

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Oak Ridge**

Site Summary Level: **Oak Ridge Reservation**

Project **OR-431 / ETTP Decontamination & Decommissioning - Def**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0137**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

The purpose of the East Tennessee Technology Park (ETTP) Decontamination and Decommissioning (D&D) - Defense Project PBS is to address environmental hazards that have been identified at facilities within the ETTP watershed and to complete the CERCLA activities required for all of these facilities. Most of the ETTP facilities are in PBS OR-433, ETTP D&D - D&D Fund. The ETTP D&D - Defense project consists of one subproject: the Centrifuge Equipment Removal subproject. The objectives of the Centrifuge Equipment Removal subproject are to complete materials and equipment removal, perform Health Physics surveys, and provide decontamination services such that these facilities are prepared for other industrial use or demolition.

Background -

The ETTP, formerly known as the K-25 Plant, or the Oak Ridge Gaseous Diffusion Plant, was the first site at which uranium was enriched for use in an atomic bomb. After World War II, the uranium enrichment operations were continued to supply uranium for nuclear reactors. All enrichment operations stopped in 1985.

The ETTP has been part of the Oak Ridge Environmental Restoration program since its inception in 1990. Several projects have been scoped and implemented during this time period in order to reduce the hazards remaining from uranium enrichment operations.

The ETTP watershed is one of the watersheds identified on the Oak Ridge Reservation to which the CERCLA process will be applied. The Oak Ridge Reservation is located in a water-rich environment with numerous surrounding water bodies. Each of the main plant areas on the Oak Ridge Reservation drains into one of the tributaries of the Clinch River/Watts Bar reservoir system. Because of this, water is the dominant media for contaminant transport on the reservation. Therefore, the watershed approach for characterization, implementation of remediation phases, and subsequent monitoring provides a context in which to prioritize work and evaluate the overall effectiveness and relative contribution of individual remedial actions.

In the DOE-ORO EM Baseline, the watershed Records of Decision (RODs) have been identified as significant milestones to the success of the plan. Because the watershed RODs encompass most of the priority-contaminated sites across the Oak Ridge Reservation, the remedial actions, including actions to demolish or decontaminate facilities, identified in the RODs will provide the roadmaps for decontamination and decommissioning work. The ETTP D&D - Defense project has additional importance because of the efforts underway to reindustrialize the ETTP. The ETTP D&D - Defense project will result in all facilities being decontaminated or demolished so that worker exposures are eliminated, or controlled to the extent practical.

Scope -

This PBS does not include any of the Surveillance and Maintenance (S&M) requirements for facilities included in the decontamination and decommissioning program. D&D - Defense S&M scope requirements are now included under PBS OR-441.

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The Centrifuge Equipment Removal subproject scope consists of three categories of work, including: (1) facility radiological characterization and subsequent decontamination activities, (2) strip-out of components inside buildings (e. g., removal of gas centrifuges from K-1600, K-1210, and K-1220), and (3) demolition of auxiliary support facilities (e. g., K-1004-P, K-1004-N1, and K-1004-N2). Facilities not demolished will be available for re-use under the Reindustrialization program.

Further scope details are as follows:

K-1600 and K-1600-A: Contains two gas centrifuge test stands, a seismic test stand (shaker table) with pumps and related equipment, a large quantity of instrumentation associated with the test stands, and a substantial amount of stored equipment. The stored equipment is to be dispositioned, the test stands dismantled, the classified material removed, the walls surveyed and decontaminated to property-releasable levels.

K-25 North End and West Side: Centrifuge equipment currently stored in the K-25 North End and West Side (Vaults) will be dispositioned properly. The equipment and parts will be sorted, and classified pieces will be segregated from unclassified pieces. Classified pieces will be dismantled/rendered unclassified, where possible. All items will be characterized and decontaminated to the extent practicable, segregated into primary material type, inventoried, and placed in containers for shipment to recycle/salvage/storage, as appropriate.

K-27: Contains a substantial number of classified pieces of equipment, which are stored in two vaults within the K-27 building. The equipment and parts will be sorted, and classified pieces will be segregated from unclassified pieces. Classified pieces will be dismantled/rendered unclassified, where possible. All items will be characterized and decontaminated to the extent practicable, segregated into primary material type, inventoried, and placed in containers for shipment to recycle/salvage/storage, as appropriate.

K-1210: Contains approximately 400 gas centrifuges and supporting equipment. The equipment will be dismantled, and classified material will be removed, characterized, decontaminated, and dispositioned appropriately. The walls and floor will be surveyed and decontaminated to releasable levels.

K-1220: Contains approximately 120 gas centrifuges and supporting equipment. The centrifuges and equipment will be dismantled, and classified material will be removed, characterized, decontaminated, and dispositioned appropriately. The walls and floor will be surveyed and decontaminated to releasable levels.

K-1210-A and K-1210-B: Contains a high-bay area and an office area. The equipment located in the facility will be removed, characterized, decontaminated, and dispositioned appropriately. The walls and floor will be surveyed and decontaminated to releasable levels.

K-1211: A small block building used as a chemical storage area. The chemicals will be removed and properly dispositioned, and the walls and floor will be surveyed and decontaminated to releasable levels.

18 Sea/Land: Containers with classified material will be appropriately dispositioned. The containers are located near the K-101 facility.

K-1004-N1 and K-1004-NV1: This cooling tower and valve house, which provided cooling water to the K-1200 complex, will be demolished, and the

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waste will be appropriately characterized and dispositioned.

K-1004-N2: This small cooling tower has supported the K-1200 complex and is in the paved area on the south side of the K-1200 complex. The tower will be appropriately characterized and dispositioned.

K-1004-P: This facility is a concrete building that housed an isostatic test facility. The building will be demolished and the waste will be appropriately characterized and dispositioned.

Technical Approach -

A fixed-price competitively bid subcontract will be awarded for discrete scopes of work within this PBS plan. Facility completion reports will be issued to describe the status of the building and present "as-built" drawings for systems that were modified during the deactivation activities. Work will be performed using Integrated Safety Management practices to protect the workers and the environment. All materials to be removed from the buildings will be surveyed by Health Physics, and radiological-contaminated materials will be characterized for uranium content using NDA techniques. HP surveys will assist in minimizing generated waste. Sampling and laboratory analyses to characterize hazardous materials will be conducted. Waste will be disposed of appropriately. All D&D work will be performed under a CERCLA EE/CA - Action Memo. The ROD will recognize these response actions.

Project Status in FY 2006:

This PBS consists of only one subproject: ETTP Centrifuge Equipment Removal, which will be completed in FY 2005. Therefore, this PBS will be completed by the end of FY 2006.

Post-2006 Project Scope:

All scope for this PBS will be completed in FY 2005.

Project End State

The East Tennessee Technology Park has a mission as a non-federal industrial park, and D&D of certain buildings is on the critical path to achieve this mission.

Cleanup will be appropriate for unrestricted/uncontrolled industrial use for all areas of land.

No restricted areas will remain.

Cost Baseline Comments:

The DOE EM Life Cycle Baseline recently issued in draft form from Bechtel Jacobs Company LLC to DOE-ORO is the cost basis for this PBS. The ETTP LCB combined the existing scopes of work, schedules, and cost estimates from the Fiscal Year Baseline (FYB) three-year planning window with newly-prepared scopes of work, schedules, and cost estimates for the work outside the three-year window to create Watershed LCB from FY 2000 to

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the completion of the work.

Following development of scope statements, cost estimating models and feasibility study estimates were used for creating the cost estimates in the Life Cycle Baseline.

1. Cost Estimating Models - Cost estimating models were developed for the majority of new Remedial Action, Decontamination and Decommissioning, and Surveillance and Maintenance projects. These innovative models were developed in concert with DOE, utilizing published cost databases such as RACER, ECHOS, and R. S. Means. Actual costs of cleanup work already completed, and previously detailed cost estimates were also utilized. These models were utilized when no other estimates existed, or when the project team needed to increase the quality of an existing estimate. Additionally, these models were developed to include the appropriate level of estimate detail and quality for a Life Cycle Baseline estimate.

2. Feasibility Study Estimates - Feasibility study estimates were used where appropriate, adjusted as needed (e. g., the LCB assumes classified waste will go to the EMWMF, whereas the feasibility study assumed it would not). For some projects, the feasibility study timing did not allow the use of estimates.

No matter which estimating method was used, each estimate was reviewed for errors, omissions, and consistency in approach across the DOE-ORO EM Program.

Safety & Health Hazards:

Systems and processes are developed under the Integrated Safety Management System (ISMS) implementation to ensure that Bechtel Jacobs Company and its subcontractors perform an analysis of hazards before the start of work. This is accomplished as hazards are identified that are associated with the performance of tasks. We examine available site data, interview people involved in the work processes, and perform site walkdowns. If existing information does not provide adequate data to identify hazards, sampling and characterization is performed, as necessary.

After hazards are identified they are analyzed initially by team walkdowns, which includes only those individuals familiar with the task activities and associated hazards. Information gathered during preparation of the preliminary hazard assessment is used to develop specific subcontract language and a tailored compliance matrix for subcontract packages. This language specifically requires the submittal of an ES&H plan and identification of applicable contractual ES&H requirements based on the complexity and risk associated with the work.

Contaminated equipment is a hazard in this PBS.

Safety & Health Work Performance:

Bechtel Jacobs Company incorporates safety into work performance by:

- Protecting the safety and health of workers, subcontractors, and the public by identifying and mitigating hazards and implementing safe work practices.

- Conserving and protecting environmental resources by integrating environmental protection into the daily conduct of business; fostering a spirit of

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cooperation with Federal, State, and local regulatory agencies, and using appropriate waste management, treatment, storage, and disposal methods.

- Striving to meet environmental performance goals to allow zero unpermitted discharges to the environment; to comply with all conditions of environmental permits; and, to the extent practicable, reduce waste generation and maximize recycle and reuse potential.

- Utilizing facility safety programs for high hazard activities.

- Fostering a commitment to zero accident performance, which is reflected in company policies, programs, procedures, and plans. All employees are empowered to make "safety first" a reality at their work sites during planning and execution of work.

Bechtel Jacobs Company's Integrated Safety Management System (ISMS) systematically incorporates ES&H controls into management and work practices. It implements the following five safety management functions:

- (1) Define the scope of work,
- (2) Analyze hazards,
- (3) Develop and implement hazard controls,
- (4) Perform work within controls, and
- (5) Provide feedback and continuous improvement.

To verify that the appropriate pre-job activities have been completed effectively, Bechtel Jacobs Company uses a readiness review process for tasks, activities, and facilities. The rigor of this review increases for more hazardous activities.

The reviews provide evidence that the following elements are in place:

- Workers have been involved in the process.
- Hazards have been adequately identified and characterized in the activity hazard assessment.
- Appropriate controls for the protection of workers have been identified and will be implemented during the execution of the work.
- Adequate ES&H procedures, emergency response procedures, and applicable environmental permits and plans have been developed and will be implemented during work execution.
- Adequate levels of ES&H staff, training, and technical support are in place before the start of work.
- Safety systems are operable and maintained according to design specifications.

Readiness reviews (excluding operational readiness assessments) will be conducted by the project teams to demonstrate that they and the subcontractors are ready to perform work. All work, including work that does not require DOE approval under the M&I contract, must be approved by Bechtel Jacobs Company.

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Baseline Validation Narrative:

The Oak Ridge Operations Office Environmental Management Life Cycle Baseline (LCB) was submitted by the Managing and Integrating Contractor, Bechtel Jacobs Company LLC, to DOE-ORO on April 1, 1999. The final draft LCB will be submitted to DOE-ORO on June 1, 1999 after formal receipt and incorporation of comments. A validation of the baseline is in process using an independent contractor to DOE-ORO. The validation will be ongoing until complete and the final validation report is scheduled to be issued on June 25, 1999.

General PBS Information

Project Validated? **Date Validated:**

Has Headquarters reviewed and approved project? No

Date Project was Added: 3/10/1999

Baseline Submission Date: 7/1/1999

FEDPLAN Project? Yes

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

Project Identification Information

DOE Project Manager: W. M. Seay

DOE Project Manager Phone Number: 423-576-1830

DOE Project Manager Fax Number: 423-574-4727

DOE Project Manager e-mail address: seaywm@oro.doe.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006	2007-2070	1997-2070	1997	Actual	1998	Actual	1999	2000	2001	2002	2003	2004	2005	2006
	Total	Total	Total		1997		1998								

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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 Baseline (current year dollars)	17,696	0	17,696		27			1,961	0	1,956	6,197	5,489	2,085	8	0	
PBS Baseline (constant 1999 dollars)	16,596	0	16,596		27			1,961	0	1,876	5,822	5,051	1,879	7	0	
PBS EM Baseline (current year dollars)	17,696	0	17,696		27			1,961	0	1,956	6,197	5,489	2,085	8	0	
PBS EM Baseline (constant 1999 dollars)	16,596	0	16,596		27			1,961	0	1,876	5,822	5,051	1,879	7	0	
	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)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	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%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

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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

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/28/2004

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	Actual 1997 Cost: 27	Actual 1998 Cost:
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	-27	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars): -1
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	-28	

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
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:	-28	
Additional Amount to Reconcile (+):	16,624	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	16,596	

Milestones

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Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
ETTP D&D - Def - Project Start	OR431-001		10/1/1996								
ETTP D&D - Def - Project End	OR431-002		9/28/2004								
ETTP D&D - Def Mission Completion	OR431-003		9/28/2004								

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
ETTP D&D - Def - Project Start	OR431-001			Y							
ETTP D&D - Def - Project End	OR431-002				Y						
ETTP D&D - Def Mission Completion	OR431-003					Y					

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
MLLW														
Comm. Disp.	M3	0.00	0.00	0.00	0.00		0.00							
Rem. Waste														
Disposed	M3	61,192.00	0.00	61,192.00					62.00	556.00	1,679.00	7,140.00	12,359.00	14,108.00
Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035	Planned 2036 - 2040
MLLW														
Comm. Disp.	M3													
Rem. Waste														
Disposed	M3	14,108.00	16,921.00	8,367.00										

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
MLLW										
Comm. Disp.	M3									0.00
Rem. Waste										
Disposed	M3									61,130.00