

Project Baseline Summary Report

Data Source: EM CDB

Operations/Field Office: Idaho

Site Summary Level: Idaho National Engineering and Environmental Laboratory

Project ID-HLW-105 / Closure and Stabilization Activities

Report Number: GEN-01b

Print Date: 3/10/2000

HQ ID: 0450

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

In 1953, the Idaho Nuclear Technology and Engineering Center (INTEC) [formally known as the Idaho Chemical Processing Plant (ICPP)] located at the INEEL was chartered to recover fissile uranium by reprocessing spent nuclear fuel. In April 1992, the United States Department of Energy (DOE) discontinued reprocessing spent nuclear fuel and called for a shutdown of the reprocessing facilities at the INTEC. The current mission for the INTEC includes management and storage of spent nuclear fuel, treatment and storage of high-level waste (HLW), and treatment and storage of low-level waste generated from past and present operations and activities.

The tank farm facility (TFF) stores liquid mixed waste (hazardous and radioactive) from plant operations and decontamination efforts. Due to historical and continued storage of mixed hazardous and radioactive waste, the TFF is regulated as an interim status HWMA/RCRA tank system.

The radioactive High Level Liquid Waste (HLLW) previously stored at the TFF was generated as a direct result of reprocessing spent nuclear fuels (SNF) while radioactive Low Level Waste (LLW) was generated from incidental activities, such as equipment decontamination, associated with operation of the INTEC. Although the liquid radioactive waste currently in the TFF is stored and treated in the same manner as the HLLW, it is actually a mixed transuranic waste. Since the cessation of spent fuel processing, no additional HLLW has been (or is planned to be) generated. Additionally, all HLLW that had been generated has been removed from the TFF.

This project will close 15 TFF liquid waste storage tanks, tank vaults, and ancillary equipment. This includes eleven (11) 300,000 to 318,000-gallon stainless steel tanks (WM-180 through 190, hereafter referred to as 300,000-gallon tanks) and four (4) inactive 30,000 gallon stainless steel tanks (WM-103 through 106). The 15 waste storage tanks will be closed to Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) requirements (Idaho Administrative Procedures Act [IDAPA] 16.01.05.009/Title 40 Code of Federal Regulations [CFR] Part 265), and the DOE radioactive waste management orders.

Each of the tanks and associated equipment comprising the TFF is unique due to different initial designs and modifications that have occurred over the past 40+ years. Additionally, due to its historical use for storage of radioactive waste (and the associated radioactivity and radiation fields), the TFF is different from typical storage units to be closed under HWMA/RCRA regulations. Adding to the complexity, the TFF will continue to operate while closure actions take place for the majority of the individual tank system components. The requirement to keep the TFF tank system operational is paramount to ensuring the INTEC continues to meet its operational and fiduciary missions and will require modified closure actions compared to actions taken if the TFF were not required to continue operations. Examples of complexities which make closure of the TFF tank system while maintaining operations unique are numerous and include the TFF vessel off-gas (VOG) system, the TFF tank system overpressure relief system, and the TFF tank system excess vacuum relief system. For example, a single centralized vessel off-gas (VOG) system maintains a negative pressure of 0.5 inches of water with airflow balanced in all of the 300,000 gallon tanks. Closing individual tanks and isolating portions of the VOG system will require modification in the operation or equipment of the remainder of the VOG system to allow continued operation of the TFF system as a whole.

The closure of the TFF will be conducted in a phased approach and consistent with a cease use schedule outlined in the Notice of Noncompliance (NON) amendment issued by the State of Idaho on January 29, 1998, and Consent Order (CO) signed August 18, 1998. The 300,000 gallon tanks will

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Project Description Narratives

be closed in groups (rather than all tanks at one time or one-at-a-time) each of which will constitute partial closure of the TTF HWMA/RCRA unit. For each group of tanks being closed, the Closure Plan will address ancillary tanks, sumps, etc., identified in recent Voluntary Consent Order negotiations on INEEL tanks. Closure to performance based standards will be attempted by decontamination and removal of hazardous wastes and constituents. If any tank in the TFF cannot meet performance based closure standards, those tanks will be closed to HWMA/RCRA landfill standards. Additionally, final closure actions must also meet DOE radioactive waste management orders and be integrated with CERCLA environmental restoration risk management decisions being made on contaminated soils surrounding TFF tanks system components.

Project Status in FY 2006:

Four 300,000 HLW tanks will be closed in accordance with RCRA and DOE 0435.1.

Post-2006 Project Scope:

The remaining 300,000 gallon and the four 30,000 gallon tanks will be closed between 2006 and 2016.

Project End State

When this project is complete the eleven 300,000 gallon and four 30,000 gallon waste tanks will have the heels immobilized. Installation of a post closure cap and ground water monitoring activities will be completed by the WAG-3 CERCLA project.

Cost Baseline Comments:

An escalation factor of 2.1% per year was applied to the costs for all years, 2000 through project end. This project is operating funded. The cost baseline is a preliminary estimate pending approval of the RCRA and DOE-HQ closure plans.

Safety & Health Hazards:

The project is currently in the conceptual phase which contains the S&H functions necessary to maintain a safe and compliant project. Workers can be expected to encounter normal construction and occupational hazards. These hazards will persist throughout the construction, operations and deactivation phases.

Safety & Health Work Performance:

The project will follow all the site S&H procedures needed to ensure readiness prior to start work, monitor adequacy of safety controls, and mechanisms that will be used to identify unforeseen S&H project hazards and manage major project changes or modifications (change control). The resources necessary to accomplish the work safely are provided through the site Health and Safety Program requirements, and through the resources allocated to the site's integrated safety management system, emergency management, fire safety, industrial hygiene, nuclear safety, occupational medicine, occupational safety, safeguards and security, safety integration, performance oversight, and standards management.

PBS Comments:

The major technical issue is whether to emplace grout on-site for disposal or in drums so the grout can be transported to alternate locations. This issue will be resolved by the EIS-ROD in 1999.

Baseline Validation Narrative:

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This project will be validated upon completion of conceptual design.

General PBS Information

Project Validated? **Date Validated:**
Has Headquarters reviewed and approved project? No
Date Project was Added: 12/1/1997
Baseline Submission Date:
FEDPLAN Project? Yes

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	Y	N	N	N	Y	Y	N

Project Identification Information

DOE Project Manager: K.A. Lockie
DOE Project Manager Phone Number: 208-526-0118
DOE Project Manager Fax Number: 208-526-7245
DOE Project Manager e-mail address: lockieka@inel.gov
Is this a High Visibility Project (Y/N): Y

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	49,082	84,858	133,940					2,108	5,712	2,631	5,778	7,245	8,970	7,687	8,951
PBS Baseline (constant 1999 dollars)	44,681	65,307	109,988					2,108	5,562	2,509	5,397	6,628	8,037	6,746	7,694

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Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS EM Baseline (current year dollars)	49,082	84,858	133,940					2,108	5,712	2,631	5,778	7,245	8,970	7,687	8,951	
PBS EM Baseline (constant 1999 dollars)	44,681	65,307	109,988					2,108	5,562	2,509	5,397	6,628	8,037	6,746	7,694	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	8,940	9,128	9,319	9,515	41,787	6,169	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	7,526	7,527	7,526	7,526	31,068	4,134	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	8,940	9,128	9,319	9,515	41,787	6,169	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	7,526	7,527	7,526	7,526	31,068	4,134	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
		0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

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Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/30/2017

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	178,396	Actual 1997 Cost:	Actual 1998 Cost:
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	178,396	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):	4,817
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	183,213		

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):	73,224	Project changed from privatization grout facility to tank farm closure.
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	109,989	
Additional Amount to Reconcile (+):	-1	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	109,988	

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Closure plan for at least one of the "WM-182 through	ID-HLW-105-03		12/31/2000	12/31/2000	12/31/2000		Y				

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
186" tanks											
Complete a master plan for closure of the HLW Tank Farm	ID-HLW-105-01		1/31/1999		1/31/1999						
First tank-specific closure plan for a pillar and panel tank	ID-HLW-105-02		12/31/2000		3/31/1999						
Project Start			10/1/1996								
Project Mission Complete			9/30/2017								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Closure plan for at least one of the "WM-182 through 186" tanks	ID-HLW-105-03										
Complete a master plan for closure of the HLW Tank Farm	ID-HLW-105-01										
First tank-specific closure plan for a pillar and panel tank	ID-HLW-105-02										
Project Start				Y							
Project Mission Complete					Y						

Technology Needs

Site Need Code: ID-2.1.42

Site Need Name: Acceptance Criteria for Tank Closure

Focus Area Work Package ID:

Focus Area Work Package:

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Technology Needs

Focus Area: Agree with Technology Link: N

Benefits (Cost, Risk Reduction, Both): Cost

<u>Technologies</u>	<u>Cost Savings (in thousands of dollars)</u>	<u>Range of Estimate</u>
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In Tank Grouting/Tank Closure	0	
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Site Need Code: ID-2.1.46

Site Need Name: Management of Tank Heel Liquids

Focus Area Work Package ID: Focus Area Work Package:

Focus Area: Agree with Technology Link: N

Benefits (Cost, Risk Reduction, Both): Cost

<u>Technologies</u>	<u>Cost Savings (in thousands of dollars)</u>	<u>Range of Estimate</u>
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In Tank Grouting/Tank Closure	0	
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Low Activity Waste Forms	0	
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Site Need Code: ID-2.1.47

Site Need Name: Management of Tank Heel Solids

Focus Area Work Package ID: Focus Area Work Package:

Focus Area: Agree with Technology Link: N

Benefits (Cost, Risk Reduction, Both): Cost

<u>Technologies</u>	<u>Cost Savings (in thousands of dollars)</u>	<u>Range of Estimate</u>
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Technology Needs

In Tank Grouting/Tank Closure	0
Low Activity Waste Forms	0
Confined Sluicing End Effector	0
Pulsed Air	0
AEA Fluidic Pulse Jet Mixer	0
(HTI) In-Tank Waste Retrieval - Arm Based System	0
(HTI) In-Tank Waste Retrieval - Vehicle Based System	0
TARZAN - An Innovative Mobile Manipulator for Tank Waste Removal	0
Flygt Mixer	0