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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 630484

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) SST Interim Closure Program	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: 241-C-104/RPP/SST Interim Closure	6. Design Authority/Design Agent/Cog. Engr.: R. R. Thompson	7. Purchase Order No.: N/A
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 241-C-104
		12. Major Assm. Dwg. No.: N/A
11. Receiver Remarks: For release	11A. Design Baseline Document? ☐ Yes ☒ No	13. Permit/Permit Application No.: N/A
		14. Required Response Date: 9/18/00

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	RPP-6557	N/A	0	Single-Shell Tank Retrieval Project Plan For Tank 241-C-104 Retrieval	Q	2	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority									
		Design Agent									
2	1	Cog. Eng. D.B. Parkman	D.B. Parkman	9-19-00	S5-13						
2	1	Cog. Mgr. C. DeFigh-Price	C. DeFigh-Price	9-18-00							
2	1	QA J.F. Bores	J.F. Bores	9/20/00	R2-89						
		Safety									
		Env.									

18.	19.	20.	21. DOE APPROVAL (if required)
R.R. Thompson 9/18/00 — Signature of EDT Originator / Date	N/A — Authorized Representative for Receiving Organization / Date	C. DeFigh-Price 9/18/00 — Design Authority/ Cognizant Manager / Date	Ctrl No. ____ ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	SST Interim Closure Program	Date 9/13/00
Project Title/Work Order		EDT No. EDT-630484
RPP-6557, Rev. 0, Single-Shell Tank Retrieval Project Plan For Tank 241-C-104 Retrieval		ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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J. F. Bores	R2-89	X			
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CH2M HILL Hanford Group, Inc.
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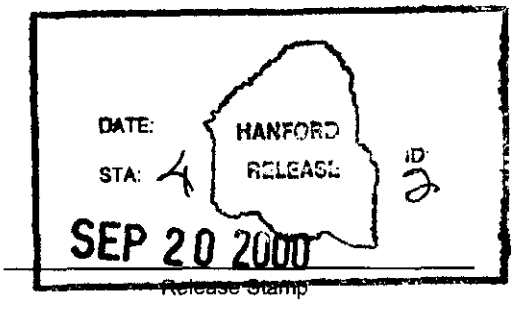
99 RL 14047
U.S. Department of Energy Contract DE-AC06-~~96RL13200~~

EDT/ECN: EDT-630484 UC: 2070
Org Code: 7LP00 Charge Code: 106495
B&R Code: EW 3120074 Total Pages: 78

Key Words: Tank 241-C-104, Tank C-104, SST Retrieval Project Plan, Tank 241-C-104 Retrieval

Abstract: N/A

Release Approval 7/20/00 Date



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SINGLE-SHELL TANK RETRIEVAL PROJECT PLAN FOR TANK 241-C-104 RETRIEVAL

Approvals:

Cherri DeFigh-Price, SST Interim Closure Program Director
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CH2M HILL Hanford Group, Inc

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ACRONYM LIST

A/E	Architect Engineer
ALARA	as low as reasonably achievable
Btu/hr	British thermal units per hour
CHG	CH2M HILL Hanford Group, Inc.
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy, Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
ECN	engineering change notice
EIS	Environmental Impact Statement
ESH&Q	Environment, Safety, Health, and Quality
ft.	foot/feet
IMUST	Inactive Miscellaneous Underground Storage Tanks
in.	inches
ISMS	Integrated Safety Management System
kg	kilogram
kgal	kilogallon
KVA	kilo-watt volts
LDMM	Leak Detection, Monitoring, and Mitigation
NEPA	National Environmental Policy Act of 1969
ORP	U.S. Department of Energy, Office of River Protection
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act of 1976
RPP	River Protection Project
SEPA	State Environmental Policy Act
SSC	systems, structures, and components
SST	single-shell tank
TBR	Technical Basis Review Narrative
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSAP	Tank Sampling and Analysis Plan
USQ	Unreviewed Safety Question
%	percent

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1.0 INTRODUCTION

The U.S. Department of Energy, Office of River Protection (ORP) mission encompasses retrieval, interim storage, and transfer of tank waste to the Tank Waste Treatment Plant for permanent stabilization. The Single Shell Tank (SST) Interim Closure Project mission, as identified in the *SST Mission Analysis Report* (HNF-2944), is to retrieve waste from the SSTs, and applicable inactive miscellaneous underground storage tanks (IMUSTs), in the 200 Areas of the Hanford Site in a safe, economical manner, transfer the waste to the designated receiver facilities, i.e., double-shell tanks (DSTs); and transition the tanks for closure without posing undo public health or environmental risks.

In support of the SST Interim Closure Project, Project W-523 "Tank 241-C-104 Waste Retrieval System" will provide systems for retrieval and transfer of radioactive waste from tank 241-C-104 (C-104) to the DST staging tank 241-AY-101 (AY-101). At the conclusion of Project W-523, a retrieval system will have been designed and tested to meet the requirements for Acceptance of Beneficial Use and been turned over to operations. Completion of construction and operations of the C-104 retrieval system will meet the recently proposed near-term Tri-Party Agreement milestone, M-45-03F (proposed Tri-Party Agreement change request M-45-00-01A, August, 30 2000) for demonstrating limits of retrieval technologies on sludge and hard heels in SSTs, reduce near-term storage risks associated with aging SSTs, and provide feed for the tank waste treatment plant.

This Project Plan documents the methodology for managing Project W-523; formalizes responsibilities; identifies key interfaces required to complete the retrieval action; establishes the technical, cost, and schedule baselines; and identifies project organizational requirements pertaining to the engineering process such as environmental, safety, quality assurance, change control, design verification, testing, and operational turnover.

2.0 TANK BACKGROUND

The 241-C Tank Farm was constructed during 1943 and 1944 in the 200 East Area. The C Farm contains twelve tanks. Tank C-104 is first in a cascade series of three tanks including C-104, C-105 and C-106. Tank C-104 has a capacity of 530 kgal, a diameter of 75 ft and an operating depth of 16 ft. The tank status is sound (e.g., there is no indication the tank is leaking).

Tank C-104 received waste of 14 different types while in service. The majority of the inventory was cladding waste from the Plutonium-Uranium Extraction (PUREX) Plant. In general, this type of waste contains elevated levels of metals and transuranic elements. All free-standing liquid has been removed from the tank and approximately 263 kgal of sludge remain. Since tank C-104 was declared inactive in 1980, a steady decline in the waste level has been measured (about 0.13 in./month). The level loss has been investigated at least six times with the conclusion that the decrease is the result of evaporative losses, surface irregularity, and slumping and compaction of the waste.

From a safety point of view, it was concluded from a 1996 sampling event that the tank acceptably met the safety screening criteria defined in the *Tank Safety Screening Data Quality Objective* (WHC-SD-WM-004). It has also been determined that even if an organic pool did exist in the tank, the consequence of a fire or ignition of organic solvents is below risk evaluation guidelines. In-tank videos in 1998 indicated a dry, cracked surface. Tank data also indicate that a propagating reaction in the waste in the tank is unlikely. No separable organic phase was observed after centrifuging a sample that was diluted with water for 30 minutes. The heat load in the tank is approximately 15,000 Btu/hr, a value below the limit of 26,000 Btu/hr that separates a low from a high-heat tank.

Tank C-104 has been selected as a Phase 1 source tank for sludge feed for vitrification. Retrieval of the tank waste will require dilution if sluicing is used. Based on the Tank Characterization Report Data and results from, "*Results of Retrieval Studies with Waste from Tank 241-C-104,* (RPP-5798), it appears that organics will not impact retrieval or disposal of Tank C-104 waste. Additional measurements of physical and rheological properties of the waste are also documented in RPP-5798.

A complete set of current data applicable to C-104 are available online via the Tank Waste Information Network System (TWINS3) database at http://twins.pnl.gov:8001.

3.0 SUMMARY NEED DOCUMENTATION

The SST Interim Closure Project Mission, as identified in the *SST Mission Analysis Report* (HNF-2944), is to retrieve waste from the SSTs, and applicable IMUSTs, in the 200 Areas of the Hanford Site in a safe, economical manner; transfer the waste to the designated receiver facilities, i.e., DSTs, and transition the tanks for closure without posing undo public health or environmental risks.

In executing the mission, SST Retrieval Project activities will be conducted in a manner to: (1) prevent or minimize further contamination or threats to the vadose zone and groundwater quality; (2) reduce near-term storage risks by backfilling available DST space as soon as practicable; (3) meet waste feed delivery order quantities and schedules in support of the tank waste immobilization facilities; and (4) satisfy Tri-Party Agreements (HNF-2944).

The *SST Retrieval Project Management Plan*, to be completed during Fiscal Year 2001, will be an overarching retrieval plan that provides the structure and systematic method for obtaining data and information that is necessary for developing a detailed technical baseline in support of retrieval project definition and production level retrieval. Among many other supporting activities and requirements, the *SST Retrieval Project Management Plan* will augment the *SST Retrieval Mission Analysis Report* (HNF-2944) *and SST Program Plan* (HNF-5095) by enhancing the SST Retrieval Technology Evaluation Strategy, Project Objectives, Management Approach, and Project Work Performance Requirements necessary to successfully execute the entire SST Retrieval Project Mission.

In support of the SST Retrieval Project Objectives and Work Performance, Project W-523, will provide systems for retrieval and transfer of radioactive waste from C-104 to the DST staging tank 241-AY-101. At the conclusion of Project W-523, a retrieval system will have met the requirements for Acceptance of Beneficial Use and been turned over to operations. Completion of C-104 retrieval construction and operations will meet the recently proposed near-term Tri-Party Agreement milestone to demonstrate limits of retrieval technologies of sludge and hard heels in SSTs, M-45-03F (Tri-Party Agreement proposed change request M-45-00-01A, August 30, 2000), reduce near-term storage risks associated with aging SSTs, and provide feed for the tank waste treatment plant.

Originally, Project W-523 included three companion retrieval actions in 241-C-107, 241-S-102, and 241-S-103. However, given the scheduling differential between C-104 and the other three tanks, Project W-523 is being formally de-scoped to specifically address a retrieval system for C-104.

4.0 SCOPE DESCRIPTION/DESIGN CONCEPT

Project W-523 will install the Systems, Structures, and Components (SSCs) necessary to retrieve waste from tank C-104 and relocate the waste to AY-101. This retrieval and transfer process requires the following general systems:

- C-104 In-tank retrieval system
- C-104 waste transfer subsystem
- C-farm ventilation system
- C-farm electrical distribution system
- C-farm water distribution system
- C-104 Leak detection, monitoring, and mitigation (LDMM) system
- C-104 instrumentation, monitoring, and control system, and
- DST supernatant/transfer pump subsystem
- DST transfer piping system
- DST transfer valving subsystem

Additional detail on SSCs or the retrieval/transfer process can be found in the following pre-conceptual engineering documents:

- *Tank 241-C-104 Waste Retrieval Preliminary Engineering Report* (RPP-6843)
- *Tank 241-C-104 Project Definition Criteria* (RPP-6844)

The project W-523 scope includes complying with all requirements necessary to complete the design process and turnover a system meeting the Acceptance for Beneficial Use. The requirements include environmental, safety, quality assurance, change control, design verification, and testing of the system.

Currently, Project W-523 is considering two retrieval technologies: sluicing technology and crawler technology (Figure 4-1). Sluicing is defined as the technology used in Project W-320, "Tank 241-C-106 Sluicing," which successfully retrieved waste from tank C-106. Crawler technology is defined "crawler" based retrieval system similar to the system developed by the Los Alamos Technical Associates, Inc. (LATA)/ Energy Systems Group Team under the Hanford Tanks Initiative Project. Project W-523 will consider both technologies during the project's preliminary engineering activities. The choice of technology will be decided prior to the start of the project's conceptual design stage.

The *Decision Plan for the Selection of the C-104 Retrieval Technology* (RPP-6878), provides the framework for the down selection of a retrieval technology for C-104. The plan establishes the process to differentiate the technologies and identifies the decision criteria that will be applied to provide the basis for the selection. If the crawler is selected as the preferred retrieval technology, the *Crawler Acquisition and Testing Demonstration Project Management Plan* (RPP-6832) will supplement this project plan by establishing the management structure and the technical baseline for the crawler acquisition, including testing and qualification for Acceptance of Beneficial Use. RPP 6832 also provides the key technical interfaces between the crawler deployment and the tank farm systems, which will be included in the C-104 Interface Control Document (See Section 6.0).

Another important aspect in finalizing the design and performance criteria for the C-104 retrieval system will be the Retrieval Performance Evaluation for C-104. The Retrieval Performance Evaluation provides risk analysis data allowing decisions to be made on the efficiency of LDMM systems, the extent of waste volume recovery required, and the allowable leak loss during retrieval. The Retrieval Performance Evaluation also provides the retrieval linkage to interim and future tank farm closure decisions.

The purpose of LDMM systems is to ensure that SST waste retrieval:

- Minimizes hazardous waste releases to the environment
- Complies with applicable regulations and requirements
- Is technically practicable and defensible
- Meets the programmatic needs of the River Protection Project.

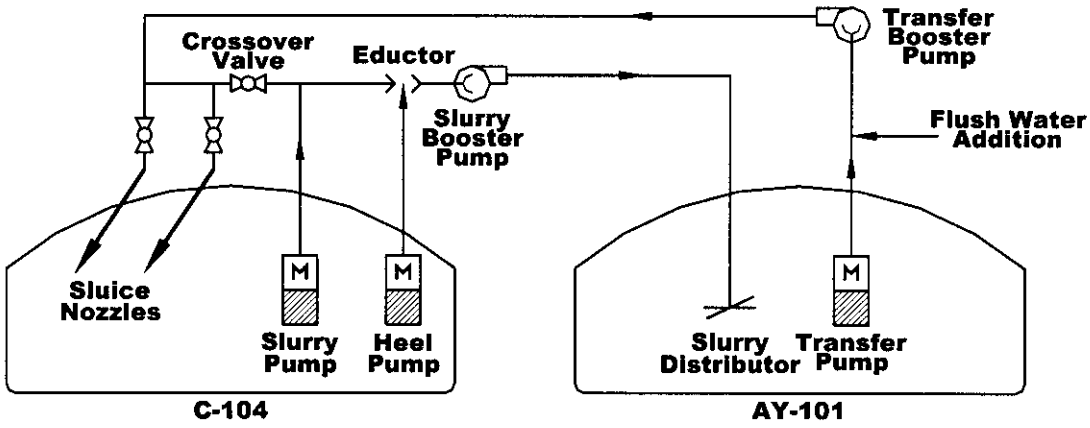
The C-104 LDMM systems utilizes the tank waste source terms to determine which technologies and actions are needed and provides a risk based approach that allows a range of operational responses to a detected release, that will allow waste retrieval operations to continue where appropriate and cease before a release, that could initiate a site remediation evaluation, contaminates the surrounding soils.

Project W-523 will be designed and operated to meet the end state of (1) waste feed delivery retrieval volume requirement of 85% of the current tank volume (RPP-6525), and (2) retrieval of waste to the limits of the technology selected, including goals of the retrieval to safe storage of approximately 89 kg of plutonium and 99% of tank contents by volume (M-45-00-01A and Best-Basis Inventory as of 8/01/2000), with input from risk reduction criteria identified via the C-104 Retrieval Performance Evaluation.

See Figure 4-2 for a document hierarchy overview. Appendix D provides a list of other documents identified in support of this Project Plan.

Figure 4-1. Process Flow Diagrams

Sluicing Technology



Crawler Technology

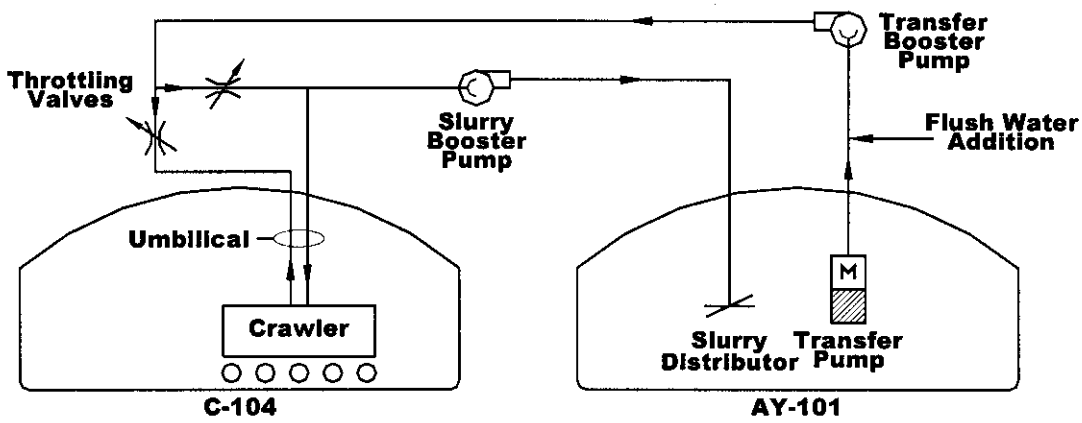
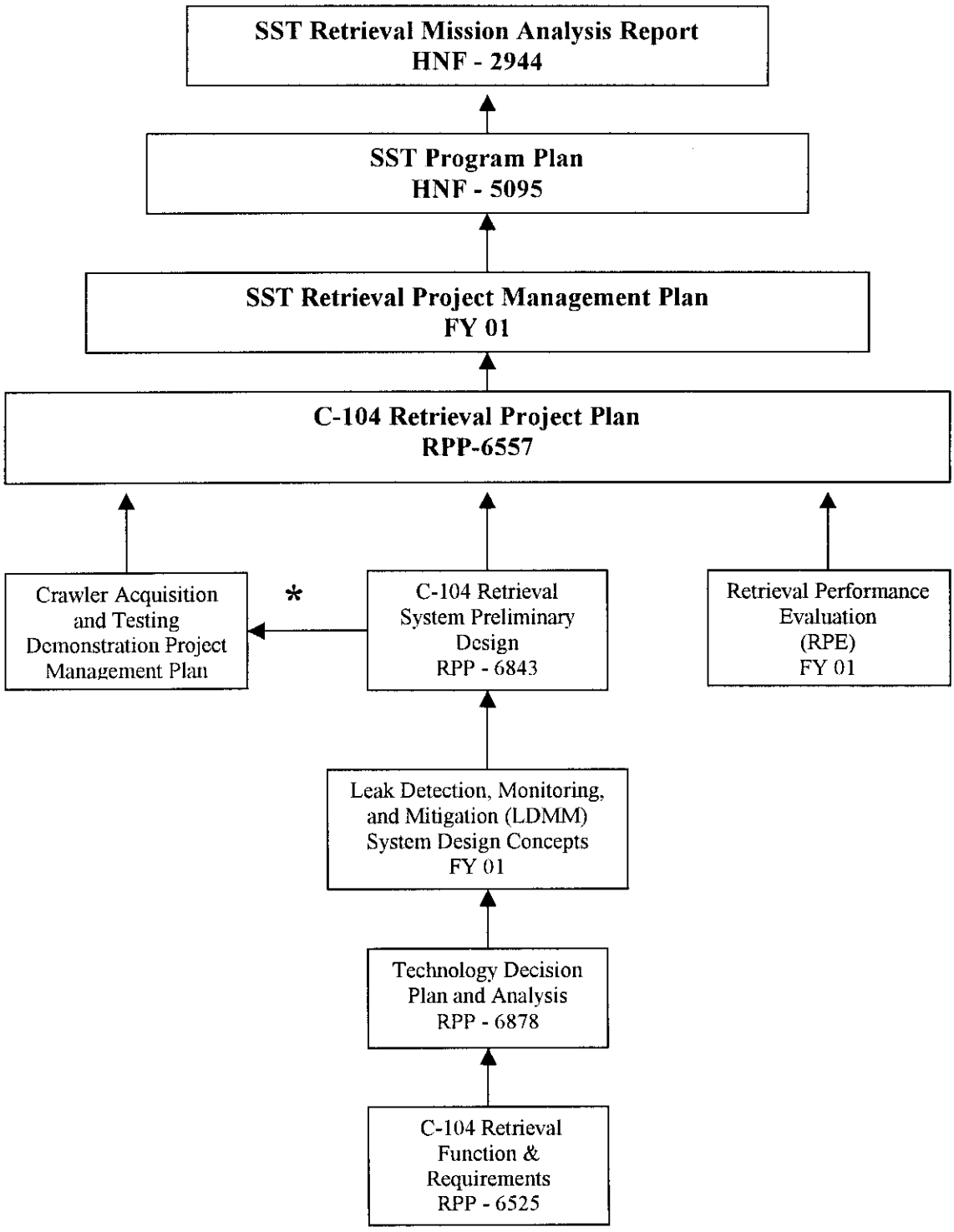


Figure 4-2. Document Hierarchy Overview



* If crawler is selected as retrieval technology

5.0 ORGANIZATIONAL ROLES AND RESPONSIBILITIES

This section describes the organizational structure, roles, and responsibilities currently in place to support retrieval of wastes from C-104. The wastes in C-104 will be retrieved into tank 241-AY-101 (AY-101) under Project W-523. This work will support efforts to provide minimum order high-level waste feed to the tank waste treatment plant and potentially permit testing of crawler-based retrieval techniques.

The major participants in Project W-523 include the U.S. Department of Energy, Office of River Protection (ORP), CH2M HILL Hanford Group, Inc. (CHG), and other onsite and offsite contractors. The Project W-523 project team is lead by CHG. Contractual relationships and responsibilities established between ORP and CHG are documented in contract DE-AC06-99RL14047.

The key organizational relationships for Project W-523 are depicted in Figure 5-1. Detailed discussions of organizational roles and responsibilities are provided in the remainder of Section 5.0. The major products and performing organizations for Project W-523 activities are summarized in Table 5-1.

5.1 U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION

The ORP Manager reports directly to the U.S. Department of Energy, Headquarters (DOE-HQ) Assistant Secretary for Environmental Restoration and Waste Management. The ORP Manager is responsible and accountable for managing all aspects of the River Protection Project (RPP) mission at Hanford.

Key ORP responsibilities related to Project W-523 and the retrieval of wastes from C-104 include the following:

- Prepare and submit budget requests to DOE-HQ supporting the Hanford mission.
- Approve construction related documentation.
- Proactively interact with stakeholders.
- Maintain an appropriate level of project knowledge to assess compliance and to be an informed advocate for construction project activities.
- Support implementation of the DOE-HQ critical decision process.
- Provide Critical Decision #1 approval for Project W-523 to move into the conceptual design phase.

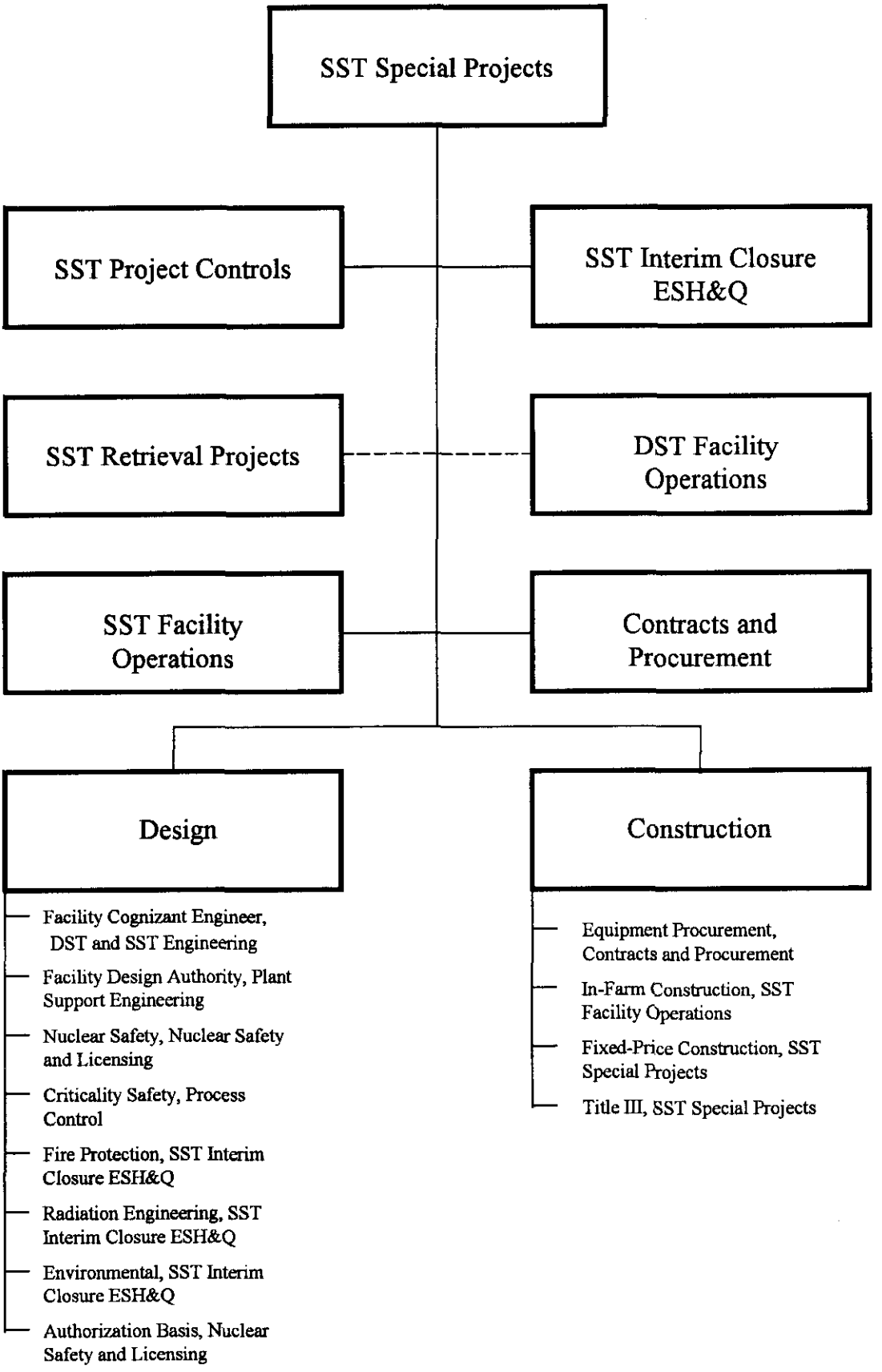


Figure 5-1. Project W-523 Functional Organizational Structure

Table 5-1. Project W-523 Major Elements and Performing Organizations

ELEMENT	PERFORMING ORGANIZATION
Project Management	CHG – SST Special Projects
Value Engineering	CHG – Value/Systems Engineering
Environmental Permits and Approvals Plan	CHG – SST Interim Closure ESH&Q
Safety Assessment	CHG – Nuclear Safety and Licensing
HPT Support	CHG – SST Interim Closure ESH&Q
Project Definition	CHG – SST Retrieval Projects
Design and Construction Support	CHG – SST Interim Closure
Configuration Verification	CHG – SST Interim Closure
Site Characterization	CHG – Data Development & Interpretation
Equipment Development	CHG – SST Interim Closure
Preliminary Safety Evaluation	CHG – SST Interim Closure ESH&Q
Quality Assurance	CHG-SST Interim Closure ESH&Q
Risk Management	CHG-SST Interim Closure
Functions and Requirements	CHG – SST Retrieval Projects - Complete
Preliminary Engineering Report	CHG – SST Retrieval Projects - Complete
Conceptual Design	Architect Engineer
Title I Design	Architect Engineer
Title II Design	Architect Engineer
Title III Engineering/Acceptance Inspection	Architect Engineer/Fluor Daniel Hanford, Inc.
Advance Procurement	CHG – Offsite Contractors via CHG Contracts and Procurement
Construction – In Farm	Construction Management
Health Physics Tech	CHG-SST Facility Operations
Construction – Buildings and Utilities	Offsite Contractors
Construction – Burial	CHG – SST Interim Closure
Retrieval System Startup	CHG – SST Facility Operations

Notes:
ESH&Q = Environment, Safety, Health, and Quality
HPT = health physics technician

- Provide Critical Decision #2 approval for Project W-523 to move into the definitive design phase.
- Provide Critical Decision #3 approval for Project W-523 to move into the construction and installation phase.
- Perform the Operational Readiness Review and provide Critical Decision #4 to initiate retrieval of wastes from C-104 for placement in AY-101.

- Review and approve amendments to the Authorization Basis for SST retrieval, as needed.

- Establish Performance Incentives for the Tank Farms Contractor and provide measurement of performance attainment.

Authority for contractual direction to CHG is limited to the ORP Contracting Officer and designated Contracting Officer Representative. The ORP Acquisitions Project Office is assigned Contracting Officer Representative responsibilities for Acquisitions Project Office sponsored projects, including Project W-523.

The Contracting Officer Representative is empowered to act as an authorized agent of the Contracting Officer for specific functions. The Contracting Officer and Contracting Officer Representative are responsible for providing technical and/or administrative direction to CHG relative to their project or area of responsibility. In addition, the Contracting Officer and Contracting Officer Representative are responsible for the following:

- Provide technical oversight to ensure that products and services are delivered in accordance with contract terms and conditions.

- Ensure that work is conducted consistent with established contracts and plans, and that applicable requirements (e.g., statutes, laws, the U.S. Department of Energy [DOE] Orders, policies, etc.) are identified and met.

- Accept all work completed in accordance with the terms and conditions of the contract.

- Review invoices, as required.

- Provide approval of Multi-Year Work Plan documentation.

- Conduct periodic reviews, audits, surveillances, and ORP independent assessments of the work to ensure compliance with the terms and conditions of the contract, and that CHG management of subcontractors is effective. Reviews, audits, surveillances, and assessments will be performed against established criteria to determine CHG progress and identify any factors that may delay performance or adversely affect human health, safety, or the environment.

The Contracting Officer and Contracting Officer Representative are assisted in their areas of responsibility by the ORP Feed Delivery Project Manager. The Feed Delivery Project Manager has project oversight responsibilities as delegated by the Acquisitions Project Office Manager and Assistant Manager for Systems Acquisition. The Feed Delivery Project Manager reports to the Acquisitions Project Office Manager. The Acquisitions Project Office Manager reports to the Assistant Manager for Systems Acquisition. The Assistant Manger for Systems Acquisition reports to the Office of Deputy Manager for Technical Integration. The Project Requirements Division Feed Delivery and Retrieval

Team establishes requirements for waste retrieval and feed delivery, and provides the requirements to the Feed Delivery Project Manager.

5.2 CH2M HILL HANFORD GROUP, INC.

CH2M HILL Hanford Group, Inc. (CHG) is responsible for management of all activities associated with Project W-523 and the retrieval of wastes from C-104. This responsibility is executed through the SST Interim Closure Project with support from other CHG organizations and internal and external contractors. All contractual and other formal communications regarding Project W-523 occur between CHG and ORP.

5.2.1 Single-Shell Tank Interim Closure Project

Within CHG, the SST Interim Closure Project Manager and Senior Vice President provides the resources necessary for successful execution of the Project W-523 and operation of the C-104 Waste Retrieval System. The SST Interim Closure Project Manager and Senior Vice President is supported by an SST Interim Closure Environment, Safety, Health, and Quality (ESH&Q) Director, SST Interim Closure Program Director, SST Interim Closure Director, Interim Stabilization Director, and SST Project Controls Manager. Figure 5-2 depicts the SST Interim Closure Project organization.

5.2.1.1 Single-Shell Tank Interim Closure Environment, Safety, Health, and Quality

The SST Interim Closure ESH&Q Director provides radiological control support to SST facilities, projects, and interim stabilization efforts. Support is also provided in the area of SST closure safety, health, and environmental matters. Quality assurance for SSTs is provided through a matrixed arrangement with the higher-level ESH&Q organization.

The SST Interim Closure ESH&Q organization provides review, field support, and overview to ensure that work activities associated with C-104 waste retrieval operations are performed in accordance with CHG requirements for environmental compliance, safety and health of workers, and in a quality assured and controlled manner as dictated by applicable laws and regulations governing C-104 waste retrieval activities.

The SST Interim Closure ESH&Q organization is responsible for preparing and obtaining approval of Air Permit Notices of Construction (NOCs), reviewing work packages and documents, and providing oversight to assure that Project W-523 activities and C-104 waste retrieval operations comply with applicable laws and regulations. Safety professionals will be provided to review work packages and procedures to ensure that work practices comply with applicable safety requirements and regulations. Industrial Health technicians provide monitoring of field operations and maintenance personnel to ensure their safety, and to detect potentially hazardous working environments. The SST Interim Closure ESH&Q personnel are responsible for preparing data, information, and

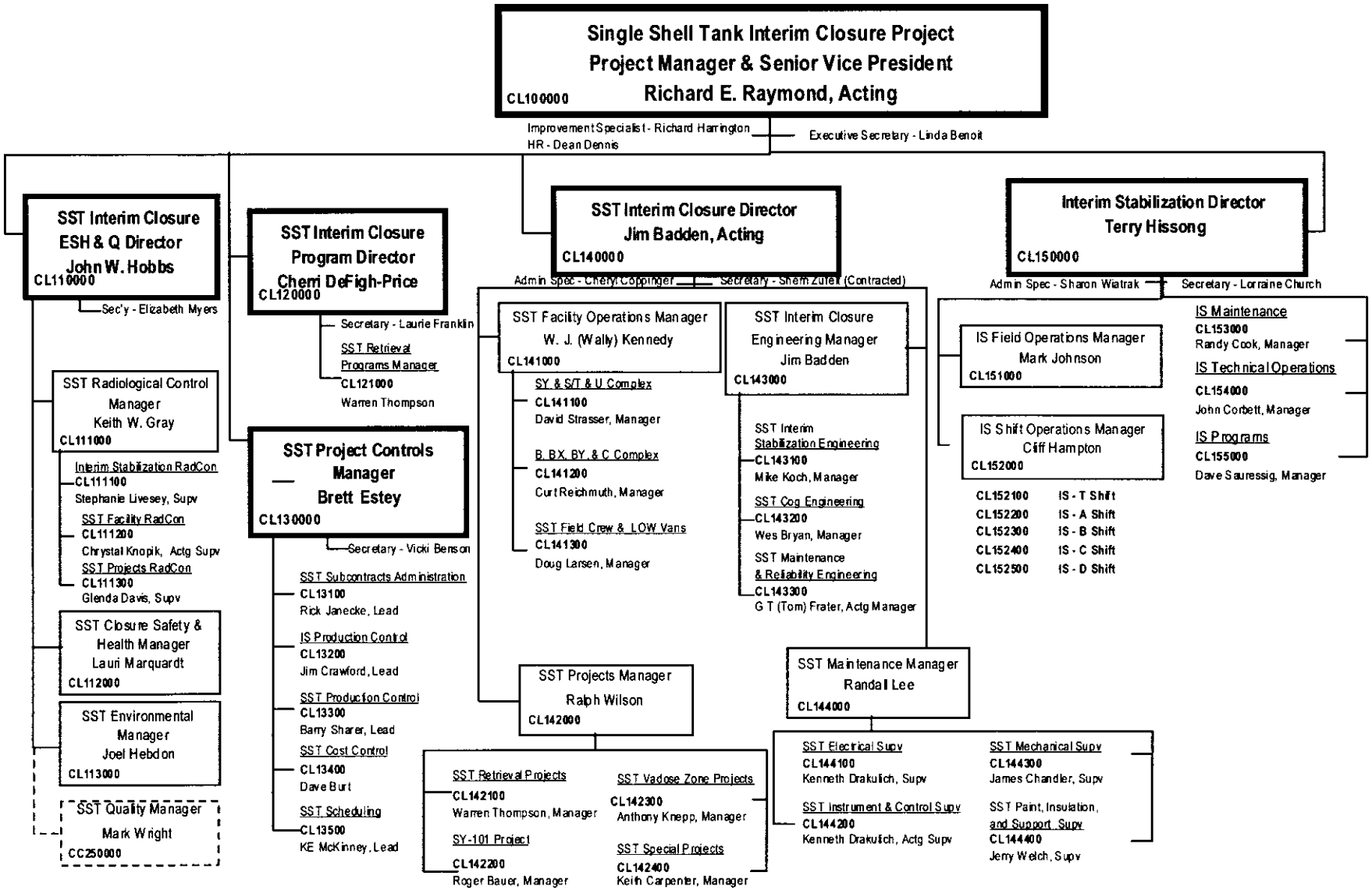


Figure 5-2. Single-Shell Tank Interim Closure Project Organization Chart

reports required to satisfy regulatory requirements for environmental, safety and health considerations.

Quality Assurance personnel are responsible for reviewing work packages and procedures to verify that quality assurance requirements are followed in the preparation and documentation of work instructions. Quality control personnel also provide verification and validation of the completion of work in accordance with quality assurance requirements.

5.2.1.2 Single-Shell Tank Interim Closure Program

The SST Interim Closure Program Director provides programmatic direction and engineering necessary for retrieval of SSTs for waste feed delivery to the waste treatment plant; including retrieval of wastes from C-104, and setting Retrieval Performance Evaluation criteria relating to "operational" and "final" tank closure. Additional responsibilities include customer relations with ORP and the regulators, interface with other projects and programs, and interactions with the Defense Nuclear Facilities Safety Board. The SST Interim Closure Program Director is the lead person for SSTs on Price-Anderson Act Amendment matters and is the lead negotiator on Tri-Party Agreement changes to the M-45 milestone series.

5.2.1.3 Single-Shell Tank Interim Closure

The SST Interim Closure Director provides SST facility operations, interim closure engineering support, SST project support, and SST maintenance support. Facility operations support is provided in B, BX, BY, and C tank farms in 200 East Area; and S, SY, T, and U tank farms in 200 West Area. Facility operations also provide SST field crews and operation of the liquid observation well (LOW) vans. Interim closure engineering is provided through SST interim stabilization engineering, SST cognizant engineering, and SST maintenance and reliability engineering. Project support includes SST retrieval projects, SST vadose zone projects, SST special projects, and the SY-101 project. Finally, SST maintenance support provides electrical, mechanical, instrument and control, paint, insulation, and overall maintenance support to the project.

The SST Retrieval Projects organization reports to the SST Projects Manager who reports to the SST Interim Closure Director. Responsibility for waste retrieval system design, procurement, construction, and construction testing for C-104 has been assigned to SST Retrieval Projects under the SST Interim Closure Director.

The retrieval of wastes from C-104 will be accomplished under Project W-523. The Project W-523 Manager is assigned by the SST Special Projects organization and has overall responsibility and accountability for day-to-day management of the project.

The SST Retrieval Projects organization is responsible for the following:

- Verify 241-C Tank Farm systems and components functionality to support C-104 retrieval operations.
- Update the SST Level 1 specification.

- Prepare project definition statements, technical baseline documents, and Project Definition Criteria (PDC). For pre-conceptual design, RPP-6525, *Functions and Requirements for the Tank 241-C-104 Waste Retrieval System (Project W-523)*, is considered the technical baseline.

- Prepare 241-C Tank Farm trade studies.

- Prepare acquisition strategies for 241-C Tank Farm; including acquisition of crawler-based retrieval systems.

- Upgrade/repair existing 241-C Tank Farm systems.

- Conduct 241-C Tank Farm closure following retrieval of wastes from all tanks.

- Develop operator procedures and training of operations personnel for project related systems, structures, and components.

- Provide a dedicated project manager empowered to authorize and direct all work scope associated with project execution by supporting contractors, managing authorized project funds and resources, and approving project cost and schedule baselines.

- Conduct project activities in accordance with an approved Quality Assurance Project Plan.

- Develop project planning documents.

- Provide contractual direction to the Architect Engineer (A/E) and construction management subcontractors for the performance of design, procurement, and construction. Provide the project technical baseline and safety basis for design.

- Ensure design media is compliant with the project baseline considering safety, quality, operability, maintainability, environmental compliance, cost effectiveness, and provide design approval. Involve engineering, operations, safety, quality assurance, and others as appropriate in project design reviews. Ensure documented closeout of design review comments.

- Provide administration of overall project change control to assure appropriate management of scope, cost, and schedule commitments.

- Provide project direction, as necessary, for coordination and integration among participating subcontractors for project activities. Provide appropriate direction to assure compliance with the project technical baseline and other technical design criteria.

- Provide development of project design and construction schedules.

- Provide project direction to optimize the design in terms of quality, safety, cost, reliability, maintainability, environmental requirements, accuracy, and interface with other RPP projects. Assure compliance with applicable codes, standards, criteria, regulations, and DOE Orders. Assure that the design/construction complies with applicable National Environmental Policy Act (NEPA) requirements, safety documentation, and permits.

- Provide design and construction reports, as required.

- Ensure that quality-affecting records providing objective evidence that the project design, procurement, and construction activities comply with governing requirements are maintained, and that documentation/records providing a traceable project history are properly archived at project completion.

- Assure the preparation, coordination, and approval of all local, state, and federal environmental documents/permits required for the project.

- Provide copies of project associated correspondence, reports, drawings, specifications, nonconformance reports, plans, schedules, cost estimates, quality assurance records, audits, subcontracts, meeting minutes, test procedures, photographs, and other project documentation to other team members.

- Provide timely notification of meetings, scheduled acceptance tests, and final inspections to participants and other parties, as appropriate.

- Prepare project reviews and reports, and data for budgetary exercises.

- Assure preparation of fair cost estimates, as required.

- Provide appropriate level of oversight for work performed by other contractors.

- Coordinate construction activities with engineering, operations, safety, quality assurance, and others as appropriate. Perform oversight of construction contractor safety programs. Provide immediate notification of accidents, incidents, significant problems, and work stoppages.

- Assure "as-built" drawings are prepared.

- Support construction turnover activities performed in preparation of operational readiness.

- Provide technical support for reviews of project documentation by off-site agencies to assure prompt and cost-effective resolution of identified issues.

- Procure long-lead equipment.

- Coordinate development of safety analyses, Authorization Basis amendments, environmental documentation, and other related documentation in support of the project.

- Perform conceptual design and issue the SST operations and maintenance concept for the retrieval systems. Consider the Project Definition Technical Basis, Project Definition Criteria, SST Level 1 Specification, SST Program Plan, SST Infrastructure needs, and the results of Limits of Technology evaluations.

- Design the retrieval system and obtain Critical Decision #3 to move into construction. Consider the results of the retrieval system Alternatives Generation Analysis.

- Procure equipment for the C-104 retrieval system.

- Construct the C-104 retrieval system.

- Startup and testing of the C-104 retrieval system. Procure retrieval system spare parts, as necessary.

- Perform management self-assessments for the C-104 retrieval system. Ensure completion of independent contractor operational readiness reviews and ORP operational readiness reviews and obtain Critical Decision #4 to retrieve wastes from C-104.

- Perform C-104 post retrieval verification of project completeness, including remaining waste volume, waste characteristics and waste constituent concentration.

5.2.1.4 Interim Stabilization

The Interim Stabilization Director is responsible for removing liquids from SSTs for placement into DSTs in accordance with Tri-Party Agreement commitments. Liquids are removed from the SSTs through saltwell pumping operations and are placed in DSTs to reduce the likelihood of a SST leak and associated impact to the environment. Interim stabilization efforts are supported by field operations, shift operations, technical operations, maintenance, and program functions.

Interim Stabilization has no responsibilities in support of C-104 waste retrieval under Project W-523. Following completion of retrieval operations, Interim Stabilization will be responsible for performing intrusion prevention. Where schedules permit, future Interim Stabilization activities will be coordinated with SST retrieval operations to minimize tank entry requirements and optimize waste retrieval and technology demonstration efforts. An example of such coordination will be the demonstration of saltcake dissolution techniques in conjunction with planned tank 241-S-112 saltwell pumping operations.

5.2.1.5 Single-Shell Tank Project Controls

The SST Project Controls Manger is responsible for providing support to the SST Interim Closure Project and its subordinate organizations. This support includes subcontracts

administration, production control, cost control, and scheduling in support of C-104 waste retrieval operations.

5.2.1.6 Single-Shell Tank Maintenance

Single-Shell Tank Maintenance is responsible for providing craft resources needed for fabrication, upgrades, modifications, and installation of C-104 waste retrieval system components. Single-Shell Tank Maintenance is also responsible for maintaining equipment in a safe, reliable, and operable condition throughout C-104 retrieval operations.

5.2.2 Double-Shell Tank and Waste Feed Delivery Operations

Double-Shell Tank (DST) and Waste Feed Delivery (WFD) Operations provide DST facility operations, DST engineering, DST startup and transfers, and DST maintenance. Figure 5-3 depicts the DST and WFD Project organization. Double-Shell Tank and Waste Feed Delivery (DST and WFD) Operations responsibilities supporting the C-104 Retrieval Project include the following:

- Provide the facility Design Authority for transfer of wastes from C-104 to AY-101.
- Promote integration between the SST System and the DST System to facilitate project execution. Provide personnel to support project reviews, meetings, and other activities. Accept the project's Acceptance for Beneficial Use (ABU) documentation.
- Ensure timely exchange of information, data, records, and guidelines for special conditions and requirements that may impact project cost (e.g., radiation levels, security, safety, and escort requirements).
- Provide excavation, core drilling, tie-in, welding, and/or cutting permits, as required, to support waste retrieval system construction. Prepare and/or approve radiation work procedures and permits required for C-104 Waste Retrieval System construction and operations.
- Participate in and concur with final inspection and acceptance testing, perform operational testing, and accept completed facilities for transfer of wastes from C-104 to AY-101.
- Perform readiness reviews and startup for completed project systems and obtain approvals to operate those systems.
- Operate the C-104 Waste Retrieval System.
- Mix AY-101 supernatant to suspend solids and transfer supernatant to C-104 to facilitate waste retrieval operations.

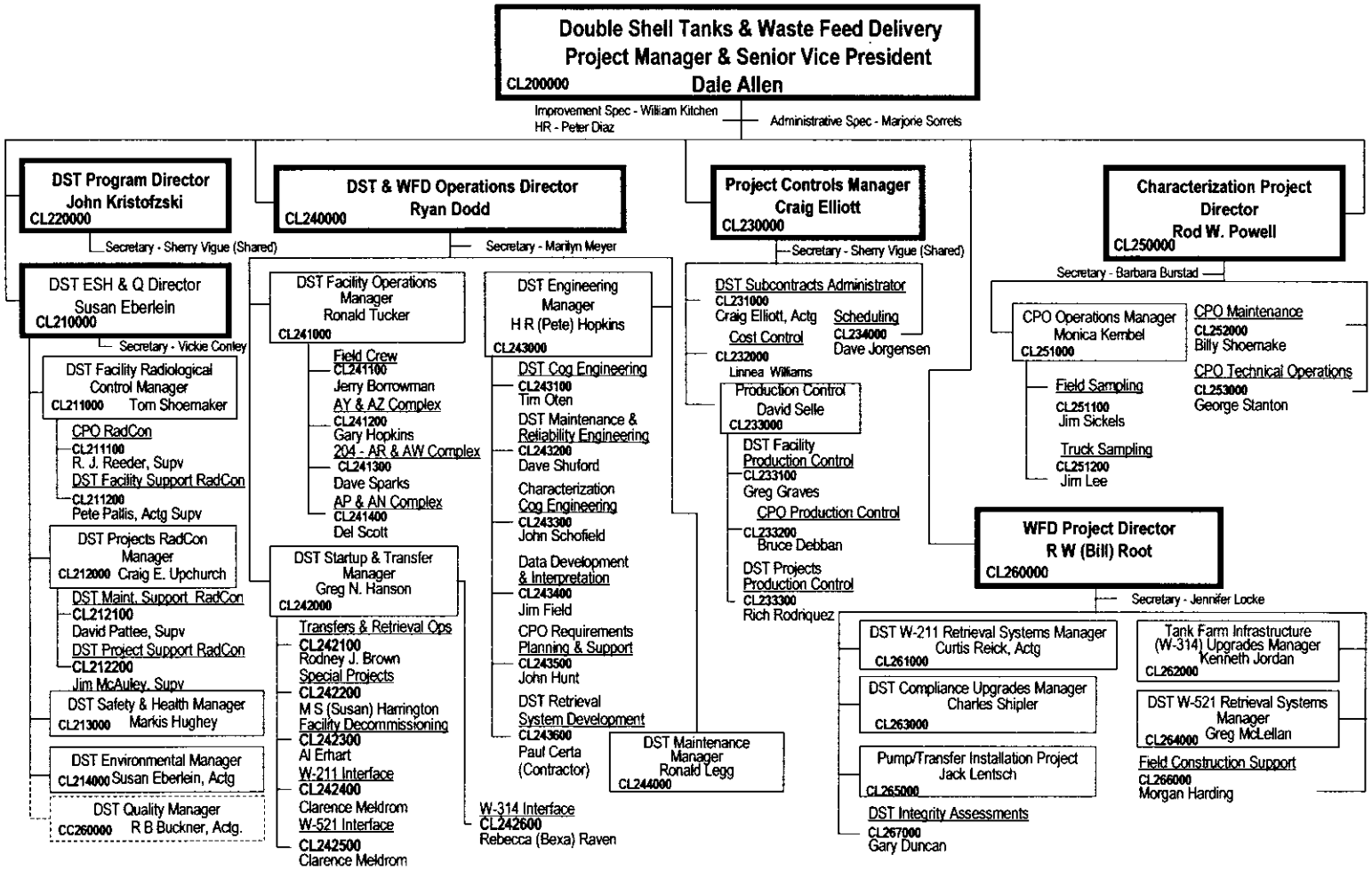


Figure 5-3. Double-Shell Tank and Waste Feed Delivery Project Organization Chart

5.2.2.1 Double-Shell Tank Engineering

Double-Shell Tank Engineering is responsible for data development and interpretation, cognizant engineering, maintenance and reliability engineering, characterization engineering and planning support, and DST retrieval system development. Double-Shell Tank Engineering provides support to C-104 waste retrieval operations in the following areas of responsibilities:

- Update the Best-Basis Inventory and Tank Characterization Report for C-104.
- Prepare Tank Sampling and Analysis Plans, Data Quality Objective, and Tank Characterization Reports, as needed, to support C-104 retrieval.
- Provide support to the development of specifications, designs, testing specifications, and operating instructions for equipment necessary to retrieve wastes from C-104 into AY-101 in accordance with the Authorization Basis.
- Provide technical support to operations for interpretation of requirements, trouble-shooting equipment, and other technical evaluations.
- Obtain samples of tank waste, characterize the waste, and provide tank waste data necessary to determine proper disposition and safe operations during the retrieval, transfer, and storage of C-104 wastes.

5.2.3 Nuclear Safety and Licensing

Nuclear Safety and Licensing reports to the Environmental, Safety, Health, and Quality Senior Vice President. Nuclear Safety and Licensing is responsible for maintaining the Authorization Basis for waste retrieval including any safety analyses, criticality safety evaluations, and Technical Safety Requirements (TSRs). This group is also responsible for resolution of Unreviewed Safety Questions (USQs) that may arise related to C-104 waste retrieval activities. Nuclear Safety and Licensing is responsible for coordinating resolution of safety and licensing issues. Figure 5-4 depicts the Nuclear Safety and Licensing organization chart.

5.2.4 Nuclear Operations Project Services

Under the Chief Engineer, the Nuclear Operations Project Services is responsible for process control. The Process Control group is responsible for preparing the Process Control Plan for tank C-104 retrieval. The Process Control Plan will consider the results of the SST Criticality Safety Evaluation Report and the Authorization Basis.

The Nuclear Operations Project Services organization is also responsible for training and procedures. This group will develop operator procedures and provide training of operations personnel in support of C-104 retrieval system operations. Figure 5-5 depicts the Nuclear Operations Project Services organization.

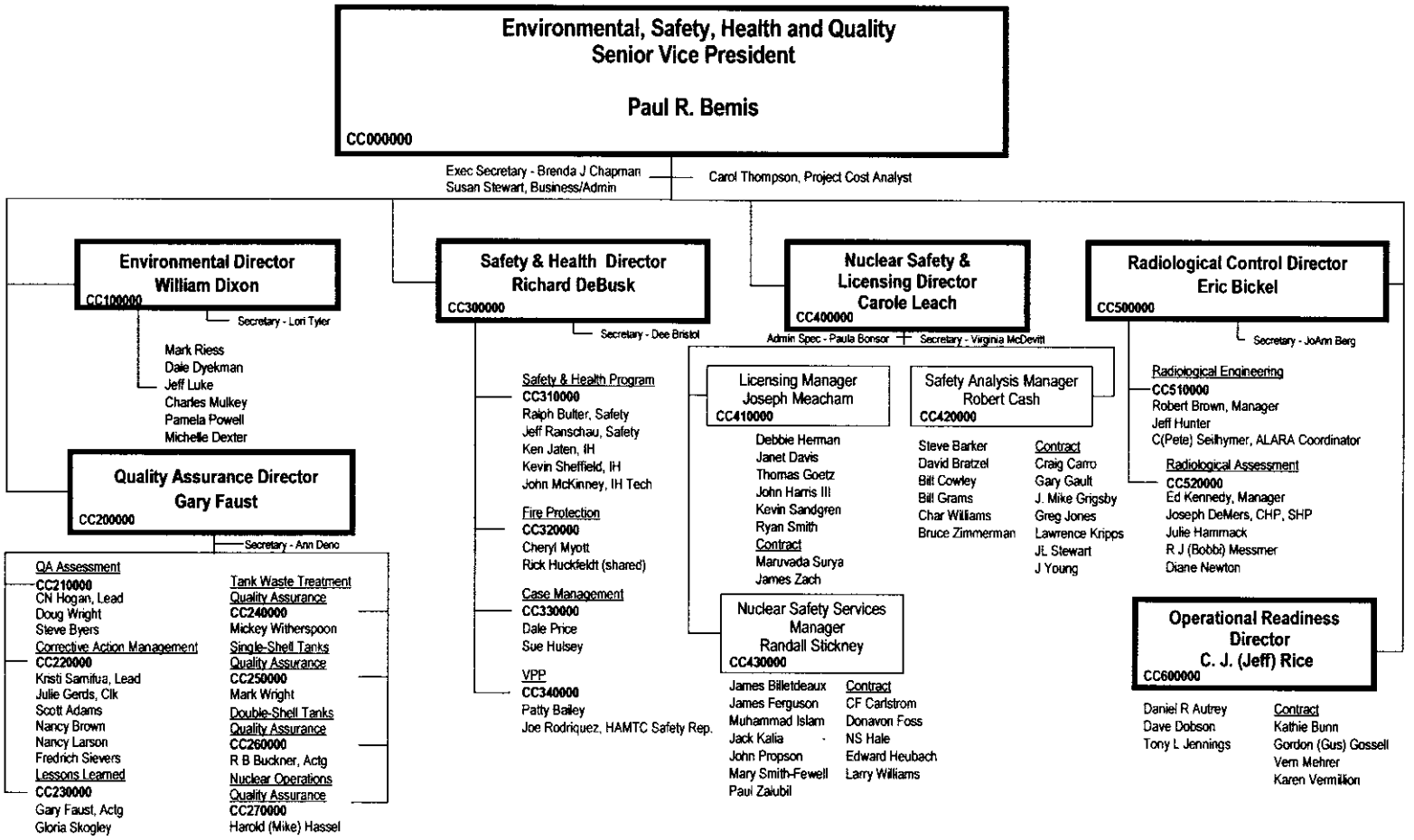


Figure 5-4. Environmental, Safety, Health, and Quality (ESH&Q) Organization Chart

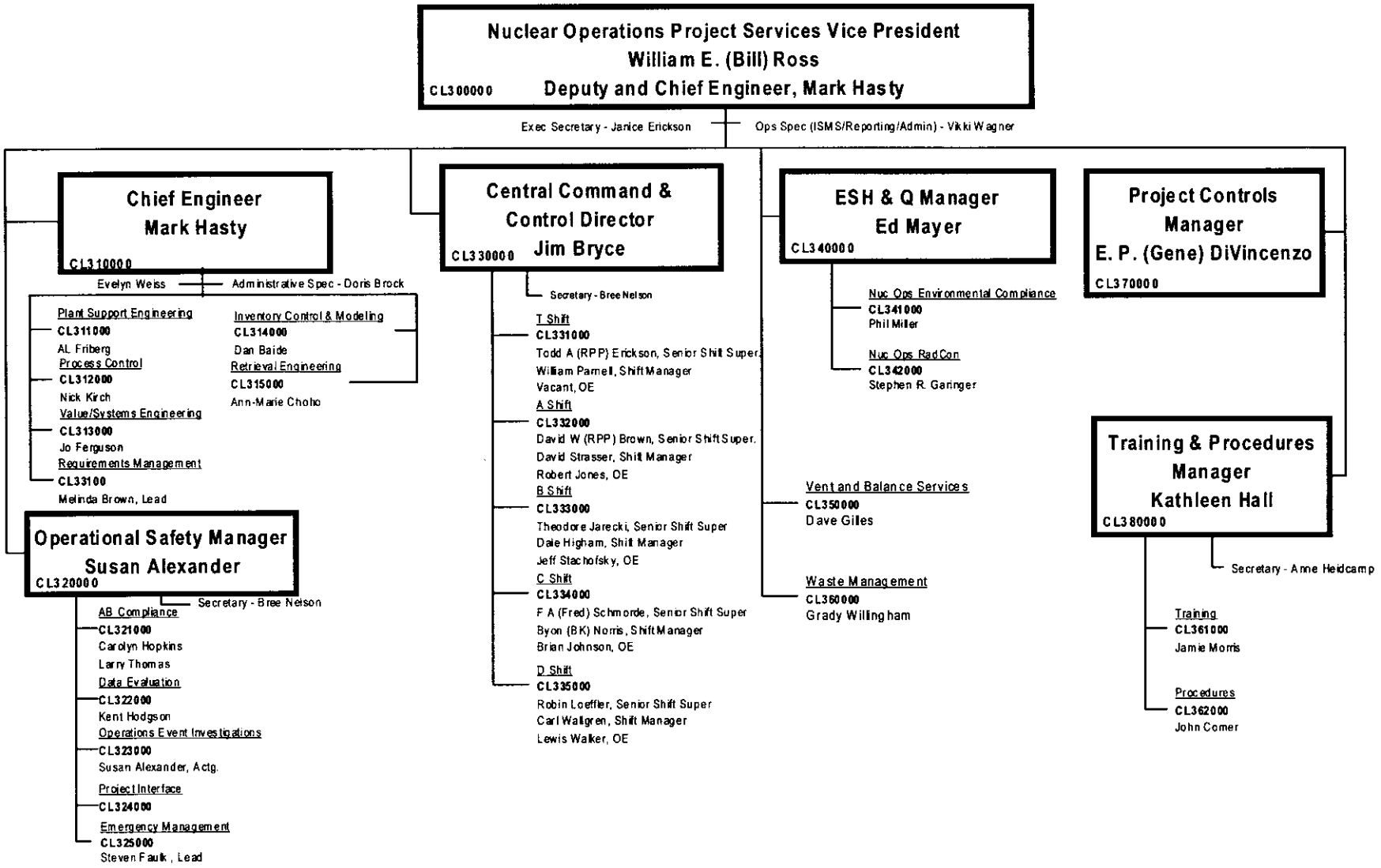


Figure 5-5. Nuclear Operations Project Services Organization Chart

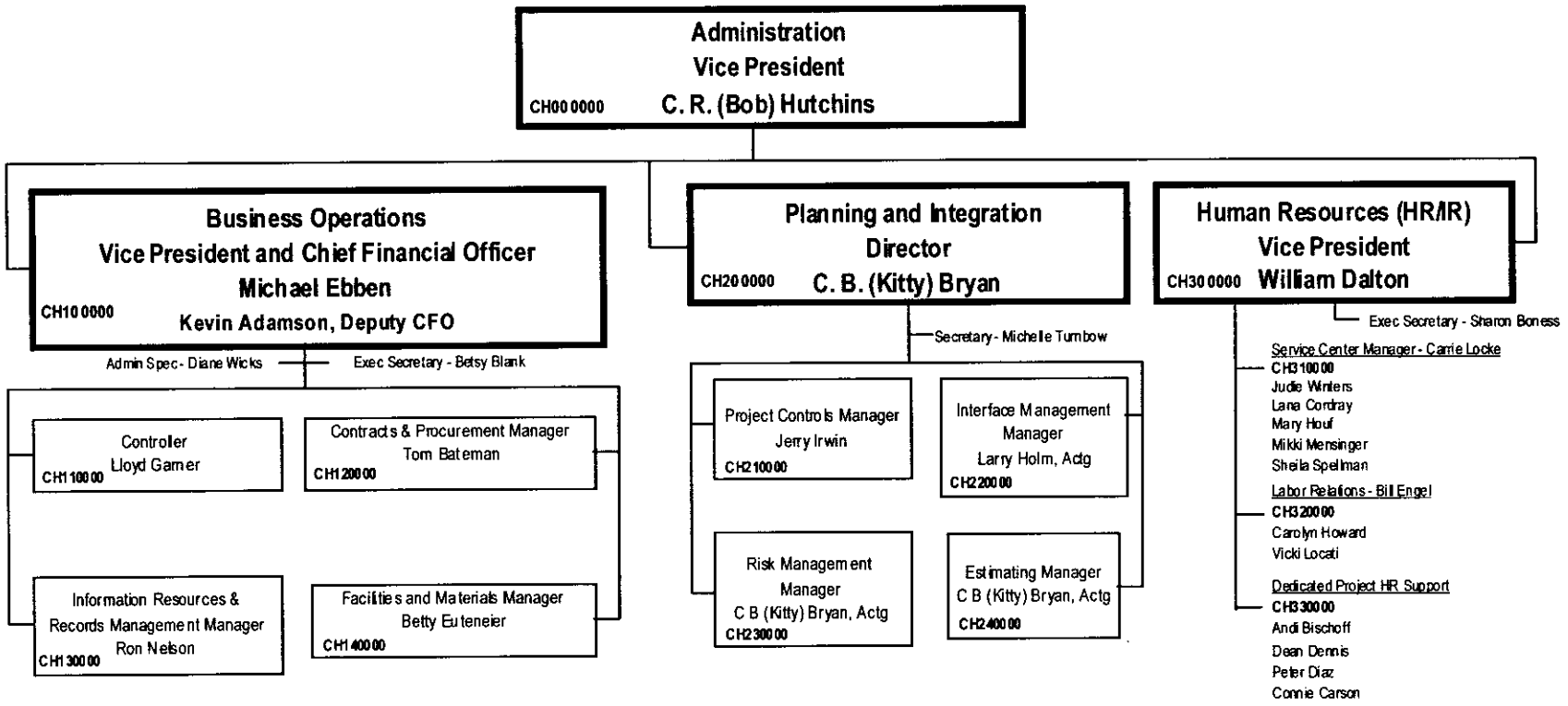


Figure 5-6. Business Operations Organization Chart

5.2.5 Business Operations

The Business Operations organization is responsible for preparation of the Multi-Year Work Plan, budgets and schedules for activities necessary to support C-104 waste retrieval. This includes supporting contracts and procurements. Figure 5-6 depicts the Business Operations organization. Business Operations is responsible for the following:

- Maintain the activity logic diagrams.
- Maintain and status the schedule.
- Assess the results or consequences of the status of work activities.
- Report known or potential impacts identified from the assessment to SST Retrieval Projects.
- Conduct performance analyses for application in Technical Basis Review Narratives (TBRs) for future planning.
- Assist in the development and maintenance of the Work Breakdown Structure.
- Assign and maintain the cost account control numbers (CACNs) for work tasks.
- Report charges to the tasks associated with the C-104 retrieval project.
- Evaluate actual charges against budget for the period of performance and against the budget for the work actually performed versus the work scheduled.
- Identify any cost or schedule variances from the planned work.
- Assist in the development of recovery plans for cost and schedule variances.
- Report on a monthly basis the results of evaluations and assessments.
- Provide performance measurement against the established baseline.
- Provide acquisition and delivery of material and equipment required to perform activities associated with C-104 retrieval, and assure that procurements meet technical and quality requirements as specified by SST Retrieval Projects.

5.3 ARCHITECT ENGINEER/CONSTRUCTION MANAGER

Project W-523 will utilize a design agent from the Architect/Engineer (A/E) pool to perform Title II design and Title III engineering. In addition, Project W-523 will contract with an ORP approved construction manager to provide fixed price construction management and in-farm construction services.

The primary responsibilities of the Architect Engineer and Construction Manager include the following:

- Provide project design, construction, and Title III engineering. Provide cost estimates and schedule services for project activities described in Letters of Instruction, Statements of Work, and other project definition documentation as provided by the W-523 Project Manager. Ensure that established project quality objectives and technical requirements are mutually understood and can be satisfied.

- Assure that the design meets applicable laws, standards, regulations, and the Project W-523 technical baseline.

- Conduct design status meetings and issue meeting minutes. Participate in the design review and approval process, construction kickoff, and construction progress meetings.

- Provide onsite construction and construction management for work by offsite construction contractors, as directed by the W-523 Project Manager.

- Develop cost estimates and schedules for Project W-523 design and construction, and prepare updates to these products as required.

- Provide welding procedures and welder qualification services.

- Review and approve vendor data submittals, and maintain and distribute records of status.

- Perform first-line inspection of construction in accordance with the design.

- Provide processing of Engineering Change Notices (ECNs) and Nonconformance Reports (NCRs). Provide supporting documentation and tracking status.

- Assure industrial safety, industrial hygiene, environmental, and security requirements are implemented at the construction site.

- Assure that the design and construction activities are performed consistent with an approved Quality Assurance Program Plan. Ensure that quality-affecting records providing objective evidence that design and construction activities comply with governing requirements are maintained. Ensure that documentation and records providing a traceable project history are properly turned over to the designated project files repository for archival at project completion.

- Manage an effective cost and schedule control system for design and construction activities. Provide construction work progress and cost information to the W-523 Project Manager on a routine basis in project status reports.

- Provide construction site safety inspections and surveillances.

- Prepare "as-built" drawings.

- Purchase materials required for construction, with the exception of long-lead equipment, including inspection of in-process and/or completed products to assure compliance with project requirements.

5.4 OTHER CONTRACTORS

Technical support may be contracted by Project W-523 to apply computer-modeling capabilities for waste retrieval and transport, assessing waste dilution and heating affects, and resolving other pertinent waste retrieval issues.

Onsite contractors may provide fabrication of long-lead equipment, and construction of instrument buildings or systems as required. Onsite contractor responsibilities are as defined in their respective contracts with the DOE and its Prime Contractors.

6.0 INTERFACE DEFINITION AND MANAGEMENT

The principal objective of interface management is to identify, document, manage, and control all performance, functional, and physical attributes relevant to the interfacing of two or more products provided by one or more organizations. Interface documentation is an important aspect of interface management and involves preparation of interface control drawings, interface control documents, and other types of documentation depicting physical, functional, and/or test interfaces of related or co-functioning products.

Interfaces are typically classified as being "physical" or "administrative." Physical interfaces involve structures, systems, and components wherein some item (e.g., tank waste) is conveyed through a linkage (e.g., transfer pipeline) from one facility to another (e.g., transfer of wastes from SSTs to DSTs). Physical interfaces for Project W-523 will be documented in interface control drawings and interface control documents using an Integrated Product/Process Design (IPPD) process, or equivalent, as described in *River Protection Project Interface Control Plan* (RPP-5993). Interfaces between the DST System and the SST System have been documented in *Interface Control Document between the Double-Shell Tank (DST) System and the Single-Shell Tank (SST) System* (HNF-3339). Project W-523 will review this interface control document for applicability. Interfaces between Project W-523 design and other project designs or existing facilities will be based from the *Functions and Requirements for the Tank C-104 Waste Retrieval System* (RPP-6525) and will be documented and managed by an Interface Control Document for Project W-523, to be developed prior to conceptual design.

Administrative interfaces typically involve the transfer of intellectual property, information, and responsibilities for a particular activity, function, or facility from one entity to another. Administrative interfaces are typically documented in Memoranda of Agreement and/or Understanding, as needed.

6.1 TANK 241-C-104 WASTE RETRIEVAL SYSTEM INTERFACES

The C-104 Waste Retrieval System must interface with a variety of new and existing utilities and other infrastructure to successfully accomplish its mission. Primary interfaces involve the SST and DST electrical power, raw water, and service air systems. A physical interface is also established between the SST Storage System (C-104) and the DST Confinement System (AY-101) for the transfer and use of AY-101 supernatants to C-104 to facilitate tank waste retrieval operations. Physical interfaces are also established with the DST Monitor and Control System and the Master Monitor and Control System to provide leak detection and other process operation controls.

6.1.1 Utility and Infrastructure Interfaces

The C-104 Waste Retrieval System will interface with utilities currently available in both C and AY Tank Farms. This includes electrical power in the C Tank Farm rated at 308 KVA of 3-phase power at 480 volts and 60 hertz. Also included is an interface with C Tank Farm raw

water that is supplied at 80 pounds per square inch. The service air available in C Tank Farm is supplied at 27.5 cubic feet per minute of dry compressed air with a dew point of –40 degrees centigrade at 100 pounds per square inch. The AY Tank Farm electrical and raw water subsystems are described in *Double-Shell Tank Utilities Specification* (HNF-4157).

The available volume in AY-101 for receipt of C-104 waste is estimated to be 831 kgal. If necessary, supernatant from AY-101 will be used to facilitate C-104 waste retrieval operations. The addition of inhibited water to AY-101 to create supernatant shall be minimized. The C-104 Waste Retrieval System will accept control signals from the Master Monitor and Control System to initiate safe shutdown of waste transfer operations, as appropriate (e.g., leak detection, transfer line/tank pressure excursions, excessive waste levels in tank, exceed temperature limits, etc.).

6.1.2 Major Physical Interfaces

The C-104 Waste Retrieval System will have several physical interfaces with existing structures in C Tank Farm. These include an interface with C-104 at three pits located above the tank. These pits (pump pit, sluice pit, and heel pit) contain risers that may be used to install and operate the C-104 Waste Retrieval System. The C-104 Waste Retrieval System will also interface with existing risers in AY-101 to facilitate waste retrieval operations from C-104 to AY-101; including the transfer of AY-101 supernate to C-104, as required. The C-104 Waste Retrieval System will control vapor space pressure and interface with tank ventilation systems to filter exhaust air to control the release of airborne contamination.

The C-104 Waste Retrieval System will interface with a C-104 monitor and control subsystem. Waste removal process parameters (e.g., waste transfer line pressures, flow rates, waste densities, waste volumes, waste temperatures, etc.), environmental safety parameters (e.g., leak detection), and waste transfer equipment parameters (transfer pump speed, motor amperage, etc.) will be monitored and controlled to ensure safe and effective waste retrieval operations.

Figure 6-1 depicts the major physical interfaces associated with the C-104 Waste Retrieval System. Figure 6-2 is a graphical representation of the SST System and DST System interface boundary during the retrieval of wastes from C-104. The adequacy of identified utilities and infrastructure will be determined and refined during pre-conceptual and conceptual design. The document *Functions and Requirements for the Tank 241-C-104 Waste Retrieval System (Project W-523)* (RPP-6525) contains a detailed description of interfacing facilities and systems. These interface descriptions are intended to help define the system and subsystem boundaries and identify specific physical interfaces.

6.2 INTERFACES OF THE TANK 241-C-104 WASTE RETRIEVAL SYSTEM WITH OTHER PROJECTS

Phase 1 waste feed delivery activities support the RPP mission by (1) staging low-activity waste feed, (2) staging high-level waste feed, (3) receiving various final and intermediate waste products from the waste treatment plant, and (4) receiving miscellaneous waste streams. Phase 1 waste retrieval activities will also make DST space available in support of SST waste retrieval

operations. In addition to Project W-523, there are a number of recently completed, ongoing, and planned projects focused on modifying and upgrading 200 Area Tank Farms to accomplish Phase 1 waste feed delivery activities. These projects include:

- Project W-058, "Cross-Site Transfer System" (completed)
- Project W-151, "Tank 241-AZ-101 Mixer Pumps" (completed)
- Project W-211, "Initial Tank Retrieval Systems" (for DSTs)
- Project W-314, "Tank Farm Restoration and Safe Operations"
- Project W-521, "Waste Feed Delivery Systems"
- Project W-522, "Double-Shell Tank Waste Retrieval Systems" (for DSTs)

Of the projects listed, Project W-314 and W-521 will be modifying mixer pumps, transfer pumps, pump pits, sluice pits, valve pits, monitoring and control instrumentation, electrical power, and ventilation systems in AY Tank Farm, as well as other tank farms. It will be incumbent upon the C-104 retrieval design effort to consider work scopes for Projects W-314 and W-521 during pre-conceptual and conceptual design efforts to identify and minimize potential impacts.

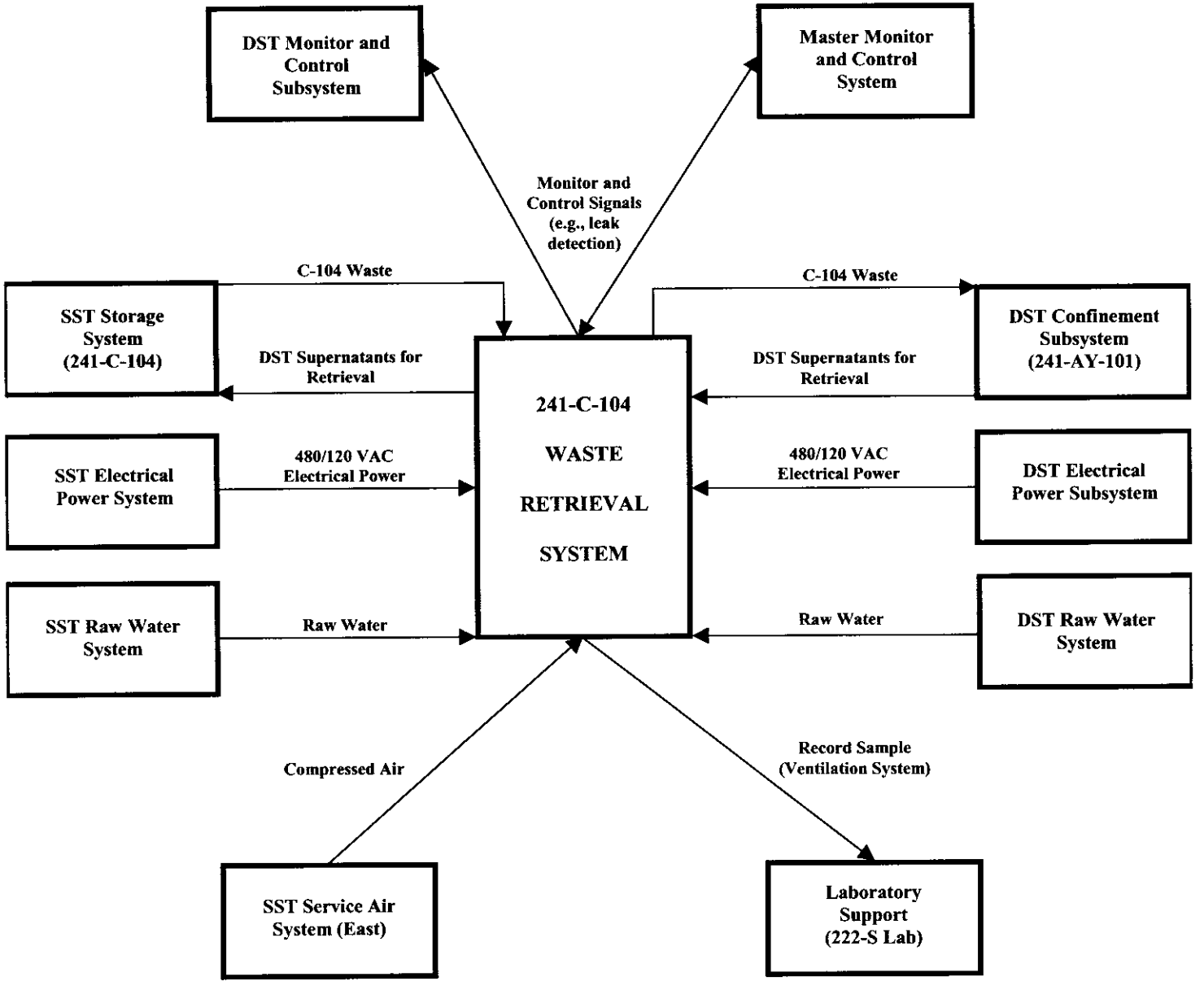


Figure 6-1. Major Physical Interfaces Associated with Tank 241-C-104 Retrieval

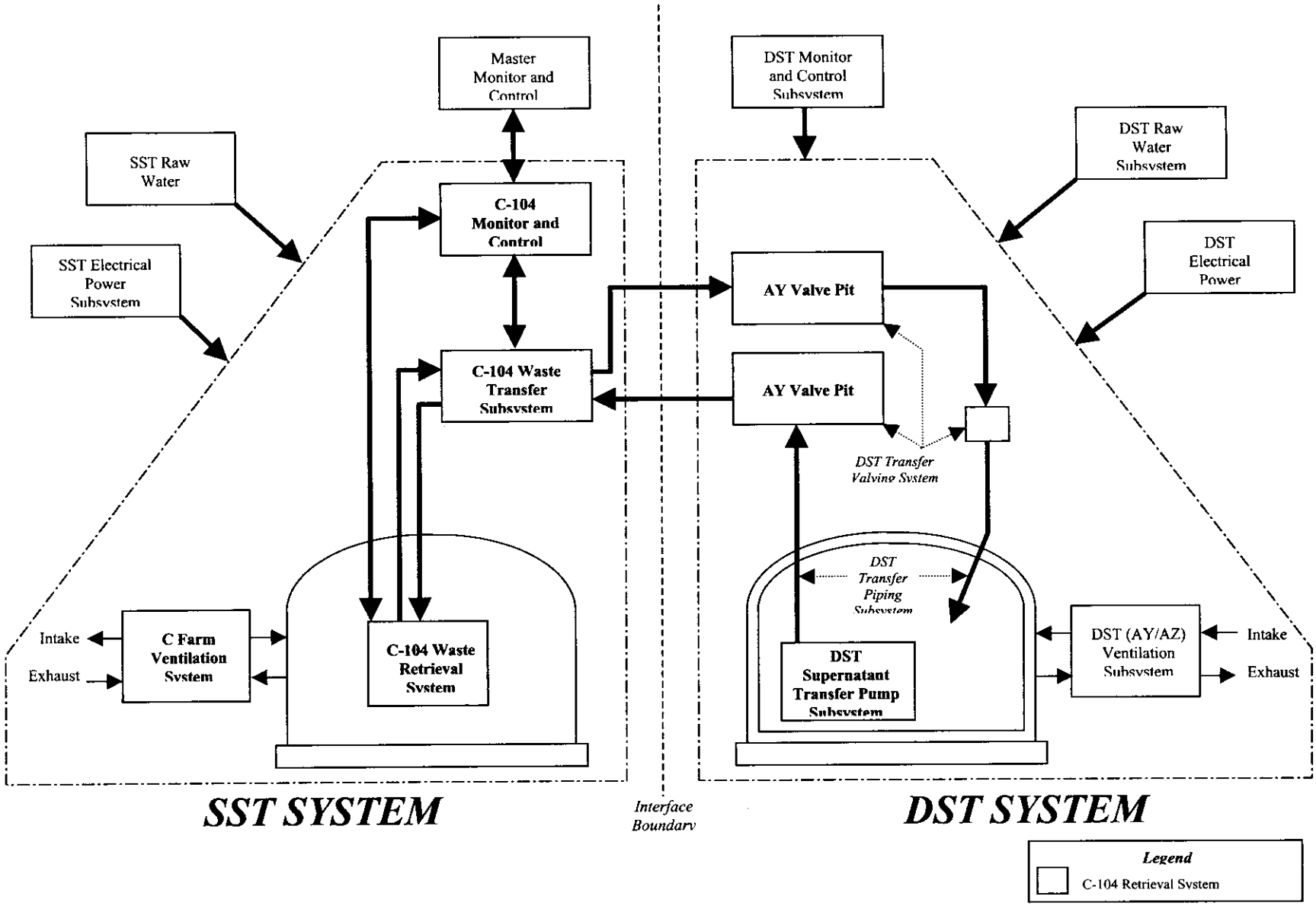


Figure 6-2. Tank 241-C-104 Waste Retrieval System Interface Boundary Diagram

7.0 PROCUREMENT AND CONTRACTING APPROACH

Project W-523 will continue to contract with an A/E from the A/E pool for the remaining conceptual and Title II design effort as well as Title III engineering during construction. Fixed price contractors will be used for construction of control building modifications outside the tank farms. Construction within the tank farms will be contracted to an ORP-approved Construction Manager.

Commercial and industrial sources will be used to the extent possible for providing the retrieval system components or sub-systems. Advance procurement for the retrieval systems includes, but is not limited to, the following equipment and systems:

- Sluice pumps, slurry pumps, and other miscellaneous pumps
- Control systems
- Slurry distributor
- Burial containers and equipment
- Component removal equipment
- Closed circuit television and thermocouple assemblies
- Heating, ventilation, and air conditioning (HVAC) system.

CH2M HILL Hanford Group, Inc. (CHG) will provide procurement services for the above equipment and systems. The construction contractor will procure other materials and equipment required for construction.

8.0 ENGINEERING AND DESIGN

Engineering, design, and construction activities will progress through three phases: pre-conceptual, conceptual, and execution phases (Figure 8-1). CH2M HILL Hanford Group, Inc. (CHG) project management will assist ORP in providing documentation DOE-HQ to receive formal "critical decisions" approvals at various stages of the project progression (i.e. CD-1, CD-2, and CD-3).

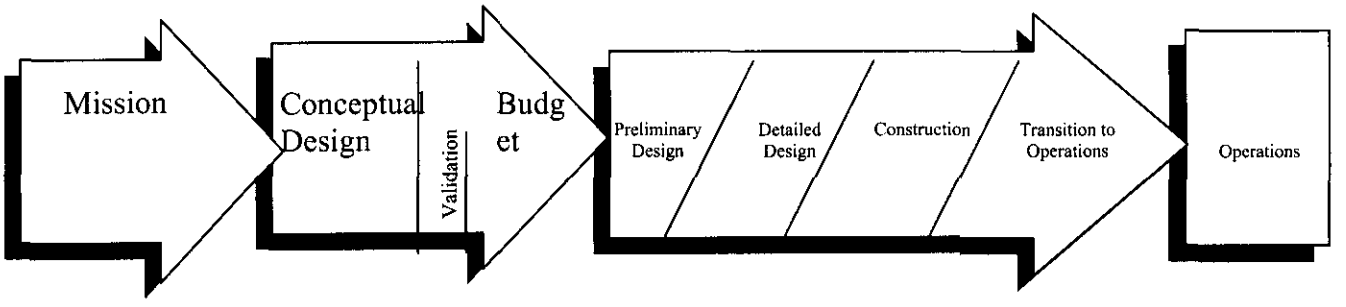
Figure 8-1. W-523 Construction Project Overview

W-523 Construction Project

Construction Project Overview		
Pre-Conceptual	Conceptual Phase	Execution Phase

Typical Construction Activity Phases

Pre-Conceptual	Conceptual	Execution



Critical Decisions

Critical Decisions 1 Mission Need

Critical Decisions 2 Approval of Baseline

Critical Decisions 3 Start Construction

Critical Decisions 4 Completion / Start Operations

8.1 PRE-CONCEPTUAL PHASE

Pre-conceptual activity will identify the need for construction activity, identify and evaluate alternatives, and recommend a preferred alternative. Mission need documentation, including high level requirements and the technical baseline, will be produced to provide sufficient information to allow the development of more detailed functions and requirements during conceptual and execution phases and validate the project under CD-1.

8.2 CONCEPTUAL PHASE

During conceptual design (Title I design), the selected retrieval technology will be developed into a preferred configuration and a design concept established. The defined scope of work will allow development of a conceptual schedule and cost estimate. The scope, schedule, and cost estimate form the performance baseline against which the project performance will be measured during the execution phase (See Section 10.0, "Performance Baseline Definition and Control," and Section 14.0, "Performance Measurement, Reporting, and Forecasting"). Conceptual design documentation also provides the basis for validating project under CD-2.

Interfaces between Project W-523 design and other project designs or existing facilities will be based from the *Functions and Requirements for the Tank C-104 Waste Retrieval System* (RPP-6525) and will be documented and managed by an Interface Control Document for Project W-523, to be developed prior to conceptual design.

8.3 EXECUTION PHASE

The execution phase will consist of preliminary design, detailed design (Title II design), construction, and transition to operations. The execution phase will be carried out in accordance with the planning and technical baselines prepared during conceptual design.

Preliminary design and detailed design utilizes the conceptual design and design criteria to firmly fix the scope and further develop schedules and cost estimates. During preliminary design, trade-off studies will be completed and final evaluation of alternatives design approaches will be made. Additionally, in accordance with Section 21.0, "Quality Assurance," the quality levels for systems and components will be established and specifications for equipment procurement will be initiated. Detailed design information will also provide the basis for receiving a CD-3 decision, which allows initiation of construction.

Physical construction will start when detailed design has progressed to a point that a logical portion of work has been logically defined and CD-3 decision has been made. Construction activity will be carried out in accordance with the engineering documents and the requirements of this project plan. Following construction, transition to operations will be managed per Section 19.0, "Inspection, Test, Acceptance, and Startup."

9.0 WORK BREAKDOWN STRUCTURE

The Project Summary Work Breakdown Structure is included as Appendix B. All work performed on project W-523 shall be planned and controlled in a lower level structure that supports reporting to the Project Summary Work Breakdown Structure. Appendix B also identifies the linkage of the Technical Basis Review Narratives (TBRs) to the appropriate reporting level of the Project Summary Work Breakdown Structure.

10.0 PERFORMANCE BASELINE DEFINITION AND CONTROL

The Project W-523 baselines are identified in the following. Changes to the baselines below will be accomplished via the Baseline Change Control process.

10.1 TECHNICAL BASELINE

The documents, Functions and Requirements for the Tank 241-C-104 Waste Retrieval System (RPP-6525), Tank 241-C-104 Preliminary Engineering Report (RPP-6843), and Tank 241-C-104 Retrieval Project Definition Criteria (RPP-6844) provide the current Project W-523 technical baseline. These pre-conceptual documents define the Project W-523 preliminary design basis, including analysis of generic features sufficient to provide an adequate technical basis for starting conceptual design of a waste retrieval system for many SSTs.

In addition to C-104 Waste Retrieval System Functions and Requirements (F&Rs), two other factors will influence the technical basis for starting conceptual design of a waste retrieval system. A LDMM system is in parallel development with the preliminary engineering documents and at completion of the preliminary engineering will be consistent with and align with the C-104 Waste Retrieval System F&Rs. Results of LDMM studies will be folded into future updates of the F&R document. The Retrieval Performance Evaluation will provide the risk-based criteria for the retrieval system in the form of allowable leak loss during retrieval and the extent of waste volume retrieval requirements.

10.2 SCHEDULE BASELINE

Appendix A includes theW-523 summary schedule for providing the C-104 waste retrieval system. Consistent with the summary schedule, milestones established via Performance Incentives and DOE milestones included in the Multi-Year Work Plan provide the W-523 schedule baseline. Table 10-1 provides a list of the key retrieval milestones. The W-523 schedule baseline is based on the fiscal year 2000 Baseline Change Requests.

Table 10-1. Retrieval Milestones

Milestone	Date
Critical Decision #1 Mission Need	2/2001
Critical Decision #2 Approval of Baseline	4/2002
Critical Decision #3 Start Construction	8/2003
Critical Decision #4 Start Operations	6/2007
Proposed Tri-Party Agreement M-45-03F Complete Full Scale Sludge/Hard Heel, Confined Sluicing and Robotic Technologies, Waste Retrieval Demonstration at Tank C-104	To Be Established
Proposed M-45-03-T04 Submit C-104 Sludge/Hard Heel, Confined Sluicing and Robotic Technologies, Waste Retrieval Demonstration Functions and Requirements Document	12/2001
Proposed M-45-03G Complete C-104 Sludge/Hard Heel, Confined Sluicing and Robotic Technologies, Waste Retrieval Cold Demonstration	6/2004
Proposed M-45-03H Complete C-104 Sludge/Hard Heel, Confined Sluicing and Robotic Technologies, Waste Retrieval Demonstration Design	9/2004
Proposed M-45-03I Complete C-104 Sludge/Hard Heel, Confined Sluicing and Robotic Technologies, Waste Retrieval Demonstration Construction	9/2006

10.3 COST BASELINE

The Total Project Cost baseline for Project W-523 is based on the cost estimate provided in the baseline established by the fiscal year 2000 Baseline Change Requests and meets the threshold requirements for a Line Item Project (5-100 million dollars) as identified in HNF-IP-0842, Volume XIII, "Projects." The Total Project Cost includes the project definition phase in the early 2000s through project completion at the end of the Operational Test Procedures and Acceptance for Beneficial Use. A revised cost estimate is being prepared based on the ongoing pre-conceptual engineering and will be incorporated into the cost baseline via the baseline change control process.

10.4 BASELINE CHANGE CONTROL

Changes to W-523 baselines are authorized by approval of a revised Project Plan or Functions and Requirements (F&Rs) or by approval of in accordance with "Baseline Change Control" (HNF-IP-0842, Volume VIII, Section 1.1). Changes below the following thresholds are processed within Project W-523. Changes above these thresholds are processed by CHG and DOE change control boards in accordance with the Baseline Change Control Procedure.

- Cost increases requiring more than 10% of the original total contingency, or any scope change requiring the use of contingency
- Any single increase of more than $50,000 to the fiscal year expense budget
- Schedule changes 45 days or more later than DOE designated milestones
- Technical changes adversely impacting another project
- Changes requiring modification of the W-523 Functions and Requirements.

11.0 LIFE CYCLE COST

Life cycle costs for Project W-523 includes the Total Project Cost, Total Operating Cost, and Post Retrieval Intrusion Prevention. Life Cycle Costs are also being revised as part of the ongoing pre-conceptual engineering and will be incorporated into the cost baseline via the baseline change control process.

12.0 COST CONTROL

See Section 14.0 for a discussion of cost control as part of the system for Performance Measurement, Reporting, and Forecasting.

13.0 CONSTRUCTION RISK

The approach for Project W-523 risk management, including construction risk, is described in Section 29.0.

14.0 PERFORMANCE MEASUREMENT, REPORTING, AND FORECASTING

Project performance will be monitored against the baseline and reported in accordance with ORP requirements. Monthly Management Review Meeting reports are provided to ORP.

Project planning, cost, and performance reporting is accomplished by a combination of the W-523 manager, various performing organizations, and Project Controls Specialist efforts. The W-523 manager has overall responsibility for planning and reporting. Supporting contractors, including the A/E, provide monthly status, via the W-523 manager, for work in progress.

During schedule development, each performing organization prepares a detailed plan for producing project products. Agreement is reached with the W-523 manager on the schedule, cost, and the associated resources. The Project Controls Specialists develops task descriptions, durations, and logic based on detailed information from the performing organizations. The Project Controls Specialists is responsible for constructing the schedule from the supplied data.

Each month the performing organizations report progress to the Project Controls Specialists, who review the reports and forward them and earned value data to the W-523 manager. Reports are forwarded to ORP in the form of Management Review Meeting reports.

15.0 FUNDING

Annual expense funding will be included in the Project Data Sheet provided as part of the Critical Decision Package. Amounts of the requested W-523 budget authority are determined through the Multi-Year Work Plan process based on the project schedule. Budget-year funding for W-523 is reviewed by an annual review conducted by CHG and ORP.

The Project Data Sheet is a DOE budget document used to explain and justify the need for construction project funding as part of the federal budget. The Project Data Sheet is based on the approved project baselines, and is submitted by DOE for Congressional authorization and appropriation. Annual updates to the Project Data Sheet will be provided by DOE to the Office of Management and Budget to reflect current project planning.

Monthly reports are provided to Project Delivery, including cost performance information. Formal review of expense funding for Project W-523 is performed by the RPP at mid-year. Forecasted expense funding under-runs are returned to the Program for other uses. Increases in annual expense funding are obtained via Change Requests.

16.0 CONTINGENCY MANAGEMENT

Cost contingency is managed within the change control process discussed in Section 10.4 above. The CHG W-523 manager maintains a log of all Change Requests authorizing the use of contingency.

17.0 SITE DEVELOPMENT/TEMPORARY FACILITY AND SERVICES PLAN

Not applicable to Project W-523 that is modifying existing tank farm facilities.

18.0 ENVIRONMENTAL PERMITS AND APPROVALS PLAN

Key environmental statutes applicable to Project W-523 include the Clean Air Act, the Resource Conservation and Recovery Act (RCRA), and NEPA. The following sections summarize the required W-523 environmental compliance actions. The *Project W-523 Waste Retrieval System Environmental Permits and Approvals Plan*, (RPP-6665) provides more detail on these requirements and will provide the basis for cost estimating and scheduling of permitting/approval activities.

18.1 AIR PERMITS

Approvals from the Washington State Department of Health, Washington State Department of Ecology, and the U.S. Environmental Protection Agency, via Notice of Construction letters, will be required before construction of the retrieval systems.

18.2 RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 (RCRA) AND DANGEROUS WASTE REGULATIONS

The Washington State Department of Ecology (Ecology) will have to approve the retrieval technology selection and design prior to implementation. A process for this approval has not been established but may be obtained via the proposed Tri-Party Agreements in change request M-45-00-01A, specifically, commitments on the Functions and Requirements of retrieval systems (see proposed M-45-03-T04). Specific items of Ecology concern will be efficiency of the LDMM system, determining an allowable leak loss during retrieval, and allowing addition of water/liquid to the tank during retrieval. The approach will be to involve Ecology at the earliest possible time (e.g., Decision Plan for Selection of the C-104 Retrieval Technology) to obtain their input.

18.3 NATIONAL (NEPA) AND STATE ENVIRONMENTAL POLICY ACTS (SEPA)

For the action of retrieval and transfer of waste from C-104 to AY-101, it has been assumed that the potential impacts would be small, of a minor additive nature, and bounded by the impacts assessed for the Tank Waste Remediation System environmental impact statement (EIS) (DOE/EIS-0189) and associated supplement analyses (SA) (DOE/EIS-0189-SA1 and SA2). Therefore, a determination likely would conclude that no additional NEPA analysis is required. A Single-Shell Tank Closure EIS would be required prior to closure. A Project W-523, Tank C-104 NEPA screening form, and project- specific NEPA matrix will be prepared for review/concurrence requested from the ORP NEPA compliance officer. This NEPA matrix compare estimated project specific impacts against the bounding assumptions in the Tank Waste Remediation System EIS and supplement analyses (SAs). This Project W-523, Tank 241-C-104 NEPA screening form and project-specific matrix will document the NEPA determination and will conclude the C-104 Waste Retrieval System NEPA review.

The SEPA regulations do not require a lead agency to adopt their own NEPA documentation. Since the Ecology was a co-lead agency with the U.S. Department of Energy, Richland Operations Office (DOE-RL) for preparation of the Tank Waste Remediation System EIS, and participated in review of subsequent supplement analyses (SAs), no further action will be required. It is assumed that Ecology will also participate in preparation and review of the SST Closure EIS.

19.0 INSPECTION, TEST, EVALUATION, ACCEPTANCE, AND STARTUP

Acceptance Inspection for the Government will be provided by Fluor Hanford as will be described in Acceptance Inspection (AI) plans prepared for each of the construction packages or vendor supplied systems.

The SST Retrieval Project Test and Evaluation Plan, which will be prepared or updated prior to initiation of conceptual design for every SST retrieval project, will define the approach to be used in testing retrieval and leak detection systems to be deployed for each tank and waste type. The testing required in each may include technology functional tests, integrated cold tests, and in-tank "hot" tests. A specific test and evaluation plan for the C-104 retrieval system will be prepared during conceptual design of the system.

Factory Acceptance Testing will be performed by the vendor on all combinations of pumps in series and pump/eductors in series. Near the completion of construction, the project will demonstrate system compliance with the design by conducting Acceptance Test Procedures (ATP). After successful completion of ATPs, the system is turned over to Operations for demonstration, with Project expense funds, that the system satisfies functional requirements via Operational Test Procedures (OTP). At successful completion of OTPs, Operations is presented with Acceptance for Beneficial Use documentation as evidence of a completed retrieval system ready for startup and assessment of readiness. Operations acceptance of the Acceptance for Beneficial Use package completes the project activities associated with the retrieval system and terminates expenditures of project funds for that system. Operations acceptance of Acceptance for Beneficial Use documentation for the final retrieval system completes the project.

20.0 DESIGN REVIEWS

The Design Agent for all design media and subsequent changes will perform design verification via independent review. In addition, a team comprised of operations, safety, quality assurance, environmental, engineering, program, and project representatives will review Title II designs.

21.0 QUALITY ASSURANCE

Project W-523 quality assurance (QA) requirements are established and executed via the *Quality Assurance Program Description for the Tank Farms Contractor* (RPP-MP-599).

The Quality Assurance Program's purpose is to ensure that appropriate quality objectives, requirements, and responsibilities are established and implemented, such that the completed project satisfies the needs for which it was undertaken. Specifically, the following QA activities will occur:

- Performing project oversight surveillances on Design Agent activities and project activities.
- Reviewing and approving construction specs, procurement specs, definitive design drawings, acceptance test procedures, submittals, ECNs to project related documents
- Verifying that project configuration control is maintained through incorporation of changes into design media such as drawings, specs, project development specs, requirement analysis studies, etc.
- Reviewing project schedules and developing budget sheets for QA support activities
- Attending design and construction status meetings and resolving assigned action items
- Maintaining (updates/revisions of) Quality Assurance Project Plan
- Representing QA for the project on the start-up test review board and resolving assigned action items
- Supporting project package close out per the Acceptance for Beneficial Use process and turnover to operations
- Resolving readiness activity affidavits pertaining to QA issues
- Interfacing with external and internal auditors and surveillance personnel, as necessary, to facilitate their activities related to the project.
- Performing contractor and vendor surveillances of construction and fabrication activities to verify compliance to referenced requirements

- Performing QA oversight of contractor construction work activities and performing quality control inspections such as: surveillance of both field and shop work and selected critical offsite activities, QA oversight and participation in project punch-list activities, and QA oversight of construction and Quality Control (QC) testing activities
- Performing reviews and approvals of construction work packages, construction ECNs, Non-Conformance Reports, and contract and material requisitions for Quality Level 1, 2, or 3 items and services.
- Preparation of receiving inspection checklists for procured Safety Class and Safety Significant items
- Preparing QA requirement checklists for Safety Class and Safety Significant procured items
- Dispositioning receiving inspection hold notices
- Performing reviews of construction work packages during and after construction to verify performance and completion of quality control inspections and activities, verifying acceptable completion and incorporation of supporting documentation into packages
- Performing oversight of construction engineering activities for compliance to prescribed practices and specification requirements
- Performing reviews of Specific Test and Evaluation Plans and verifying implementation and completion of Specific Test and Evaluation Plans requirements
- Providing QA interface with construction and engineering for resolution of construction deficiencies and non-conformances
- Providing QA support in qualifying commercial grade items to be used in Safety Class or Safety Significant applications
- Reviewing and approving project Quality Assurance Checklists and Acceptance of Completed Work
- Witnessing construction and factory acceptance testing as required.
- Reviewing and approving sub-tier contractor or supplier Quality Assurance plans and implementing procedures.

22.0 SAFETY

22.1 CONSTRUCTION SAFETY

Construction shall be conducted in accordance with *Subcontractor Safety & Health Management* (RPP-PRO-078) and *Integrated Environmental, Safety and Health Management System Plan (ISMS)* (RPP-MP-003). For construction activity involving radiological work the concept of ALARA shall be incorporated. A life-cycle management approach to radiation dose, contamination control and radiological waste minimization shall be implemented. Construction shall be conducted in compliance with *Tank Farms Radiological Control Manual* (HNF-5183). Additional procedures that control construction activities include: *Hanford Site Hoisting and Rigging Manual* (DOE-RL-92-36) and *Hanford Site Lockout/Tagout Program* (DOE-RL-SOD-INST-L&T-001).

22.2 FACILITY SAFETY ANALYSIS

A Hazards Identification and Evaluation (HI&E) will be completed for the C-104 retrieval technology alternatives. Once a technology has been selected, the HI&E will be followed by development of a Preliminary Safety Evaluation. The Preliminary Safety Evaluation will be prepared for Project W-523 during the conceptual phase of the project. The Preliminary Safety Evaluation will identify and evaluate the risks and hazards associated with retrieval of C-104 waste and provide the safety basis for development of Title I and Title II designs.

The Unreviewed Safety Question (USQ) process will be followed prior to construction to verify Project W-523 construction activities can be conducted within the existing tank farms RPP Authorization Basis (HNF-SD-WM-SAR-067). However, it may be determined necessary for some Authorization Basis amendment steps to be taken to support project implementation. The USQ process includes the following tasks:

22.2.1 Unreviewed Safety Question Screening

Support performance of USQ screening of proposed activities, tasks, and modified documents against the approved RPP safety basis (i.e., RPP Final Safety Analysis Report [FSAR] HNF-SD-WM-SAR-067). Examples of documents that require USQ screening include:

- Design documents associated with the proposed W-523 modifications/upgrades
- Modified Operation, Maintenance, Calibration, and Functional Test procedures
- Facility documentation that may require modification because of the W-523 upgrades
- Engineering Change Notices (ECNs)
- Construction Work Packages.

22.2.2 Unreviewed Safety Question Determination Support

Performance of USQ determinations (a more detailed analysis than the USQ screening) for those items indicated by the USQ screening process as requiring it.

22.2.3 Safety Basis Support

Developing Authorization Basis amendments when indicated by the determination process and the design cannot be modified to comply with the Authorization Basis.

22.2.4 Safety Equipment List (SEL) Interfacing.

Providing RPP with project-specific information for installed upgrades for maintaining Safety Equipment List.

23.0 SAFEGUARDS AND SECURITY

No special safeguards or security is required for the project. Only normal security requirements for the 200 Areas are imposed.

24.0 CONFIGURATION CONTROL

Configuration control for the SST Retrieval Project shall preserve and control the technical integrity of products and processes; structures, systems, and components; and associated information in accordance with CHG's configuration management standards established in *Configuration Management Plan for the Tank Farm Contractor* (HNF-1900).

25.0 DOCUMENT AND RECORD MANAGEMENT

Project W-523 will generate a significant quantity of records. Documentation is expected to include design media, technical reports, decision analysis, financial data, decision-making documents, modeling data, project performance information, plans, meeting minutes and other document types. To effectively manage records and documents, a Records Management Plan will be prepared and issued as an Appendix to the *SST Retrieval Project Management Plan* during Fiscal Year 2001. The Records Management Plan will address the following elements:

- Records location
- Records access and control protocols
- Record and document release procedures
- Record and document change procedures
- Record indexing and inventory protocols
- Physical protection of records
- Standard distributions for record dissemination
- Record retention and archive requirements and procedures
- Record handling at project closeout
- Roles and responsibilities for record generators and custodians
- Record purging protocols.

The Records Management Plan will address, as appropriate, elements of Project and Task Document Management (HNF-PRO-232), Preparation and Control Standards for Engineering Drawings (RPP-PRO-709), Engineering Data Transmittal Standards (RPP-PRO-244), Engineering Document Change Control Requirements (HNF-PRO-440), and Process Engineering Desk Instruction and Guidance Manual, "Project Working Files Management" (HNF-SD-WM-PROC-021).

26.0 PROCEDURES/PROCEDURE DEVELOPMENT

No project specific procedures are planned for Project W-523 during conceptual, Title II, or Title III design. However, specific procedural requirements are anticipated during construction and operation of the system and will be identified in construction and process control plans as necessary.

27.0 TRAINING

A Project W-523 Qualification and Training Plan will be prepared to ensure the project staff meet the specific qualification requirements, are trained to applicable procedures, and that records of training and qualification are maintained. The Project W-523 manager and Project Engineers are required to obtain a Project Delivery qualification certification.

28.0 SYSTEMS ENGINEERING

The SST Retrieval Project will prepare a *Single-Shell Tank Retrieval Project Systems Engineering Implementation Plan* during the first quarter of Fiscal Year. To define how Systems Engineering will be implemented, a graded approach will be applied which documents the appropriate tailoring of the Systems Engineering process called-out in the *Systems Engineering Management Plan for the Tank Farm Contractor* (HNF-SD-WM-SEMP-002) for the specific needs of Project W-523 and the SST Retrieval Project.

29.0 RISK MANAGEMENT

Risk management is an integral part of the project management function, which allocates resources to achieve certain goals with minimal risk. A Project Risk Assessment, including assessments of funding, schedule, and technical risks, will be completed in Fiscal Year 2001. Based on the Risk Assessment and associated Risk Curves, the project will continue only with a profile consistent with an 80% confidence of success or greater.

The primary objectives of risk management for W-523 include:

- Identifying risks that can affect the successful completion of the project and determine responsibility,
- Determining risk likelihood, consequences, affected functions, consequence severity, and risk criticality,
- Developing and implementing risk mitigation actions,
- Updating and maintaining risk status,
- Establishing risk based contingency

Implementation of the W-523 risk management objectives will be detailed in a Critical Risk Management List, prepared in parallel with Conceptual Design of the C-104 retrieval system.

30.0 DATA MANAGEMENT PLAN

Because the SST Project will develop computer-modeling capabilities for waste retrieval and transport, assessment of waste dilution and heating effects and resolution of flammable gas issues, it is necessary to develop a Data Management Plan for the entire SST Retrieval Project. The Data Management Plan is essential to maintain data integrity and to facilitate orderly electronic transmission of data among project stakeholders particularly when nonstandard software or applications or complex programs are being used.

The Data Management Plan will be prepared during Conceptual Design of W-523 and address the following items:

- Data management functions and requirements in data collection, data maintenance and data dissemination
- Roles of data generators, custodians and users
- Identification of and responsibilities of data generators, custodians and users
- Data flow processes
- Data management practices
- Database operations and maintenance
- Data safeguards and security
- Data storage and backup
- System documentation (hardware and software)
- Configuration management
- Validation of calculations
- Personnel qualifications and training
- Physical protection of hardware and software.

The plan will address applicable elements of Self-Assessment Standards Checklist for Data Systems (HNF-SD-WM-TRD-005) and Computer Software Quality Assurance Requirements (HNF-PRO-309).

31.0 SAMPLING AND ANALYSIS PLAN

If additional sampling or analytical events are needed for the successful execution of W-523, preparation of a Tank Sampling and Analysis Plan (TSAP) will be required. Sampling and Analysis is performed by DST Engineering and approved by the Characterization Project Office and SST ESH&Q.

If only analysis of archived material is needed, a TSAP or letter-of-instruction will be prepared. (Some tanks may not require sampling, but analysis of archived materials may be undertaken.) At a minimum, the TSAP or letter-of-instruction will address the following elements, as applicable:

- Sampling and/or analysis objectives
- Tank and waste description
- Sampling method (e.g., core or grab)
- Sample number and location
- Sample preparation and analytical methods
- Quality control requirements including duplicates, spikes, blanks, and standards
- Responsibilities for sampling and analysis
- Data reporting
- Change control protocols.

The TSAP will be based upon the requirements identified in *RPP Process Engineering Desk Instruction and Guidance Manual*, "Preparation of Sampling and Analysis Plans" (HNF-SD-WM-PROC-021).

32.0 REFERENCES

DOE/EIS-0189, *Tank Waste Remediation System, Hanford Site, Richland, WA, Final Environmental Impact Statement*, U.S. Department of Energy, Washington, D.C., dated 1996.

DOE/EIS-0189-SA1/SA2, *Supplement Analysis For The Proposed Upgrades To The Tank Farm Ventilation, Instrumentation, and Electrical Systems Under Project W-314 In Support of Tank Farm Restoration and Safe Operations*, U.S. Department of Energy, Washington, D.C., dated 1997.

DOE/RL-92-36, *Hanford Site Hoisting and Rigging Manual*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated 1993.

DOE/RL-SOD-INST-L&T-001, Rev. 2, *Hanford Site Lockout/Tagout Program,* U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated 2000.

HNF-1900, Rev. 1, *Configuration Management Plan for the Tank Farm Contractor,* Lockheed Martin Hanford Corporation, Richland, Washington, dated 2000.

HNF-2944, Rev. 0, *Single-Shell Tank Mission Analysis Report*, Lockheed Martin Hanford Corporation, Richland, Washington, dated 1998.

HNF-3339, Rev. 0, *Interface Control Document between the Double Shell Tank (DST) System and the Single Shell Tank (SST) System*, TRW Environmental Systems, Richland, Washington, dated 1999.

HNF-4157, Rev. 0, *Double-Shell Tank Utilities Specification*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-5095, Rev. 0, *Single-Shell Tank Program Plan,* Lockheed Martin Hanford Corporation/CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-5183, Rev. 0, *Tank Farms Radiological Control Manual,* CH2M HILL, Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-IP-0842, *RPP Administration*, Volume XIII, Projects, Volume VIII, Baseline Change Control, CH2M HILL, Hanford Group, Inc., Richland, Washington.RPP-IP-0842, , CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-PRO-232, Rev. 1, *Project and Task Document Management*, Fluor Daniel Hanford, Inc., Richland, Washington, dated 1999.

HNF-PRO-309, Rev. 1, *Computer Software Quality Assurance Requirements*, Project Hanford Management System, Richland, Washington, dated 2000.

HNF-PRO-440, Rev.0, *Engineering Document Change Control Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington, dated 1997.

HNF-SD-WM-PROC-021, Rev 3E, *RPP Process Engineering Desk Instruction and Guidance Manual*, "Project Working Files Management," CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-SD-WM-SAR-067, Rev. 1-L, *Tank Waste Remediation System Final Safety Analysis Report*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-SD-WM-SEMP-002, Rev. 2, *Systems Engineering Management Plan for the Tank Farm Contractor*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

HNF-SD-WM-TRD-005, Rev. 4, *Self-Assessment Standards Checklist for Data Systems*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-5798, Rev. 0A, *Results of Retrieval Studies with Waste from Tank 241-C-104*, Fluor Hanford, Richland, Washington, dated 2000.

RPP-5993, *River Protection Project Interface Control Plan,* Volume V, Section 4, "Interfaces", U.S. Department of Energy, Office of River Protection, Richland, Washington, dated 2000.

RPP-6525, Rev. 0, *Functions and Requirements for the Tank 241-C-104 Waste Retrieval System (Project W-523)*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6557, Rev.0, *Tank 241-C-104 Retrieval Project Plan,* CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6665, Rev. 0, *Project W-523 Environmental Permits and Approvals Plan,* CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6832, Rev. 0, *Crawler Acquisition and Testing Demonstration Project Management Plan,* CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6843, Rev. 0,*Tank 241-C-104 Waste Retrieval Preliminary Engineering Report*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6844, Rev. 0, *Tank 241-C-104 Project Definition Criteria,* CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-6878, Rev. 0, *Decision Plan for the Selection of the C-104 Retrieval Technology*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

RPP-MP-003, Rev. 1, *Integrated Environmental, Safety and Health Management System Plan (ISMS)*, CH2M HILL Hanford Group, Inc., and U.S. Department of Energy, Office of River Protection, Richland, Washington, dated 2000.

RPP-MP-599, Rev. 0, *Quality Assurance Program Description for the Tank Farm Contractor*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 1999.

RPP-PRO-078, Rev. 0, *Subcontractor Safety & Health Management*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 1999.

RPP-PRO-244, Rev. 0, *Engineering Data Transmittal Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 1999.

RPP-PRO-709, Rev. 2, 2000, *Preparation and Control Standards for Engineering Drawings*, CH2M HILL Hanford Group, Inc., Richland, Washington, dated 2000.

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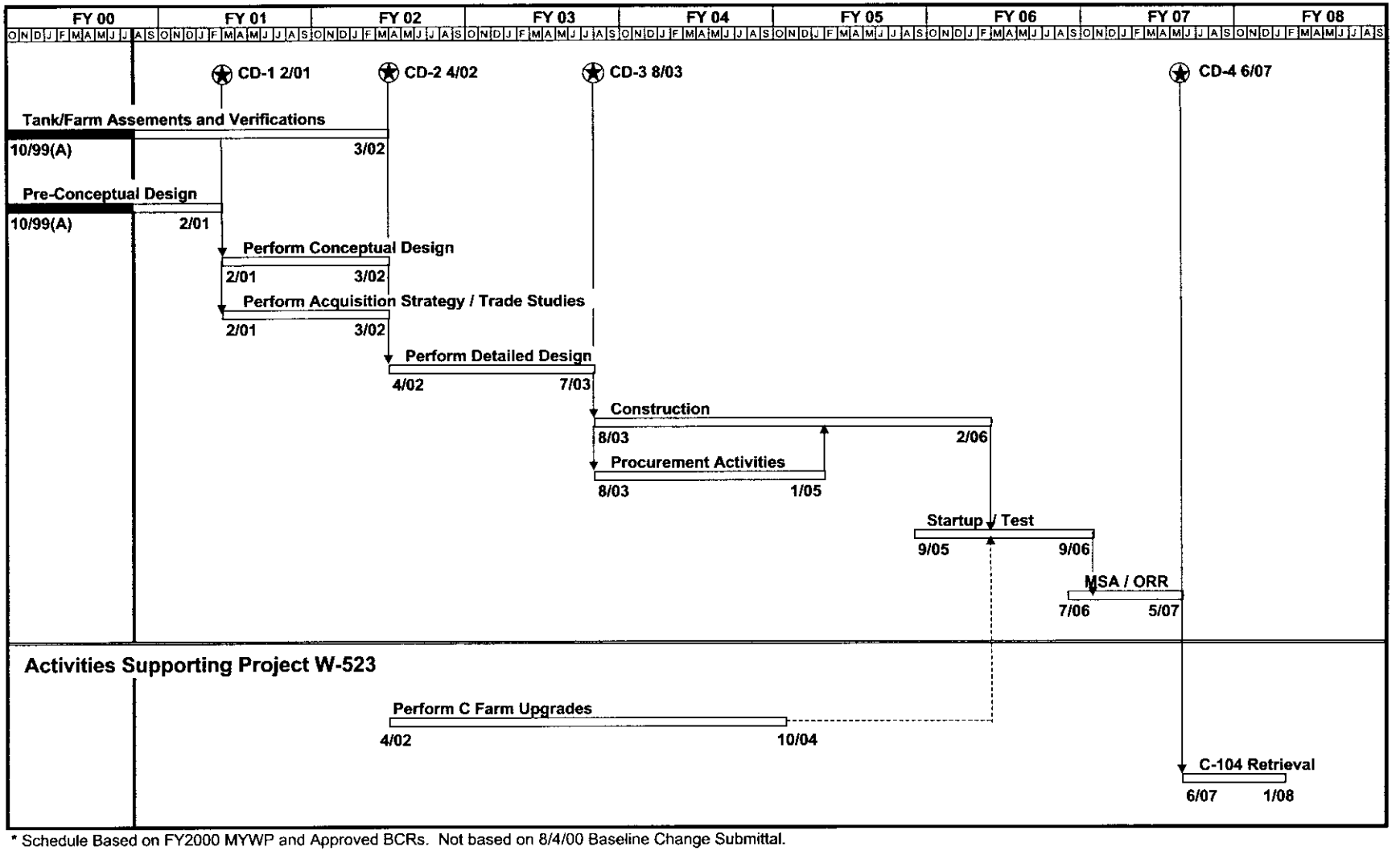
APPENDIX A

BASELINE SCHEDULE

W-523 C-104 Design and Construction
FY2000 Summary
Schedule*



* Schedule Based on FY2000 MYWP and Approved BCRs. Not based on 8/4/00 Baseline Change Submittal.

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APPENDIX B

WORK BREAKDOWN STRUCTURE

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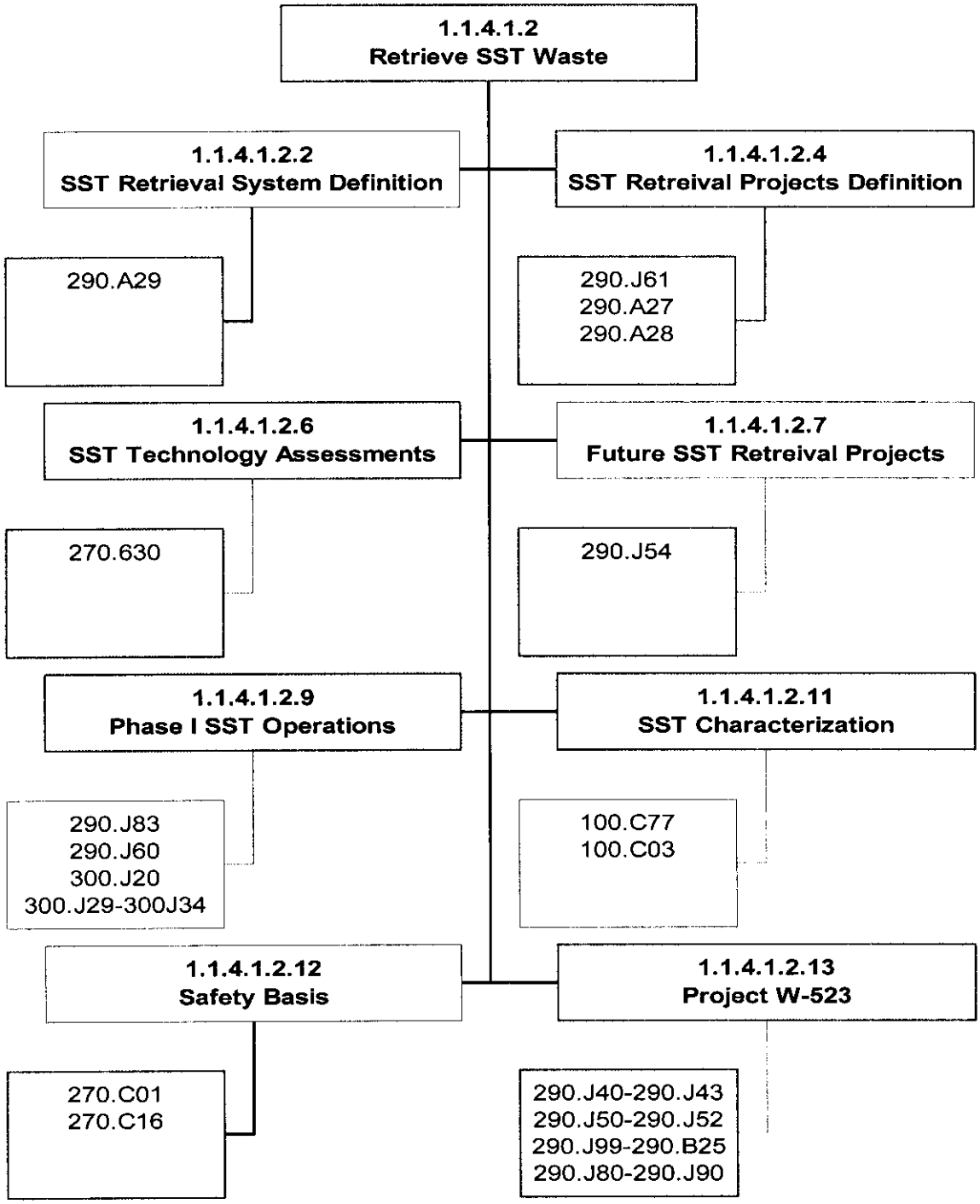
TANK 241-C-104 RETRIEVAL
PROJECT SUMMARY WORK BREAKDOWN STRUCTURE (PSWBS) AND TECHNICAL BASIS REVIEWS (TBRS)

PSWBS and TBRs



Technical Basis Review Narratives

100.C77	Perform Post Retrieval Verification
100.C03	Update C-104 Best Basis Inventory
270.C01	Issue Criticality Safety Evaluation Report
270.C16	Update/Amend Authorization Basis
270.630	Assess C-104 Tank Conditions
290.A29	Perform C Farm Trade Studies
290.J61	Prepare Project Def/Technical Basis/Project Def. Criteria
290.A27	Verify C Tank Farm Sys/Components Functionality
290.A28	Perform Acquisition Strategy for C Tank Farm
290.J54	Repair/Upgrade Existing C Tank Farm System
290.J83	Perform Management Self Assessment
290.J60	Startup/Test the C-104 Retrieval System
300.J29	Retrieve C-104 into AY-102
300.J20	Prepare Process Control Plan for C-104
300.J34	Perform C-104 Intrusion Prevention
290.J40	Design the C-104 Retrieval System and Obtain CD-3
290.J43	Perform Conceptual Design W-523 Retrieval System
290.J50	Construct the C-104 Retrieval System
290.J52	Procure Equipment C-104 Retrieval System
290.J99	Project Management for W-523
290.B25	Prepare the W-523 Project Technical Baseline Document
290.J80	Perform Contractor Operations Readiness Review
290.J90	Perform ORP Operation Readiness Review and Obtain CD-4

Project W-523 Technical Basis Review Narratives
And
Cost Estimating Input Sheets

Notes:

- The following Technical Basis Review Narratives (TBRs) are linked to other TBRs as similar activities, and costs were estimated accordingly:
    - 270.C01 similar to 150.C01
    - 290.A28 similar to 120.A04
    - 290.A29 similar to 120.A05
    - 290.B25 similar to 160.B05
    - 290.J90 similar to 160.A42
    - 290.J80 similar to 160.A40
    - 290.J83 similar to 160.A83
    - 100.C77 similar to 100.COR
    - 100.C03 similar to 100.COR
- Some of the Cost Estimating Input Sheets reflect retrieval activities for C-104, C-107, S-105, and S-102

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APPENDIX C

TANK 241-C-104 LEVEL 1 LOGIC

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SST Retrieval Program
Technology Demo and Retrieval Project
Tank 241-C-104

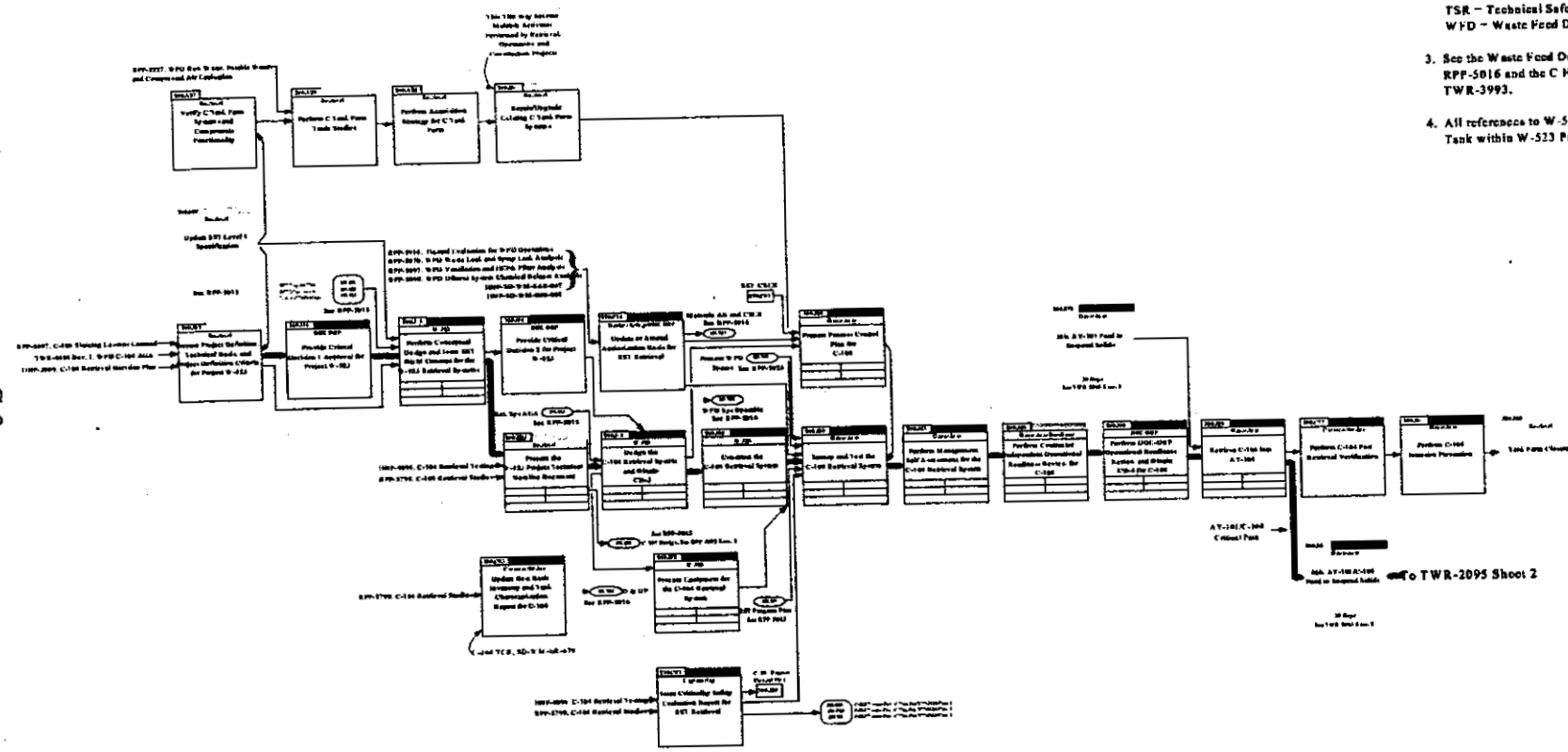
NOTES:

1. This logic is a summary representation of the program schedule. Durations shown are approximate. See the detailed program schedule for full details.

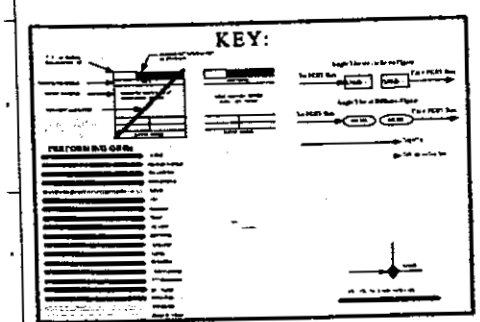
2. AB – Authorization Basis
   BBI – Best Basis Inventory
   BNFL – British Nuclear Fuels Ltd.
   CD – Critical Decision
   CSER – Criticality Safety Evaluation Report
   DQO – Data Quality Objective
   DST – Double-Shell Tank
   HLW – High Level Waste
   MT – Metric Tons
   O&UP – Operations & Utilization Plan
   RPP – River Protection Project
   TCR – Tank Characterization Report
   TSR – Technical Safety Requirements
   WFD – Waste Feed Delivery

3. See the Waste Feed Delivery Program Logic, RPP-5016 and the C Farm Safe Storage Logic, TWR-3993.

4. All references to W-523 are limited to 241-C-104 Tank within W-523 Project.



C-3



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APPENDIX D

OTHER SUPPORT DOCUMENTS FOR PROJECT W-523

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OTHER SUPPORT DOCUMENTS FOR PROJECT W-523

SINGLE-SHELL TANK RETRIEVAL PROJECT MANAGEMENT PLAN	FY 2001
RECORDS MANAGEMENT PLAN	FY 2001
QUALIFICATION AND TRAINING PLAN	As Needed FY 2001
SINGLE-SHELL TANK RETRIEVAL TEST AND EVALUATION PLAN	FY 2001
TANK 241-C-104 RETRIEVAL TEST AND EVALUATION PLAN	FY 2001
QUALITY ASSURANCE PROGRAM DESCRIPTION FOR THE TANK FARM CONTRACTOR	Complete RPP-MP-599 Convert to RPP-MP-600 During FY 2001
W-523 INTERFACE CONTROL DOCUMENT	FY 2001
HAZARDS IDENTIFICATION AND EVALUATION	FY 2001
PRELIMINARY SAFETY EVALUATION	FY 2001
ENVIRONMENTAL PERMITS AND APPROVALS PLAN	Complete RPP-6665
SYSTEMS ENGINEERING IMPLEMENTATION PLAN	FY 2001
DATA MANAGEMENT PLAN	FY 2001
CONFIGURATION MANAGEMENT PLAN FOR THE TANK FARM CONTRACTOR	Complete HNF-1900
TANK SAMPLING AND ANALYSIS PLAN	As Needed To Be Determined

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