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Abstract

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This document presents the plan for the dismantlement of the Sodium Pump Test Facility (SPTF) and demolition of the structure to the foundation.

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1.0 INTRODUCTION

The Sodium Pump Test Facility (SPTF) started operations in 1974 and continued through October 2001. The facility was operated by the Energy Technology Engineering Center (ETEC). This sodium metal test loop is located within building B/462 at the Boeing Canoga Park Santa Susana Field Laboratories (SSFL). Its primary purpose was to provide test beds for development, performance, and verification testing of large sodium pumps. No SPTF programs or activities involved the use of radioactive materials. It's primary mission completed, the facility has now been turned over to the ETEC Closure Program. The sodium within the SPTF sodium loop and feed and drain tanks has been declared excess and was assigned the regulatory status of "Excluded Recyclable Material". Regulations require that 75% of the sodium inventory, estimated in January of each calendar year, be removed from the site for reuse by the end of each calendar year.

It is estimated that the total SPTF sodium inventory is approximately 54,000 gallons. The bulk is contained in the drain tank (T-104) 24,000 gallons, and the feed tank (T-105) 27,000 gallons. It is also estimated that approximately 3,000 gallons of residual sodium remains on surfaces within the sodium piping and associated components system.

This SPTF Program Management Plan will focus on the SPTF facility and the technical approach to dismantlement. This document will address the sodium inventory off-load, dismantlement of the complete SPTF sodium system and the demolition of the building structures. Following demolition, the building excavations will be back-filled, and the site will be graded to natural contours and seeded with native species vegetation. The DOE has responsibility for the structures down to the concrete foundation. Others parties are responsible for the test article and for the facility foundation removal and backfill.

2.0 PROJECT SCOPE

This document provides the general plan that will be followed to safely and systematically dismantle the SPTF and to demolish the SPTF facility. The activities required for system dismantlement and facility demolition include the following:

- Off-load of the existing 54,000 gallons of sodium inventory to a new owner.
- In-situ cleaning of sodium heels remaining in storage tanks.
- In-situ cleaning of the JAPC Large Electro-Magnetic Pump and Pump Tank. (Funded by others)
- In-situ cleaning of sodium remaining in large (over 12 inch diameter) piping systems.
- Removal of smaller sodium systems and components and the required size reduction for cleaning
- Removal of any non-sodium systems pipe and/or components as required to accomplish the sodium system dismantlement.
- Hazardous materials removal, packaging and disposal at an approved waste site.
- Divestment of usable equipment
- Recycling of scrap recoverables.

- Demolish the foundations (funded by others)
- Back filling excavations, site grading and revegetation. (funded by others)

3.0 FACILITY DESCRIPTION

3.1 General Description

The SPTF complex consists of Buildings 461 and 462 and associated electrical substations. These buildings are DOE-owned and located in Area IV of the Rocketdyne Santa Susana Field Laboratory (SSFL). This field laboratory is located in the Santa Susana Mountains of Ventura County, California, near the city of Chatsworth. The SPTF complex consists of a high bay containing the main sodium storage tanks (feed and drain tanks) and sodium feed, drain, cooler and purification system piping, and two sodium to air heat exchangers (coolers). The mid bay area contains the High Flow Loop and Pump Tank. The control area contains the data acquisition system (DAS) room, electrical switchgear room and liquid rheostat room. A separate building (Building 461) houses the test pump electrical power control unit (PCU), interconnecting transformers, and a storage/supply area.

In addition to the sodium loop, the facility contains several auxiliary systems; an instrument/plant air system, a cooling water system, an electrical system, an argon/nitrogen supply system, and a natural gas supply system. The major systems are discussed below.

3.2 Sodium System

The SPTF sodium system consists of the main sodium circulation loop, the feed and drain systems, the sodium cooler loop and the sodium purification loop. The sodium tanks are currently maintained at a temperature slightly above ambient (100 F to 120 F) and under a low pressure inert nitrogen cover gas. Sodium systems are laid up in this manner to minimize the possibilities of stress corrosion cracking occurring and the intrusion of air and moisture into the system.

The main circulation loop consists of the test pump tank, with the test pump still in place, a 36 inch diameter discharge piping, an 18 inch diameter bypass loop with butterfly flow control valve that returns downstream of two 30 inch diameter variable pressure reducing device (VPRD) flow control valves. The piping then opens to the 48 inch diameter pump suction elbow back to the pump tank. The majority of the system and components are 304 stainless steel.

The cooler loop branches off at the cooler tee located in the main drain loop, through the E-105 sodium cooler and returns through the sodium feed loop to the mixing tee downstream of the 18 inch diameter butterfly flow control valve in the bypass loop. The E-105 sodium cooler includes a natural gas fired preheater operated by a "Fire-Eye" burner control system. In addition to the E-105 sodium cooler, the E-102 sodium cooler has seen past sodium service on other programs, but has been previously isolated from the cooler system

The feed and drain system consists of two sodium storage tanks (T-104 and T-105), isolation/control valves at each tank (TV-120 & PV-111), and interconnecting piping to the main High Flow Loop. The Feed and Drain system was utilized to fill the sodium systems and provide a path for emergency drain as well as thermal transient capability.

The Drain Tank (T-104) is a 21 foot. diameter spherical vessel fabricated of 7/16 inch thick stainless steel with a 3/4 inch thick crown. A 12 inch diameter sodium inlet line, a 10 inch diameter vent line, two 1 inch diameter instrument thimbles, and an 18 inch diameter manhole with welded cover all enter the top of the vessel inside the skirt. The tank is provided with an internal baffle structure at the end of the 12 inch diameter sodium inlet pipe. The drain tank maximum capacity is 36,300 gallons, design pressure is 25 psig and it has a nondrainable sodium heel of 600 gallons.

The Feed Tank (T-105) is a 13 foot diameter cylindrical vessel 37 feet in length. A 12 inch diameter sodium outlet line, an 8 inch diameter vent line, a 6 inch diameter drain line, 1 inch diameter instrumentation thimbles, and an 18 inch diameter manhole with a welded cover all enter the top of the vessel. The feed tank maximum capacity is 34,000 gallons, design pressure is 135 psig, and it has a 400-gallon nondrainable heel of sodium.

The sodium purification system consists of two 30 gpm electro-magnet pumps, a cold trap with economizer to allow for service above 800F, a plugging meter and interconnecting piping to allow purification and transfer of sodium between tanks or systems.

3.3 Auxiliary Systems

The auxiliary systems include the instrument/control/plant air system, the argon/nitrogen supply system, a natural gas system, the cooling water system, hydraulic valve actuation systems, and the electrical distribution system.

The instrument/control/plant air system provided compressed air for instrumentation and control functions as well as utility air for plant maintenance. The compressor package consists of two air compressors, a receiver tank and air dryer. The air dryer is plumbed to the instrument and control air supply only.

The inert gas supply system consists of a liquid gas cryogenic 2500-gallon storage vessel, a low-pressure vaporizer, a cryogenic pump, a high-pressure vaporizer, and a high-pressure argon storage tank. The low-pressure gas system provides inert cover gas to the feed, drain and pump tank, as well as constant positive pressure in the vent system. The system has a twofold purpose. One, it maintains an inert cover gas over the sodium, thus preventing oxidation and caustic formation. Secondly, when pressurized, it provides the driving force for moving sodium from the feed and drain tanks into the purification and main sodium loops. The cryogenic pump, high-pressure vaporizer and high-pressure storage tank once provided high-pressure argon at high volume to the feed tank to force hot or cold sodium into the main loop at high flowrates for thermal transient testing. Currently, the argon cryogenic storage tank has been converted to nitrogen and the high-pressure supply to the feed tank has been disconnected and capped as the outlet from the high pressure cryogenic pump.

The cooling water system consists of a closed loop recirculation system for cooling the power supply for the Large Electro-Magnetic Pump. Heat rejection is through an air blast heat exchanger and water purity is maintained with a replaceable demineralizer cartridge unit.

There are two hydraulic valve actuation hydraulic units, one for each of the two VPRD's. They are self contained, high pressure, servo controlled units with 100 gallon sumps containing Mobil DTE-10 hydraulic oil.

The electrical system distributes the power for operation of the SPTF. This includes power for the test article pump, auxiliary pumps and equipment drivers, piping and component heating, instrumentation and control, and facility lighting. Electrical power is supplied at 4160 volts from circuits "E" and "F" from the Burro Flats substation. The 4160V supply is further transformed to 480V and 120/208V at the facility. Power is distributed through circuit breakers on the main distribution panel to different circuits that provide power as required for system operations. The system includes a diesel generator for emergency power and thirty-two lead-acid batteries in the uninterruptable power supplies (UPS).

3.4 Facilities and Structures Subsystems

The facilities and structures subsystem provided the support and containment structures for the test system equipment, the equipment handling capability, control room and utilities. The utilities requirements included natural gas for conditioned space heating and hot water, water, and sewer services.

Building 4462 is steel -framed and totally enclosed. The roofing and walls are corrugated, galvanized sheet metal. The base is concrete. The purpose of the building is to provide weather protection and a solid foundation for all sodium piping and vessels.

The control room, Data Acquisition System (DAS) room, office area and change room are located on the north side of Building 462. The control room contains the facility instrumentation and control panels and the operational console. Recorders, controllers, and data loggers display facility and test conditions. The DAS room is located south of the control room and provides a separate area for the DAS to be operated and for customer access to data without interruption of control room operations. A single restroom and a change/locker room with showers are also contained within this building.

Building 461 is a steel framed, totally enclosed building located to the southeast of Building 462. The roofing and walls are corrugated, painted sheet metal. The foundation is concrete. The building consists of two separate rooms at different elevations. The upper elevation functions as a tool storage and workshop, the lower level was originally constructed for weather protection of the CRBR pump motor generator speed control unit. That equipment has been removed and power control units with transformers have been installed for operation of JAPC Electro-Magnetic test pumps.

4.0 SELECTION OF ALTERNATIVES

The proven method established to react residual sodium is Water Vapor Nitrogen (WVN) cleaning. This method has been used at all major sodium facilities dismantlement at ETEC and was originally selected as the method of choice during the ETEC transfer study conducted in 1995. Two variations of WVN cleaning have been used at ETEC to date. The approach for smaller components or components with complex internal geometries has been to size reduce to make all surfaces accessable for reaction and to then place them within a reaction chamber. A second variation (in-situ) was used to clean very large components or components whose size reduction is very costly. As long as the internal surfaces are accessable to the WVN, the components can be cleaned in situ. The WVN apparatus is moved to the large component and the process is completed. The internals of the large component are then inspected at appropriate locations to assure cleanliness. Either cleaning process yields sodium hydroxide solution for eventual reuse.

At the SPTF, much of the high flow loop is large diameter (14 to 48 inches) and will be cleaned in situ. This piping should have little residual sodium and size reducing and subsequent handling of these large, heavy sections is costly and raises safety concerns. In situ cleaning followed by verification inspection is a natural choice for the larger sections in the faciltity. Cleaned piping will remain in place and will be demolished together with the remaining facility structure. Large components such as the feed and drain tanks will also be cleaned in place.

The smaller diameter piping (<12 inch diameter) will be sectioned and cleaned in a reaction chamber. This approach is preferable because 1) there is a higher likelyhood of sections being plugged or containing large quantities of sodium, 2) most of the smaller diameter piping is horizontal, making it difficult to react and drain in situ, and 3) this piping is physically accessable and can be sectioned and handled safely.

5.0 DISMANTLEMENT PLAN

This project will result in the removal of all sodium, sodium related components, and systems from the facility, and will clear the building of other components and hazardous materials to allow for demolition of the facility buildings and the release of the site for use without restriction.

5.1 General Facility Approach

The SPTF dismantlement will consist of the removal of a number of interrelated systems. Task specific instructions will be prepared to cover those tasks involved with the dismantlement and removal of these individual systems. These instructions will not only provide guidance and direction for the system or component removal but will specify health and safety requirements and waste disposition requirements. “Hold points” requiring sign off will verify these requirements by appropriate department representatives. Depending upon the complexity and the nature of the instructions, these instructions will be conveyed using Standard Operating Procedures (SOPs), Operator Instructions (OIs), or Engineering Work Requests (EWRs), as appropriate.

Specific work function sequence will be established by the Person-in-Charge of the work activities on a day-to-day basis, and as specified in weekly project review and work guidance meetings.

Hardware, components, and other materials will be removed and reviewed for use in the performance of the contract in other facilities. If no future need is identified, then these items will be divested utilizing the DOE guidelines and Boeing Canoga Park’s system for divestment. The divestment process involves checking against inventory records, being transferred to other users, sold as surplus or scrapped.

5.2 SPTF SODIUM SYSTEM COMPONENTS DISMANTLEMENT SEQUENCE

The following is a general sequence to be followed for the dismantlement and disposal of the SPTF sodium system. This will be performed by Rocketdyne personnel knowledgeable and skilled in sodium systems dismantlement. The sequence described below may be rearranged or done in an alternate component order to meet sodium inventory reduction requirements.

5.2.1 Remove the Bulk Sodium from the Feed and Drain Tanks

The bulk sodium from the SPTF Feed and Drain tanks will be removed and transferred to a new owner. This activity is planned to be similar to the bulk sodium removal already performed at SCTL, LMDL-1, LLTR, and SCTI. After arrangements are finalized to transfer the sodium to a new owner (Callery Chemical Company), a sodium transportation contractor will be brought on site to receive the sodium. This contractor will be responsible for providing vessels approved for transporting sodium on public thoroughfares (e.g. an ISO tanker), for receiving the sodium from Rocketdyne into those vessels, and for transporting the sodium to the new owner. Rocketdyne will be responsible for designing and constructing a system to transfer the sodium from the facility storage tanks into the transportation vessels and for performing the transfer.

5.2.2 In-Situ Cleaning of the Feed and Drain Tanks

The sodium within the SPTF has a regulatory status of "Excluded Recyclable Material". To comply with the regulations governing reducing the inventory of this type of material, it is planned to follow the bulk sodium transfer in calendar year 2002 with additional bulk sodium transfer and the removal of the sodium heels from the Feed and Drain tanks in calendar year 2003. Experience during similar demolition projects (SCTI and SCTL), and the location of these tanks within the facility indicate the most efficient and cost effective method for removing sodium heels is to perform Water-Vapor-Nitrogen (WVN) processing in-situ. The tanks would then be removed as part of the facility structural demolition activity.

5.2.3 Prepare Sodium System Components For Insulation Removal

Larger Sodium Systems

The parameters of sodium off-load activity and for in-situ cleaning of the Feed and Drain tanks and large diameter piping require trace heating and insulation to reach the required temperatures. Once these operations have been completed, further disassembly of the large systems can be performed for inspection. Exterior electrical leads, instrumentation, and auxiliary systems pipe and components that interfere with the removal of insulation from the sodium system components can be removed. Prior to removal of any electrical or mechanical components, source disconnection will be verified and power/energy supplies will be "locked out".

Smaller Diameter Sodium Piping

The smaller diameter piping (<12 inch diameter) will be sectioned and cleaned in a reaction chamber as discussed in Section 4.0. Exterior electrical leads, instrumentation, and auxiliary systems pipe and components that interfere with the removal of insulation from the smaller sodium system components will be removed. This is the first necessary step in the process of physical removal of the smaller diameter piping for eventual sectioning and cleaning in the WVN reaction chamber.

5.2.4 Remove insulation from the sodium components

In-situ cleaning of the larger sodium piping and components requires that the heaters and insulation remain in place. Insulation will only be removed to 1) install components necessary for the WVN processing or 2) allow inspection of the system interior for cleanliness after WVN cleaning. Final larger pipe and component insulation removal will take place prior to final demolition of the sodium systems and facility structure.

Smaller diameter piping and components requiring removal and size reduction for cleaning in the reaction chamber will be stripped of insulation prior to removal from the sodium system. The thermal insulation at the SPTF does not contain asbestos, but does require a less stringent form of respiratory protection when handling the material. However, the thermocouple retention blocks, some heater spacer blocks, and hanger spacer blocks are asbestos containing material. Certified and licensed asbestos removal contractors will perform removal and disposal of asbestos containing material. Rocketdyne personnel may remove the non-asbestos insulation materials.

5.2.5 Remove heater elements and other instrumentation from sodium system components.

Following insulation removal, the heater elements and any other remaining instrumentation on the sodium system components that were under the insulation will be removed.

5.2.6 Remove sodium system lines and components

The smaller sodium system pipe and components will be removed. Each sodium line that is to be removed will be inspected for sodium and sodium products prior to its removal. This includes both surface deposits on the exterior of the exposed pipes and, where possible to determine, the status of the piping interior. If sodium is present, appropriate safety precautions will be instituted.

Each of the sodium piping lines will be cut and removed in sections. The sizes of the individual sections will depend upon the internal sodium contamination and a trade-off between relative ease of final size-reduction in place or in the lay-out areas. Safety and ease of handling will be paramount consideration when determining the size of the pipe sections. The method of sectioning will be determined by the status of the piping (location, residual sodium), but mechanical methods (sawing) shall be used for the initial cuts.

Particular care shall be taken in the removal of valves and other components that may hold trapped residual sodium. These components require that open ends are bagged or taped until WVN processing can be accomplished.

After removal, the smaller or more complex sodium system components shall be inspected, sealed, packaged, and transported to a designated location for subsequent cleaning and disposal. The WVN process cleaning will be performed using a batch process reaction chamber. All larger piping and components that are to be cleaned in-situ shall remain in place.

5.2.7 In-Situ Cleaning of the Pump Tank

The SPTF test pump tank will be isolated from the High Flow Loop by cutting sections from the suction and discharge piping and capping both ends. Enough of the insulation on the suction and discharge piping will be removed to provide access for cutting these lines. The trace heat is to remain intact on the facility ends of the suction and discharge piping to support in-situ cleaning of the High Flow Loop. Similarly, the trace heat and insulation will remain intact on the Pump Tank to allow cleaning temperature parameters to be achieved. Because of the structural complexity of the installed pump and tank system, a detailed plan/procedure will be developed for this assembly.

5.2.8 In-Situ Cleaning of SPTF Expansion Tank

The expansion tank is a vertically mounted, 30 inch diameter, 18.5 foot long vessel. The overflow line to the drain tank will be cut and isolated, the vent piping shall be cut from the existing vent system and the tank will be cleaned in-situ using the WVN process.

5.2.9 In-Situ Cleaning of the Knockout Drum (Vapor Trap)

The knockout drum is a 36 inch diameter, 12 foot long vertically mounted cylinder containing 1700 pounds of ceramic Intalox saddles. This vessel was inadvertently filled with sodium on two separate occasions in the 1970's and has been trapping sodium aerosols from venting cover gas for 25 years. The knockout drum will be isolated from the vent system and vent stack and be cleaned in place using the WVN process.

5.2.10 In-Situ Cleaning of the High Flow Loop

The High Flow Loop consists of 30, 36, and 48 inch diameter piping. This piping system will be cut and capped in specifically planned locations to isolate individual sections to be cleaned in place using the WVN process. The sectioning location will be determined to provide the best possible drain path for sodium hydroxide product and adequate venting of hydrogen gas produced during the WVN process.

5.2.11 Remove Other Facility Components

Other components of the facility will be inventoried and divested using the Boeing Canoga Park system for divestment. If no future need is identified, these items will be divested utilizing the DOE guidelines. These include the control room consoles and associated wiring, the test pump drive systems, electrical switchgear, and remaining auxiliary systems components.

6.0 PROGRAM MANAGEMENT

A sitewide closure program management plan, (Reference 1) has been issued, which governs the work of this project, and other similar projects. The scope of the plan includes in part, "....the removal of hazardous and/or radioactive material and wastes resulting from DOE activities and remediation of soil and groundwater at the site. No SPTF programs or activities involved the use of radioactive materials. Buildings shall be remediated to the extent necessary to ensure that they are useable without restriction. Soils are remediated to residential standards...... [and] "Waste minimization and pollution prevention opportunities are implemented during decontamination activities".

6.1 Organization

The organization used to implement and manage the work is a matrix of program/project management and functional organizations within Boeing. The detailed responsibilities, titles and current assignments, as well as the reporting chains of authority are presented in Reference 1. The following discussion is intended to provide a summary overview.

A Boeing business area executive is responsible for management of the entire sitewide remediation activities (ETEC Closure), through a contract with the Department of Energy.

The functional work units fall under the Boeing Division Director for Safety, Health and Environmental Affairs. The key managers for this project (and others) administratively report to this Director and are as follows:

- ETEC Site Closure Program Manager-This person is responsible to direct all program/project activities and is accountable for technical objectives, schedule achievement, and budget management. Individual Project Managers are assigned to be responsible for specific projects and for functional areas. A project manager has been assigned responsibility for the entire scope of this plan.

- Site Restoration Manager-This person is responsible for the physical implementation of the projects. This person assigns and manages the staff, assuring the appropriate skill levels and training. This activity receives its technical objectives, schedule requirements and budgets from the Site Closure Program Manager in a matrix capacity. Two key responsibilities for this manager are: to designate a single point of contact person (person in charge- PIC) to provide day-to-day coordination with all participants on a project: and to be responsible for the physical safety of all participants on a project. One of the tools required to be used by the PIC is a checklist of submittal and approvals of subcontractor documents. This tool, Reference , is customized for the specific project and offers objective evidence of compliance.

- Corporate centers for selected areas of expertise exist and provide matrix support to the Site Closure Program Manager. These functions are centralized to assure that uniform policies and procedures are made available to all projects and activties, with minimal duplication. Support is provided on an as requested basis.

- Business Operations provides staff and systems for accumulation of cost information, budgeting, accounting and financial reporting.

- Test Support provides technical staff with expertise in the preparation of designs, specifications, procedures, analyses and reports. Shops, laboratories and special equipment are available as required.

- Quality & Systems Safety provide staff for implementation of the corporate wide Quality Management System. Compliance with the general requirements of the DOE contract is implemented through this system. A quality assurance plan document, Reference 2, has been prepared specifically for the ETEC closure activities, and applies to this project.

- Other functional departments provide matrixed staff, equipment, procedures and support on an as-needed basis. These include purchasing and contract representatives, facilities engineers and equipment, emergency service personnel and equipment, public affairs, security, etc.

- Contractors work activities are governed by a commercial contract, which includes the technical work specifications and a standardized group of construction related requirements.

6.2 Schedule

The schedule for SPTF Dismantlement is shown in Figure 1

6.3 Costs

The estimated costs are shown below in Table 1

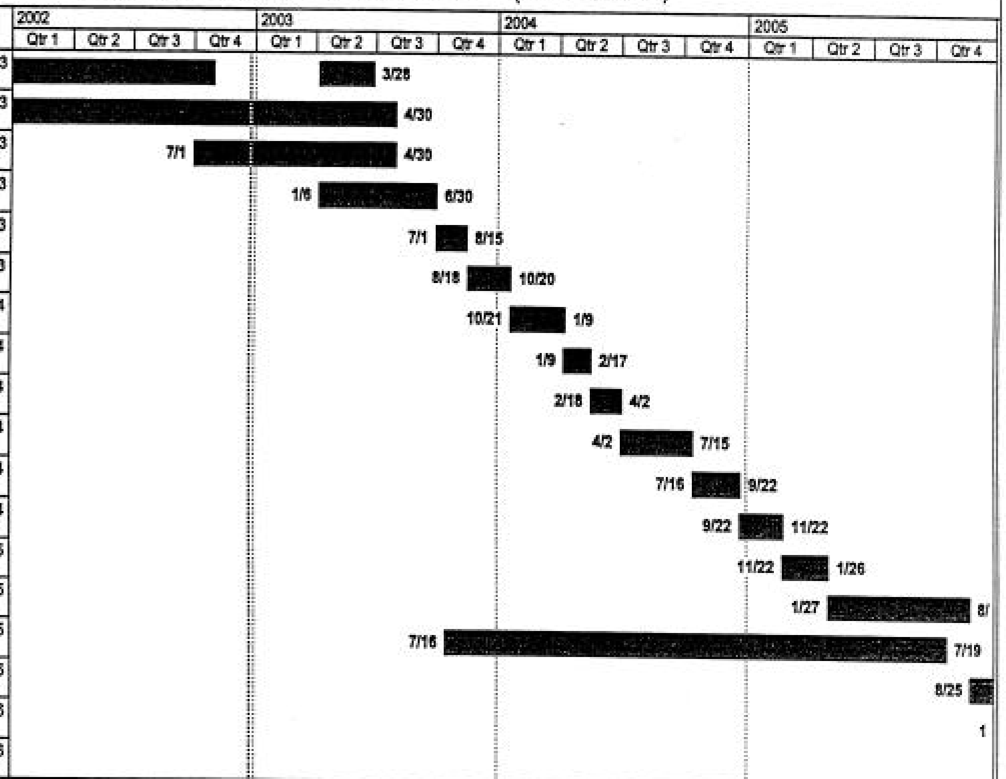
Table 1

SPTF Estimated Costs

GFY	$ (000)
2001	23
2002	875
2003	1,128
2004	2,320
2005	2,832
2006	630
Total	7,808

Figure 1, SPTF Dismantlement Schedule (GFY Calendar)

ID	Task Name	Start	Finish
1	BULK SODIUM OFFLOAD	10/1/01	3/28/03
2	SMALL SODIUM SYSTEMS	10/1/01	4/30/03
3	DESIGN & FAB WVN SYSTEM	7/1/02	4/30/03
4	FACILITY PREP INSITU WVN	1/6/03	6/30/03
5	DRAIN TANK CLEAN	7/1/03	8/15/03
6	FEED TANK CLEAN	8/18/03	10/20/03
7	PUMP TANK CLEAN	10/21/03	1/9/04
8	EXPANSION TANK CLEAN	1/9/04	2/17/04
9	KNOCKOUT DRUM CLEAN	2/18/04	4/2/04
10	HIGH FLOW LOOP CLEAN	4/2/04	7/15/04
11	BYPASS LOOP CLEAN	7/16/04	9/22/04
12	DRAIN LINE CLEAN	9/22/04	11/22/04
13	FEED LINE CLEAN	11/22/04	1/26/05
14	BATCH PROCESSING	1/27/05	8/24/05
15	COMPONENT SIZE REDUCTION	7/16/03	7/19/05
16	CLEANUP HAZMAT	8/25/05	10/31/05
17	FACILITY DEMOLITION	11/1/05	1/31/06
18	FINAL REPORT	2/1/06	3/31/06



7.0 WORKER AND ENVIRONMENTAL PROTECTION

7.1 Worker Safety

Safety has the first priority and safety is specifically included in the ETEC Closure budget and contract. An Integrated Safety Management System (ISMS) has been implemented to ensure protection of workers, the public and the environment. The ISMS utilizes established Boeing Canoga Park safety policies and procedures as well as Boeing Canoga Park Safety Health and Environmental Affairs (SHEA) expertise.

Health, safety and environmental protection is centralized in a dedicated Division at the Boeing company. Conformance to governmental rules, regulations and laws is implemented through a series of corporate policies and procedures, the key ones being POL-4 Safety, Health and Environmental Affairs (Reference 3) which states, in part, "This policy establishes and describes the Boeing commitment to provide employees with a safe and healthful workplace, create a strategic business advantage, and protect the environment wherever it conducts business." This policy also states the Company's intention to strive for excellence in safety, health, and environmental stewardship through a set of requirements. Direction and guidance for policy implementation is the subject of Boeing procedure PRO-910 (Reference 4) which defines and establishes requirements and oversight responsibilities for the Safety, Health and Environmental Affairs department. An ETEC closure specific Health and Safety Plan has been prepared, Reference 5.

7.2 Worker Training

The SPTF dismantlement and facility demolition project, like other demolition projects, presents hazards to the personnel working at the facility. All personnel working at the facility will be trained in the safe handling of sodium, hazardous materials handling, packaging and transportation and will be working to written instructions specific to the tasks being performed. Additionally, personnel will be trained in the proper use of personal safety equipment, i.e., hearing protection, eye protection and respiratory protection. Health and Safety will be available to assess all safety-related issues and will make periodic inspections of the ongoing operations. Selected personnel will be trained in lifting and handling, forklift operation, and mobile crane operations. To the greatest extent possible, personnel with sodium system demolition experience will be utilized. Each crew will be required to have at least one person with this experience. General training requirements are addressed in the ETEC Closure Training Plan, Reference 6. This plan addresses training mandated by federal, state and local governments as implemented through Boeing Canoga Park Standard Operating procedures (SOPs), and other company training requirements for safe and effective operation.

7.3 Project Reviews

To ensure that the dismantlement of the SPTF is performed safely and in an environmentally sound manner, the project utilizes a system of procedures and program documents to satisfy the DOE Integrated Safety Management System Description guiding principles and the core functions.

The ETEC Closure Program has a system for evaluating hazards involved in a new project, or for evaluating hazards related to changing conditions or the scope of existing projects. When a manager has identified the hazards associated with a work function or task, he or she has a number of choices for establishing the appropriate controls. Hazard control may be within the manager's experience, and can be specified and implemented at the manager's discretion. The control may be as simple as requiring a specific procedure for doing the work. When assessment and control of the hazards is outside of the manager's experience, he or she should call the SHEA Coordinator, the appropriate SHEA Organization staff person, or others (Security & Fire Services) for assistance. Representatives from Health and Safety, from Environmental Remediation or Test Operations, and/or from Quality Assurance can be invited to participate in the analysis.

Depending upon the level of hazards established by the process hazards analysis or at the discretion of the Project Manager, a Readiness Review (DOE participation) or a Safety Review (DOE participation optional) will be performed. The purpose of the Readiness Review is to ensure that the required documents are approved and available, all safety and environmental issues are resolved and necessary equipment is on site, and that Health & Safety, Environmental Remediation, and Rocketdyne management are prepared to initiate the activity.

Reviews will be conducted of procedures and operating instructions prior to release. The level of the review will be dependent upon the criticality or complexity of the operation. All documents will be reviewed by the facility Person-in-Charge (PIC). Other reviewers could include Quality Assurance, the Facility Manager, Engineering, Health & Safety, and Environmental Restoration.

7.4 Environmental Protection

Protection of the off-site community and the environment is accomplished by large-scale sitewide programs as well as project specific procedures. A sitewide program for environmental monitoring has been in place for many years, and continues under the oversight and permits of various regulatory bodies.

All demolition activities will be continuously supervised and controlled to preclude the release of any contaminants such as asbestos and lead. Conformance to regulatory requirements is implemented by detailed procedures for in process issues (e.g. personnel and environmental air monitoring, dust control, erosion); and waste and debris handling, packaging, labeling and transportation issues. All of these matters have been successfully implemented in prior similar projects.

8.0 WASTE MANAGEMENT

The SPTF Dismantlement activity will generate limited quantities of hazardous waste. The sodium and its residuals are classified as “Excluded Recyclable Material” and as such will be reused as a product and is not considered waste. Non-sodium related hazardous waste would be generated and stored prior to shipping to licensed off site treatment/storage/disposal facilities.

There are materials such as asbestos, PCBs, and Freon, which require special handling and packaging for disposal. An initial estimate of the quantity of these materials is shown below in Table 2.

Table 2

Non-Sodium Hazardous Materials Removal Requirements

Item	Quantity
Freon in HVAC	58 lbs.
Ballasts (PCB)	94 ea.
Asbestos containing material	7000 ft^2
Diesel Fuel	200 gallons

The asbestos containing materials (ACM) is in the form of roofing mastic, floor tiles, dry wall joint compound and thermocouple retention blocks. The thermal insulation installed is calcium silicate and does not contain asbestos.

Other commercial wastes and construction debris expected from this project include large quantities of concrete, structural steel, and asphalt. All of these materials can be recycled or shipped to appropriate disposal sites.

9.0 REFERENCES

1. PMP-000001, “Program Management Plan for ETEC Closure”, Boeing Staff

2. QAP-00001, “Quality Assurance Program Plan for ETEC Closure”, Boeing Staff

3. POL-4, Safety Health and Environmental Affairs, Boeing Corporation Policy

4. PRO-910, Safety Health and Environmental Protection, Boeing Corporation Procedure

5. EPA-00060, “Health and Safety Plan for ETEC Closure”, Boeing Staff

6. EID-04450, “ETEC Closure Training Plan”, Boeing Staff