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Page 1 of 1

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Distribution	SST Interim Closure Program	Date 9/13/00
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Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
CH2M HILL HANFORD GROUP, INC.					
J. J. Badden	T4-08	X			
J. F. Bores	R2-89	X			
W. E. Bryan	T4-07	X			
K. E. Carpenter	T4-08	X			
D. W. Crass	R3-47	X			
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C. J. Harden	R3-73	X			
OFFICE OF RIVER PROTECTION					
DOE REading Room	H2-53	X			

Crawler Acquisition and Testing Demonstration Project Management Plan

C. DeFigh-Price
CH2M HILL Hanford Group, Inc., Richland, WA 99352
Office of River Protection Contract DE-AC06-99RL14047

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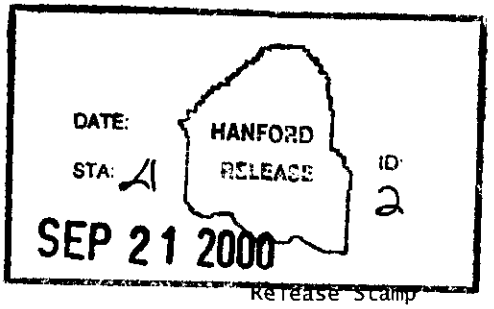

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RPP-6832, rev 0

Crawler Acquisition

And Testing Demonstration

Project Management Plan

Approvals:

Cherri DeFigh-Price 9/8/00

Cherri DeFigh-Price, Manager SST Interim Closure Program Director
CH2M Hill Hanford Group, Inc.

9/8/00

Warren T. Thompson, Manager SST Retrieval Projects
CH2M Hill Hanford Group, Inc.

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APPENDICES

FIGURES

TABLES

Glossary

AB	Authorization Basis
ABU	Acceptance for Beneficial Use
ACTR	Acquired Commercial Technology for Retrieval
A/E	Architect Engineer
BCR	Base-Line Change Request
BTR	Buyers Technical Representative
CHG	CH2M Hill Hanford Group, Inc.
CO	Contracting Officer
COR	Contracting Officers Representative
CTF	Cold Test Facility
DOE	U.S. Department of Energy
DST	Double Shell Tank
EPA	Environmental Protection Agency
HTI	Hanford Tanks Initiative
LATA	Los Alamos Technical Associates
MC	Managing Contractor
MYWP	Multi-Year Work Plan
NEPA	National Environmental Policy Act of 1969
NOC	Notice of Construction
OPD	Operations Program Division
ORP	Office of River Protection
PM	Project Manager
PMP	Project Management Plan
RCR	Review Comment Record
PPS	Past Practice Sluicing
QA	Quality Assurance
RPP	River Protection Project
SE	Systems Engineering
SEB	Source Evaluation Board
SOW	Statement of Work
SST	Single Shell Tank
TPA	Tri-Party Agreement
WA-DOE	Washington State Department of Ecology
WA-DOH	Washington State Department of Health
WBS	Work Breakdown Structure

1.0 SUMMARY

If the crawler based retrieval system is selected, this project management plan identifies the path forward for acquiring a crawler/track pump waste retrieval system, and completing sufficient testing to support deploying the crawler for as part of a retrieval technology demonstration for Tank 241-C-104. In the balance of the document, these activities will be referred to as the Crawler Acquisition and Testing Demonstration.

During recent Tri-Party Agreement negotiations, TPA milestones were proposed for a sludge/hard heel waste retrieval demonstration in tank C-104. Specifically one of the proposed milestones requires completion of a cold demonstration of sufficient scale to support final design and testing of the equipment (M-45-03G) by 6/30/2004. A crawler-based retrieval system was one of the two options evaluated during the pre-conceptual engineering for C-104 retrieval (RPP-6843 Rev. 0). The alternative technology procurement initiated by the Hanford Tanks Initiative (HTI) project, combined with the pre-conceptual engineering for C-104 retrieval provide an opportunity to achieve compliance with the proposed TPA milestone M-45-03H.

This Crawler Acquisition and Testing Demonstration project management plan identifies the plans, organizational interfaces and responsibilities, management control systems, reporting systems, timeline and requirements for the acquisition and testing of the crawler based retrieval system. This project management plan is complimentary to and supportive of the Project Management Plan for Retrieval of C-104 (RPP-6557). This project management plan focuses on utilizing and completing the efforts initiated under the Hanford Tanks Initiative (HTI) to acquire and cold test a commercial crawler based retrieval system. The crawler-based retrieval system will be purchased on a schedule to support design of the waste retrieval from tank C-104 (project W-523) and to meet the requirement of proposed TPA milestone M-45-03H.

This Crawler Acquisition and Testing Demonstration project management plan includes the following:

- Identification of acquisition strategy and plan to obtain a crawler based retrieval system.
- Plan for sufficient cold testing to make a decision for W-523 and to comply with TPA Milestone M-45-03H
- Cost and schedule for path forward.
- Responsibilities of the participants.
- The plan is supported by updated Level 1 logics, a Relative Order of Magnitude cost estimate and preliminary project schedule.

2.0 BACKGROUND

The purpose of this section is to acquaint the reader and user with the prior achievements that are critical to implementing the acquisition strategy in the most cost-effective manner. The work accomplished under the Hanford Tanks Initiative (HTI), and specifically the HTI Retrieval Project from 1996 to 1999 is key in implementing a cost-effective approach. The procurement

activities by HTI Retrieval Project were conducting a competitive procurement. It was necessary to carefully restrict details to protect the ongoing competition; it is appropriate now to provide relevant information from this effort.

The HTI Retrieval Project was a five-year project to reduce the risk and uncertainty associated with sludge and hard heel retrievalof wastes from SST's with the specific objective of determining the state-of-the-art capability to retrieve the residual wastes from 241-C-106 after past practice sluicing was complete. The second objective of the HTI Retrieval Project was to apply the best commercially available technology for waste retrieval without limiting the technology choice by pre-selection. Within this context, residual waste included both soft sludge's and difficult to remove hard heel waste. The HTI Retrieval project built on the baseline established by the Acquired Commercial Technology for Retrieval (ACTR) program to provide a source of commercial capability and to manage risks associated with the retrieval demonstration. The HTI and HTI Retrieval Projects were cancelled prior to meeting the objectives. Prior to work stoppage, a performance based, service contract was established with two competing teams to adapt existing commercially available crawler based retrieval systems to meet 241-C-106 requirements and to retrieve the waste remaining after sluicing 241-C-106 was complete. The 241C-106-retrieval demonstration selection was based on results from competing commercially available technologies that are obtainable by competitive bids from private industry. The major performance requirement was to retrieve waste to the DST to the limits of technology as stated in Tri-Party Agreement M-45-00-03F.

Utilizing the ACTR baseline, HTI established a performance based, service contract as the contractual vehicle. Eight credible responses were received from the broad call to industry for services. A Source Evaluation Board (SEB) evaluated the eight responses received from different industry team and two contracts for retrieval of the residual wastes from C-106 were awarded, one to a team lead by Foster Wheeler and one to a team lead by Los Alamos Technical Associates (LATA). The strategy was to have both companies compete during the first Task, and based on the results and an updated proposal, one company would be selected to proceed with retrieving the residual wastes from C-106.

The performance based service contracts for retrieving the waste from C-106 were divided into five tasks, representing the entire scope of work to be accomplished. Task 1 was preliminary engineering to adapt existing retrieval systems to meet the requirements for retrieving waste from C-106. The results of this task also provided the basis for selection between the two competing teams. Transitioning from one task to another is accomplished by exercising an option for the next task. Once the down selection between the two competing companies for Task 1 was complete, the option for Task 2 would be exercised with the selected ("winning") vendor team. Task 2 is the detailed design, fabrication and qualification testing of the retrieval system; Task 3 was to be the support for installation and conducting the necessary readiness activities; Task 4 was to be actual waste retrieval; and Task 5 is decontamination, demobilization and performance reporting. Tasks 1 and 2 were firm fixed price, and Tasks 3 – 5 were indefinite quantity, fixed unit rate. Substantial incentives and disincentives were provided in the HTI contract.

Both vendor teams provided excellent preliminary designs as their Task 1 products. A Source Evaluation Board evaluated the vendor designs and updated proposals. The down selection process was completed and a Source Evaluation Board report issued to the Source Selection Official recommending the option for executing Task 2 be exercised with the LATA team. Both the Foster Wheeler and LATA teams were formally notified of the results of the Source Evaluation Board determination and debriefed. The option for task 2 was not exercised with the selected team, because the HTI project was cancelled at that point in time. However, the initial contract is still in effect and the option for Task 2 can still be exercised.

In October 1999, the Office of River Protection (ORP) directed that tank C-104 be incorporated into Phase 1, minimum quantity order. In response to the direction, CH2M-Hill Hanford Group, Inc. (CHG) processed three Baseline Change Requests (BCR) to accelerate the SST retrieval project. BCR RPP-00-32 provides the preliminary engineering for C-104 retrieval, RPP-00-25 evaluates the potential for transitioning tank C-106 to non-operational status and RPP-00-036 demonstrates alternative retrieval technologies. Combining the need to accelerate the retrieval of C-104 and the preliminary design provided during Task 1 provides CHG with the opportunity to evaluate retrieval of the C-104 wastes using an alternative technology. This opportunity is being addressed during the preliminary engineering study for C-104 being performed by Holmes and Narver Design and the necessary decision documents to select a retrieval technology for C-104 are in final preparation. If the crawler-based retrieval system is selected, the strategy and methodology for managing the acquisition is provided in the following sections.

The crawler based retrieval system being evaluated by HND is centered on the track pump crawler system, which consists of a remotely operated vehicle with an electro-hydraulic control system that controls the submersible pump, the tractive mobility of the vehicle, the on-board tool packages, and other equipment designated for the specific mission. The basic TracPump vehicle is shown below in Figure 2. The tool packages include high-pressure water jetting unit and a water cannon for heavy sludge mobilization and mixing, shown in Figure 1. The system features a track-drive assembly and subsystems that are folded hydraulically to allow access into dimensionally restricted circular openings. For the purposes of Tank C-104 waste retrieval demonstration, the unit must fit into a 24 inch opening as planned.

Figure 1 TracPump with Tool Package

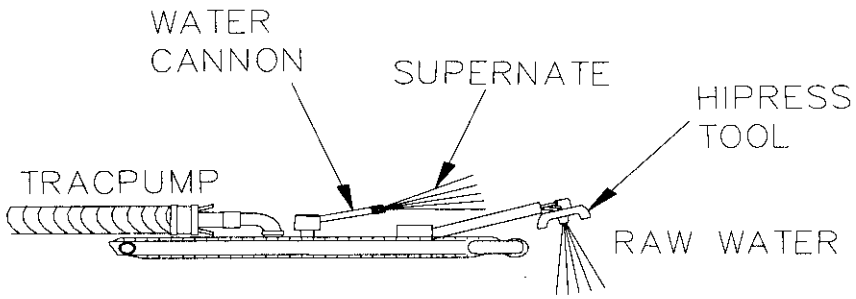
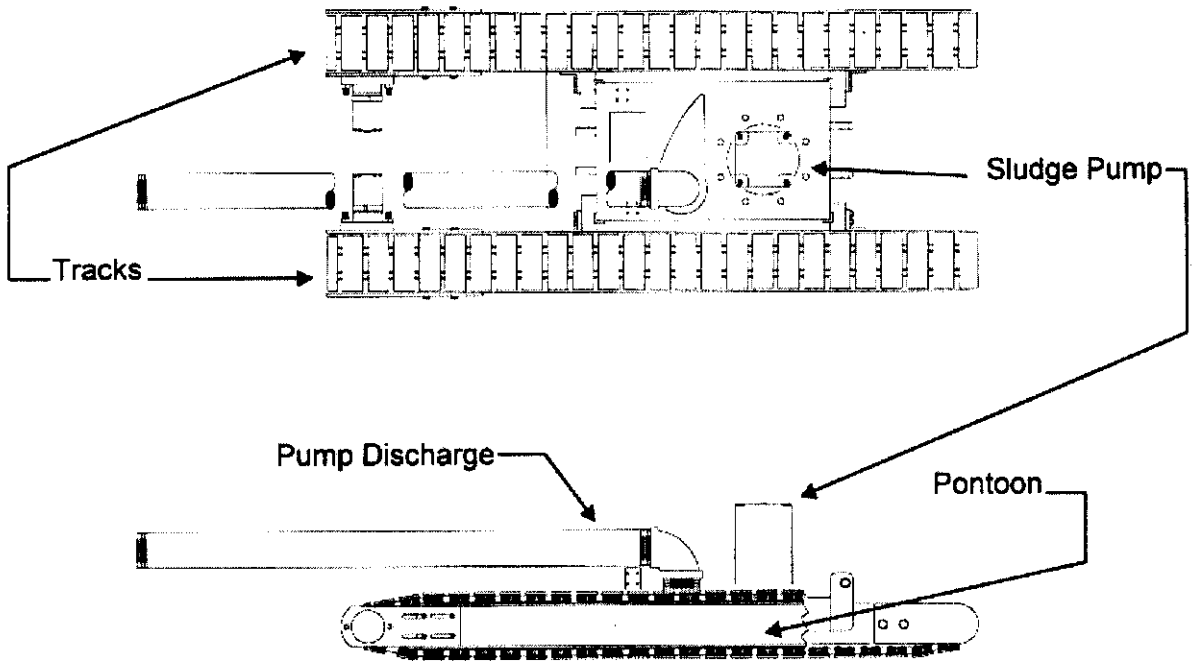


Figure 2 Basic TracPump

Figure 1



3.0 PROJECT SCOPE DESCRIPTION

The scope of the Crawler Acquisition and Testing Demonstration is to obtain and cold test a crawler based retrieval system via the existing contracting effort to obtain an alternative retrieval technology for C-106, which was initiated by HTI. The cold testing must be sufficient to support a decision on deployment in C-104 as the retrieval system, to provide sufficient data to support an authorization basis amendment and to meet the requirements of M-45-03H. The major activities to accomplish this scope are shown in the flow diagram in Figure 3.

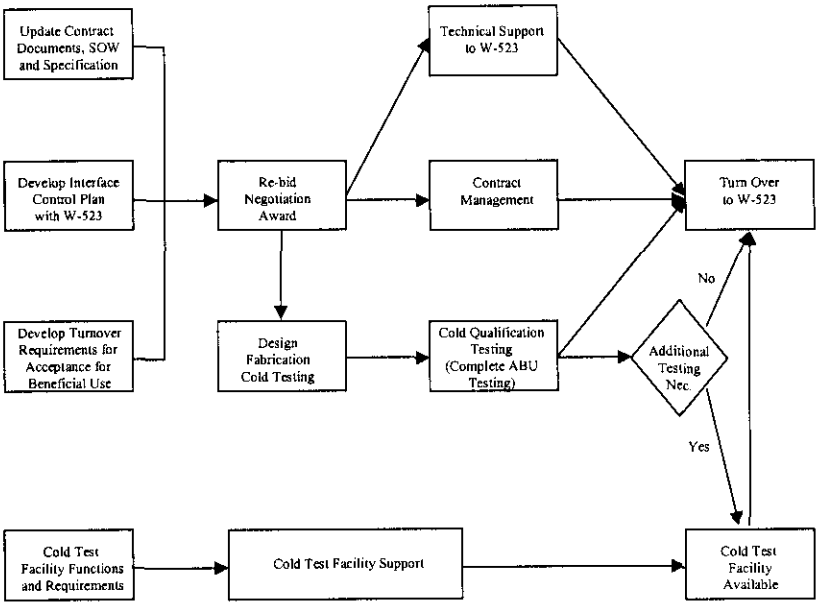
The path forward consists of updating the documentation baseline by: 1) updating the Statement of Work and Specification (LHMC,1998 Rev. 1 & HNF-S-0574 Rev. 0) to reflect deep sludge and a hard heel in tank C-104; 2) Developing a Interface Control Plan with project W-523; and 3) Developing the criteria and requirements for Acceptance for Beneficial Use by project W-523. The major difference in the documentation baseline is the depth of sludge, other physical parameters, such as the riser configuration, dome loading, available services, etc. are the same as for C-106. In parallel with updating the documentation baseline, the functions and requirements to support testing of the crawler-based retrieval system in the cold test facility will be developed and issued.

Once the baseline is updated the HTI contract for design fabrication and qualification testing can be rebid. When negotiations are complete, the option for Task 2 in the HTI contract will be exercised and the LATA/ESG team will proceed with design and fabrication and qualification testing, and the CHG team will manage the contract and provide technical support to W-523, in

accordance with the Interface Control Plan. Technical assistance will also be provided to the cold test facility. The HTI contract for the crawler requires extensive cold testing for CHG acceptance (Eight weeks to demonstrate the equipment and procedures meet the criteria in the specification and statement of work). At this point it is not known if the testing specified in the HTI contract will be sufficient for W-523 to accept the crawler based retrieval system. After the crawler-based retrieval system is shipped to Hanford, additional cold testing can be performed, as necessary, in the cold test facility. The schedule for these activities supports both W-523 design activities and proposed TPA Milestone M-45-03H.

Figure 3 C-104 Crawler Acquisition & Test Demonstration Flow Diagram

C-104 Crawler Acquisition
& Test Demonstration Flow Diagram

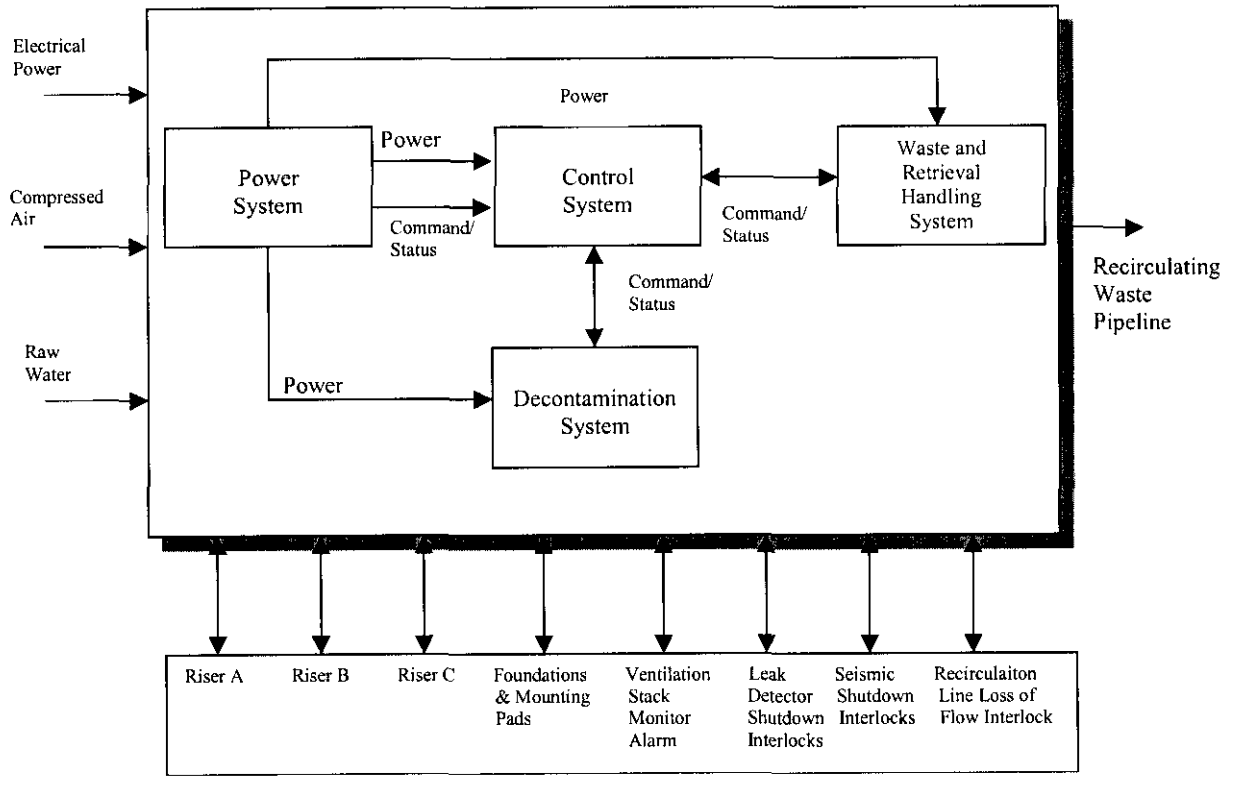


With Acceptance for Beneficial Use by W-523, the Crawler Acquisition and Testing Demonstration activities are complete, and the contract for other crawler retrieval activities will be managed by project W-523. CHG Procedure RPP-0842, Volume IV, Engineering, Section 3.12, Rev. 1d will control turnover of equipment and documentation from the SST Retrieval Projects to SST Facility Operations.

The interfaces between the Crawler Acquisition and Testing Demonstration and project W-523 will be controlled through the Interface Control Plan and Crawler Specification. The Crawler Specification provides interface information between the tank and the crawler-based retrieval system and services in C-Farm and the crawler-based retrieval system. The interface diagram in

the Crawler Specification is shown here for illustrative purposes to understand the interface requirements.

Figure 4 Crawler Specification Interface Diagram



4.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section describes the organizational structure, roles, and responsibilities currently in place to support Crawler Acquisition and Testing Demonstration. The organizational team consists of DOE-ORP, who provides the program direction, CHG who has the operational responsibility and key subcontractors to provide specific services.

4.1 US DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION

The DOE-ORP Manager reports directly to the DOE-HQ Assistant Secretary for Environmental Management. The DOE-ORP Manager is responsible and accountable for managing all aspects of the RPP mission. The DOE-ORP Manager works closely with the DOE-RL Manager on matters regarding nuclear operations authorization for all Hanford Site facilities. Interfaces between the DOE-ORP Manager and the U.S. Department of Energy Richland Operations Office (DOE-RL) Manager are established to address the Federal Facilities Agreement and Consent

Order (commonly referred to as the Tri-Party Agreement), landlord and support services, and nuclear and process safety. The DOE-ORP Manager works closely with the DOE-RL Manager to ensure effective integration of DOE-ORP activities with other Hanford Site activities.

Key DOE-ORP responsibilities related to demonstration projects include the following:

- preparing and submitting budget requests to DOE-HQ supporting the Hanford mission
- proactively interacting with stakeholders
- maintaining an appropriate level of project oversight to assess compliance and to be an informed advocate for construction project activities

Authority for contractual direction to CHG is limited to the DOE-ORP Contracting Officer (CO) and designated Contracting Officer Representative (COR). The COR is empowered to act as an authorized agent of the CO for specific functions. The CO and COR are responsible for providing technical and/or administrative direction to CHG relative to their project or area of responsibility. In addition, the CO and COR are responsible for the following:

- Providing technical oversight to ensure that products and services are delivered in accordance with contract terms and conditions. Ensuring that work is conducted consistent with established contracts and plans, and those applicable requirements (e.g., statutes, laws, DOE Orders, policies, etc.) are identified and met.
- Accepting all work completed in accordance with the terms and conditions of the contract.
- Reviewing invoices, as required.
- Providing approval of Multi-Year Work Plan documentation.
- Conducting periodic reviews, audits, and surveillances.
- Conducting 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 and safety or the environment.

4.2 CH2M HILL HANFORD GROUP, INC

CHG is responsible for planning, managing, and executing River Protection Projects (RPP), operations, and other activities as described in contract DE-AC06-99RL14047. The CHG is responsible and accountable for management of all activities associated with the Crawler Acquisition and Testing Demonstration. All contractual and other formal communications regarding the Crawler Acquisition and Testing Demonstration will occur between CHG and DOE-ORP.

4.2.1 Single Shell Tank Interim Closure Project

Within CHG is the Project Manager and Senior Vice President for Single Shell Interim Closure Project is responsible for planning, managing and successfully executing the Crawler Acquisition and Testing Demonstration. Single Shell Tank Interim Closure Project is responsible for providing programmatic support and direction, engineering, project management, budget, schedules and operations. Responsibilities for specific activities within the scope of the Crawler Acquisition and Testing Demonstration have been delegated to line organizations within the Single Shell Tank Interim Closure Project.

Programmatic sponsorship and coordination of the overall programmatic support for the Crawler Acquisition and Testing Demonstration is provided by the SST Interim Closure Programs organization. This sponsoring organization provides programmatic direction defining project, programmatic related operational needs to the Crawler Acquisition and Testing Demonstration and ongoing support through the Multi-Year Work Plan process. Engineering and Project Management is provided by SST Retrieval Projects. SST Retrieval Projects is specifically responsible for day-to-day management and successful completion of the Crawler Acquisition and Testing Demonstration from updating the documentation baseline to turn over to W-523 for Acceptance for Beneficial Use (ABU) per CHG Procedure HNF-IP-0842, Volume IV, Engineering, Section 3.12, Rev 1d. Project W-523 is responsible for on going support, joint development and approval the criteria and requirements for ABU, verifying the criteria for ABU has been completed.

4.2.2 SST Retrieval Projects

Specific responsibilities of the SST Retrieval Projects for the Crawler Acquisition and Testing Demonstration include the following:

- Authorize and direct all work scope associated with Crawler Acquisition and Testing Demonstration execution by supporting contractors, managing authorized project funds and resources, and approving and managing all work scope associated with Crawler Acquisition and Testing Demonstration execution by supporting contractors, managing authorized project funds and resources, and approving Crawler Acquisition and Testing Demonstration cost and schedule baselines.

- Conducting Crawler Acquisition and Testing Demonstration activities in accordance with the CHG Quality Assurance Project Plan, performing assessments to determine the adequacy of quality assurance implementation, and participating in the CHG corrective action management program.

- Developing Crawler Acquisition and Testing Demonstration planning and baseline documents.

- Providing contractual direction to the LATA/ESG team for the performance of design, fabrication and cold testing, providing the Crawler Acquisition and Testing Demonstration technical baseline and safety basis for design.

- Ensuring design media is compliant with the Crawler Acquisition and Testing Demonstration baseline and specification considering safety, quality, operability, maintainability, environmental compliance, cost effectiveness, and providing design approval, involving engineering, operations, safety, quality assurance, and others as appropriate in project design reviews, ensuring documented closeout of design review comments.

- Providing administration of overall Crawler Acquisition and Testing Demonstration change control to assure appropriate management of scope, cost, and schedule commitments.

- Providing the Crawler Acquisition and Testing Demonstration acquisition and testing schedules.

- Providing progress and status reports, as required.

- Ensuring that quality-affecting records providing objective evidence that the design, procurement, and testing activities comply with governing requirements are maintained, and that documentation/records providing a traceable history are properly archived at completion of the Salt Cake Dissolution Demonstration.

- Providing copies of 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.

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

- Assuring "as-built" drawings are prepared.

- Supporting construction turnover activities performed in preparation of operational readiness by co-developing and approving the criteria and requirements for ABU and ensuring these requirements are fulfilled prior to turn over to operations.

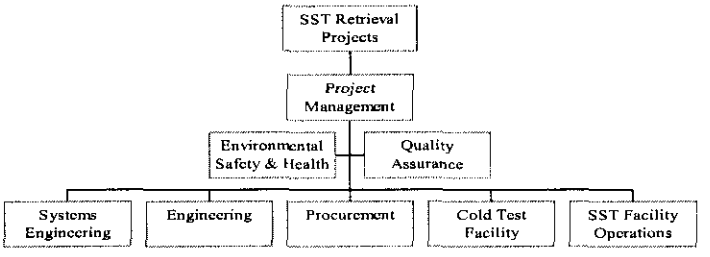
- Providing technical support for reviews of demonstration documentation by off-site agencies to assure prompt and cost-effective resolution of identified issues.

- Coordinating development of safety analyses, and input to Authorization Basis (AB) amendments, environmental documentation, and other related documentation in support of project W-523 related to the Crawler Acquisition and Testing Demonstration activities

The proposed organizational structure for SST Retrieval Project to Manage the Crawler Acquisition and Testing Demonstration is shown is Figure 5.

Figure 5 Organization Structure

Organization Chart for
Crawler Acquisition & Test Demonstration



4.2.2.1 Los Alamos Technical Associates

Los Alamos Technical Associates, Inc. (LATA) with support from Environmental Specialties Group, LLC (ESG) and Cox Walker & Associates (CWA) were contracted to fulfill the requirements of Task 1, system definition. This contractor subcontractor relationship will continue through design, fabrication, testing and turnover of a performance-tested retrieval system.

Formal communication will flow through CHG to LATA and then subsequently to subcontractors of LATA. Design, fabrication, quality assurance, and testing requirements will flow down from CHG to LATA and subsequent contractors.

4.2.2.2 Other Contractors

C-104 Retrieval Project may contract to obtain specific skills and/or services from time to time, on an as needed basis.

4.2.3 Nuclear Safety

Nuclear Safety has the responsibility for working in conjunction with DOE-ORP to update or amend the Authorization Basis for SST retrieval, as required. In addition, Nuclear Safety will provide a member to the project team to help ensure Authorization Basis considerations are

evaluated on an ongoing basis by reviewing LATA safety studies, designs, safety documents and participating in working and design review meetings. Nuclear Safety will also issue the Criticality Safety Evaluation Report for SST retrieval and provide input to the tank 241-C-104 Process Control Plan.

4.2.3 SST FACILITY OPERATIONS

Operation of the C-104 Waste Retrieval supplied systems has been delegated to SST Facility Operations.

SST Facility Operations has the responsibility to provide an ongoing operations support and perspective to the Crawler Acquisition and Testing Demonstration team, including participating in team working sessions, working meetings with the LATA team and design reviews.

4.2.3.1 Other CHG Responsibilities

Other CHG responsibilities associated with Project W-523 are defined in the C-104 Retrieval Project Plan, RPP-6557, including management of physical and administrative interfaces.

4.3 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 by one or more organizations. Interface documentation is an important aspect of interface management and involves preparation of Interface Control Documents depicting physical, functional and/or test interfaces.

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. Physical interfaces will be documented in interface control drawings such as LATA-SK-402 and LATA-SK-403. Currently twenty physical interfaces have been identified and documented using this approach see Appendix E for examples.

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 Memoranda of Understanding, as needed. Table 1 summarizes the interfaces currently identified.

Table 1 Interface Control Document Listing

DOCUMENT NO.	DESCRIPTION
CWA-1150-SK-002	ICD Physical Interface Drawing
CWA-1150-SK-003	ICD Physical Interface Drawing
C-01	DCCV Footings
C-02	DCCV Stairway Pad
C-03	Air & Water Service Building Piping to DCCV
C-04	Pump Pit Cover Blocks
C-05	Operator Control Station
E-01	Electrical Power to Vendor
I-01	Nitrogen Supply to Vendor
I-03	Riser 6 Cameras & Lights
I-04	Riser 3 Cameras & Lights
I-06	Riser 15 Cameras & Lights
I-08	Loss of Tank C-106 Pressure
I-09	Pump Pit Leak Detector
I-10	HVAC Damper in DCCV
I-11	Stack Monitors at AY-102 & C-106
I-12	Seismic Shutdown Interlock
M-01	Vendor Slurry Injection Point
M-02	Supernate Supply to Vendor
M-03	Raw Water Supply to Vendor
M-04	High Pressure Water Relief Valve Drain
M-05	Stinger/Riser 9 Interface
M-06	Instrument Air Connection at Air & Water Service Building

5.0 PROCUREMENT AND CONTRACTING APPROACH

The basic procurement and contract approach is to exercise option for Task 2 on the existing HTI contract (MJG-SBD-A42163). Other services will be contracted for on an as needed basis. Other services are expected to minor in comparison to the LATA contract.

5.1 ACQUISITION STRATEGY

The goal is to provide a crawler based retrieval system capable of retrieving the waste from C-104 on a timeline that supports TPA Milestone M-45-00-03G, sludge/hard heel waste retrieval cold demonstration.

The core of the strategy is to acquire a crawler-based retrieval system that will support a cold demonstration using the contractual vehicle and competitive procurements executed by HTI (contract MJG-SBD-A42163). As indicated above, the original contract for retrieval of C-106 residual wastes is still in force, the crawler based retrieval system selected by the Source Evaluation Board is capable of retrieving the C-104 wastes and the crawler based retrieval system acquisition can be initiated by exercising the option for Task 2 of the LATA contract. This approach preserves the most of the multi-million dollar investment by the DOE and industry during the ACTR/HTI activities and minimizes the initial investment and schedule required to initiate acquisition of the crawler-based retrieval system.

6.0 FUNDING APPROACH

Annual expense funding, consistent with the $14,,000,000 Total Estimated Cost baseline, is included in TBR 280.105, Conduct Limits of Technology Demonstration. The annual requested Crawler Acquisition budget authority is determined through the Multi-Year Work Planning process, (see summary estimate appendix C). Annual budget requests will include progress payments for achievement of scheduled milestone accomplishment, plus the appropriate amount for work in progress on other milestone activities yet to be completed. Budget-year funding for Crawler Acquisition is reviewed by an annual review conducted by CHG and DOE-ORP.

Monthly cost and schedule reports are provided to the SST Interim Closure Project, including analysis of cost performance information. Formal review of expense funding for Crawler Acquisition is performed by the RPP at mid-year.

7.0 ENGINEERING AND DESIGN

7.1 DESIGN

The SST Retrieval Projects is responsible for providing day-to day direction to the design management of the Crawler Acquisition contract to meet the requirements of the approved Statement of Work and C-104 retrieval Specification. SST Retrieval Projects is also responsible for day-to-day coordination of the interface between Crawler Acquisition and the W-523 and Cold Test Facility projects. SST Retrieval Projects is also responsible for identification of proprietary information and appropriate marking of such information.

The Design Authority is responsible for integration and approval of the following design deliverables within the project:

- System design
- Draft Qualification Test Plan
- Functions and Requirements for C-104 Retrieval Project

Throughout the design effort, periodic technical review meetings are conducted with CHG project management and other members of the CHG design review team as appropriate. Design comments will be documented using a formal Review Comment Record (RCR) format and disposition to the satisfaction of the client. Deviations in design will be transmitted through the project management chain and if warranted significant deviations will be processed as change requests in accordance with Section 9.0, "Performance Baseline Definition and Control."

7.2 EXECUTION PHASE

The execution phase will consist of preliminary design, detailed fabrication, qualification testing, supplemental cold testing and transition to Project W-523. The execution phase will be carried out in accordance with the planning and technical baselines prepared during conceptual design of the C-104 Retrieval Project and the terms of the contract for acquisition.

8.0 WORK BREAKDOWN STRUCTURE

The project Work Breakdown Structure (WBS) reflects the proposed work scope necessary to complete cold testing and transition to Project W-523. This project resides under ORP WBS 1.01.04.01.02.03.03 TBR No. 280.105 – see also Appendix B of the C-104 Retrieval Project Plan, RPP-6557. A detailed WBS chart for C-104 Crawler Acquisition and Test Demonstration is shown in Appendix A of this document.

9.0 PERFORMANCE BASELINE DEFINITION AND CONTROL

Crawler Acquisition performance will be monitored against the baseline reported in accordance with ORP requirements. Monthly Management Review Meeting reports are provided to CH2M HILL SST Interim Closure Project organizations.

9.1 TECHNICAL BASELINE

The Function and Requirements Document for Tank 241-C-104 Waste Retrieval System, RPP-6525, the existing Statement of Work and Technical Specification for contract MJG-SBD-A42163 provides the current technical baseline for Crawler Acquisition and a basis for managing the interface with the W-523 Project. Since this project management plan is complimentary to and supportive of the Project Management Plan for Retrieval of C-104 (RPP-6557), it will be updated and coordinated with the development of the W-523 Project Execution Plan, to be issued next year during Conceptual Design.

The Crawler Acquisition statement of work provides the definition of technical documents required to demonstrate compliance with the technical baseline. These technical deliverables produced as part of the technical work will be controlled and tracked to assure compliance with the baseline. Work in progress will generally be tracked as revision alphas; deliverables formally transmitted for baseline will be revision zero. Changes to baseline documents will be tracked, controlled, and subjected to the same level of approval as the revision zero document. The Document Control Log will list and track deliverables and whether they are submitted for review, down select or approval.

Relationships to other projects and activities are depicted in the Level I logics shown in Appendix D of this document.

9.2 SCHEDULE BASELINE

Appendix B includes the P3 project schedule for crawler acquisition. The schedule is consistent with the 1999 Baseline Change Request, which authorized development of this project plan.

Schedule control of this project will be implemented through critical path schedule analyses, resulting in the identification of schedule float, the establishment of milestones, and corrective actions for schedule variances as determined by Earned Value methodology. The official baseline schedule for this task will be the schedule approved as part of the Project Management/ Control Work Plan. The schedule will be statused monthly (as a minimum) to determine problems and corrective actions. If it is determined that a baseline schedule change is required, a change request will be submitted in accordance with HNF-IP-0842.

9.3 COST BASELINE

The cost baseline is summarized in Appendix C. The cost baseline is consistent with the 1999 Baseline Change Request, which authorized development of this project plan.

Formal change control to the cost baseline will be used. Generally accepted estimating methodology will be employed. The cost baseline will be revised when a deviation in the Statement of work warrants a scoping change. A change control log will be maintained with the Manager of Project Controls. All changes to the cost baseline require Project Management approval. Costs will be summarized and reported monthly. If it is determined that a cost change is required, a change request will be submitted in accordance with the procedure.

9.4 BASELINE CHANGE CONTROL

Changes to Crawler Acquisition baselines are authorized by approval of a revised Project Plan or Functions and Requirements or by approval of a change request (CR) in accordance with *Baseline Change Control* (RPP-IP-0842, Volume VIII, Section 1.1). Changes below the following thresholds are processed within the Crawler Acquisition project. 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.

The CWBS for Waste Retrieval: Systems Definition flows from the higher level Waste Retrieval Division CWBS and is established for planning, execution, and control of the work. The CWBS represents the way in which the work will be estimated, scheduled, budgeted, performed, and managed. The CWBS defines all authorized task work and therefore, forms the basis for technical, schedule, and cost control. Each active element of the CWBS is statused at regular intervals (at least monthly) to determine if the planned work is being accomplished on schedule and within budget.

The project baseline consists of three elements: technical, schedule, and cost. A system by which changes to the baseline will be controlled, approved, and documented will be developed. The Technical Baseline of the project is organized using the CWBS.

The approach to managing project changes is based on maintaining an accurate description of the project baseline, methodically evaluating proposals to alter it, and maintaining configuration to the technical baseline.

9.5 RISK MITIGATION

The approach to managing technical risks will build on the HTI practices of integrating safety and authorization envelope considerations into the design process as it progresses and to require risk mitigation testing at all stages of the design to provide early verification of design choices. Initial risk mitigation testing is focused on component and sub-system testing in accordance with the LATA Risk Management Plan and Task 1 supporting documents. The updated proposal for the crawler based retrieval system received at the completion of Task 1, which was reviewed by the Source Evaluation Board, adequately reflects these approaches and neither the statement of work nor the LATA proposal need to be modified. Technical risks will also be managed by performing independent operability assessments using Failure Mode Effects Analysis (FMEA) and Reliability, Availability and Maintainability (RAM) analysis techniques. The analyses will be similar to the analysis performed to support development of the Phase 1 Operations & Maintenance Concept. Early demonstration of sustained submerged operation in 6 or more feet of sludge will provide data to use in the failure mode effects analysis and reliability, availability and maintainability, as well as performance based design input. The early demonstration of submerged operation will be an addition to the statement of work.

The approach to managing cost risk would be to continue to allocate cost risks to those most capable and motivated of managing them. Task 2 will continue as a fixed price contract. On site activities will be priced as indefinite quantity, fixed unit cost, with pre-negotiated escalation rates. The strategic utilization of significant incentives to encourage attainment of clearly identified performance goals by the contractor will be continued as a mechanism to manage cost risk. The current baseline acquisition approach is to obtain the crawler-based retrieval system from a commercial vendor, who would also provide operating services on a performance based service contract.

The integrated project schedule shows C-104 conceptual design and crawler acquisition activities supporting an application for CD-2 at the completion of FY 2001. Attainment of CD-2 will provide authorization to complete design activities and initiate procurement of long lead equipment. The crawler-based retrieval system is considered long lead equipment.

Technical, schedule and costs risks will also be managed on an ongoing basis as additional lessons learned information becomes available from companion projects. Lessons learned information from W-320, C-106 retrieval operations and W-521 were incorporated into the C-104 preliminary engineering activities and preparation of the updated statement of work for the crawler acquisition. Lessons learned from managing the Task 1 crawler acquisition were also incorporated into the updated statement of work.

Integration between the crawler based retrieval system and the Architect Engineer for C-104 Retrieval Project will continue to be managed by refinement of the existing ICD's, supplemented by periodic meeting and information exchanges during the design period.

10.0 LIFE CYCLE COST

The life cycle cost is captured in Section 8.0 of the C-104 Retrieval Project, RPP-6557. The costs for Crawler Acquisition are managed as part of the overall C-104 Retrieval Project.

11.0 COST CONTROL

The approach to managing cost risk would be to continue to allocate cost risks to those most capable and motivated of managing them. Specifically that means continuing Task 2 as a fixed price contract and on site activities would remain activities priced as indefinite quantity, fixed unit cost, with pre-negotiated escalation rates. The strategic utilization of significant incentives to encourage attainment of clearly identified performance goals by the contractor would be continued. The current baseline acquisition approach is to obtain the crawler based retrieval system from a commercial vendor, who would also provide operating training services. The option to obtain retrieval services from a commercial vendor using a performance based, service contract will be maintained until decision-making is complete. Cost control and change controls are the same activity for a fixed price contract.

12.0 TECHNOLOGY EVALUATION STRATEGY

As part of the HTI, an evaluation of commercial technologies for retrieval was performed. Industry and other technology developers were solicited to propose alternate technologies for removing waste from SSTs. These technologies were evaluated and proof-of-principle tests were conducted. The results supported a remotely operated track pump modified for introduction into a SST. See Background, Section 2 for additional details.

13.0 TEST AND EVALUATION PLAN

CHG acceptance of the crawler-based retrieval system is contingent on satisfactory completion of factory acceptance testing. Factory acceptance testing is an eight-week period of extensive testing of all aspects of deployment, waste retrieval and vehicle management, including demonstration of all aspects of all operating and maintenance procedures. Performance standards were established in the existing Crawler Acquisition statement of work and reflected the LATA proposal. If the time period between acceptance and installation is prolonged, the system will be installed in the Cold Test Facility to re-qualify the operators. The decision to re-qualify will be the responsibility of the C-104 Retrieval Project as they prepare for readiness activities.

14.0 SYSTEMS ENGINEERING

The C-104 Retrieval Systems Engineering program plan is described in *"Single Shell Tank Retrieval Project Systems Engineering Implementation Plan"* (RPP-6761).

15.0 PERFORMANCE MEASUREMENT, REPORTING AND FORCASTING

Work planning, scheduling, and budgeting will be integrated to provide a realistic baseline against which performance can be measured. Earned value methodology will be utilized to measure performance. Each contractor will utilize and maintain internal cost and schedule performance measurement information which provides responsible managers with timely, accurate, and objective performance data.

Reporting will be completed monthly (as a minimum) and will support the monthly reporting needs. Items to be included are:

- Overall status of all active CWBS activities,
- Major achievements during the period, including milestones accomplished and end items submitted,
- Critical path items; their potential effect on scope, schedules, or costs; and recommendations/actions being taken to correct all problems, Anticipated progress and milestones to be accomplished during the next 90 days,
- Status with anticipated closure dates of all agreements and commitments and action items, and technical problems affecting cost and schedule with recommendations for resolution.

16.0 CONTINGENCY MANAGEMENT

Cost contingency is managed within the change control process discussed in Section 7.4. The CHG Crawler Acquisition Project Manager maintains a log of all change requests authorizing the use of contingency. The Crawler Acquisition schedule does not include contingency allowances, although RPP does include schedule contingency between the end of Crawler Acquisition construction/startup and the planned operational date as depicted on the Mission Summary schedule.

17.0 ENVIRONMENTAL COMPLIANCE ACTIVITIES

17.1 AIR PERMITS

Data from the crawler based retrieval system design will be provided to C-104 Project Management to support necessary environmental documents. Permits, if required, will be obtained by the C-104 Project Staff and will be prepared consistent with the requirements outlines in RPP-6665, *Project W-523 Environmental Permits and Approvals Plan.*

17.2 RCRA AND DANGEROUS WASTE REGULATIONS

Data from the crawler based retrieval system design will be provided to C-104 Project Management to support necessary environmental documents.

17.3 NATIONAL ENVIRONMENTAL POLICY (NEPA) ACT

Any NEPA requirements for Crawler Acquisition will be incorporated as a sub part of the C-104 Retrieval Project.

18.0 DESIGN REVIEW

During the design effort, at least two technical design review meetings will be conducted with the vendor, CHG and other members of the CHG design review team. Comments concerning the design will be documented using the Review Comment Record (RCR) process. Disposition of the RCRs are the responsibility of the LATA. The need for additional design reviews will be at the discretion of the C-104 Project Manager.

19.0 QUALITY ASSURANCE

The crawler acquisition project will culminate before Project W-523 completes the conceptual design phase. The W-523 project will have a specific Quality Assurance Program Plan, but not until the conceptual design phase is underway. Therefore, the crawler acquisition project will use the higher-level quality assurance document RPP-MP-600 "Quality Assurance Program Description for the Tank Farms Contractor." The quality assurance activities performed for the crawler acquisition project are the same as the general quality assurance activities identified in Section 18.0 of the C-104 Project Plan, RPP-6557.

20.0 SAFETY

The crawler acquisition project will follow the safety procedures and guidelines in accordance with the C-104 Retrieval Safety Plan and Cold Test Facility requirements.

21.0 CONFIGURATION CONTROL

The crawler acquisition project will use the C-104 Retrieval Configuration Control plan.

22.0 DOCUMENT AND RECORD MANAGEMENT

The crawler acquisition project will use the C-104 Retrieval Document and Record Management plan.

23.0 TRAINING

The crawler acquisition project will use the C-104 Retrieval Training Plan.

24.0SAMPLING AND ANALYSIS PLAN

The crawler acquisition project will follow the requirements outlines in the C-104 Sample and Analysis Plan.

25.0 PROCEDURES

No project specific procedures are planned during the design phase. However, specific procedural requirements are anticipated to support end product assembly, maintenance and acceptance activities.

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RPP-6761, *Single-Shell Tank Retrieval Project Systems Engineering Implementation Plan,* CH2M HILL, Hanford Group, Inc., Richland, Washington.

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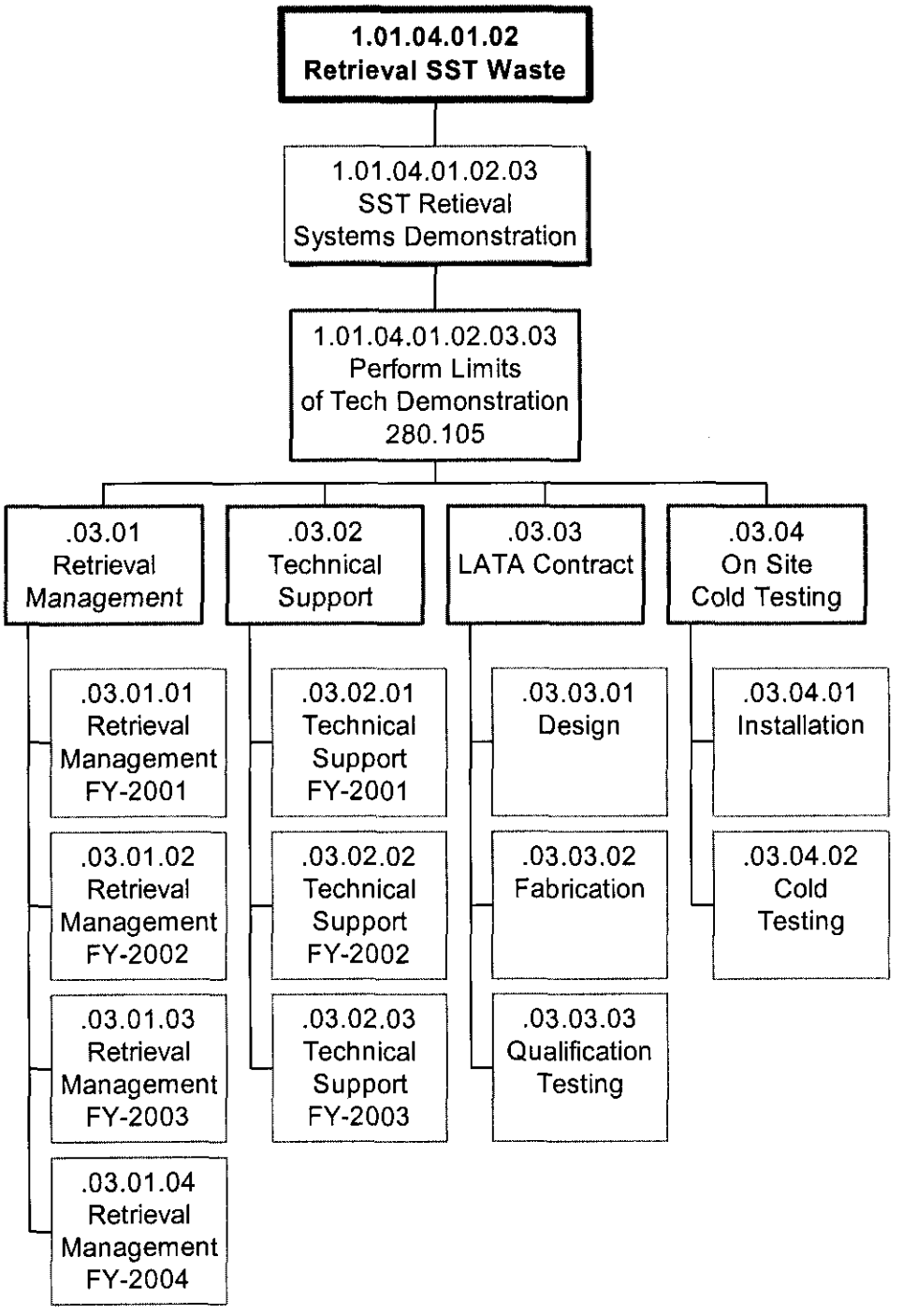
RPP-MP-003, 2000, *Integrated Environmental, Safety and Health Management System Plan (ISMS),* CH2M HILL, Hanford Group, Inc., DOE-ORP, Richland, Washington.

RPP-MP-600, *Quality Assurance Program Description for the Tank Farms Contractor,* CH2M-Hill, Hanford Group, Inc., Richland, Washington.

APPENDIX A – WORK BREAKDOWN STRUCTURE (WBS)

C-104 Crawler Acquisition WBS



APPENDIX B - SUMMARY SCHEDULE

APPENDIX C - SUMMARY ESTIMATE

WBS 1.01.04.01.02.03.03
TBR: 280.105
C-104 Crawler Acquisition And Testing Demonstration

WBS Element	FY-2001	FY-2002	FY-2003	FY-2004	Total
Retrieval Management	425	810	918	215	2368
Technical Support	425	809	232		1466
LATA Contract	2834	4897	1395	0	9126
Installation in Cold Test Facility			100		100
Cold Testing at Hanford				940	940
Total	3684	6516	2645	1155	14000

APPENDIX D - LEVEL I LOGICS

For
MYWP
FY01

SST Interim Closure Project
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.

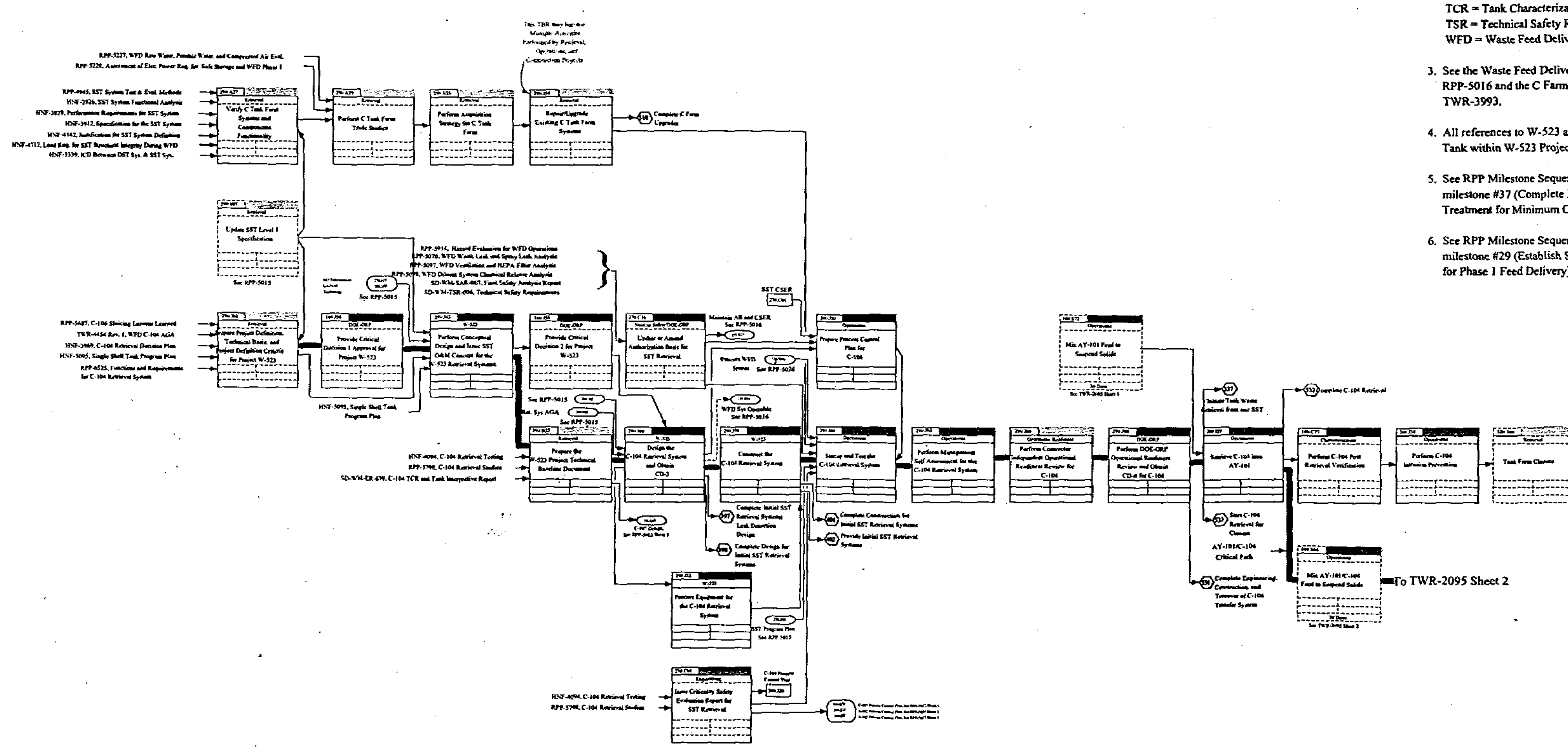
2. AB = Authorization Basis
   BBI = Best Basis Inventory
   CD = Critical Decision
   CSER = Criticality Safety Evaluation Report
   DQO = Data Quality Objective
   DST = Double-Shell Tank
   HLW = High Level Waste
   MT = Metric Tons
   O&UP = Operations & Utilization Plan
   RPP = River Protection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

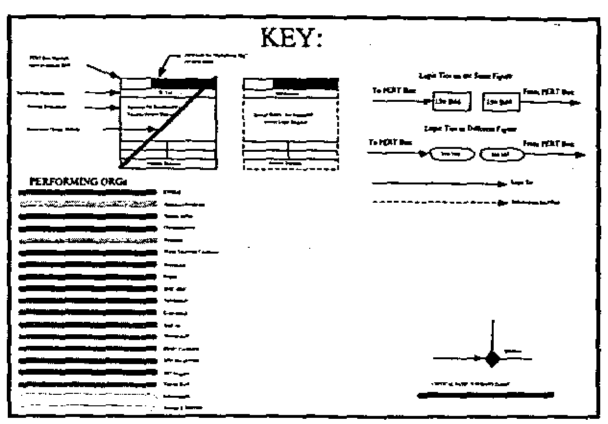
3. See the Waste Feed Delivery Program Logic, RPP-5016 and the C Farm Safe Storage Logic, TWR-3993.

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

5. See RPP Milestone Sequence Chart for major milestone #37 (Complete Phase 1 HLW Treatment for Minimum Order Quantity)

6. See RPP Milestone Sequence Chart for major milestone #29 (Establish SST Retrieval Capability for Phase 1 Feed Delivery)





RPP-6832, REV 0
D-2

U.S. DEPARTMENT OF ENERGY
CH2MHILL HANFORD GROUP INC.
RPP Retrieval Level 1 Logic
SST Interim Closure Project
Tank 241-C-104
TWR-2104

For
MYWP
FY01

SST Interim Closure Project

NOTES :

1. ACTR - Acquire Commercial Technology for Retrieval
AGA - Alternative Generation Analysis
DOE-ORP - U.S. Dept. of Energy, Office of River Protection
DST- Double Shell Tank
EIS - Environmental Impact Statement
HLW- High Level Waste
HTI - Hanford Tanks Initiative
HTWOS - Hanford Tank Waste Operation Simulator
ICD - Interface Control Document
MAR - Mission Analysis Report
MUST - Miscellaneous Underground Storage Tank
OSD - Operational Specification Document
PDC- Project Design Criteria
RPECA - Retrieval Performance Evaluation Criteria Assessment
RPP - River Protection Project
SST - Single Shell Tank
TSR - Technical Safety Requirement
T&E - Test and Evaluation
USQ- Unreviewed Safety Question
WRF - Waste Retrieval Facility
WTC - Waste Treatment Contractor

2. See RPP Milestone Sequence Chart for major milestone #29 (Establish SST Retrieval Capability for Phase 1 Feed Delivery)

Program Definition

Technology Evaluations

SST Retrieval Test Definition

WRF/Capital Projects

Typical of SST Retrieval/Capital Projects

SST Retrieval/ Demonstration Projects

KEY:

RPP-6832, rev 0 D-3

U.S. DEPARTMENT OF ENERGY
Office of River Protection (ORP)
CH2MHILL HANFORD GROUP INC.

SST Interim Closure Project

RPP-5015

APPENDIX E - INTERFACE CONTROL DOCUMENT (Example)

Interface Control Documents (ICD)

LATA-SK-402
LATA-SK-403

Example ICD's

C-01 DCCV Footings
I- 01 Nitrogen Supply Line
I- 04 Riser 3 Cameras & Lights
M-02 Supernate Supply to Vendor

SCOPE SHEET
FOR INTERFACE CONTROL DOCUMENT

ICD NUMBER: C-01 DATE INITIATED:
REVISION: DATE:

ICD TITLE: DCCV Footings

PARTICIPANTS: CHG- Project Engineer
LATA - Project Manager

SCOPE: Covers DCCV foundation supports

EQUIPMENT RESPONSIBILITY: LATA

INTERFACE DIAGRAM: See drawing

Note: Foundation pads will be pre-cast concrete. These pads will be placed on special material to distribute load to ground. Special material to be identified in final design.

RELATED ICDS: None

APPROVALS:

PARTICIPANT	DATE	PARTICIPANT	DATE
SE REPRESENTATIVE	DATE	PROJECT MANAGER	DATE

SCOPE SHEET
FOR INTERFACE CONTROL DOCUMENT

ICD NUMBER: I-01 DATE INITIATED:
REVISION: DATE:

ICD TITLE: Nitrogen Supply to Vendor

PARTICIPANTS: CHG - Project Engineer
LATA - Project Manager

SCOPE: Connection for supplying vendor with nitrogen.

EQUIPMENT RESPONSIBILITY: Crawler Acquisition to provide ½ inch piping connection for vendor Nitrogen supply line.

INTERFACE DIAGRAM:

RELATED ICDS: None

APPROVALS:

PARTICIPANT	DATE	PARTICIPANT	DATE
SE REPRESENTATIVE	DATE	PROJECT MANAGER	DATE

SCOPE SHEET
FOR INTERFACE CONTROL DOCUMENT

ICD NUMBER: I-04 DATE INITIATED:
REVISION: DATE:

ICD TITLE: Riser 3 Cameras and Lights

PARTICIPANTS: CHG - Project Engineer
LATA - Project Manager

SCOPE: All equipment, spaces, and areas needed to enable vendor to install, operate, and maintain cameras and lighting in Riser No. 3.

EQUIPMENT RESPONSIBILITY: LATA will request Tank Farms to provide lighting and cameras as a service subcontract.

INTERFACE DIAGRAM: See drawing

RELATED ICDS: I-3, I-4, I-6, & I-7

APPROVALS:

PARTICIPANT	DATE	PARTICIPANT	DATE
SE REPRESENTATIVE	DATE	PROJECT MANAGER	DATE

SCOPE SHEET
FOR INTERFACE CONTROL DOCUMENT

ICD NUMBER: M-02 DATE INITIATED:
REVISION: DATE:

ICD TITLE: Supernate Supply to Vendor's System

PARTICIPANTS:
CHG - Project Engineer
FDNW - Design and Fabrication
LATA - Project Manager

SCOPE: Delivery of AY-102 supernate to vendor's system (DCCV)

EQUIPMENT RESPONSIBILITY: Buyer will design and fabricate jumper. Jumper to be installed and flow tested in Pump Pit 04A (Tank 241-C-104) by Buyer. Buyer to supply gaskets, bolts, nuts, and washers.

INTERFACE DIAGRAM: See drawing (Dimensions showing exact location and configuration of connecting flange (interface description) to be included in final design.

RELATED ICDS: M-01

APPROVALS:

PARTICIPANT	DATE	PARTICIPANT	DATE
SE REPRESENTATIVE	DATE	PROJECT MANAGER	DATE