



Department of Energy

Richland Operations Office
P.O. Box 550
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97-WDD-153

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue N.W., Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB) RECOMMENDATION 92-4
REVISION 2N, DOCUMENTATION SUBMITTED IN EVIDENCE OF COMPLETION OF
COMMITMENT 5.2.2(d)

The U.S. Department of Energy, Richland Operations Office (RL) has completed Commitment 5.2.2(d), requiring a deliverable to "Provide a schedule for key initial systems engineering products on the TWRS Immobilized Low-Activity Waste Interim Storage Project (Project W-465)," and proposes closure of this commitment. This commitment is identified in the DNFSB Recommendation 92-4 Implementation Plan, Revision 2N, "Improving The Systems Engineering Approach and Management Practices of the Hanford Site Tank Waste Remediation System (TWRS)."

The enclosure to this letter describes the use of systems engineering in the execution of TWRS Project W-465 as well as a timetable of documents to be produced, from initial project authorization through generation, but not through review of detailed designs. This timetable includes systems engineering elements, deliverables designed to satisfy those elements, activity numbers for those activities which are ongoing or planned, and a schedule of dates when these activities were or will be completed. The planned activities are from the TWRS Multi-Year Work Plan, and are under change control. The TWRS System Engineering Management Policy, TWRS System Engineering Management Plan, and the TWRS System Engineering Implementing Procedures serve as the basis for generating the listed activities.

We are completing an evaluation of systems engineering processes on Project W-465, as called for in Commitment 5.2.2(c) of the subject DNFSB recommendation. The results of this evaluation, which will be reported to the DNFSB by April 30, 1998, will form the basis for implementation of improvements to systems engineering on Project W-465.

If you have any questions, please contact me, or your staff may contact William J. Taylor, Director of the Waste Disposal Division, on (509) 372-3864.

Sincerely,

John D. Wagoner
Manager

WDD:PEL

Enclosure

U.S. DEPARTMENT OF ENERGY RESPONSE TO DEFENSE NUCLEAR FACILITIES SAFETY BOARD
RECOMMENDATION 92-4 IMPLEMENTATION PLAN, REVISION 2N,
COMMITMENT 5.2.2(d)

Background

The mission of the Tank Waste Remediation System (TWRS) Immobilized Low-activity Waste Storage and Disposal Project is to receive the certified immobilized low-activity waste packages produced by the privatized tank waste treatment contractors, transport the packages to an engineered storage/disposal facility, and store/dispose of the packages. The mission includes constructing and operating immobilized low-activity waste interim storage and disposal facilities for both Phase I and Phase II privatized vitrification production, and also developing and operating a transportation system for moving the packages from the private contractors to the storage and disposal facility. In addition, the Immobilized Low-activity Waste Storage and Disposal Project mission includes developing closure procedures and obtaining authorization from the U.S. Department of Energy-Headquarters (DOE-HQ) via permitting and performance assessment analyses either for direct immobilized low-activity waste package disposal or for monitoring and subsequent redesignation of the storage facility as a permanent disposal system. The Immobilized Low-activity Waste Interim Storage Project, Project W-465, is the first capital construction project to be derived from the Immobilized Low-activity Waste Storage and Disposal Project. The mission of Project W-465 has been derived through the TWRS Mission Analysis and Functional Requirements Analysis for the Immobilized Low-activity Waste Storage and Disposal Project. (Knutson, 1995 and Murkowski, 1995).

Project W-465 Scope

The scope of Project W-465 is to provide a facility and capabilities for transport and interim storage of immobilized low-activity waste. The recommended path forward entails retrofit modification of the existing grout vault storage facilities (Burbank, 1996 and Murkowski, 1996). These vaults were initially constructed by the Grout Vault Construction Project (Project B-714). Project W-465 is proposed as a new fiscal year (FY) 2000 line item. Project W-465 is estimated to provide 3.5 years of storage capacity for immobilized low-activity waste product from privatization. Project W-465 was scoped for storage rather than disposal because early program planning indicated that disposal authorization would not be achievable in time to support privatization start up. The Immobilized Low-activity Waste Storage and Disposal Project is currently identifying new projects to provide additional storage/disposal capacity after Project W-465.

Project W-465 Status

Prior to project authorization, the Immobilized Low-activity Waste Storage and Disposal Project established the following Systems Engineering bases for

Project W-465. These documents are also shown in the timetable listing as complete.

1. The functional requirements and the mission for immobilized low-activity waste storage were identified consistent with the TWRS Mission Analysis and functional requirements and further project decomposition, (Murkowski, 1995).
2. Alternative immobilized low-activity waste storage architectures and evaluation criteria were identified (Murkowski, 1996).
3. The decision statement, responsibilities, strategy, criteria, schedule, and basis for selecting the Project W-465 architecture were identified (Washenfelder, 1996).
4. Engineering analyses of alternatives were prepared (Burbank, 1996)
5. A letter of recommendation with a preferred alternative was sent to RL (Murkowski, 1996).
5. DOE concurred with Westinghouse Hanford Company's recommendation for project W-465 scope (Taylor, 1996)

Project W-465 received DOE authorization to proceed into conceptual design (Alm, 1996). Project W-465 will complete the conceptual design early in FY 1998, and is scheduled for project capital funding validation in April 1998.

Project W-465 staff will continue to follow the project/administrative systems engineering principles identified in the TWRS Systems Engineering Management Plan (WHC-SD-WM-SEMP-002) until further clarified during FY 1998 when a Project W-465 Systems Engineering Management Plan is scheduled for completion.

Planned Deliverables

In response to the DNFSB commitment, the following table includes tasks/deliverables to be performed or delivered for Project W-465 as identified by the TWRS Systems Engineering Management Policy, TWRS Systems Engineering Management Plan, and TWRS Systems Engineering Implementing Procedures. The systems engineering guidance deliverable categories were arranged in relative order in which they might be performed by a project. Project W-465 activities/deliverables from FY 1998 planning were then mapped into the systems engineering tasks and deliverables, and sorted by date. The listing includes those deliverables currently scheduled to occur prior to June 2000, the first review of detailed designs (Preliminary Detailed Design, Title 1). This listing assumes all deliverables are required and does not account for grading that is expected to occur with a project systems engineering management plan. The description of the deliverables also includes the schedule identification number pulled from the project schedule.

The deliverables listed are those being prepared by Project W-465 or the Immobilized Low-activity Waste Storage and Disposal Project. There exists other TWRS, Lockheed Martin Hanford Corporation (LMHC), FDH and DOE efforts that contribute to the implementation of systems engineering. As noted previously, a project specific Systems Engineering Management Plan is scheduled for FY 1998. This effort is anticipated to address the tailoring or grading of systems engineering requirements for Project W-465.

References

Burbank, D.A., *Alternatives Generation and Analysis Report for Immobilized Low-Level Waste Interim Storage Architecture*, WHC-SD-W465-AGA-001, 1996.

Taylor, W. J. to President, Westinghouse Hanford Company, Milestone Completion "Issue Low-Level Waste Interim Storage Engineering Evaluation," September 27, 1996.

Piper, L. L., Justification of Mission Need, Initial Phase I Immobilized Low-Activity Waste Interim Storage, November 27, 1996.

Knutson, B., *Tank Waste Remediation System Mission Analysis*, WHC-SD-WM-MAR-008, Rev. 0, September 18, 1995.

Tank Waste Remediation System Functions and Requirements, WHC-SD-WM-FRD-020, Rev. B, October 1995.

R. J. Murkowski to P. E. LaMont, "Functional Requirements - Immobilized Low-Level Waste Interim Storage," 9556303, November 29, 1995.

Letter, R. J. Murkowski to P. E. LaMont, "Immobilized Low-Level Waste Interim Storage Alternatives," 960431, January 30, 1996.

Letter, D.J. Washenfelder to R.J. Murkowski, "Immobilized Low-Level Waste Interim Storage Architecture Selection Decision Plan," 9652215, May 15, 1996.

Letter, R. J. Murkowski to P. E. LaMont, "Alternatives Generations and Analysis Report for Immobilized Low-Level Waste Interim Storage Architecture" WHC-SD-W465-AGA-001, 9654045, September 10, 1996.

Letter, W. J. Taylor to President, Westinghouse Hanford Company, "Milestone Completion, Issue Low-Level Waste Interim Storage Engineering Evaluation," 96-WDD-149, September 27, 1996.

Letter, A. L. Alm to Manager, DOE Richland Operations Office, "Approval of Critical Decisions for Phase I Immobilized High-Level and Low-Activity Waste Interim Storage and Tank Farm Restoration and Safe Operations Projects (Projects W-464, W-465 and W-314)," December 26, 1996.

Letter, Carl J. Paperiello, U.S. Nuclear Regulatory Commission, to J. E. Kinzer, U.S. Department of Energy, "Classification of Hanford Low-Activity Tank Waste Fraction," June 9, 1997.

Mouette, P., *Preliminary Safety Evaluation for Project W-465, Immobilized Low-Activity Waste Interim Storage*, HD-SD-W465-PSE-001, Rev. 0, October 1997.

Letter, R. J. Murkowski to J. D. Thomson, "Storage and Disposal Project Risk Management Plan," 73300-95-011, December 29, 1995.

Timetable Listing of W-465 Systems Engineering Responsive Deliverables

Project Documentation	W-465 Deliverable	Schedule ID	Scheduled Date	Notes
Project Specific SEMP	•System Engineering Management Plan	(S1W02030)	9/98	Accelerated date anticipated
Relationship to TWRS Technical Requirements	•Addressed with W-465 SEMP	(S1W02030)	9/98	Presently using WHC-SD-WM-FRD-020 Draft C, 2/96
Project Mission Analysis Report	•Functional Requirements-ILAW Interim Storage W-465 •Justification of Mission Need		Complete	Murkowski, 1995
			Complete	Piper, 1996
Design Requirements Document (DRD)	•DRD - ILAW Interim Storage Facility •Closure requirements, Disposal Facility DRD	(S1W02060)	Complete 9/98	Burbank, 1996 DRD review, 10/1/96-12/31/96
Project Development Specification	•DRD Update, Project W-465	(S1W02050)	3/98	DRD update review, 2/1/98-3/1/98
Project Design Concept	•Conceptual Design Report •Preliminary Design (Title 1)	(S1W04055) (S1W04075a)	12/97 6/00	90% CDR review, 10/1/97-12/15/97
Project Design Specification	•Outline Specifications, CDR	(S1W04055)	12/97	
Mass/Energy Flow Sheets	•Mechanical Flow Diagram, CDR	(S1W04055)	12/97	

Project Documentation	W-465 Deliverable	Schedule ID	Scheduled Date	Notes
Piping and Instrumentation Diagram	•Instrumentation Definition, CDR	(S1W04055)	12/97	
Trade Study Documents	•Alternatives Generation and Analysis •Remote vs Contact Handled Waste •Engineering Studies - Resolve CDR Uncertainties	(S1W02100) (S1W04110)	Complete 2/98 9/98	Burbank, 1996 construction access, control room, crane systems
Project Reports	•Preliminary Safety Evaluation •FY 1998 Performance Assessment •Validation Package and Decision •Waste Acceptance Criteria •Conceptual Design Report	(S1W03000) (S1W04000) (S1W02080) (S1W04055)	Complete 4/98 4/98 9/98 12/98	Mouette, 1997 potential criteria modifications basis for budget request potential criteria modifications potential function modifications
Project Interface Control Documents	•Privatization Interface - ICD-15	(S1W02090)	Annual	
System Integration Plan	•Addressed with W-465 SEMP •Project Management Plan	(S1W02030)	12/97	
Technology Development Reports				Needs identified for disposal performance assessment only

Project Documentation	W-465 Deliverable	Schedule ID	Scheduled Date	Notes
Risk Management Plan	<ul style="list-style-type: none"> •Storage & Disposal Risk Management Plan, including W-465 		Complete	Murkowski, 1995
Critical Risk Management List and Risk Management	<ul style="list-style-type: none"> •Risk Management List Preparation and Maintenance 	(SIW01205)	Monthly	
Decision Management Plan	<ul style="list-style-type: none"> •Addressed with W-465 SEMP •W-465 AGA decision •NRC Incidental waste determination •W-465 Critical Decision 1 •Project Validation •W-465 Critical Decision 2 		Complete Complete Complete 4/98 10/99	Murkowski, 1996 Paperiello, 1997 Alm, 1996
Test and Evaluation Plan	<ul style="list-style-type: none"> •Addressed with W-465 SEMP •Product Receipt-Development and Testing 		9/99	Equip. tests grapple, shipping container, canister
System Assessment Reports	<ul style="list-style-type: none"> •Addressed with W-465 SEMP •Permitting Plan for ILAW Project 		Complete	Deffenbaugh, 1997
Technical Performance Measurement Plan	<ul style="list-style-type: none"> •Addressed with W-465 SEMP 			
Data Management Plan	<ul style="list-style-type: none"> •Addressed with W-465 SEMP 			
Configuration Management Plan	<ul style="list-style-type: none"> •Addressed with W-465 SEMP 			
Closure Plan Report	<ul style="list-style-type: none"> •Closure Plan 	(SIW02120)	7/98	

Project Documentation	W-465 Deliverable	Schedule ID	Scheduled Date	Notes
Speciality Discipline Studies	<ul style="list-style-type: none"> •NRC Incidental Waste Determination •Permitting Plan •QAPP Graded Approach •Life-cycle Cost Estimate •Safeguards and Security Plan •Conceptual Design Report 	(SIW04015) (SIW04005) (SIW04010) (SIW04055)	Complete Complete 2/98 4/98 4/98 12/98	Paperiello, 1997 Deffenbaugh, 1997 shielding, structural, cost estimating, construction management.
Project Logistics Plan	<ul style="list-style-type: none"> •Preliminary Safety Evaluation •SARP for Transport Cask •RCRA Part B Permit Application 	(SIW04675) (SIW04415)	12/98 3/00 12/00	
Preliminary Safety Evaluation Report	<ul style="list-style-type: none"> •Addressed with W-465 SEMP •Mechanical Flow Diagram, CDR 	(SIW04055)	12/97	Mouette, 1997
Closure Plan Report	<ul style="list-style-type: none"> •Preliminary Safety Evaluation •Closure Plan 	(SIW02120)	Complete 7/98	

Project Documentation	W-465 Deliverable	Schedule ID	Scheduled Date	Notes
Cost/Schedule Control System	<ul style="list-style-type: none"> • Addressed with W-465 SEMP • Multi-year Program Plan • Life-cycle Cost Estimate • Design/Construction Schedule, CDR • BA/BO Layout, CDR • Financial Data System & P3 Schedule 		Annual 4/98 12/97 12/97 Ongoing	