2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [b]			
2001	6,783	0	0
2002	0	6,783	6,783
2003	0	0	0
Construction			
2003	20,800	20,800	16,000
2004	3,700	3,700	8,500

3. Project Description, Justification and Scope

Currently, only a small, development-scale purification facility and capability exist at Y-12 National Security Complex. The previous full-scale purification production facility was shut down in the late 1980s. Given the length of time that has passed since the initial startup of this facility and its operation, there is a need to reestablish and define the operating parameters and controls and process prove-in requirements for this production process, in advance of the completion of the construction of a long-term, full-scale production facility.

Prior to building a full-scale production purification facility, the Purification Prototype Facility project would design, procure, construct, test and checkout and re-establish the process controls and process-prove-in requirement via a prototype facility, simulating production-scale operations. While this facility would not contain all of the process elements required for full-scale, long-term production operations, the prototype process equipment provided for this facility would be designed, fabricated and installed utilizing modular concepts, which would afford the relocation of this equipment to a full-scale, long-term production facility to be constructed later. The environment safety and health requirements, maintainability, and operational reliability of the full-scale, long-term facility will benefit from the experience and design basis acquired in this prototype facility. The execution of this smaller prototype facility can be expedited, which will afford, upon it's completion, a manufacturing capability and capacity supportive of the current near-term SLEP needs.

Operations performed within the Purification Prototype Facility will include: 1) dissolution, filtration, and recrystallization; and 2) powder processing in a nitrogen atmosphere.

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[b] $6,783,000 of design funding was appropriated in 01-D-103, Project Engineering and Design (PED). It is anticipated that the design TEC for this project will increase by $3,010,000 and a reprogramming action may be required.

For estimating and scheduling purposes, the assumed siting for this facility is 9720-40.

Project Milestones:

FY 2002:	Initiate Design	2Q
	Completion of Preliminary Design	4Q
FY 2003:	Initiate Physical Construction	1Q
	Complete Design and long lead procurement	3Q
FY 2004:	Complete Physical Construction	4Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Total, Design Phase (21.7% of TEC) [a]	6,783	N/A
Construction Phase		
Improvements to land	996	N/A
Buildings	4,106	N/A
Special facilities	4,926	N/A
Utilities	1,499	N/A
Inspection, design & project liaison, testing, checkout, and acceptance	5,042	N/A
Construction Management (5% of TEC)	1,575	N/A
Project Management (8.1% of TEC)	2,543	N/A
Total Construction Costs (66.1% of TEC)	20,687	N/A
Contingencies		
Construction Phase (12.2% of TEC)	3,813	N/A
Total, Line Item Costs (TEC)	31,283	N/A

5. Method of Performance

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

[a] $6,783,000 of design funding was appropriated in 01-D-103, Project Engineering and Design (PED). It is anticipated that the design TEC for this project will increase by $3,010,000 and a reprogramming action may be required.

procurement and construction will be accomplished by fixed-price contracts awarded on the basis of competitive bidding. All contracts will be administered by the operating contractor.

Best value practices will be used for design and construction services.

6. Schedule of Project Funding

	(dollars in thousands)					
	Prior Years	FY 2001	FY 2002	FY 2003	Outyears	Total
Project Costs						
Facility Costs						
Design [a]	0	0	6,783	0	0	6,783
Construction	0	0	0	16,000	8,500	24,500
Total, Line Item TEC	0	0	6,783	16,000	8,500	31,283
Total, Facility Costs (Federal and Non-Federal)	0	0	6,783	16,000	8,500	31,283
Other Project Costs						
Other project-related costs	0	5,369	1,042	1,619	1,740	9,770
Total, Other Project Costs	0	5,369	1,042	1,619	1,740	9,770
Total, Project Cost (TPC)	0	5,369	7,825	17,619	10,240	41,053

7. Related Annual Funding Requirements

	(FY 2002 dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs	0	N/A
Annual facility maintenance/repair costs	0	N/A
Programmatic operating expenses directly related to the facility	0	N/A
Other costs	0	N/A
Total related annual funding (operating from FY 2005 through FY 2054)	0	N/A

[a] $6,783,000 of design funding was appropriated in 01-D-103, Project Engineering and Design (PED). It is anticipated that the design TEC for this project will increase by $3,010,000 and a reprogramming action may be required.

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. Cost analysis shows that significant savings in security costs of approximately $6 million per year will be realized.

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. After completion of the new facility, the reactor will be relocated into the new underground facility as soon as reactor operations can be disrupted.

The performance baseline has been established for this project and construction funding is being requested in FY 2003 under line item 03-D-101.

01-09: Purification Prototype Facility, Y-12

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2002	3Q 2003	1Q 2003	4Q 2004	6,783 [a]	30,000 - 35,000

Fiscal Year	Appropriations	Obligations	Costs
2001	6,783	0	0
2002	0	6,783	6,783
2003	0	0	0

[a] Original amount allocated to this subproject was reduced by $17,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. It is anticipated that the design TEC for this subproject will increase by $3,010,000 and a reprogramming action may be required.

This subproject provides for preliminary and final (Title I and Title II) design of the proposed Purification Prototype Facility at the Y-12 Plant, and is one of the individual subprojects that replaces the Special Materials Complex subproject at Y-12 (also see 02-D-103).

Currently, only a small, development-scale purification facility and capability exist at Y-12. The previous full-scale purification production facility was shut down in the late 1980s. Given the length of time that has passed since the initial startup of this facility and its operation, there is a need to re-establish and define the operating parameters and controls and process prove-in requirements for this production process, in advance of the completion of the construction of a long-term, full-scale production facility.

Prior to building a full-scale production purification facility, the Purification Prototype Facility project would design, procure, construct, test, and checkout and re-establish the process controls and process-prove-in requirements via a prototype facility, simulating production-scale operations. While this facility would not contain all of the process elements required for full-scale, long-term production operations, the prototype process equipment provided for this facility would be designed, fabricated and installed utilizing modular concepts, which would afford the relocation of this equipment to a full-scale, long-term production facility to be constructed later. The environment safety and health requirements, maintainability, and operational reliability of the full-scale, long-term facility will benefit from the experience and design basis acquired in this prototype facility. The execution of this smaller prototype facility can be expedited, which will afford, upon its completion, a manufacturing capability and capacity supportive of the current near-term SLEP needs.

Operations performed within the Purification Prototype Facility will include 1) dissolution, filtration, and recrystallization: and, 2) powder processing in a nitrogen atmosphere.

Construction funding for this project is being requested in FY 2003 under line item 03-D-122.

01-D-103, National Nuclear Security Administration Project Engineering and Design (PED), Various Locations

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

Significant Changes

The design start and completion dates for the TA-18 Mission Relocation subproject, as well as the design funding profile, have been modified due to delays in evaluating siting alternatives. A final siting decision is anticipated late in the second quarter of FY 2002. The design completion date for this PED line item has slipped due to the delay in this subproject.

The Total Estimated Cost (TEC) for this line item is reduced by $26,590,000 as a result of the following changes:

- The Special Materials Complex (SMC) subproject at Y-12 was originally planned as a single large project to provide for both critical near-term weapons refurbishments and long-term production capabilities. The Department has completed programmatic evaluations of the previous SMC strategy, as discussed in this data sheet in the FY 2002 Congressional Budget. The evaluations have indicated that to meet near-term production requirements, address current management capabilities and reduce overall risk, the SMC should be divided into four smaller projects. Under this approach, the projects will be more easily managed by focusing each project on the establishment of distinct, separate capabilities, reducing interdependencies and optimizing individual project schedules. Only one of the four subprojects that replace the SMC, the Purification Prototype Facility, will begin design in FY 2002 in this line item utilizing funds appropriated in FY 2001 for the SMC subproject. Two of the subprojects replacing the SMC will start design during FY 2002 and are included in the FY 2002 PED line item, 02-D-103, and one will start design after FY 2003. (Net TEC decrease: -$26,800,000)

- The TEC for design of the Sandia Underground Reactor Facility (SURF) increased by $210,000 due to increases identified during preliminary design.

01-02: Special Materials Complex, Y-12

The Special Materials Complex (SMC) subproject at Y-12 was originally planned as a single large project to provide for both critical near-term weapons refurbishments and long-term production capabilities. Programmatic evaluations of the previous SMC strategy indicated that to meet near-term production requirements, address current management capabilities and reduce overall risk, the SMC should be divided into four smaller projects. Under this approach, the projects will be more easily managed by focusing each project on the establishment of distinct, separate capabilities, reducing interdependencies and optimizing individual project schedules. This data sheet reflects NNSA's current plan to replace the SMC PED design subproject with the following four subprojects:

- Purification Prototype Facility, Y-12 (included in this line item, subproject 09)
- Beryllium Manufacturing Facility, Y-12 (included in 02-D-103)
- Purification Production Facility, Y-12 (included in 02-D-103)
- SMO Production Support Facilities, Y-12 (scheduled for design after FY 2003)

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		
2Q 2002	3Q 2003	4Q 2002	2Q 2005	2,693	16,000-18,000

Fiscal Year	Appropriations	Obligations	Costs
2001	0	0	0
2002	2,693	2,693	1,000
2003	0	0	1,693

This subproject provides for 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

2005	0	0	690

This subproject provides the preliminary and final (Title I and Title II) design for the proposed Beryllium Facility at the Y-12 Plant, and is one of the individual subprojects that replaces the Special Materials Complex subproject at Y-12 (see 01-D-103).

The Beryllium Facility will: 1) consolidate all beryllium operations at Y-12; 2) provide long-term capability and capacity to support the Stockpile; 3) benefit from knowledge and experience gained from early/expedited prototype efforts of the NNSA Y-12 Special Materials Capabilities Program and; 4) will comply with the new ACGIH limit for suspended beryllium in air. Beryllium operations at Y-12 are currently performed in multiple, aging facilities that require extensive administrative controls to maintain compliance; the new facility would eliminate the use of respirators during normal operations.

The Beryllium Manufacturing Facility would contain blank forming, machining, laboratory analysis, inspection and certification operations in addition to other supporting functions. Primary operations would be enclosed in gloveboxes to protect workers from exposure to beryllium and the facility would be equipped with secondary and tertiary confinement ventilation systems.

This project is being done in support of the remanufacturing requirements for the Nuclear Weapons Complex. This project will provide modern facilities that are designed to the latest standards for worker and environmental protection.

02-09: Purification Production Facility, Y-12

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Complete d	Physical Construction Start	Physical Construction Complete		
4Q 2002	4Q 2004	1Q 2005	2Q 2006	15,410	60,000-80,000

Fiscal Year	Appropriations	Obligations	Costs
2002	2,210	2,210	1,768
2003	4,000	4,000	4,042
2004	9,200	9,200	8,680
2005	0	0	920

This subproject provides the preliminary and final (Title I and Title II) design for the proposed Purification Production Facility at the Y-12 Plant, and is one of the individual subprojects that replaces the Special Materials Complex subproject at Y-12 (see 01-D-103).

The Purification Production Facility would provide a full-scale, long-term purification production process capability. This production facility will benefit in design, construction and operation from the experience and knowledge gained through the expedited, early design and construction of the Purification Prototype Facility. Currently, only a development-scale facility and capability for this process exists at Y-12. This development-

scale facility may not meet the production needs to support the enduring stockpile. The Department will reestablish the long-term capability and capacity in this new facility with new equipment better suited to meet the current environment, safety and health requirements, maintainability, and operational reliability.

Operations performed within the Purification Production Facility will include: 1) dissolution, filtration, and recrystallization; 2) powder processing in a nitrogen atmosphere, and; 3) drying, machining and inspection. The purification process will use flammable liquid acetonitrile (ACN) and will require special design features, including an adjoining tank farm to store ACN.

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

02-10 Building 12-44 Production Cells Upgrade, PX

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Complete d	Physical Construction Start	Physical Construction Complete		
4Q 2002	3Q 2004	2Q 2004	3Q 2005	2,600	10,000-12,000

Fiscal Year	Appropriations	Obligations	Costs
2002	1,500	1,500	1,200
2003	1,100	1,100	1,290
2004	0	0	110

This subproject provides the preliminary and final (Title I and Title II) design for the Pantex Building 12-44 Production Cells Upgrade (5 Cells). This project will lessen the cell shortfall by modifying five cells in building 12-044. The upgrade will bring these cells up to the same operational/capacity level as other cells at Pantex. The modifications to each of the five cells include:

1.1 | Task exhaust installation
1.2 | Contaminated Waste Isolation installation
1.3 | Dehumidifier installation
1.4 | HVAC replacement

The Building 12-44 Production Cells Upgrade will provide a crucial asset in meeting the DOE's objective of maintaining confidence in the nuclear weapons stockpile. This project will provide modifications to an existing facility to increase capacity to meet the impact of changing weapon complexity, projected workload, and the stockpile refurbishment activities. The W-76 program is the first user to benefit from this additional capacity with other programs to follow.

03-D-122, Purification Prototype Facility Y-12 National Security Complex, Oak Ridge, Tennessee

This project is requested in FY 2003 concurrent with a request for design funding in line-item 01-D-103, Project Engineering and Design, in order to commence site preparation and support long lead procurements (gloveboxes and processing equipment) that must be placed from 6 to 18 months in advance of the time they are needed for installation. In addition, information gained through procurements is needed to complete design.

The TEC and TPC presented are preliminary estimates that are based upon conceptual design, and do not reflect an anticipated increase in the design TEC of $3,010,000 which may require a reprogramming action. Current project plans provide for a review and approval of Critical Decision 3A, Long Lead Procurement, in 3Q 2002 in support of the FY 2003 construction request. Completion of the entire project performance baseline will be provided at the completion of preliminary design that is scheduled for 4Q 2002 to support the FY 2004 budget request.

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 2003 Budget Request *(Preliminary Estimate)*	2Q 2002	3Q 2003	1Q 2003	4Q 2004	31,283[a]	41,053

[a] The TEC includes the cost of preliminary and final design ($6,783,000), which was appropriated in 01-D-103, Project Engineering and Design. It is anticipated that the design TEC for this project will increase by $3,010,000 and a reprogramming action may be required. The performance baseline will be established following completion of preliminary design and Critical Decision 2, currently scheduled for 4Q 2002.