Department of Energy
FY 2001 Supplemental Budget Request

Weapons Activities

Defense Facilities Closure Projects

Defense Environmental Restoration and Waste Management

Non-Defense Environmental Management

Uranium Facilities Maintenance and Remediation

Defense Environmental Management Privatization

June 2001 Office of Chief Financial Officer

Department of Energy
FY 2001 Supplemental Budget Request
Summary

(dollars in thousands)

	Presently Available	Proposed Supplemental	Revised Estimate
Weapons Activities	5,004,153	140,000	5,144,153
Defense Facilities Closure Projects	1,080,331	21,000	1,101,331
Defense Environmental Restoration and Waste Management	4,963,533	100,000	5,063,533
Non-Defense Environmental Management	277,200	11,400	288,600
Uranium Facilities Maintenance and Remediation	384,102	18,000	402,102
Defense Environmental Management Privatization	-32,000	29,600	-2,400
Total, Energy and Water Development	11,677,319	320,000	11,997,319

Weapons Activities

Proposed Appropriation Language

For an additional amount for "Weapons Activities," $140,000,000 to remain available until expended.

Explanation of Change

The FY 2001 Energy and Water Development Appropriations Act, (P.L. 106-377) provided $5.02 billion for Weapons Activities, which included activities to assure the safety and operational readiness of the nuclear weapons stockpile. Of the requested additional $140 million for these activities, $100 million would be used for refurbishment and life extension support work in the Directed Stockpile activities and $40 million would be used for plutonium pit manufacturing certification, and related Campaign activities.

Funding Profile

Weapons Activities Account Summary

(dollars in thousands)

	Presently Available	Proposed Supplemental	Revised Estimate
Directed Stockpile Work	942,702	54,000	996,702
Campaigns	1,951,269	24,000	1,975,269
Readiness in Technical Base and Facilities	1,424,789	62,000	1,486,789
Transportation Safeguards Division	115,117		115,117
Safeguards and Security	381,765		381,765
Program Direction	202,158		202,158
Subtotal, Weapons Activities	5,017,800	140,000	5,157,800
Use of PY Balances	-13,647	0	-13,647
Total, Weapons Activities	5,004,153	140,000	5,144,153

Decision Unit Summary

(dollars in thousands)

	Presently Available	Proposed Supplemental	Revised Estimate
Directed Stockpile Work			
Stockpile Maintenance	320,290	18,900	339,190
Stockpile Evaluation	161,993	4,000	165,993
Dismantlement/Disposal	25,243		25,243
Field Engineering, Training and Manuals	6,229		6,229
Production Support	144,930		144,930
Stockpile Research and Development	284,017	31,100	315,117

	Presently Available	Proposed Supplemental	Revised Estimate
Subtotal, Directed Stockpile Work	**942,702**	**54,000**	**996,702**
Campaigns			
Primary Certification	46,402		46,402
Dynamic Materials Properties	67,507		67,507
Advanced Radiography	48,572		48,572
97-D-102, Dual-Axis Radiographic Hydrotest Facility, LANL	34,004		34,004
Secondary Certification and Nuclear Systems Margins	43,100		43,100
Enhanced Surety	25,551		25,551
Weapons Systems Engineering Certification	15,336		15,336
Certification in Hostile Environments	14,599		14,599
Enhanced Surveillance	98,791	12,000	110,791
Advanced Design and Production Technologies	75,988	3,000	78,988
Inertial Confinement Fusion Ignition and High Yield	231,311		231,311
96-D-111, National Ignition Facility, LLNL	197,255		197,255
Defense Applications and Modeling	677,344		677,344
01-D-101, Distributed Information Systems Lab., SNL	2,295		2,295
00-D-103, Terascale Simulation Facility, LLNL	4,889		4,889
00-D-105, Strategic Computing Complex, LANL	55,877		55,877
00-D-107, Joint Computational Engineering Lab., SNL	6,685		6,685
Pit Manufacturing Readiness	101,788	4,000	105,788
Secondary Readiness	29,287	1,800	31,087
HE Manufacturing and Weapons Assembly/Disassembly Readiness	1,795	1,600	3,395
Nonnuclear Readiness	1,339	1,600	2,939
Materials Readiness	6,163		6,163
Tritium Readiness	75,589		75,589
98-D-125, Tritium Extraction Facility, SR	74,835		74,835
98-D-126, Accelerator Production of Tritium, VL	14,967		14,967

	Presently Available	Proposed Supplemental	Revised Estimate
Subtotal, Campaigns	**1,951,269**	**24,000**	**1,975,269**
Readiness in Technical Base and Facilities			
Operation of Facilities	908,578	28,100	936,678
Program Readiness	163,631	11,400	175,031
Special Projects	35,064		35,064
Material Recycle and Recovery	74,961	12,500	87,461
Containers	13,833	8,800	22,633
Storage	14,418	1,200	15,618
Nuclear Weapons Incident Response	55,039		55,039
01-D-108, Microsystem & Engineering Science Applications, SNL	0	9,500	9,500
01-D-107, Atlas Relocation and Operations, NTS	0	3,789	3,789
01-D-103, Project Engineering & Design, VL	35,422	-13,289	22,133
01-D-124, HEU Storage Facility, Y-12	17,710		17,710
01-D-126, Weapons Evaluation Test Laboratory, PX	2,993		2,993
99-D-103, Isotope Sciences Facility, LLNL	4,964		4,964
99-D-104, Protection of Real Property (Roofs Ph II), LLNL	2,780		2,780
99-D-105, Central Health Physics Calibration Facility, LANL	0		0
99-D-106, Model Validation & System Certification Test Center, SNL	5,189		5,189
99-D-108, Renovate Existing Roadways, NV	1,870		1,870
99-D-122, Rapid Reactivation, VL	0		0
99-D-125, Replace Boilers and Controls, KC	12,971		12,971
99-D-127, SMRI - Kansas City Plant II, KC	23,514		23,514
99-D-128, SMRI - Pantex Consolidation, PX	4,987		4,987
98-D-123, SMRI - Tritium Facility Modernization and Consolidation, SRS	30,699		30,699
98-D-124, SMRI - Y-12 Consolidation	0		0

	Presently Available	Proposed Supplemental	Revised Estimate
97-D-123, Structural Upgrades, KC	2,858		2,858
96-D-102, Stockpile Stewardship Facility. Revitalization, Phase VI, VL	0		0
96-D-104, Processing & Environmental Technology Lab., SNL	0		0
95-D-102, CMR Upgrades Project, LANL	13,308		13,308
Subtotal, Readiness in Technical Base and Facilities	**1,424,789**	**62,000**	**1,486,789**
Transportation Safeguards Division			
Operations & Equipment	77,886		77,886
Program Direction	37,231		37,231
Subtotal, Transportation Safeguards Division	**115,117**	**0**	**115,117**
Safeguards and Security			
Operations and Maintenance	361,055		361,055
99-D-132, Nuclear Materials S&S Upgrade Project, LANL	18,003		18,003
88-D-123, Security Enhancements Project, PX	2,707		2,707
Subtotal, Safeguards and Security	**381,765**	**0**	**381,765**
Program Direction	**202,158**		**202,158**
Subtotal, Weapons Activities	**5,017,800**	**140,000**	**5,157,800**
Use of Prior Year Balances	-13,647		-13,647
TOTAL, WEAPONS ACTIVITIES	**5,004,153**	**140,000**	**5,144,153**

Weapons Activities

Program Performance Summary

The appropriation for the FY 2001 Weapons Activities program is $5.0 billion. The additional $140 million is urgently needed to address issues that have emerged since the FY 2001 Congressional budget was enacted. Funding requirements are needed to support weapons refurbishment and life extension related activities or for pit certification, manufacturing and related campaign activities.

A total of $100 million is requested for refurbishment and life extension of the weapons stockpile. The funding will be used to support Directed Stockpile Work supporting the B61, W76, and W80; stockpile maintenance, and stockpile evaluation. The funding will also support Campaign activities to accelerate essential procurements in Advanced Design and Production Technologies, Secondary Readiness, High Explosives Readiness, and Nonnuclear Readiness; and to accelerate work in Enhanced Surveillance primarily related to aging assessments and diagnostic deployment. In addition, funding is requested to address safety at several NNSA sites supporting the stockpile stewardship mission to address Defense Nuclear Facilities Safety Board recommendations, complete corrective actions, and address other federal safety-related requirements.

A total of $40 million is requested to bolster National Nuclear Security Activity's efforts to establish a pit manufacturing capability, including increased funding for certification activities, operations of facilities, and Modern Pit Facility planning.

Directed Stockpile Work

Stockpile Research & Development **+ 31,100,000**

Additional funding of $7,100,000 would provide laboratory support for surveillance activities at the production plants for the B61 refurbishment (planning and engineering), to support an First Production Unit (FPU) of a refurbished weapon in FY 2004; accelerate assessment and closeout of Significant Finding Investigations to provide timely input to the engineering activities in support of the W76 and B61 refurbishments; and support continued development and evaluation of W80 surety features to meet the refurbishment First Production Unit of FY 2006.

The W88 Pit Manufacturing and Certification Interim Report identified FY 2001 funding shortfalls for certification activities and related supporting program and facility requirements. An additional $24,000,000 requested would provide increased management and support; support engineering tests and hydrodynamic tests; hire additional scientists; complete critical material experiments on plutonium, including gas gun tests; and fully fund subcritical test preparation and diagnostic development. These activities must be supported in FY 2001 to deliver a certified pit in FY 2009. In FY 2001, the Pit Manufacturing Readiness Campaign supports only activities associated with the manufacture of pits, not their certification. Therefore, additional funds are requested in the Directed Stockpile Work, Research and Development account where W88 pit certification

efforts are funded. These certification activities will become part of the restructured Pit Manufacturing and Certification Campaign requested in FY 2002.

Stockpile Maintenance **+18,900,000**

The additional funding requested would procure material for the fabrication and production of neutron generators; support product development for rocket motors and common radars; reduce single point failures in the neutron production facility; and fund pre-production activities including conducting tests and evaluations associated with the B61.

Stockpile Evaluation **+ 4,000,000**

Additional funding would be used to procure equipment enabling the accelerated development of non destructive testing techniques for pits and the procurement of test equipment and initiation of additional evaluation activities at the Weapons Environmental Test Laboratory.

Campaigns

Enhanced Surveillance **+12,000,000**

Additional funding will support critical aging assessments for weapon components, diagnostic deployment and other related evaluation activities. Activities will be focused in the following areas: pit tomography; neutron radiography; advanced telemetry; high explosive, pit, detonator, and canned subassembly diagnostics; and pit, canned subassembly, high explosive, nonnuclear material, and radioisotope thermoelectric generator diagnostics.

Advanced Design and Production Technologies **+ 3,000,000**

Fund essential procurements, related manufacturing equipment and software, and workstation enhancements that are required to support Directed Stockpile Work. Specific items include a 3D laser welder, autoclave equipment and components information system software enhancements for the Kansas City Plant and zone refinement equipment, microwave melting equipment and process modeling and analysis for the Y-12 Plant.

Pit Manufacturing Readiness **+ 4,000,000**

The limited manufacturing capacity being established to support the W88 requirements is potentially insufficient to meet manufacturing requirements for the long term support of the stockpile. Planning for a Modern Pit Facility with the capability to meet unforeseen future pit manufacturing requirements is essential to establish a viable readiness posture. The additional funding requested would support the completion of preconceptual design activities required to initiate Conceptual Design in early FY 2002, and continue associated research and development on manufacturing and facility equipment for the Modern Pit Facility.

Secondary Readiness **+ 1,800,000**

High Explosives Readiness **+ 1,600,000**

Nonnuclear Readiness **+ 1,600,000**

Funds are requested to accelerate the procurement of equipment for the Readiness Campaigns including the Secondary Readiness Campaign; the HE/Manufacturing and Weapons Assembly/Disassembly Readiness Campaign; and the Nonnuclear Readiness Campaign.

Readiness in Technical Base and Facilities

Operations of Facilities **+28,100,000**

An additional $12,000,000 is needed to safely operate facilities at the Los Alamos National Laboratory. This requirement was identified in a March 30, 2001 reprogramming proposal of $29,800,000 of which $11,900,000 was disallowed due to objections of the proposed source of funding. Without the additional funding, LANL would place several facilities in safe configuration and cease programmatic operations at facilities required to support plutonium operations. The following projects would be adversely affected: W88 pit manufacturing and certification, and pit surveillance. These funds will support the continuation of programmatic operations and avoid placing any facilities in safe shutdown for the remainder of the fiscal year.

Funding is needed to address several Defense Nuclear Facilities Safety Board recommendations, complete corrective actions, and address other federal safety related requirements.

Type A Corrective Action and Material purchases at various plants will support further implementation of the corrective action plan and includes the procurement of continuous air monitors and urgent improvements to support nuclear safety in facilities that support pit production. Also procures needed materials at various sites to assure facility availability in support of the stockpile (+$4,000,000).

Funding is also requested to address DNFSB Recommendation 2000-2 which calls for the identification and upgrade of deficient safety systems at the Nevada Test Site and the three weapons laboratories (+$2,000,000).

10CFR830, Nuclear Safety Management, effective April 10, 2001 requires the completion of a Safety Authorization Basis for existing nuclear facilities and activities by April 2003. The requested funds will begin a rigorous two-year effort to bring most DP facilities and activities at the Nevada Test Site and the three weapons laboratories into compliance with 10CFR830 (+$6,500,000).

Support operational requirements for the subcritical experimental program and safety authorization basis at the Device Assembly Facility at the NTS (+$3,600,000, Operations of Facilities).

Material Recycle and Recovery **+12,500,000**

Additional funding will support the stabilization and repackaging of plutonium compounds in storage at LANL. DNFSB Recommendation 94-1 cited several DOE facilities at LANL and LLNL for holding plutonium materials in configurations that were unsuitable for long term storage, and DNFSB Recommendation 2000-1

reiterates the need to accelerate the pace for stabilization and repackaging of these materials. This funding is to be applied to improve the process and implement an accelerated schedule to complete this stabilization activity.

Program Readiness **+ 11,400,000**

These funds are needed to support dynamic experiments at the Nevada Test Site and to begin work to enhance underground test readiness. In particular, these activities would support critical work necessary for pit certification.

Containers **+ 8,800,000**

Storage **+ 1,200,000**

DNFSB 99-1 recommended that Defense Programs repackage disassembled pits stored at the Pantex Plant into AL-R8 Sealed Insert Containers to provide an inert atmosphere to retard corrosion for long term storage. Major improvements have been made in the repackaging process and a repackaging rate of 200 pits per month as the DNFSB requested was achieved. Funding is needed to acquire a sufficient quantity of the AL-R8 Sealed Insert containers to sustain the repackaging rate through FY 2002.

Construction

01-D-103, Project Engineering and Design, VL **-13,289,000**

The Project Engineering and Design line item, 01-D-103, is reduced by $13,289,000 to transfer physical construction funding to the new Atlas Relocation and Operations line item (-$3,789,000) and the MESA construction line item (-$9,500,000). An amended FY 2002 construction project data sheet is provided.

01-D-107, Atlas Relocation and Operations, NTS **+ 3,789,000**

A new line item, 01-D-107, Atlas Relocation and Operations, reflects the transfer of construction funding appropriated for this project under line item 01-D-103, Project Engineering and Design (PED). The construction funding has been transferred from the PED line item since PED is intended to fund preliminary and final design only (+$3,789,000). A construction project data sheet is provided..

01-D-108, MESA, SNL **+ 9,500,000**

Consistent with the transfer of construction funding for the the Atlas facility out of PED, construction funding associated with the Microsystems and Engineering Sciences Applications Facility (MESA) is also being relocated to a stand alone construction line item, 02-D-101 (+$9,500,000). An amended FY 2002 construction project data sheet is provided.

Program Funding by Site

(dollars in thousands)

	Presently Available	Proposed Supplemental	Revised Estimate
Albuquerque Operations Office			
Albuquerque Operations Office	241,532		241,532
Kansas City Plant	344,409	3,550	347,959
Los Alamos National Laboratory	1,110,866	64,000	1,174,866
Pantex Plant	287,591	15,100	302,691
Sandia National Laboratories	849,981	22,775	872,756
Subtotal, Albuquerque Operations Office	2,834,379	105,425	2,939,804
Chicago Operations Office	41,969		41,969
Idaho Operations Office	6,017		6,017
Nevada Operations Office	232,823	16,600	249,423
Oak Ridge Operations Office			0
Oak Ridge Y-12	481,651	5,850	487,501
OR Science & Technology Institute	150		150
Oak Ridge National Laboratory	19,518		19,518
Oak Ridge Operations Office	10,108		10,108
Subtotal, Oak Ridge Operations Office	511,427	5,850	517,277
Oakland Operations Office			
General Atomics	8,000		8,000
Lawrence Livermore National Laboratory	805,755	7,625	813,380
Naval Research Laboratory	24,015		24,015
Oakland Operations Office	16,103		16,103
University of Rochester	32,660		32,660

Subtotal, Oakland Operations Office	886,533	7,625	894,158
Richland Operations Office			
Pacific Northwest National Laboratory	9,280		9,280
Subtotal, Richland Operations Office	9,280	0	9,280
Savannah River Operations Office			
Savannah River Operations Office	3,210		3,210
Savannah River Westinghouse	226,476	500	226,976
Subtotal, Savannah River Operations Office	229,686	500	230,186
Headquarters	265,686	4,000	269,686
Subtotal	5,017,800	140,000	5,157,800
Adjustments	(13,647)		(13,647)
			0
Total, Weapons Activities	5,004,153	140,000	5,144,153

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

(Changes from FY 2002 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, the FY 2001 Energy and Water Development Appropriations Act provided $20,000,000 for design and supporting infrastructure upgrades for Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories.

- # The Project Engineering and Design line items are intended to fund only design activities. Therefore, this revised data sheet reflects the transfer of all construction funding associated with Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories to line item 02-D-101, and all construction funding associated with the Atlas Relocation and Operations project to line item 01-D-107. For MESA, a total of $17,000,000 in TEC for construction activities is transferred, including FY 2001 funding of $9,500,000. For Atlas Relocation and Operations, a total of $10,989,000 in TEC for construction activities is transferred, including FY 2001 funding of $3,789,000.

- # 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. This subproject is now included in this line item.

- # 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 (*A-E and technical design only)*	1Q 2001	2Q 2002	N/A	N/A	14,500 [a]
FY 2001 Supplemental Budget *(A-E and technical design only)*	1Q 2001	4Q 2003	N/A	N/A	82,676
FY 2002 Budget Request *(A-E and technical design only)*	1Q 2001	4Q 2003	N/A	N/A	82,676

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	22,133 [b c]	22,133	13,450
2002	37,879	37,879	40,342
2003	22,664	22,664	25,503
2004	0	0	3,381

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.

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[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] The FY 2001 Energy and Water Development appropriation for design and other non-design activities increased the requested appropriation from $14,500,000 to $35,500.000. This was reduced by $78,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] The FY 2001 Congressional Budget Supplemental requests a transfer of $13,289,000 of the FY 2001 appropriation to 02-D-101 ($9,500,000) and 01-D-107 ($3,789,000)

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 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 l 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	14,956 [a]	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

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. The supporting infrastructure upgrades associated with the MESA Complex, which were funded in this line item in the FY 2001 Energy and Water Development Appropriations Act, have been transferred to line item 02-D-101, Microsystems and Engineering Sciences Applications (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

[a] Congress provided $20,000,000 in the FY 2001 appropriation for design and supporting infrastructure upgrades for MESA. The total TEC for design is $15,000,000. This was reduced by $44,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. The total TEC for the infrastructure upgrades is $17,000,000, which has been transferred to line item 02-D-101 as part of the FY 2001 Congressional Budget Supplemental.

- Integration of classified and unclassified supercomputing, visualization and ultra-high speed telecommunications resources to the MESA Complex.

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	2,250	26,000-28,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
2,250	0	0	0	2,000	250	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	1,200 [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

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. Of this amount, construction costs totaling $3,789,000 have been transferred to a new line item, 01-D-107, Atlas Relocation and Operations. This subproject will support the design efforts of a joint team of Los Alamos National Laboratory (LANL), Bechtel Nevada (BN), personnel from other laboratories, and NNSA Nevada Operations Office staff in the development and implementation of a plan that will relocate Atlas to an optimum site at the Nevada Test Site (NTS). It is anticipated that the Atlas Relocation and Operations 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. A total of $3,789,000 in construction funding has been transferred to new line item 01-D-107 as part of the FY 2001 Congressional Budget Supplemental.

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)	63,135	10,575
Design Management Costs (7.4% of TEC)	6,100	1,450
Project Management Costs (16.3% of TEC)	13,441	725
Design Phase Contingency (current estimates include contingency based on risk analysis)	0	1,750
Total Design Costs (100% of TEC)	82,676	14,500
Total, Line Item Costs (TEC)	82,676	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.

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
Total, Line item TEC	0	12,750	41,042	25,503	3,381	82,676
Total Facility Costs (Federal and Non-Federal)	0	12,750	41,042	25,503	3,381	82,676
Other Project Costs						
Conceptual design costs	2,240	7,640	0	0	0	9,880
Other project-related costs	4,095	9,435	4,280	1,120	200	19,130
Total, Other Project Costs	6,335	17,075	4,280	1,120	200	29,010
Total Project Cost (TPC)	6,335	29,825	45,322	26,623	3,581	111,686

[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.

01-D-107, Atlas Relocation and Operations, Nevada Test Site, Las Vegas, Nevada

This new line item is requested as part of the FY 2001 Congressional Budget Supplemental in order to transfer all of the construction costs for the relocation and operations of Atlas at the Nevada Test Site from line item 01-D-103, Project Engineering and Design (PED). The funding was appropriated in the PED line in FY 2001; however, PED is intended to fund only preliminary and final design activities.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2001 Supplemental Budget Request	NA	NA	1Q 2002	3Q 2003	12,189 [a]	17,874

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
FY2001	3,789	3,789	200
FY2002	0	0	3,500
FY2003	7,200	7,200	7,289

3. Project Description, Justification and Scope

Description

The FY 2001 Appropriation Act provided $5,000,000 under project 01-D-103, Project Engineering and Design for proof of concept and completion of facility operational capability for the Atlas pulsed power machine at the Nevada Test Site. This newly established line item includes the capital construction costs associated with moving Atlas to the NTS, which are transferred from 01-D-103. The preliminary and final design costs remain in the Project Engineering and Design line item, 01-D-103.

This project will relocate Atlas to an optimum site at the Nevada Test Site (NTS), and will include 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

[a] The TEC includes the cost of preliminary and final design ($1,200,000), which is funded in 01-D-103, Project Engineering and Design. This is a preliminary baseline estimate. The performance baseline will be established following completion of preliminary design and Critical Decision 2.

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.

Justification

Atlas provides the Stockpile Stewardship Program with unique capability to produce the high quality scientific data needed to validate the new ASCI codes used for primary and secondary certification. Successful certification in the future requires the best available computational models, especially models for materials properties and hydrodynamics, validated by experimental data.

The certification Campaigns, Primary Certification and Secondary Certification and Nuclear Systems Margins, require high confidence in modeling of the underlying physics. Recent experience has shown the new ASCI codes can successfully simulate analytical test problems while failing to properly predict the behavior of a simple, large scale, feature in a strengthless Pegasus/Atlas implosion. Data from Pegasus experiments led to hydrodynamic code improvements that, in turn, led to greater confidence that the code can ultimately be used for certification. The central role for Atlas is to provide experimental data to validate the physics models in the newly emerging suite of certification codes.

Moving Atlas to the Nevada Test Site optimizes Defense Programs' investment in the NTS by applying NTS expertise in facility operations and management to Atlas operations, and engages NTS experimental and diagnostic scientists in advanced experiments that contribute to stockpile stewardship data needs, sub-critical experiments and test readiness.

Project Milestones

FY 2001:	Complete Conceptual Design	2Q
	Award Building Construction Contract	4Q
FY 2002:	Complete Machine Disassembly	3Q
	Complete Building Construction	4Q
	Building Beneficial Occupancy	4Q
FY 2003:	Complete Machine Reassembly	2Q
	Complete Recommissioning	3Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Construction Phase		
Improvements to Land	100	0
Buildings	2,000	0
Utilities	300	0
Standard Equipment	0	0
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	6,650	0
Construction Management (1.4% of TEC)	150	0
Project Management (1.4% of TEC)	150	0
Total Construction Costs (85.1% of TEC)	9,350	0
Contingencies		
Construction Phase (14.9% of TEC)	1,639	0
Total Contingencies (14.9% of TEC)	1,639	0
Total, Line Item Costs (TEC) [a]	10,989	0

5. Method of Performance

Design shall be performed under a negotiated Best Value architect/engineer contract. Construction and procurement shall be accomplished by fixed-price contracts based on competitive bidding and best value award.

[a] Includes only the construction costs included in this line item. Design costs for this project totaling $1,200,000 are included under line item 01-D-103.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Costs						
Construction	0	0	200	3,500	7,289	10,989
Total, Line item TEC	0	0	200	3,500	7,289	10,989
Total Facility Costs (Federal and Non-Federal)	0	0	200	3,500	7,289	10,989
Other Project Costs						
Conceptual design costs	0	0	0	0	0	0
NEPA documentation costs	0	0	300	0	0	300
Other project-related costs [a]	0	0	1,100	2,385	1,900	5,385
Total, Other Project Costs	0	0	1,400	2,385	1,900	5,685
Total Project Cost (TPC)	0	0	1,600	5,885	9,189	16,674

7. Related Annual Funding Requirements

	Current Estimate	Previous Estimate
Annual facility operating costs [b]	12,907	0
Programmatic operating expenses directly related to the facility [c]	27,103	0
Utility costs [d]	0	0
Total related annual funding (estimate based on operating life of FY 2004 through FY 2023)	40,010	0

[a] Includes 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, Soil Reports, Permits, Administrative Support, Operations and Maintenance Support, ES&H Monitoring, Operations Testing, Energy Management Control System Support, Readiness Assessment.

[b] Includes the following RTBF costs: operations support, warm standby, pulsed power maturation.

[c] Includes Science & Technology Base, Physics R&D, Machine Operations, Target Fabrication, and University Participation.

[d] Included within annual facility operating costs in RTBF.

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

(Changes from FY 2002 Congressional Budget Request are denoted with a vertical line [ ] in the left margin.)

This data sheet, originally submitted with the FY 2002 Congressional Budget, has been modified to transfer the infrastructure upgrade construction costs for MESA to this line item. Funding for the infrastructure upgrades was appropriated in FY 2001 in 01-D-103, Project Engineering and Design (PED), a line item intended for design activities only.

Funding for the entire MESA complex is not currently included in this data sheet. Preliminary and final design for the MESA complex is being funded in 01-D-103, PED. Following completion of preliminary design the Department will decide whether to proceed with construction. This data sheet presently supports only the following activities:

- **S** infrastructure upgrades, which includes systems upgrades to the existing Microelectronics Development Laboratory (MDL) and utilities upgrades to reroute existing utilities in preparation for the MESA complex (TEC: $17,000,000)

- **S** long lead procurements associated with retooling the MDL in order to support radiation hardened integrated circuits (rad-hard IC) production (TEC: $51,000,000)

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 2002 Budget Request (*Preliminary Estimate*) *REVISED*	N/A	N/A	2Q 2002	TBD	68,000 [a] [b]	68,000

[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.

[b] The TEC estimate includes the infrastructure upgrades appropriated in 01-D-103, and transferred to this line item from 01-D-103 ($17,000,000) and the preliminary estimate of the TEC for the MDL Retooling ($51,000,000).

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	9,500 [a]	9,500	3,000
2002	9,500 [b]	9,500	16,000
2003	TBD	TBD	TBD

3. Project Description, Justification and Scope

Project Description

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

Infrastructure Upgrades

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

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.

Long-lead Procurement for Rad-hard Integrated Circuit Retooling

This portion of the 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 also proceeding with the design 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

[a] $9,500,000 was appropriated in FY 2001 in 01-D-103.

[b] Includes $7,500,000 to complete the infrastructure upgrades and $2,000,000 for the MDL retooling. The funding profile for the MDL retooling has not been validated and will be provided 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.

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.

Project Milestones:

FY 2001:	Start Construction, systems upgrades and utilities upgrades	4Q
FY 2002:	Start Construction, MDL Retooling	2Q

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	N/A
Design Management Costs (0% of TEC)	0	N/A
Project Management Costs (.5% of TEC)	100	N/A
Total Design Costs (.5% of TEC)	100	N/A
Construction Phase		
Buildings	4,600	
Special Equipment	1,900	N/A
Utilities	7,900	N/A
Construction Management (0% of TEC)	1,700	N/A
Project Management (2.1% of TEC)	400	N/A
Total Construction Costs (86.8% of TEC)	16,500	N/A
Contingencies		
Design Phase (0% of TEC)	0	N/A
Construction Phase (12.6% of TEC)	2,400	N/A
Total Contingencies (12.6% of TEC)	2,400	N/A
Total, Line Item Costs (TEC) [b]	19,000	N/A

5. Method of Performance

Equipment will be procured using either design procurement and installation contracts or turnkey design/procure/install contracts as appropriate.

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[a] Design costs are included in the 01-D-103, PED except project management associated with the MDL tools.

[b] Costs are shown only for the infrastructure upgrades and the FY 2002 funding for the MDL retooling. The TEC/TPC, outyear funding profile, and schedule for this activity 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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2001	FY 2002	FY 2003	Outyears	Total
Project Cost						
Facility Costs						
Design	0	0	100	TBD	TBD	100
Construction	0	3,000	15,900	TBD	TBD	18,900
Total, Line item TEC	0	3,000	16,000	TBD	TBD	19,000
Total Facility Costs (Federal and Non-Federal)	0	3,000	16,000	TBD	TBD	19,000
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	3,000	16,000	TBD	TBD	19,000

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 infrastructure upgrades and equipment upgrades to the already existing Microelectronics Development Laboratory.

Executive Summary

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Defense Facilities Closure Projects			
Site Closure	1,025,680	21,000	1,046,680
Safeguards and Security	54,651	0	54,651
Total, Defense Facilities Closure Projects	1,080,331	21,000	1,101,331
			0
Defense Environmental Restoration and Waste Management			
Site/Project Completion	963,960	26,500	990,460
Post 2006 Completion	3,281,404	73,500	3,354,904
Safeguards and Security	197,235	0	197,235
Program Direction	363,196	0	363,196
Science and Technology	254,107	0	254,107
Subtotal	5,059,902	100,000	5,159,902
Offsets	-96,369	0	-96,369
Total, Defense ER&WM	4,963,533	100,000	5,063,533
Non-Defense Environmental Management			
Site Closure	81,069	0	81,069
Site/Project Completion	60,564	11,400	71,964
Post 2006 Completion	135,603	0	135,603
Subtotal	277,236	11,400	288,636
Offsets	-36	0	-36
Total, Non-Defense EM	277,200	11,400	288,600
Uranium Facilities Maintenance and Remediation			
UE D&D Fund	315,829	18,000	333,829
Other Uranium Activities	68,273	0	68,273
Total, UFMR	384,102	18,000	402,102
Defense EM Privatization			

[a] Presently available reflects current new budget authority as of the June Approved Funding Program.

Privatization	90,092	29,600	119,692
Subtotal, Privatization	90,092	29,600	119,692
Offsets	-122,092	0	-122,092
Total, Defense EM Privatization	-32,000	29,600	-2,400
Subtotal, EM	6,673,166	180,000	6,853,166
Offsets	-419,076	0	-419,076
Total, Site Closure	6,254,090	180,000	6,434,090

Defense Facilities Closure Projects

Proposed Appropriation Language

For expenses of the Department of Energy to accelerate the closure of defense environmental management sites, including the purchase, construction and acquisition of plant and capital equipment and other necessary expenses, $21,000,000, to remain available until expended.

Site Closure

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Site Closure			
Ohio Operations Office			
OH-FN-03 / On-Site Disposal Facility	16,470	6,600	23,070
OH-FN-06 / Soils	4,913	4,400	9,313
OH-MB-03/ Waste Activities	14,397	3,000	17,397
OH-MB-06/ Special Metals/Pu Process Hill	1,977	3,500	5,477
OH-MB-07/ Test Fire Valley	5,746	2,500	8,246
OH-MB-08 / Soils	3,150	1,000	4,150
All Other	359,653	0	359,653
Subtotal, Site Closure, Ohio	406,306	21,000	427,306
All Other Site Closure	619,374	0	619,374
Total, Site Closure	1,025,680	21,000	1,046,680

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

Public Law 106-398, “The National Defense Authorization Act for Fiscal Year 2001"

[a] Presently available reflects current new budget authority as of the June Approved Funding Program.

(dollars in thousands)

	Presently Available	Proposed Supplemental	Revised Estimate
OH-FN-03 / On-Site Disposal Facility	**16,470**	**6,600**	**23,070**

Accelerate and complete removal of North Access Road; purchase materials for Cell # 2 cap; accelerate placement of soil and debris in Cells # 2 and # 3. Purchase materials, award contracts and complete construction for Liners 4 and 5.

OH-FN-06 / Soils	**4,913**	**4,400**	**9,313**

Excavate an additional 140,000 cubic yards of soil and debris in areas 3A, 4A, Solid Waste Landfill, and Lime Sludge Pond, resulting in an approximately one year acceleration of these activities.

OH-MB-03 / Waste Activities	**14,397**	**3,000**	**17,397**

Remove off-site additional waste generated from remediation activities.

OH-MB-06 / Special Metals/Pu Process Hill	**1,977**	**3,500**	**5,477**

Accelerate cleanup of highly contaminated building 38.

OH-MB-07 / Test Fire Valley	**5,746**	**2,500**	**8,246**

Additional cleanup of various contaminated buildings which will permit accelerated transfer of property to the Miamisburg Mound Community Improvement Council for economic development.

OH-MB-08 / Soils	**3,150**	**1,000**	**4,150**

Accelerate characterization and removal actions of Potential Release Sites to support land parcel transfers to the private sector reducing regulator concerns and accomplishing Federal Facility Agreement milestones.

Defense Environmental Restoration and Waste Management

Proposed Appropriation Language

For Department of Energy expenses, including the purchase, construction and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense environmental restoration and waste management activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; $100,000,000, to remain available until expended.

Defense Environmental Restoration and Waste Management

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Defense Environmental Restoration and Waste Management			
Site/Project Completion	963,960	26,500	990,460
Post 2006 Completion	3,281,404	73,500	3,354,904
Safeguards and Security	197,235	0	197,235
Program Direction	363,196	0	363,196
Science and Technology	254,107	0	254,107
Subtotal	5,059,902	100,000	5,159,902
Offsets	-96,369	0	-96,369
Total, Defense ER&WM	4,963,533	100,000	5,063,533

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

Public Law 106-398, “The National Defense Authorization Act for Fiscal Year 2001"

[a] Presently available reflects current new budget authority as of the June Approved Funding Program.

Site/Project Completion

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Site/Project Completion			
Albuquerque Operations Office			
AL-014 / Pantex Plant Site Remediation Project	13,369	3,000	16,369
All Other Albuquerque	52,665	0	52,665
Subtotal, Albuquerque	66,034	3,000	69,034
Richland Operations Office			
RL-WM01 / Spent Nuclear Fuels Project	188,300	10,000	198,300
RL-TP05 / Plutonium Finishing Plant Deactivation	98,868	5,000	103,868
All Other Richland	48,923	0	48,923
Subtotal, Richland	336,091	15,000	351,091
Savannah River			
SR-NM-10 / Plutonium Packaging and Stabilization [b]	0	8,500	8,500
All Other Savannah River	434,181	0	434,181
Subtotal, Savannah River	434,181	8,500	442,681
All Other Site/Project Completion	127,654	0	127,654
Total, Site/Project Completion	963,960	26,500	990,460

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

Public Law 106-398, “The National Defense Authorization Act for Fiscal Year 2001"

[a] Presently available reflects current new budget authority as of the June Approved Funding Program. These figures may differ from the current 25% benchmark for those projects that have Approved Funding Program changes resulting in less than a 25% change.

[b] New project baseline summary (PBS) established to accommodate new capital construction line item project.

(dollars in thousands)

Presently Available	Proposed Supplemental	Revised Estimate

AL-014 / Pantex Plant Site Remediation Project **13,369** **3,000** **16,369**

Supports development of innovative groundwater technologies and provides for additional characterization and response actions to the Ogallala contamination.

RL-WM01 / Spent Nuclear Fuels Project **188,300** **10,000** **198,300**

Accelerate activities to increase spent fuel throughput in K West Basin including installation and operation of manual processing tables, and increase operations staff. Accelerate start of activities for K Basins facility modifications for transfer of K East Basin spent fuel to K West Basin for processing.

RL-TP05 / Plutonium Finishing Plant Deactivation **98,868** **5,000** **103,868**

Provides for:

- Accelerated completion of stabilization and storage of plutonium;
- Installation of Alpha Continuous Air Monitors;
- Procurement of additional 3013 containers to safely store plutonium bearing materials for up to 50 years;
- Procurement of additional pipe overpack containers to store plutonium bearing residues for shipment to the Waste Isolation Pilot Plant; and,
- Procurement and installation of a Radio Frequency Surveillance System to monitor structural integrity of the 3013 containers.

SR-NM10 / Plutonium Packaging and Stabilization **0** **8,500** **8,500**

Initiates procurement of long-lead equipment and early construction activities prior to approval of Critical Decision 3 for the construction line-item Plutonium Packaging and Stabilization project. Risk- mitigating early construction activities include demolition and removal of the existing furnaces and interior walls and safeguards and security upgrades to the project.

Post 2006 Completion

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Post 2006 Completion			
Carlsbad Field Office			
CBFO-03 / WIPP Transportation	28,897	7,000	35,897
All Other Carlsbad	161,989	0	161,989
Subtotal, Carlsbad	190,886	7,000	197,886
Idaho Operations Office			
ID-HLW-102 / High-Level Waste Immobilization Facility and/or			
ID-HLW-103 / High-Level Waste Treatment and Storage	18,115	5,000	23,115
All Other Idaho	255,556	0	255,556
Subtotal, Idaho	273,671	5,000	278,671
Office of River Protection			
ORP-TW04 / Retrieval Project	61,832	10,000	71,832
ORP-TW06LT / Waste Treatment and Immobilization Plant	376,171	25,000	401,171
All Other River Protection	311,223	0	311,223
Subtotal, Office of River Protection	749,226	35,000	784,226
Richland Operations Office			
RL-ER06 / Decontamination and Decommissioning	17,180	3,300	20,480
All Other Richland	347,481	0	347,481
Subtotal, Richland	364,661	3,300	367,961
Savannah River Operations Office			
SR-HL01 / H-Tank Farm	98,293	6,600	104,893
SR-HL02 / F-Tank Farm	64,120	3,600	67,720
SR-HL12 / High-Level Waste Removal	28,137	800	28,937
SR-HL13/ Salt Disposition	21,105	12,200	33,305
All Other Savannah River	488,801	0	488,801
Subtotal, Savannah River	700,456	23,200	723,656
All Other Post 2006 Completion	1,002,504	0	1,002,504
Total, Post 2006 Completion	3,281,404	73,500	3,354,904

[a] Presently available reflects current new budget authority as of the June Approved Funding Program. These figures may differ from the current 25% benchmark for those projects that have Approved Funding Program changes resulting in less than a 25% change.

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 102-579, “Waste Isolation Pilot Plant Land Withdrawal Act (1992)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

Public Law 106-398, “The National Defense Authorization Act for Fiscal Year 2001"

(dollars in thousands)

Presently Available	Proposed Supplemental	Revised Estimate

CBFO-03 / WIPP Transportation **28,897** **7,000** **35,897**

Provides funding to exercise contract options for additional shipping containers to support the operational capability of WIPP and meet transuranic waste shipping needs of the complex. This includes the acquisition/fabrication of additional Transuranic Packaging Transporter, Model II (TRUPACT II) and HalfPACT shipping containers. The additional TRUPACT-IIs and HalfPACTs are needed to carry out the purposes of the Waste Isolation Pilot Plant Land Withdrawal Act. In addition, funds available to DOE from the Fluor Corporation contract settlement (approximately $3.8 million) will be available to buy TRUPACT-IIs.

ID-HLW-102 / High-Level Waste Immobilization Facility and/or
ID-HLW-103 / High-Level Waste Treatment and Storage **18,115** **5,000** **23,115**

Accelerate high-level waste tank inspection efforts to clarify solids volume and characteristics and validate tank integrity. Accelerate work to evaluate cold crucible melter technology in support of sodium bearing waste vitrification plant and accelerate work on preparing engineering documentation necessary for CD-0 approvals associated with the plant.

ORP-TW04 / Retrieval Project **61,832** **10,000** **71,832**

Supports tank waste retrieval engineering activities such as feed sequence analysis and coordination of retrieval system design.

ORP-TW06LT / Waste Treatment and Immobilization Plant **376,171** **25,000** **401,171**

For the Waste Treatment and Immobilization Plant Project, line item 01-D-416, funds will supplement engineering activities and provide economy of scale in the procurement of bulk materials (i.e., concrete, structural steel) necessary for the Waste Treatment and Immobilization Plant.

RL-ER06 / Decontamination and Decommissioning **17,180** **3,300** **20,480**

Complete the engineering for the F Reactor Safe Storage Roof enclosure and authorize/commit in FY 2001 construction portion of the contract in order to complete the F Reactor Interim Safe Storage (cocooning).

(dollars in thousands)

Presently Available	Proposed Supplemental	Revised Estimate

SR-HL01 / H-Tank Farm **98,293** **6,600** **104,893**

The 2H Evaporator System requires substantial modifications to clean the system and return it to service. Funding allows the completion of this task in FY 2001, including completion of the equipment modifications such as the 2H ventilation purge system upgrades and final operational readiness activities including training, procedures and readiness assessments ($3,000).

H-Tank Farms continue to have substantial challenges associated with Tank Space Management. Funding improves transfer capabilities for increased transfers, modifications to improve reliability of the 3H evaporator system and waste characterization studies ($3,600).

SR-HL02 / F-Tank Farm **64,120** **3,600** **67,720**

F-Tank Farm continues to have substantial challenges associated with Tank Space Management. Provides improved tank inspection and transfer capabilities, modifications to improve reliability of the 2F evaporator system, waste characterization studies, and upgrades to support increased Tank Farm transfers.

SR-HL12 / High-Level Waste Removal **28,137** **800** **28,937**

Enables modifications to return Tank 50 to high-level waste storage service, to support the 3H evaporator system cooling modifications, as well as getting the Authorization Basis ready for waste removal from Tanks 7 and 18.

SR-HL13 / Salt Disposition **21,105** **12,200** **33,305**

Provides research and development; advanced development; procurement of process chemicals; and major components such as centrifugal contactors, shielded viewing windows, tele-manipulators, etc.

01-D-416, Waste Treatment and Immobilization Plant
Hanford Site, Washington (ORP-TW06LT)

(Changes from FY 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 2001 Budget Request *(Title I Baseline)* [a]	4Q 1998	2Q 2005	2001	2007	5,466,000	12,488,000
FY 2002 Budget Request (*Current Baseline Estimate*) [b]	" [c]	"	2002	2007	4,350,000	4,350,000
FY 2001 Supplemental Request (*Current Baseline Estimate*)	"	"	"	"	"	"

[a] Total Project Cost/Total Estimated Cost based upon Privatization concept and included plant operations through FY 2018.

[b] The FY 2002 Total Project Cost/Total Estimated Cost based on traditional government construction contract.

[c] The A-E work initiated and funding provided under the Tank Waste Privatization Project.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Prior Year	393,673 [a]	338,673	324,584
2001	376,171 [b]	432,000	418,538
2001 Supplemental	25,000	25,000	10,000
2002	500,000	500,000	420,609
2003	855,000	855,000	828,329
2004	678,901	678,901	799,444
2005	686,904	686,904	615,866
2006	408,167	408,167	432,874
2007	275,648	275,648	267,696
2008	137,010	137,010	168,068
2009	13,526	13,526	63,992
2010	0	0	0

3. Project Description, Justification and Scope

Radioactive waste has been stored in large underground storage tanks at the Hanford Site since 1944. Approximately 53 millions gallons of waste containing approximately 240,000 metric tons of processed chemicals and 172 mega-curies of radionuclides are currently being stored in 177 tanks. These caustic wastes are in the form of liquids, slurries, saltcakes, and sludge. In 1992, the Tank Waste Remediation System Program was established to manage, retrieve, treat, immobilize, and dispose of these wastes in a safe, environmentally sound, and cost-effective manner. In FY 2001, as directed by Congress, the Tank Waste Remediation System was renamed the River Protection Project. The River Protection Project is managed by the Office of River Protection at the Hanford site in Washington State. The River Protection Project also includes efforts to resolve a number of safety concerns and technical issues. Of particular interest is addressing past leakage from some of the underground storage tanks. The leakage has resulted in contamination of the underlying ground column (vadose zone) and recent reports indicate that some of the leakage has permeated to a depth to cause contamination of the groundwater. Storage in the current tanks is very costly, and as the tanks

[a] Prior Years appropriated under EM Privatization account reflect $97,000,000 Congressional Rescission in the FY 2001 Appropriation.

[b] Reflects FY 2001 Rescission of $829,000. The original appropriation was $377,000,000.

age, potential for radioactive and chemical release will increase, although short-term risks are low. The River Protection Project will substantially decrease the long-term costs and provide protection of public health and safety and the environment by removing the waste from the tanks and placing it in a waste form suitable for long-term disposal.

The River Protection Project will implement cleanup under two contract vehicles.

- The Tank Farm Contractor will provide for safe storage and retrieval of tank wastes, storage and disposal of immobilized waste, decontamination and decommissioning of tanks, and initiation of post closure monitoring of the tank farms.
- The Waste Treatment Contractor will design, construct, and commission a Waste Treatment and Immobilization Plant and support transition of the plant into full operation. Operation of the Waste Treatment and Immobilization Plant is planned to be under a separate contract awarded after commissioning.

The River Protection Project pathway for cleanup is documented in the Hanford Federal Facility Agreement and Consent Order, commonly known as the Tri-Party Agreement. Under the Tri-Party Agreement, DOE, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology have agreed to a timetable for cleanup of the Hanford Site. A major objective in that timetable is to accomplish the first phase (Phase I) of the treatment effort by immobilizing approximately 10 percent of the tank waste by mass and 25 percent of the tank waste by radioactivity by 2018. The objective associated with Phase I will be met utilizing the Waste Treatment and Immobilization Plant. Phase II will accomplish immobilization of the remaining tank waste.

Until spring 2000, the Department's acquisition strategy for construction of the Waste Treatment and Immobilization Plant was planned to occur through a privatization contract. However, the Department determined that the privatization contractor's April 24, 2000, proposal for the Hanford privatization contract was unacceptable in many areas including cost, schedule, management, and business approach. The price of the proposal included high contingency, fees, and return on investment, which essentially shifted the financial risk from the contractor back to the Federal government. Thus a key benefit of privatization, in this case, was lost. Therefore, on May 8, 2000, then Secretary Richardson announced that the privatization contract with BNFL, Inc., would be terminated. Although the privatization contract was terminated, significant progress has been made in acquiring a robust technical design for the Waste Treatment and Immobilization Plant. Process tests with simulated and actual waste have demonstrated that the melter and pretreatment technologies meet or exceed requirements. These test results have been independently verified.

The Department awarded a competitively bid, non-privatized design and construction contract for the Waste Treatment and Immobilization Plant on December 11, 2000, a full month ahead of schedule. Bechtel Washington Group, the Waste Treatment and Immobilization Plant contractor, will continue to build upon the design initiated and developed by the prior privatization contractor. Design work will entail development of all structural, mechanical, electrical, and process drawings to a degree of detail sufficient for construction.

The Waste Treatment and Immobilization Plant Contractor will subcontract for operability and commissioning

support. After commissioning, DOE will award a separate contract to operate the Waste Treatment and Immobilization Plant and treat and immobilize approximately 10 percent of the Hanford tank waste by mass and 25 percent of the Hanford tank waste by radioactivity by 2018.

The Waste Treatment and Immobilization Plant Contractor will review the privatization contractor's Waste Treatment and Immobilization Plant design and supporting information; complete process and facility design; perform construction and procurement; conduct acceptance testing; select and integrate a subcontractor into the project team to provide the necessary operability and commissioning capability; and conduct all required environmental, safety, quality, and health actions. From contract award, the Waste Treatment and Immobilization Plant Contractor will be the design authority responsible for the design of the Waste Treatment and Immobilization Plant.

The Waste Treatment and Immobilization Plant Complex currently consists of five separate facilities: Pretreatment facility, Low Activity Waste Conditioning facility, Low Activity Waste Vitrification facility, High-Level Waste Vitrification facility, and the Balance of Facilities. The Pretreatment facility will separate the Hanford feed waste into low-level and high-level fractions. The high-level fraction is sent to the High-Level Waste Vitrification facility for immobilization. The low-level fraction is sent to the Low Activity Waste Conditioning facility for additional treatment prior to being immobilized in the Low Activity Waste vitrification facility. Office facilities, chemical storage, site utilities, and infrastructure are provided as part of the Balance of Facilities.

Schedule performance is an important consideration for the River Protection Project, and specifically the Waste Treatment and Immobilization Plant. The Waste Treatment and Immobilization Plant contract includes several key milestones, the most important of which is the start of hot commissioning by December 2007. The Department will seek to accelerate the project by providing contractor fee incentives to optimize life-cycle performance, cost, and schedule, including the process design, facility design, and technologies. The current Waste Treatment and Immobilization Plant design provides a reference solution that meets project requirements, but has significant potential for optimization. The Department will expect full Waste Treatment and Immobilization Plant Contractor accountability for performance, cost, and schedule throughout the contract period of performance.

This project has a contingency of $350,000,000 (8 percent) of the Total Estimated Cost, which is on the low side of the contingency allowance per Chapter 11 of DOE G 430.1-1. Project contingency is based on a risk assessment of design maturity, work complexity and project uncertainties. The assessment evaluated the following criteria: weather, unknown interferences, unknown tie-ins, rework, unknown special work procedures, operations impacts, changing waste disposal requirements, Health Physics Technician support, safety class/regulatory changes, contamination/radiation changes, longer project duration, schedule conflicts, and maturity of work definition.

The FY 2001 supplemental appropriation of $25,000,000 is being used by the Waste Treatment and Immobilization Plant contractor to continue detailed design, engineering, long-lead procurement, and planning. Many of the activities listed below are multi-year activities and some carry on through FY 2002 and FY 2003, or beyond. The work that is being funded in FY 2001, to which the supplemental funding will be incrementally

applied, includes the following:

- Preparation of Regulatory documentation
- Ion Exchange Testing for radionuclides removal
- Preparation of procurement specifications for piping fabrication, Heating Ventilation, and Air Conditioning, stainless steel liner plate, roofing and siding, rebar and embeds.
- Initiation of Instrumentation and Control Design Activities.
- Continue seismic analysis of facilities.
- Continue civil and structural detail drawings of all facilities.
- Full scale Melter Design starts
- Initiate performance testing of the canister design
- Continue primary and secondary Off-Gas System development
- Continue preparation of the piping and instrumentation drawings
- Continue preparation of Control System Drawings
- Continue preparation of Piping Support Drawing
- Continue development of the Mechanical Equipment Specifications
- Continue small scale testing of the vitrification processes
- Continue regulatory permitting activities
- Initiate Land Disposal Requirement Petitions
- Continue Pretreatment process testing of unit operations
- Continue development testing of unit operations
- Continue design of underground utilities
- Initiate facility site preparation for all facilities
- Continue design of site facilities (steam, water, electrical)

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Facility Construction	$4,350,000	N/A
Facility Operations	$0	N/A
TOTAL	$4,350,000	N/A

The cost estimate was developed from the BNFL cost estimate provided to DOE on April 24, 2000, as part of the Tank Waste Remediation System Privatization contract. Since there were areas of the BNFL cost estimate that DOE believed to excessive (i.e. management costs and contingency) the original estimate for these areas were dramatically reduced. The contingency costs were reduced from $500,000,000 to $350,000,000 and there were portions of the management costs that were completely eliminated. The Department agreed with the "brick and mortar" costs proposed by BNFL and therefore did not propose any dramatic changes. The use of the BNFL cost estimate provides DOE with a cost, schedule, technical and risk baseline for comparison to any future baseline changes.

5. Method of Performance

Schedule performance is an important requirement for the Waste Treatment and Immobilization Plant Contract. The Waste treatment and Immobilization Plant Contract includes several key milestones, most important is the start of hot commissioning by December 2007. The Department will seek to improve the Waste Treatment and Immobilization Plant by incentivizing the Contractor, Bechtel Washington, to optimize life-cycle performance, cost, and schedule of the Waste Treatment and Immobilization Plant, including the process design, facility design, and technologies. The Waste Treatment and Immobilization Plant Conceptual Design provides a reference solution that appears to meet project requirements, but has significant potential for optimization. The Department will expect full Contractor accountability for performance, cost, and schedule throughout the contract period of performance.

The project has currently met the intent of DOE Order 413.3 requirements for Critical Decisions 0, 1, 2, and 3. Critical Decisions 0 and 1, which established the need for waste treatment capability and the design approach, were completed under the former privatization approach. The requirements for Critical Decisions 2 and 3, which establish needed confidence in the design and cost estimate to permit final design and construction to move forward, were met during the process of selecting a contractor to complete design, construction, and commissioning of the WTP. To date, the DOE has completed a Government Fair Cost Estimate (GFCE), a Request for Proposals, and selected a contractor based on two bids that were within 5 percent of the GFCE. Further, the DOE has funded and completed an External Independent Review. The technical requirements of the project have been determined through evaluation of waste characteristics and performance of ongoing research and development activities to mitigate potential project risks. An external review of the technologies to be used in the WTP was also performed. Results indicated that the DOE is proceeding down a prudent technological path for treating the wastes. A revised project baseline, reflecting the plans of the construction

contractor, Bechtel Washington, will establish detailed project cost, scope, and schedule requirements. It will be completed in April 2001. The contract contains numerous incentives to assure the contractor meets cost and schedule requirements and a large portion of the incentive fee is associated with the successful commissioning and hot start of the facility.

The current baseline milestones for the project are included in Table 5.1. The baseline for this project has not changed as a result of contract award, but may change in the May 2001 timeframe following review by the new contractor of the cost, schedule, and technical requirements.

Table 5.1

Treatment and Immobilization Milestones

Milestone Title	Date
Start Construction of the Pretreatment Facility	July 8, 2002
Start Construction of the High-Level Waste Facility	July 16, 2002
Start Construction of the Low Activity Waste Facility	July 29, 2002
Complete Design of the Pretreatment Facility	October 1, 2003
Complete Design of the Low Activity Waste Facility	December 29, 2004
Complete Design of the High-Level Waste Facility	February 16, 2005
Complete Construction - Low Activity Waste	March 2, 2006
Complete Construction - Pretreatment	March 16, 2006
Complete Construction - High-Level Waste	September 28, 2006
Initiate Pretreatment Hot Start	May 2, 2007
Initiate Pretreatment Services	November 28, 2008
Initiate High-Level Waste Treatment Services	July 2, 2008

6. Schedule of Project Funding

(dollars in thousands)

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

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Facility cost						
Design	0	324,584	370,597	350,311	337,400	1,382,892
Construction	0	0	41,941	70,298	2,198,098	2,310,337
Total facility costs (Federal and Non-Federal)	0	324,584	412,538	420,609	2,535,498	3,693,229
Other project costs						
Conceptual design cost	0	0	0	0	0	0
Other project-related costs	0	0	6,000	10,000	640,771	656,771
Total other project costs	0	0	6,000	10,000	640,771	656,771
Total project costs (TPC)	0	324,584	418,538	430,609	3,176,269	4,350,000

7. Related Annual Funding Requirements

(FY 2000 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs (staff, utilities, etc.) [a]	114,000	TBD
Annual facility maintenance and repair costs	TBD	TBD
Other annual costs [b]	TBD	TBD
Total related annual funding *(operating from FY 1998 through FY 2010)*	114,000	0

[a] The total operating costs for all facilities that constitute the Waste Treatment and Immobilization Plant are included in this estimate. This estimate includes the estimated maintenance and repair costs. This is an estimated average cost for the operation of the Waste Treatment and Immobilization Plant.

[b] No estimate currently exists for this work scope.

01-D-414, Environmental Management, Project Engineering and Design (PED), Various Locations

(Changes from FY 2002 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

An FY 2001 supplemental appropriations for the Department of Energy has been submitted to the Congress for appropriate action. The supplemental appropriation requests funding to support completion of environmental management projects at several defense facilities, closure sites, and activities that address identified environment, safety and health issues.

In the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2000-1, the Department committed to stabilize and package all plutonium at the Savannah River Site in accordance with DOE-STD-3013. The 235-F Packaging and Stabilization Project was intended to provide that capability. However, a less costly new project, the Plutonium Packaging and Stabilization Project, will provide that capability instead. Therefore, $7,500,000 of the funding appropriated in FY 2001 for the canceled 235-F Packaging and Stabilization Project will be used for project, engineering and design of the new Plutonium Packaging and Stabilization Project.

1. Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2001 Congressional Amendment *(Preliminary and Final Design Only)*	1Q 2001	3Q 2003	N/A	N/A	64,724
FY 2002 Budget Request *(Preliminary and Final Design Only)*	"	"	"	"	47,673
FY 2001 Supplemental *(Preliminary and Final Design Only)*	"	"	"	"	"

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	17,262 [a]	17,262	6,071
2002	6,254	6,254	17,222
2003	20,707	20,707	20,873
2004	3,450	3,450	3,507

3. Project Description, Justification and Scope

This construction project data sheet summarizes the Environmental Management requirements for architect-engineering services preliminary design and final design for several projects. This data sheet outlines projects which will be proceeding from conceptual design into preliminary design and final design. The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules including procurements.

As outlined in the FY 2001 House and Senate Energy and Water Development Appropriations Bills report language, both committees support the Department in requesting “project engineering and design” funds for the purpose of achieving a 30-35 percent level of engineering design for new construction projects, prior to providing data to the Congress in support of construction funding. Such an advanced design should provide a more mature technical and cost baseline, ensuring greater likelihood of achieving project cost and schedule adherence.

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. Also, the past procedure has forced the program manager to “baseline” the design and construction costs and schedules based only on a conceptual design. The use of project engineering and design funds will: 1) enable a project to proceed immediately upon completion of the conceptual design into preliminary and final designs because only the design funds are requested, 2) provide a range for the construction cost and schedule, 3) permit acceleration of new facilities providing savings in construction costs based on current rates of inflation, and 4) permit more mature cost, schedule, and technical baselines for projects when the construction funds are requested from the Congress.

Following completion of preliminary design activities, Environmental Management personnel will determine

[a] Reflects a reduction of $38,000 to support the FY 2001 rescission. The original appropriation was $17,300,000.

preliminary project baselines and provide detailed funding and schedule estimates for final design, physical construction and procurements. In conformance with the guidelines currently being developed by the Department's Office of Engineering and Construction Management, at the completion of the preliminary design, the appropriate Department acquisition executive will request external independent reviews of the project requirements, scope, schedule, cost and budget. Based upon the results of this assessment, and a review of the continuing programmatic requirement for the project, the acquisition executive will either approve the project baseline and authorize proceeding to final design activities, defer the project or cancel the project.

The project baseline will be the basis for the request to Congress for authorization and appropriations for physical construction and procurement. The request will identify the project baseline and provide the acquisition executive approval to proceed with final design. For certain projects, in order to meet project schedules, construction and/or procurement activities may be required in the same year as the preliminary design, Project Baseline and Acquisition Executive approval is completed. For those projects, a report will be provided to Congress with the results of preliminary design, project baseline, external independent reviews and acquisition executive approval. Long-lead project and/or construction start will not proceed until 30 days after the report has been submitted to Congress. Each project that proceeds to physical construction will be separated into an individual construction line item, the total estimated cost of which will identify the costs of the engineering and design activities funded through the project engineering and design account.

4. Details of Cost Estimate (Total PED)

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design Costs (Design Drawings and Specifications)	37,677	N/A
Design Management (Preliminary Design) Costs	5,105	N/A
Design Management (Final Design) Costs	28	N/A
Project Management (Preliminary Design) Costs	4,686	N/A
Project Management (Final Design) Costs	177	N/A
Total Design Costs	47,673	N/A

[a] The Design Management and Project Management Costs are estimates based on historical records and are preliminary estimates. Any contingency reported in the FY 2001 budget is now included in the preliminary and final design costs.

6. Schedule of Project Funding (Total PED)

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	FY 2004	Outyears	Total
Facility Cost						
Design	6,071	17,222	20,873	3,507	0	47,673
Total PED	6,071	17,222	20,873	3,507	0	47,673
Other Project Costs [a]						
Conceptual Design Cost	4,173	0	0	0	0	4,173
NEPA Documentation Costs	80	0	0	0	0	80
Other Project-Related Costs	5,021	4,125	2,250	0	0	11,396
Total Other Project Costs	9,274	4,125	2,250	0	0	15,649
Total PED and Other Project Costs	15,345	21,347	23,123	3,507	0	63,322

[a] The other project costs include support for work package processing, waste characterization, facility design reviews, temporary modification design and control, and support of facility activities related to the project.

FY 2002 Proposed Design Project

02-01, Sitewide INEEL Information Network, Idaho National Engineering and Environmental Laboratory, Idaho

Preliminary Fiscal Quarter				Total Estimated Cost (Design Only $000)	Full Total Estimated Cost Projection ($000) [a]
A-E Work Initiated	A-E Work Completed	Physical Construction			
		Start	Complete		
1Q 2001	3Q 2001	1Q 2002	N/A	650	24,000 to 32,000

Fiscal Year	Appropriation	Obligations	Costs
2002	650	650	625 [a]
2003	0	0	25 [b]

The objective of the Sitewide Idaho National Environmental and Engineering Laboratory (INEEL) Information Network (SIINET) project is to maintain a capable and reliable communications infrastructure that supports the Department of Energy (DOE) missions at the INEEL and enables its workforce to fully utilize information technologies. Personnel health and safety, the Environmental Restoration and Waste Management (EM) mission, and national security are at jeopardy due to the age and capacity of the existing INEEL telecommunications network. In support of the EM mission and the health and safety of INEEL employees this network must remain operational for the next 35-40 years. Even with the projected funding and schedule profile, there is a high level of risk for total system failure prior to FY 2005. Further project delays are not acceptable.

The telecommunications networks that support internal and external communications are a critical resource for any business as well as the INEEL. All personnel, including offsite personnel, rely heavily upon the telecommunications system in supporting agreements, goals, milestones, and missions.

In 1992 (the time of the start of the last upgrade to the telecommunications system) there were approximately 800 local area network (LAN) connections across the INEEL site and the major telecommunications function was to support telephone systems. Currently there are over 8000 data connections to the network. In the past 2 years the data usage has more than quadrupled. More than 50 percent of the traffic over the INEEL telecommunications system is now computer generated. Two years from now projections are that the data

[a] The Full Total Estimated Cost Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

[b] Cost estimate is provided at total design costs. The ratio of 40:60 Preliminary to Final design is based on a historical average.

traffic will be seven times larger than telephone traffic. Adding to the demand for data transmission services is the improved methods for communications. In 1992 e-mail consisted of only simple text messages typed by the user. Today the e-mail system is capable of accepting rich text format attachments of unlimited size (computer generated graphics, digitized photographs, etc.). This increase in e-mail capability also increases demand on the system but improves efficiency and productivity by supporting offsite collaboration, video teleconferencing, security video transmission, and site research initiatives.

Research drivers utilizing the upgrades in intranet and internet capabilities include the Subsurface Science Initiative (SSI), Long-Term Environmental Stewardship Initiative, Waste Treatment and Disposition Initiative, Critical Infrastructure Program Initiative, and Clean Energy Demonstrations. High-speed connections to research collaborators at INRA, PNNL, NREL, Savannah River Site, ORNL, and supercomputer facilities in the complex are essential to achieving the goals outlined in the INEEL 2001-2005 Institutional Plan. The INEEL trunk radio system and paging systems have also been added to the telecommunications backbone.

Two independent networks at the INEEL provide access to communications systems within and between operating areas. Both networks provide access for voice, data, video, life safety, security, and facility management information.

FD-565 Access Network. The FD-565 network was the first access network at the INEEL. The FD-565 network is a DS-3 level T-carrier system and was the first access network at the INEEL, originally installed in 1986. The technology is outdated and the manufacturer has discontinued the system. An excessive spare parts inventory must be maintained to ensure availability. The repair cycle on failed components averages 6 to 8 weeks and the reliability of this system will degrade as available off-the-shelf used parts become scarce. Spare parts and technical support can be obtained only on a "best effort" basis until 2003, whereupon manufacturer support for the system will be discontinued completely.

The FD-565 network supports four basic functions: 1) Fire protection monitoring and reporting at the Central Facilities Area (CFA) fire station, 2) Power management for Idaho Nuclear Technology Engineering Center (INTEC), Test Area North (TAN), Test Reactor Area (TRA), and Naval Reactor Facility (NRF) substations, 3) Reporting capability for Site Security, and 4) Video teleconferencing. These functions support site operations and the probability of communications failures will increase with time because of lack of support and spare parts from the manufacturer.

Total failure of the FD-565 network would result in the following:

Fire Protection: Manpower intensive fire watches in numerous buildings would be required at NRF and TAN. Manual notification to the fire station would be required. Extended outages would violate DOE Orders, Occupational Safety and Health Act standards (OSHA), and National Fire Protection Association (NFPA) codes.

Power Management: Electronic monitoring of substation power distribution equipment at INTEC, TAN, TRA, and NRF substations would cease. Large, expensive, long lead procurement items (transformers, breakers, etc.) would be left substantially unprotected requiring a manpower intensive response. Power management personnel would be stationed in the substations at INTEC, TAN, TRA, and NRF to perform a physical watch

of the substation equipment. Personnel in the substations as directed via radio by the power dispatcher would conduct manual switching operations.

Security: Monitoring of various security systems would cease. DOE Orders require that special nuclear materials be protected at all times. Failure of the FD-565 network would require security personnel to execute compensatory measures to maintain security. Compensatory measures include calling out additional guard force personnel to maintain a continuous patrol around sensitive facilities and to man backup positions.

Video conferencing: This efficiency would be lost resulting in decreased productivity of site personnel.

SONET Access Network. The second access network is an OC-12 SONET ring network that is filled to capacity. The SONET carries much of the same information as the FD-565 and in addition carries all telephone and provides the long-haul carrier service for computer data information between the geographically separated Site and Town facilities.

The SONET backbone was commissioned (installed beginning in 1992 and completed in 1997) with the intent of replacing the older FD-565 backbone. Due to funding limitations, the network was never adequately sized for the application. Also in 1992, the OC-12 system was relatively new and considered a state-of-the-art transmission vehicle. Since that time fiber optic transmission capacity has grown by a factor of 64 (OC-768) and beyond. This additional capacity has spawned new applications and uses for networks (intranet, extranet, internet, etc.) that were unimaginable a few years ago. The funding limitation and growth of network demand forced the INEEL to retain the outdated FD-565 network. The SONET is running at 90 percent of capacity and does not have the ability to make up for the loss of the FD-565 network. If approved as scheduled, the systems installed by the SIINET project will be operational in 2006. The OC-12 SONET ring will have been in service an average of 12 years at that time and will be similar in age to the current FD-565 network. Past history shows and current projections into the future indicate that the need for information in support of INEEL missions will continue to increase. The existing SONET network cannot fill that need.

The SIINET conceptual design calls for replacing both systems and integrating the management of separate voice and data systems. Under this design the principal asset of the system, the fiber backbone, will remain in place. Both the FD-565 and OC-12 networks use government-owned fiber optic cable (96 miles of cable) that will be reused as part of the SIINET Project. No new wide-area cable facilities will be required.

Subject matter experts from LMI, who performed an extensive technical review at the INEEL, concluded that the project "satisfies mission need and should proceed." They noted that the current system risk "degraded reliability" and "cannot support future growth." A peer review by the Nevada Test Site, and an external independent review by LMI conclude that the existing networks cannot be expanded and both need to be replaced to ensure that the INEEL will continue to have viable and capable communication capabilities.

An economic analysis performed by the project indicates that because of the potential losses that could occur if the old systems are not updated, the cost recovery period would be on the order of 2 to 3 years.

Some of the existing site network equipment is housed in buildings built in the 1950s and 1960s. These buildings were not designed or constructed to house high capacity and sensitive electronic equipment. An inspection of one of the dial rooms revealed several violations to OSHA standards and National Electrical Code (NEC)

codes including: loose and friable asbestos, poor designed cable vault hatches that present safety hazards, and electrical and electronic equipment without required working clearances (safety risk). Other dial rooms lack space to install any additional equipment. Two of the twelve dial rooms will be replaced and others will be expanded or modified.

As a further consideration, high-performance computing, scientific and engineering research, computational science, and a spectrum of interactions among people at dispersed sites are critical to the success of the INEEL. Access to the network is an indispensable part of the INEEL programs and is essential for conducting day-to-day work activities. All INEEL programs rely on the existing networks to sustain programmatic missions, increase operational efficiencies, and improve the delivery of information. Modern, reliable communications must be sustained if INEEL programs are to conduct work in a safe, secure, reliable, timely, and cost-effective manner.

Compliance with Project Management Order

- Critical Decision - 0: Mission Need completed August 25, 1998.
- Critical Decision - 1: Conceptual Design/Preliminary Baseline September 14, 1999.
- External Independent Review: April 14, 2000 by LMI.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary Costs (Design Drawings and Specifications)	284	N/A
Final Costs (Design Drawings and Specifications)	244	N/A
Design Management (Preliminary Design) Costs *	7	N/A
Design Management (Final Design) Costs *	10	N/A
Project Management (Preliminary Design) Costs **	42	N/A
Project Management (Final Design) Costs **	63	N/A
Total, Design Costs	650	N/A

* Design management and Project management costs are consistent with FAR 52.230.2 CAS Disclosure Statement (Public Law 100-679) for BBWI charging practices at the INEEL, which establishes direct and indirect charging practices. Design and Project management estimates above are direct charges to this project. Other sites may have different CAS Disclosure Statements.

** Project management includes activities for the project manager, design reviews, project document control, project manager supervisors, cost estimating, and conduct of operations (Standard 101 work package). The BBWI preliminary and final design Project management estimate is based on historical actuals and is consistently applied to INEEL PED data sheets.

There is high confidence in the cost estimate based on historical site data.

5. Method of Performance

Design services will be obtained through a competitive and/or negotiated contract issued by the Management and Operating contractor. Management and operating 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	FY 2004	Outyears	Total
Facility cost						
PED	0	625	25	0	0	650
Total Project Costs (TPC)	0	625	25	0	0	650

Ongoing PED Design Projects

01-01, INTEC Cathodic Protection System Expansion Project, INEEL, Idaho Falls, Idaho

Preliminary Fiscal Quarter				Total Estimated Cost (Design Only $000)	Full Total Estimated Cost Projection ($000) [a]
A-E Work Initiated	A-E Work Completed	Physical Construction			
		Start	Complete		
2Q 2001	3Q 2001	3Q 2002	N/A	603	6,000 to 8,000

Fiscal Year	Appropriation	Obligations	Costs
2001	499 [b]	499	331 [c]
2002	104	104	131

[a] The Full Total Estimated Cost Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

[b] Reflects a reduction of $1,000 to support the FY 2001 rescission. The original appropriation was $500,000.

[c] Cost estimate is provided at total design costs. The ratio of 40:60 Preliminary to Final design is based on a historical average.

2003	0	0	141

The Cathodic Protection System Expansion Project will upgrade the existing cathodic protection system located at Idaho Nuclear Technology Engineering Center at the Idaho National Engineering and Environmental Laboratory. This project is necessary to provide reliable cathodic protection as necessary to prevent underground system failures, environmental contamination, and impacts to meeting the Idaho Settlement Agreement. The project will be designed and constructed using standard components and techniques, incorporating improvements in technology that have occurred over the years. Since the scope of the project is well-defined and standard components and subsystems will be used to upgrade the system, the risk of significant changes in the preliminary baseline are relatively low.

The existing cathodic protection system has been in operation at this facility, since 1961 and must remain operational until at least 2035. Currently the majority of this cathodic protection system has exceeded its 20-year design life. At present, there exists at Idaho Nuclear Technology Engineering Center over 4 miles of metallic underground radioactive waste piping, 1.1 miles of underground off-gas lines, over 5 miles of other metallic underground piping systems, and several underground metallic fuel storage structures that must be protected from external corrosion. Visual inspection of underground metallic piping, which is anywhere from 6 to 20 feet below grade, would require extensive excavation and destructive examination to determine the extent of corrosion to the pipe. This type of inspection would be cost prohibitive and would not provide a comprehensive condition status. In order for the Department of Energy to protect the environment, comply with CFRs, and meet all mandatory and legal agreements, a well-maintained impressed cathodic protection system is required to be operational until at least 2035.

Idaho Nuclear Technology Engineering Center at the Idaho National Engineering and Environmental Laboratory has an extensive cathodic protection system installed to prevent metallic underground piping and structures from corrosion. The High Level Liquid Waste Tank Farm Resource Conservation and Recovery Act interim status document requires, a fully operating cathodic protection system that meets the criteria contained in 40 CFR 264, and 265. The Cathodic Protection System Expansion Project incorporates replacing anodes that have exceeded their design life in numerous areas of the Idaho Nuclear Technology Engineering Center, adding additional anodes where required for complete protection, and installing permanent reference electrodes for more accurate survey readings.

The anodes installed in the Tank Farm and the Dry Fuel Storage Area have exceeded their design life of 20 years. Annual surveys of these areas have revealed reduced voltage drops indicative of anode wear. Leaks from underground tanks, piping, or vaults could occur from these areas and would result in a Resource Conservation and Recovery Act violation. Without a properly functioning cathodic protection system, the risk of a structural or piping failure increases.

The 1996 annual cathodic protection system survey revealed out-of-tolerance operating conditions for the Tank Farm. Negative out-of-tolerance readings indicate that full protection to steel structures is not being obtained. With negative out-of-tolerance readings, partial protection to the underground structures will occur. When underground structures receive partial protection they are subject to corrosion at a higher rate than at full

protection. The 1996 survey also indicated some positive out-of-tolerance readings from possible anode and/or cable failures.

In 1997 a cathodic protection/corrosion engineer was contracted by the operating contractor to evaluate the condition of the Tank Farm cathodic protection system and provide short and long-term recommendations for cathodic protection system repairs at the Tank Farm. Short-term recommendations have been incorporated and the long-term recommendations are included in the scope of this project and include the recommendation to replace all anodes that have over five years of service as recommended by cathodic protection/corrosion engineers. A study is planned during the design phase to effectively determine the life expectance of anodes at the Idaho Nuclear Technology Engineering Center.

The vessels and piping in the Tank Farm contain or have contained high level radioactive liquid wastes that resulted from the chemical reprocessing of spent nuclear fuels. A structural failure of transfer lines in the Tank Farm and the Dry Fuel Storage Area could release into the soil high level radioactive wastes. These wastes contain significant amounts of mixed radioactive fission products, actinides, and Environmental Protection Agency listed hazardous and toxic chemicals. A liquid released into the soil could theoretically migrate to the groundwater below and contaminate the Snake River Plain Aquifer. Any contamination of the groundwater with high level liquid waste would be virtually impossible to reverse and, therefore, must be viewed in terms of the negative impact on the aquifer, its entire ecosystem, and public perception thereof. In addition, any release would require the suspension of compliance agreement activities. The Settlement Agreement between the Department of Energy and the State of Idaho requires that the Tank Farm be emptied by 2012. Other underground metallic systems must remain operational until at least 2035. The Idaho Nuclear Technology Engineering Center Fire Water System provides fire protection to facilities at the Idaho Nuclear Technology Engineering Center and a loss of the system due to corrosion and leaks would result in a increased risk of life safety issues to Idaho Nuclear Technology Engineering Center facilities and personnel. An incident or failure of any of these systems would likely cause Settlement Agreement milestones to be missed with significant legal and political repercussions at State and Federal levels.

Cathodic protection does not eliminate corrosion but merely transfers the corrosion from protected structures or piping elsewhere. In a properly working system this corrosion occurs at the sacrificial anode which accounts for their wear while a cathodic protection system is operating. When anodes are depleted cathodic protection can be lost and the formally protected structures become unprotected, allowing corrosion to occur. A carbon steel pipe that is protected by the cathodic protection system and considered fully protected according to National Association of Corrosion Engineers criteria may be subjected to the loss of 1.4 mil of material per year. Fully protected to National Association of Corrosion Engineers means that the structure being protected meets one of the three criteria contained in National Association of Corrosion Engineers Standard RPO-169-92 for steel and cast iron piping. The majority of piping at the Idaho Nuclear Technology Engineering Center is constructed of carbon steel. The Idaho Nuclear Technology Engineering Center Tank Farm piping is constructed from corrosion resistant materials (stainless steel) and employs a cathodic protection system for additional corrosion protection.

All underground piping systems and structures which have a cathodic protection system must be electrically bonded (e.g., piping is connected together by a common ground). If underground structures or piping systems

become unbonded from the cathodic protection system, “stray corrosion currents” can occur, resulting in a greatly accelerated corrosion rate. Past experience at the Idaho Nuclear Technology Engineering has shown that stainless steel piping not bonded while nearby cathodic protection systems are operating, failed within six weeks of operation.

This project will support the continued operation of the Tank Farm for the near future and operation of the underground utilities and dry fuel storage for the next 30 years, while maintaining compliance with the Settlement Agreement between the Department of Energy and the State of Idaho. Cathodic protection shall be provided on all underground metallic structures throughout the Idaho Nuclear Technology Engineering Center. This protection shall be provided in accordance with the most recent edition of National Association of Corrosion Engineers International Requirement RPO-169, “Standard Recommended Practice – Control of External Corrosion on Underground or Submerged Metallic Piping Systems.”

The Cathodic Protection Center Expansion Line Item Project will include installing reference electrode wells in the Dry Fuel Storage Area CPP-749. Use of these wells will provide accurate monitoring of CPP-749 underground metal irradiated dry fuel storage vaults. Additional anode replacements and/or new anodes may be required in this area based on the studies performed during preliminary design.

The underground fire water system at Idaho Nuclear Technology Engineering Center requires additional rectifiers and anodes to be added to the underground fire water system. This project will bond all piping found not connected to the present cathodic protection system. Some of the existing fire water system has degraded over the years due to corrosion. The potential exists for unbonded piping to be found in the existing system. Cathodic protection system is required for propane lines and tanks at the Idaho Nuclear Technology Engineering Center. Currently this system is incomplete and will require all lines not bonded to the existing cathodic protection system to have a test bond lead attached to the lines.

Compliance with Project Management Order

- Critical Decision - 0: Mission Need approved July 28, 1998.
- Critical Decision - 1: Planned for 3rd Quarter 2001.
- External Independent Review: Completed August 15, 2000, by LMI.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary Costs (Design Drawings and Specifications)	180	198
Final Costs (Design Drawings and Specifications)	203	185
Design Management (Preliminary Design) Costs *	12	12
Design Management (Final Design) Costs *	18	18
Project Management (Preliminary Design) Costs **	76	76
Project Management (Final Design) Costs **	114	114
Total, Design Costs	603	603

* Design management and project management costs are consistent with FAR 52.230.2 CAS Disclosure Statement (Public Law 100-679) for Bechtel BWXT Idaho, LLC (BBWI) charging practices at the INEEL, which establishes direct and indirect charging practices. Design and Project management estimates above are direct charges to this project. Other sites may have different CAS Disclosure Statements.

** Project management includes activities for the project manager, design reviews, project document control, project manager supervisors, cost estimating, and conduct of operations (Standard 101 work package). The BBWI preliminary and final design project management estimate is based on historical actuals and is consistently applied to INEEL Project Engineering and Design data sheets.

There is high confidence in the cost estimate based on historical site cost data.

5. Method of Performance

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

[a] Any contingency reported in the FY 2001 budget is now included in the preliminary and final design costs.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	FY 2004	Outyears	Total
Facility Cost						
Preliminary Design	286	0	0	0	0	286
Final Design	45	131	141	0	0	317
Total PED	331	131	141	0	0	603
Other Project Costs [a]						
Conceptual Design Cost	133	0	0	0	0	133
NEPA Documentation Costs	75	0	0	0	0	75
Other Project-Related Costs	126	125	250	0	0	501
Total Other Project Costs	334	125	250	0	0	709
Total PED and Other Project Costs	665	256	391	0	0	1,312

01-02, Immobilized High-Level Waste Interim Storage Facility, ORP, Richland, Washington

A-E Work Initiated	A-E Work Completed	Physical Construction		Total Estimated Cost (Design Only $000)	Full Total Estimated Cost Projection ($000) [b]
		Start	Complete		
4Q 2001	4Q 2004	4Q 2004	2Q 2007	11,420	81,300 to 109,100

Fiscal Year	Appropriation	Obligations	Costs
2001	1,297 [c]	1,297	1,240
2002	2,000	2,000	2,000
2003	4,673	4,673	4,673
2004	3,450	3,450	3,507

[a] The other project costs include support for work package processing, waste characterization, facility design reviews, temporary modification design and control, and support of facility activities related to the project.

[b] The Full Total Estimated Cost Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

[c] Reflects a reduction of $3,000 to support the FY 2001 rescission. The original appropriation was $1,300,000.

This design subproject is requesting the second year of funding which provides preliminary and final architect-engineering services associated with the Immobilization High-Level Waste Interim Storage Facility at Richland. Preliminary Design is expected to be completed by September 2002. Funding will be requested for long-lead procurement in FY 2003.

The Immobilized High-Level Waste Interim Storage Facility will install systems, structures, and components in vaults 2 and 3 of the Canister Storage Building to enable receipt and storage of immobilized high-level waste. This project also includes a system for transporting immobilized high-level waste canisters from the Waste Treatment and Immobilization Plant to the Canister Storage Building.

Critical Decision 0, Approved Mission Need, was completed in December 1996 through the Energy Systems Acquisition Review Process with DOE/HQ approval. The Conceptual Design Report for the project was completed in April 1998. Critical Decision 0 and the Conceptual Design Report were completed under DOE O430.1A. Validation of the FY 2001 budget request occurred May 25, 1999, and is cited as Critical Decision 1, although that doesn't exist under DOE O430.1A. Remaining Critical Decisions will be completed under the requirements of DOE O413.3.

Compliance with Project Management Order

- Critical Decision - 0: Mission Need Completed December 26, 1996.
- Critical Decision - 1: Conceptual Design/Preliminary Baseline May 25, 1999.
- External Independent Review: Site Review final report issued on May 5, 2000.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design Costs (Design Drawings and Specifications)	9,120	8,895
Design Management (Preliminary Design) Costs	620	385
Project Management (Preliminary Design) Costs	1,680	1,340
Total Design Costs	11,420	10,620

The Design Management and Project Management Costs are estimates based on historical records and are preliminary estimates. The estimate is based on a conceptual design; therefore, there is a moderate degree of confidence in the estimate.

[a] Any contingency reported in the FY 2001 budget is now included in the preliminary and final design costs.

5. Method of Performance

The CH2M Hill Hanford Group will manage the project for the Office of River Protection. A design agent from the onsite architect/engineer pool will perform preliminary design and engineering and inspection during the construction of the Immobilized High-Level Waste Interim Storage Facility Project. Detailed design and construction will be performed by a competitively selected architect-engineer/construction manager with fixed-price contracts utilized to the maximum extent possible.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	FY 2004	Outyears	Total
Facility Cost						
Design	1,240	2,000	4,673	3,507	0	11,420
Total PED	1,240	2,000	4,673	3,507	0	11,420
Other Project Costs [a]						
Conceptual Design Cost	1,040	0	0	0	0	1,040
NEPA Documentation Costs	5	0	0	0	0	5
Other Project-Related Costs	895	0	0	0	0	895
Total Other Project Costs	1,940	0	0	0	0	1,940
Total PED and Other Project Costs	3,180	2,000	4,673	3,507	0	13,360

[a] The other project costs include support for work package processing, waste characterization, facility design reviews, temporary modification design and control, and support of facility activities related to the project.

01-03, 235-F Packaging and Stabilization Project, Savannah River Site, Aiken, South Carolina

A-E Work Initiated	A-E Work Completed	Physical Construction		Total Estimated Cost (Design Only $000)	Full Total Estimated Cost Projection ($000) [a]
		Start	Complete		
2Q 2001	N/A	N/A	N/A	27,500	N/A

Fiscal Year	Appropriation	Obligations	Costs
2001	15,466 [b]	15,466	9,000
2001 Supplemental	(7,500)	(7,500)	(7,500)
2002	3,500	3,500	9,966
2003	16,034	16,034	16,034

In the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2000-1, the Department committed to stabilize and package all plutonium at the Savannah River Site in accordance with DOE -STD-3013. The 235-F Packaging and Stabilization Project was intended to provide that capability. However, a less costly new project, the Plutonium Packaging and Stabilization Project, will provide that capability instead. Therefore, $7,500,000 of the funding appropriated in FY 2001 for the canceled 235-F Packaging and Stabilization Project will be used for project, engineering and design of the new Plutonium Packaging and Stabilization Project.

Compliance With Project Management Order

- Critical Decision - 0: Mission Need was approved June 2, 2000.

- Critical Decision - 1: Preliminary Baseline Range was approved February 13, 2001.

[a] The Full Total Estimated Cost Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

[b] Reflects a reduction of $34,000 to support the FY 2001 rescission. The original appropriation was $15,500,000.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design Costs (Design Drawings and Specifications)	22,146	28,175
Design Management (Preliminary Design) Costs	3,466	4,410
Project Management (Preliminary Design) Costs	1,888	2,415
Total Design Costs	27,500	35,000

This design cost estimate has a medium to high degree of confidence.

5. Method of Performance

Design services will be obtained through competitive and/or negotiated contracts. Management and operating 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	FY 2004	Outyears	Total
Facility Cost						
Design	1,500	9,966	16,034	0	0	27,500
Total PED	1,500	9,966	16,034	0	0	27,500
Other Project Costs						
Conceptual Design Cost	3,000	0	0	0	0	3,000
NEPA Documentation Costs	0	0	0	0	0	0
Other Project-Related Costs	4,000	4,000	2,000	0	0	10,000
Total Other Project Costs	7,000	4,000	2,000	0	0	13,000
Total PED and Other Project Costs	8,500	13,966	18,034	0	0	40,500

[a] Any contingency reported in the FY 2001 budget is now included in the preliminary and final design costs.

01-04, Plutonium Packaging and Stabilization Project, Savannah River Site, Aiken, South Carolina

Reflects creation of the Plutonium Packaging and Stabilization Project, consisting of an outer can welder, thermal stabilization furnaces, infrastructure and support equipment, systems and services modifications.

A-E Work Initiated	A-E Work Completed	Physical Construction		Total Estimated Cost (Design Only $000)	Full Total Estimated Cost Projection ($000) [a]
		Start	Complete		
4Q 2001	2Q 2002	2Q 2002	2Q 2004	7,500	22,000

Fiscal Year	Appropriation	Obligations	Costs
2001 Supplemental	7,500	7,500	3,000
2002			4,500

In the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendations 2000-1, the Department of Energy committed to meet DOE -STD-3013, Packaging and Storage of Plutonium Bearing Materials by June 2008. The Plutonium Packaging and Stabilization Project will provide a packaging and stabilization capability in Building 221-FB Line.

This project includes replacement of existing thermal stabilization furnaces with higher temperature furnaces, installation of an outer can welder and leak detector, and associated modification and/or upgrades to existing support equipment, systems and services. These modifications will be minimum which are necessary to support the thermal stabilization and packaging process including, but not necessarily limited to safeguards and security, ventilation, cooling, fire detection, nuclear incident monitoring, and material storage.

Upon approval of Critical Decision-1, FY 2001 funding will be utilized to initiate and complete preliminary and final design of the project.

Associated long-lead equipment procurement and construction funding is requested through a construction project data sheet, line item 01-D-418, Plutonium Packaging and Stabilization Project. These funds will not be expended until the design is 35 percent complete.

[a] The Full Total Estimated Cost Projection (design and construction) is a preliminary estimate and should not be construed as a project baseline.

Compliance With Project Management Order

- Critical Decision - 0: Mission Need to be approved June 2001.
- Critical Decision - 1: Preliminary Baseline Range to be approved June 2001.
- Critical Decision - 2: Performance Baseline to be approved December 2001.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design Costs (Design Drawings and Specifications)	5,500	N/A
Design Management (Preliminary Design) Costs	1,000	N/A
Project Management (Preliminary Design) Costs	1,000	N/A
Total Design Costs	7,500	N/A

5. Method of Performance

Design services will be provided by the Management and Operating (M&O) Contractor and/or obtained through competitive and/or negotiated contracts. Management and Operating contractor staff may be utilized in areas involving security, production, proliferation, and other concerns.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2001	FY 2002	FY 2003	Outyears	Total
Facility Cost						
Design [a]	0	3,000	4,500	0	0	7,500
Total PED	0	3,000	4,500	0	0	7,500
Other Project Costs						
Conceptual Design Cost	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	0	0	0	0	0	0
Total PED and Other Project Costs	0	3,000	4,500	0	0	7,500

[a] This includes the preliminary and final design portion of the Plutonium Packaging and Stabilization Project (01-D-418). The construction and other project cost funds are included in 01-D-418.

01-D-418, Plutonium Packaging and Stabilization Project, Savannah River Site, Aiken, South Carolina (SR-NM10)

Significant Changes

Based on the FY 2001 Supplemental, funds requested for a new project, Plutonium Packaging and Stabilization.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Mobilization Start	Physical Construction Complete		
FY 2001 Supplemental *(CDR Preliminary Baseline Range) . .*	4Q 2001	2Q 2002	2Q 2002	2Q 2004	22,000 [a]	29,000

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Cost
2001 Supplemental [b]	8,500	8,500	1,000
2001 Supplemental (PED)	7,500	7,500	3,000
2002	0	0	7,100
2002 (PED)	0	0	4,500
2003	6,000	6,000	6,400

3. Project Description, Justification and Scope

In the Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 2000-1, the Department of Energy committed to stabilize and package all plutonium at the Savannah River Site in accordance with DOE-STD-3013. This project will provide thermal stabilization and packaging capability in Building 221 FB-Line to meet DOE-STD-3013. The project includes replacement of existing furnaces with higher temperature furnaces, installation of an outer can welder and leak detector, and associated modification and/or upgrades to existing support equipment, systems and services. These modifications and upgrades will be minimum which are necessary to support the thermal stabilization and packaging process including, but not

[a] All data based on a parametric analysis during the pre-conceptual phase. Preliminary and final design costs of $7,500,000 included in project 01-D-414, Project and Engineering Design. $14,500,000 is required for long-lead procurement and construction.

[b] Funds will not be spent until the preliminary design is 35 percent complete.

necessarily limited to, safeguards and security, ventilation, cooling, fire detection, nuclear incident monitoring, and material storage.

The procurement and construction efforts support the completion schedule and mitigation of risks associated with project execution. Long-lead equipment procurements include the stabilization furnaces, outer can welder, and leak detector. Risk mitigating, construction activities include demolition and removal of the existing furnaces and interior walls and safeguards and security upgrades. These activities will be integrated with ongoing facility operation and outages on an as available basis. Partial Critical Decision 3 (Start Construction) will be requested for these activities concurrent with Critical Decision 2 (Approve Baseline) or early during final design.

Detailed design will be completed under line item 01-D-414, Project, Engineering and Design, subproject 01-04, Plutonium Packaging and Stabilization.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and final design costs	5,500	N/A
Design management costs	1,000	N/A
Project management costs	1,000	N/A
Total, engineering, design, inspection, and administration of construction costs	7,500	N/A
Construction Phase		
FY 2002 Advance Procurement	2,000	N/A
Outyear Advance Procurement	0	N/A
Construction	12,500	N/A
Total, Construction Costs	14,500	N/A
Total, Line Item Costs (TEC)	22,000	N/A

5. Method of Performance

Design, construction, and procurement may be accomplished by the Management and Operating contractor. Specific scopes of work within this project may be accomplished by fixed-price contracts awarded on the basis of competitive bidding.

[a] Design phase costs are included in project 01-D-414, Project Engineering and Design (subproject 01-03).

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2001	FY 2002	FY 2003	Outyears	Total
Project Cost						
Facility Cost						
Design	0	3,000	4,500	0	0	7,500 [a]
Construction	0	1,000 [b]	7,100	6,400	0	14,500
Total Facility Costs	0	4,000	11,600	6,400	0	22,000
Other Project Costs						
R&D necessary to complete project	0	0	0	0	0	0
Conceptual design costs	0	0	0	0	0	0
Other project-related costs	0	500	3,000	3,500	0	7,000
Total other project costs	0	500	3,000	3,500	0	7,000
Total, Project Costs	0	4,500	14,600	9,900	0	29,000

7. Related Annual Funding Requirements

(dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	N/A
Annual facility maintenance/repair costs	TBD	N/A
Annual utility costs	TBD	N/A
Total related annual funding (operating from *FY 2004 through FY 2007*)	TBD	N/A

[a] These design costs are requested in line item 01-D-414, Project, Engineering and Design, subproject 01-04.

[b] For long-lead procurement and early construction activities.

02-EXP, Salt Processing Pilot Plant, Savannah River Site, South Carolina (SR-HL13)Significant Changes

20) Relationship of the pilot scale demonstration unit (pilot plant) to the Salt Processing Project (SPP) – The pilot plant will be designed, built, and operated; and experience gained through operation of the pilot plant will be used in completing the SPP preliminary design. The pilot plant will contribute significantly to the establishment of the SPP baseline at the conclusion of preliminary design. Conceptual design of the full-scale facility will be performed concurrent with design and construction of the pilot.

21) Supplemental appropriations for FY 2001 will be applied to research and development; advanced development; procurement of process chemicals; and, major components such as centrifugal contactors, shielded viewing windows, tele-manipulators etc.

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 2002 Budget Request *(Preliminary Estimate)*	3Q 2001	2Q 2002	2Q 2002	1Q 2003	35,000	61,000
FY 2001 Supplemental *(Preliminary Estimate)*	"	"	"	4Q 2002	"	"

2. Financial Schedule (Operating Expense Funded)

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	3,000	3,000	3,000
2001 Supplemental	10,200	10,200	8,200
2002	11,263	11,263	11,263
2003	10,537	10,537	12,537

3. Project Description, Justification and Scope

This project proposes the installation of a pilot plant to be used for technical demonstration and research and development of treatment processes for high-level waste (HLW) at the Savannah Rive Site (SRS). Research and process verification will be conducted with this pilot plant by processing actual high-level waste currently in storage at SRS. This information will be used for the engineering, design, and process optimization for the full scale Salt Waste Processing Facility to feed salt waste to the Defense Waste Processing Facility (DWPF). This pilot plant project would provide for the development,design, and construction of a treatment process at the pilot scale, associated building infrastructure systems, process controls and instrumentation, and interface connections with HLW systems. The project would also provide for reconfiguration of the existing Late Wash Facility to accommodate the pilot plant equipment.

The Salt Waste Processing Facility project would provide a treatment facility for the salt component of HLW

prior to vitrification in the DWPF. The SRS Site Treatment Plan and Federal Facilities Agreement (FFA) call for closing the HLW tanks and vitrification of the HLW in preparation for transport to the national high-level waste repository. To make this program economically feasible, it is necessary to limit the volume of glass produced by separating the salt portion of the HLW into a high activity component for processing at DWPF and a low activity component for disposal at Saltstone.

The SRS currently stores 34 million gallons of HLW in interim storage tanks. The FFA requires removing the waste from the high-level waste tanks to resolve several safety and regulatory concerns. Some 'old style' tanks have leaked observable quantities of waste from primary to secondary containment. These 'old style' tanks do not meet Environmental Protection Agency secondary containment standards for storage of hazardous waste and must be removed from service. The waste must be removed and processed to meet this objective. Three million gallons of the liquid waste is sludge. The vitrification process for sludge is fully operational at DWPF. The remaining thirty one million gallons of the liquid waste is in the form of 'salt' (saltcake or salt solution called supernate) for which a new process/processing facility is needed.

A rigorous technology evaluation and research and development program has been conducted to support selection of a technology for pilot scale demonstration. Resources, personnel, and facilities from across the DOE complex, including the national laboratories, academic institutions and private industry, have been employed in this effort. Technical risks that could impact successful waste processing have been identified, evaluated, and mitigated within the constraints and limitations of laboratory scale testing with both simulated and actual HLW. Final confirmation of the conclusions from the lab scale tests can only be obtained by processing adequate quantity and variety of liquid radioactive HLW feeds. This can only be performed in a pilot scale facility located within the HLW system at the SRS. Initial pilot scale demonstrations will provide data required to perform final design of the facility. Timely design, construction, start-up, and operation of the pilot facility is imperative for success in meeting the schedule objectives of the project. Failure to meet these objectives will result in the inability of the HLW system to support site missions, continued operation of DWPF, and meeting FFA commitments for closure of non-compliant HLW storage tanks.

The Salt Processing Pilot Plant facility for all of the processes under consideration would consist of modularized test beds to be installed in the existing biologically shielded cells in the Late Wash Facility to permit the use of actual high-level waste from the high-level waste tanks as part of the technology demonstration. The test modules will be of a remote-operated design for ease of maintenance, replacement, and later decommissioning. The objectives of the pilot plant are to collect process data on: unit operations, process integration, process extreme conditions, upset conditions, process optimization, evaluate equipment, and support the design and engineering of the Salt Processing Pilot Plant project by providing a research and development test bed.

The Federal Facilities Agreement and Site Treatment Plan require SRS to average 200 HLW canisters per year. In order to continue this average, minimize total canister production and avoid future slowdowns or shutdowns of the Defense Waste Processing Facility, a constant level of feed (both sludge and salt) must be maintained. At this time, the alternative salt process facilities are on the critical path maintaining this constant feed.

The projects for the Salt Processing Pilot Plant and full scale facility will be conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

The pilot plant critical decisions are in the process of being delegated to the Savannah River Site Manager, and will be approved using an Energy Systems Acquisition Advisory Board (ESSAB)-like process. Critical decisions

for the full scale facility remain the purview of DOE Headquarters, and will be approved by the ESAAB.

Compliance with Project Management Order

- Critical Decision - 0: Mission Need - June 2001.
- Critical Decision - 1: Preliminary Baseline Range - June 2001.
- Critical Decision - 2: Performance Baseline - October 2001.
- Critical Decision - 3: Start of Construction - January 2002.
- Critical Decision - 4: Start of Operations - October 2002.

All critical decisions for the pilot plant will be reviewed by the Savannah River Site Project Evaluation Board and the Executive Technical Management Board, and will be approved by the Site Manager.

4. Details of Cost Estimate [a]

(dollars in thousands)

	Current Estimate	Previous Estimate
Design phase		
Preliminary and final design costs (20.0% of total estimated cost (TEC))	7,000	NA
Design management costs	1,250	NA
Total, engineering, design, inspection, and administration of construction costs (23.6% of TEC)	8,250	NA
Construction phase		
Other (major utilities/comp items, specialized facilities, etc.)	18,750	NA
Removal costs less salvage	0	NA
Inspection, design and project liaison, testing, checkout and acceptance	1,000	NA
Construction management (5.0% of TEC)	1,750	NA
Total, construction costs	21,500	NA
Contingencies		
Design phase (3.0% of TEC)	1,050	NA
Construction phase (12.0% of TEC)	4,200	NA
Total, contingencies (15.0% of TEC)	5,250	NA
Total, line item costs (TEC)	35,000	NA

There is a low degree of confidence in this cost estimate because it has been developed based on inputs to the pre-conceptual design.

5. Method of Performance

[a] The cost estimate breakdown information will be available after completion of pre-conceptual design.

Design and construction shall be performed by the management and integration contractor or subcontractor under the direction of the management and integration contractor.

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	3,000	5,000	1,300	9,300
Construction	0	0	8,200	6,263	11,237	25,700
Total facility costs (Federal and Non-Federal)	0	0	11,200	11,263	12,537	35,000
Other project costs						
R&D necessary to complete project [a]	0	0	2,000	4,000	3,000	9,000
Conceptual design cost [b]	0	0	1,000	11,263	0	12,263
NEPA documentation costs [c]	0	0	0	0	0	0
Other project-related costs [d]	0	0	1,000	0	3,737	4,737
Total other project costs	0	0	4,000	15,263	6,737	26,000
Total project costs (TPC)	0	0	15,200	26,526	19,274	61,000

7. Related Annual Funding Requirements

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs (staff, utilities, etc.) [e]	6,800	NA
Annual facility maintenance and repair costs	1,500	NA
Programmatic effort related to facility	0	NA
Other annual costs	200	NA

[a] This pilot plant would be used for research and development of the processing technology to be used in the production scale Salt Processing Pilot Plant project, which is separately funded.

[b] Conceptual Design to be performed during FY 2001.

[c] National Environmental Policy Act of 1969 documentation for the pilot and Salt Processing Facility is being performed as part of the salt process down selection process, with a Record of Decision expected in FY 2001.

[d] Includes all costs associated with the process development, training, procedures and facility support during construction of the project including Radcon protection.

[e] The operating life of this facility will be approximately 2 years during the conduct of preliminary and final engineering design of the Salt Processing Plant. Continuation of operation beyond FY 2005 to support operator training and waste processing will be evaluated by the project.

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Total related annual funding *(operating from FY 2004 through FY 2006)*	8,500	NA

Non-Defense Environmental Management

Proposed Appropriation Language

For expenses of the Department of Energy, including the purchase, construction and acquisition of plant and capital equipment and other expenses necessary for non-defense environmental management activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction or expansion, $11,400,000, to remain available until expended.

Non-Defense Environmental Management

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Site/Project Completion			
Albuquerque Operations Office			
AL-034 / Atlas Site	0	1,400	1,400
All Other Albuquerque	561	0	561
Subtotal, Albuquerque	561	1,400	1,961
Chicago Operations Office			
CH-BRNLRA / Brookhaven National Laboratory Remedial Actions	17,450	4,000	21,450
CH-BRNLDD / Brookhaven National Laboratory Graphite Research Reactor	4,653	5,100	9,753
CH-BRNLBYW / Brookhaven National Laboratory Boneyard Waste	6,290	900	7,190
All Other Chicago	13,989	0	13,989
Subtotal, Chicago	42,382	10,000	52,382
All Other Site/Project Completion	17,621	0	17,621
Total, Site Project Completion	60,564	11,400	71,964

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

[a] Presently available reflects current new budget authority available as of the June Approved Funding Program.

(dollars in thousands)

Presently Available	Proposed Supplemental	Revised Estimate

AL-034 / Atlas Site **0** **1,400** **1,400**

Provide resources to study remediation options that objectively evaluate the costs, benefits, and risks associated with various remediation alternatives for the cleanup of the former Atlas uranium mill tailings site near Moab, Utah.

CH-BRNLRA / Brookhaven National Laboratory Remedial Actions **17,450** **4,000** **21,450**

Accelerates several groundwater activities, including the pre-design characterization of an off-site pesticide plume in Operable Unit VI, and construction of a groundwater treatment system for volatile organic compounds. In addition, stockpiles of low-level radioactive and mixed wastes would be disposed.

CH-BRNLDD / Brookhaven National Laboratory Graphite Research Reactor **4,653** **5,100** **9,753**

Completes most of the Canal Removal Project, and low-level wastes from the Above Ground Ducts removal project would be disposed. In addition, significant work would be performed on the Below Ground Ducts removal project.

CH-BRNLBYW / Brookhaven National Laboratory Boneyard Waste **6,290** **900** **7,190**

Completes the remainder of the Boneyard Waste project.

Uranium Facilities Maintenance and Remediation

Proposed Appropriation Language

For necessary expenses to maintain, decontaminate, decommission, and otherwise remediate uranium processing facilities, $18,000,000 shall be derived from the Uranium Enrichment Decontamination and Decommissioning Fund, which shall remain available until expended.

Uranium Facilities Maintenance and Remediation

Funding Profile

(dollars in thousands)

	Presently Available [a]	Proposed Supplemental	Revised Estimate
Uranium Facilities Maintenance and Remediation			
Uranium Enrichment Decontamination and Decommissioning Fund			
Oak Ridge Operations Office			
OR-523/ Paducah Remedial Action	35,339	13,000	48,339
OR-553/ Paducah Waste Management	26,114	5,000	31,114
All Other Uranium Enrichment Decontamination and Decommissioning Fund	254,376	0	254,376
Subtotal, Uranium Enrichment Decontamination and Decommissioning Fund	315,829	18,000	333,829
All Other Uranium Facilities Maintenance and Remediation	68,273	0	68,273
Total, Uranium Facilities Maintenance and Remediation	384,102	18,000	402,102

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 102-486, Title X, Subtitle A, “Energy Policy Act of 1992"

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, Fiscal Year 2001"

[a] Presently available reflects current new budget authority available as of the June Approved Funding Program.

(dollars in thousands)

Presently Available	Proposed Supplemental	Revised Estimate

Uranium Enrichment Decontamination and Decommissioning Fund

OR-523 / Paducah Remedial Action **35,339** **13,000** **48,339**

Accelerate groundwater assessments and cleanup (new technology testing treatability studies). Accelerate North-South Ditch excavation for FY 2002 project completion. Accelerate surface water cleanup (site-wide sediment controls and scrap metal). Accelerate C-410 facility infrastructure decontamination and decommissioning. Complete seismic field investigation for proposed Comprehensive Environmental Response, Compensation, and Liability Act of 1980 cell siting location. Replace residential well in water policy area to increase pumping capacity. Accelerate DOE Material Storage Area characterization.

OR-553 / Paducah Waste Management **26,114** **5,000** **31,114**

Accelerate characterization and disposition of deteriorated drums of low-level waste stored outdoors.

Defense Environmental Management Privatization

Proposed Appropriation Language

For expenses of the Department of Energy to privatization projects necessary for atomic energy defense environmental management activities authorized by the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), $29,600,000, to remain available until expended.

Defense Environmental Management Privatization

Funding Profile

	Presently Available	Proposed Supplemental	Revised Estimate
Privatization			
Advanced Mixed Waste Treatment Project, Idaho	65,000	29,600	94,600
All Other Privatization	25,092	0	25,092
Subtotal, Privatization	90,092	29,600	119,692
Use of prior year balances	-25,092	0	-25,092
Rescission of prior appropriations	-97,000	0	-97,000
Total, Privatization	-32,000	29,600	-2,400

Public Law Authorization:

Public Law 95-91, “Department of Energy Organization Act (1977)”

Public Law 103-62, “Government Performance and Results Act of 1993"

Public Law 106-377, “The Energy and Water Development Appropriations Act, 2001"

Public Law 106-398, “The National Defense Authorization Act for Fiscal Year 2001"

Detailed Program Justification

Presently Available	Proposed Supplemental	Revised Estimate

ID-WM-104 / Advanced Mixed Waste Treatment Project; Idaho Falls, Idaho **65,000** **29,600** **94,600**

This project has been in development at the Idaho National Engineering and Environmental Laboratory since 1993. A contract was awarded to British Nuclear Fuels, Limited on December 20, 1996, for the retrieval, sorting, characterization, storage, pre-treatment, treatment, certification, and loading for transportation of 65,000 cubic meters of alpha and transuranic mixed waste located in retrievable storage at the Idaho National Engineering and Environmental Laboratory Radioactive Waste Management Complex. The contract has an option for treatment of up to 120,000 cubic meters of additional DOE mixed wastes. The project scope is to treat Idaho National Engineering and Environmental Laboratory transuranic and alpha mixed waste, as well as other DOE mixed waste in the complex, through a private sector treatment facility located at the Idaho National Engineering and Environmental Laboratory. Specifically, the additional $29,600,000 accelerates construction to increase the confidence in meeting legally enforceable deadlines for shipping waste out of Idaho.

The primary wastes to be treated are DOE laboratory and process wastes generated at Rocky Flats and various DOE facilities. These wastes are currently stored in drums, boxes and bins at the Idaho National Engineering and Environmental Laboratory Transuranic Storage Area of the Radioactive Waste Management Complex.

The wastes consist of a heterogeneous mixture of solid materials including paper, cloth, rubber, plastic, glass, graphite, bricks, concrete, metal, nitrate salts, process sludges, miscellaneous components, and some absorbed liquids. Some wastes also contain Toxic Substance and Control Act regulated materials such as polychlorinated biphenyls. No more than 4,100 kilograms of elemental mercury, and approximately 2.1 million kilograms of lead is expected in the 65,000 cubic meters.

This project is necessary to meet the requirement in the October 1995, Idaho Settlement Agreement to ship all transuranic waste out of Idaho by the target year of 2015 and no later than 2018. It is also necessary to meet site treatment plan milestones under the Federal Facility Compliance Act. The transuranic waste will be disposed at the Waste Isolation Pilot Plant near Carlsbad, New Mexico. Non-transuranic wastes that are not allowed to be disposed at Waste Isolation Pilot Plant (e.g., low-level and mixed wastes) will be disposed in accordance with applicable requirements.

Presently Available	Proposed Supplemental	Revised Estimate

The Advanced Mixed Waste Treatment Project is a privatized, fixed-price contract and will be performed in three phases. Phase I consists of facility permitting, preliminary facility/process design, and establishing the facility safety basis. Phase II consists of final facility/process design, facility construction, and testing. Phase III consists of facility operations, Resource Conservation and Recovery Act closure, and decontamination and decommissioning. The service provided by the contractor shall treat waste to meet Resource Conservation and Recovery Act Land Disposal Restrictions (except for waste that is certified for disposal at the Waste Isolation Pilot Plant), Toxic Substance and Control Act requirements, and Waste Isolation Pilot Plant Waste Acceptance Criteria. Transportation support for shipment of the waste from the Idaho National Engineering and Environmental Laboratory to the Waste Isolation Pilot Plant is required and will be performed under a separate Waste Isolation Pilot Plant-managed contract.

In accordance with the Idaho Settlement Agreement, facility construction will be complete by December 31, 2002, and operations will commence no later than March 31, 2003. Shipments of waste from the Advanced Mixed Waste Treatment Project are expected to begin in the second quarter of FY 2003.

Funding requested through FY 2002 will provide for the physical construction phase (including advance procurement of major equipment) of this project. These funds will cover the remote possibility of termination of the contract and will eventually be used to reimburse capital expenditures after service commences. The current schedule is to complete construction of the Advanced Mixed Waste Treatment Project in the fourth quarter of FY 2002 and begin retrieval operations in the first quarter of FY 2003.

97-PVT-2, Advanced Mixed Waste Treatment Project, Idaho National Engineering and Environmental Laboratory, Idaho

Project Baseline Summary Number (ID-WM-104)

Operating Expense Funded

Significant Changes

The Total Project Cost has been adjusted to reflect actual costs for FY 1997-1999 and current estimate of management and operating support for FY 2003.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost [a] ($000)	Total Project Cost [b] ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 1998 Budget Request (*A-E and technical design only*)	N/A	N/A	4Q 1999	1Q 2003	569,400	1,173,000
FY 1999 Budget Request (*Preliminary Estimate*)	N/A	N/A	"	"	569,400	1,078,900
FY 2000 Budget Request (*Current Estimate*)	N/A	N/A	"	"	569,400	1,115,400
FY 2001 Budget Request *(Current Estimate)*	N/A	N/A	1Q 2000	"	569,400	1,114,450

[a] These estimates are based on a negotiated firm fixed price contract with a commercial firm. The contract includes a provision for price re-determination and economic price adjustment on the operating portion of the contract (Phase III). However, the capital portion of this contract is not subject to either price re-determination or economic price adjustment and is fixed.

[b] The Total Project Cost as defined here is the combined value that the Department of Energy believes will be necessary to pay for the products or services contractually agreed upon plus other support costs. It includes Budget Authority requests for Privatization of $569,400,000; EM Base Program requests for direct payments to the vendor for Licensing and Permitting of $16,300,000, Facility Operations of $434,800,000, and decontamination and decommissioning of $22,700,000. It also includes $66,700,000 of management and operating support and $3,100,000 of other project office costs (e.g. National Environmental Policy Act).

FY 2001 Supplemental Request	N/A	N/A	1Q 2000	"	569,400	1,114,450
FY 2002 Budget Request *(Current Estimate with Contingency)*	N/A	N/A	4Q 2000	"	569,400	1,113,000

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs [a]
Design - N/A			
Construction			
1997	70,000	0	0
1998	0	11,497	0
1999	87,252	115,839	0
2000	109,661	109,530	0
2001	65,000	64,740	0
2001 Supplemental	29,600	29,600	0
2002	40,000	39,669	0
2003	105,000	104,877	22,700
2004	62,887	93,648	102,300
2006	0	0	159,400
2006	0	0	159,400
Outyears	0	0	125,600
Total	569,400	569,400	569,400

3. Project Description, Justification and Scope

This project has been in development at the Idaho National Engineering and Environmental Laboratory since 1993. A contract was awarded to BNFL, Inc., on December 20, 1996, to provide the required services to prepare 65,000 cubic meters of accumulated defense waste located at the Idaho National Engineering and Environmental Laboratory for disposal. Those services include retrieval of the waste from existing storage, characterization of the waste for treatment and/or disposal, treatment of the waste, certification of the final waste form for disposal and packaging the waste in approved containers for shipping to disposal. The project meets all current regulations and requirements. The contract has an option for treatment of up to 120,000 cubic meters of additional DOE mixed wastes. The project scope is to treat the Idaho National Engineering and Environmental Laboratory alpha and transuranic mixed waste, as well as other DOE mixed waste, through a

[a] This cost profile represents the annual liability increase to the Government for this project based on work performed by the contractor. The liability is liquidated as waste is treated (see costs above).

private sector treatment facility located at the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory. Specifically, the additional $29,600,000 accelerates construction to increase the confidence in meeting legally enforceable deadlines for shipping waste out of Idaho.

The primary wastes to be treated are DOE laboratory and process wastes from Rocky Flats and various DOE facilities. These wastes are currently stored in drums, boxes, and bins at the Transuranic Storage Area of the Radioactive Waste Management Complex. The wastes consist of a heterogeneous mixture of solid materials including paper, cloth, plastic, rubber, glass, graphite, bricks, concrete, metals, nitrate salts, process sludges, miscellaneous components, and some absorbed liquids. Ninety-five percent of the waste is believed to contain both the Resource Conservation and Recovery Act hazardous waste constituents and radioactivity. Some wastes also contain material regulated under the Toxic Substances and Control Act such as polychlorinated biphenyls. No more than 4,100 kilograms (kg) of elemental mercury, and approximately 2,100,000 kg of lead is expected in the 65,000 cubic meters. The transuranic waste will be disposed of at the Waste Isolation Pilot Plant near Carlsbad, New Mexico. Non-transuranic wastes, which are not allowed to be disposed of at the Waste Isolation Pilot Plant (e.g., low-level and mixed low-level wastes), will be disposed of in accordance with applicable waste disposal requirements.

This project is necessary to process alpha contaminated and transuranic mixed waste to produce a disposal ready waste that meets all current requirements for storage, transportation and disposal, including the Waste Isolation Pilot Plant Waste Acceptance Criteria and Resource Conservation and Recovery Act Land Disposal Restrictions. (The Land Disposal Restrictions treatment requirement is waived for waste that is certified for disposal at the Waste Isolation Pilot Plant). The treatment process will size and/or re-package waste into standardized containers; treat polychlorinated biphenyls for disposal, eliminate excess liquids and corrosive characteristics; minimize volatile organic compounds and hydrogen gas generation; and reduce hydrogen layers to increase the wattage (radioactive components) allowed per container.

This project is necessary to meet the requirement in the October 1995 Idaho Settlement Agreement to ship all transuranic waste out of Idaho by 2015 (target) and no later than 2018. It is also necessary to meet Site Treatment Plan milestones under the Federal Facility Compliance Act. In accordance with the Settlement Agreement and the Site Treatment Plan, facility construction will be completed by December 31, 2002, and operations will commence no later than March 31, 2003. Shipments of waste from the Advanced Mixed Waste Treatment Project are expected to begin in March 2003. The State of Idaho will provide the Resource Conservation and Recovery Act and Clean Air Act oversight, while the Environmental Protection Agency Region 10 will provide oversight under Toxic Substance Control Act and the National Emission Standard for Hazardous Air Pollutants.

The FY 1997, 1999, 2000, and 2001 appropriations of $70,000,000, $87,252,000, $109,661,000, and $65,000,000, respectively, and the budget requests of $29,600,000 for the FY 2001 supplemental and $40,000,000 for FY 2002 will provide funding for the physical construction phase (including advance procurement of major equipment) of this project. These funds will also cover the remote possibility of termination of the contract. They will eventually be used to reimburse capital expenditures after services commence.

Future budget requests will be made within the Defense Environmental Restoration and Waste Management Appropriation for the purpose of making payments to the vendor - $434,800,000 for operations and $22,700,000 decontamination and decommissioning. An additional $64,150,000 will be requested to provide management and operating support (e.g., facility infrastructure such as utilities, fire protection, etc.) for the privatization effort.

The project has had two external independent reviews. In March-April 1999, the DOE Headquarters Office of Field Integration tasked Logistics Management Institute and Robbins-Gioia, Inc. to conduct a limited external independent review of the Advanced Mixed Waste Treatment Project in order to determine whether project documentation was sufficient for DOE to direct the contractor to proceed with Phase II (i.e., facility construction) of the project. The review team determined that the project was ready to proceed with Phase II. Based on discussions and review of project documentation, the review team provided the Department with five findings in the areas of independent government cost estimating, contract price adjustment and price redetermination mechanisms, financing feasibility, the DOE Project Management Plan, and contract unit price redetermination. The review team's findings, as well as well as recommendations, are being addressed in the Department's corrective action plan. The first three findings identified above are being addressed at the Departmental level and will require policy analysis/development, while the latter two findings are being addressed at the project level (i.e., Advanced Mixed Waste Treatment Project).

The second external independent review, titled *Review of BNFL Inc. Safety and Quality Management Practices for DOE Projects and Facilities*, was performed by Concurrent Technologies Corporation. This review was requested in March 2000 by the Secretary of Energy and the Assistant Secretary for Environmental Management following a mid-February 2000 release of Sellafield inspection reports by the Nuclear Installations Inspectorate of the United Kingdom. These reports described a number of nuclear quality, management, and safety-related issues that had been found at the Sellafield Nuclear site of BNFL plc, the corporate parent of BNFL, Inc. The overall objective of the Department's external independent review was to assess the implications of the issues found at Sellafield on BNFL Inc's operations at the U.S. DOE sites where BNFL Inc. has management responsibilities. The review team provided four findings specific to the Advanced Mixed Waste Treatment Project. Two of the findings identified exemplary practices and, thus, did not require corrective actions. The other two findings dealt with transition planning for project staffing changes and implementation of a formal Employee Concerns Program. The finding on transition planning is being addressed in the Department's corrective action plan, and the finding on the Employees Concerns Program has been closed.

All Critical Decisions for the Advanced Mixed Waste Treatment Project have been accomplished, as discussed below.

The CD-0, Approve Mission Need, was accomplished in May 30, 1995, with the issuance of the Record of Decision on the "Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement."

The CD-1, Approve of Preliminary Baseline Range, was accomplished with the December 20, 1996, contract award to BNFL Inc.

The CD-2, Approve Performance Baseline, was accomplished with the December 20, 1996, contract award to BNFL Inc.

The CD-3, Approve Start of Construction, was accomplished by a May 3, 1999, memorandum from the Acting Assistant Secretary for Environmental Management to the Acting Manager of the Idaho Operations Office.

The CD-4, Approval of Start of Operations, was accomplished by a May 3, 1999, memorandum from the Acting Assistant Secretary for Environmental Management to the Acting Manager of the Idaho Operations Office. This project will require both a Final Safety Analysis Report and an Operational Readiness Review and acceptance report, prior to starting operations, as required by DOE Order 413.3.

The level of confidence for completing the project within the current estimate is low. The estimate is expected to increase as a result of the delay in the start of construction, attributed to a lawsuit associated with the proposed incineration portion of the project, and the resultant delays in issuance of the regulatory permits.

4. Details of Cost Estimate

Total capital cost is $569,400,000 based on the fixed-price contract awarded in December 1996. [Note: BNFL has submitted a $54,000,000 Request for Equitable Adjustment for the six-month schedule slip the project experienced as a result of the delayed issuance of the final environmental permits. The delay was due primarily to a lawsuit involving the proposed Advanced Mixed Waste Treatment Project incinerator. This Request for Equitable Adjustment is currently being review by the Defense Contract Audit Agency.]

5. Method of Performance

The Advanced Mixed Waste Treatment Project is a privatized, fixed-price contract and will be performed in three phases. Phase I consists of facility permitting, preliminary facility/process design, and establishing the facility safety basis; Phase II consists of final facility/process design, facility construction and system testing; Phase III consists of facility operations, Resource Conservation and Recovery Act Closure, and Decontamination and Decommissioning. The services provided by the contractor shall treat waste to meet the Resource Conservation and Recovery Act Land Disposal Restrictions (except for waste that is certified for disposal at the Waste Isolation Pilot Plant), Toxic Substances Control Act requirements (are still in the Advanced Mixed Waste Treatment Project contract), and Waste Isolation Pilot Plant Waste Acceptance Criteria. Transportation support for shipment of the wastes from the Idaho National Engineering and Environmental Laboratory to the Waste Isolation Pilot Plant is required and will be performed under a separate Waste Isolation Pilot Plant - managed contract.

6. Schedule of Project Funding

(Dollars in Thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Total Project Cost (Agency Requirements)						
Total Facility Costs (Paid to Vendors)	0	0	0	0	569,400	569,400
Other Project Cost						
Facility Operations – payments to vendors [a]	16,300	0	0	0	457,500	473,800
Facility Support – Management and Operation/Other [b]	2,750	950	950	1,000	64,150	69,800
Total, Other Project Cost	19,050	950	950	1,000	521,650	543,600
Total Project Cost	19,050	950	950	1,000	1,091,050	1,113,000

7. Related Annual Funding Requirements

(dollars in thousands)

	Current Estimate	Previous Estimate
Given the nature of the privatization contract, these operating costs are shown in the Total Project Cost.	N/A	N/A
Total related annual funding	N/A	N/A

[a] Of the total, $16,300,000 will be paid for preliminary facility and process design activities, licensing and permitting (Phase 1 costs) funded from EM base operating program. Outyear payments to vendors include $434,800,000 for facility operations and $22,700,000 for decontamination and decommissioning.

[b] Facility infrastructure support (e.g. utilities, fire protection, etc.) and the National Environmental Protection Act.