



Plan for Developing
Hanford Tank Waste Processing Alternatives

Revision 1

December 15, 1999



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PLAN FOR DEVELOPING
HANFORD TANK WASTE PROCESSING ALTERNATIVES

Revision 1

December 15, 1999

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Introduction

In August 2000, The Department of Energy (DOE) must decide whether to authorize BNFL Inc. (BNFL) to construct and operate tank waste processing facilities as proposed or to take another path. This will be a multi-billion dollar commitment, requiring that the best path forward be chosen. The plan for reaching this decision is described in reference 1.

The alternative evaluations in this plan are directed toward acquiring information needed for the August 2000 decision and for preparing an alternate path plan, should an acceptable agreement with BNFL not be reached. Many of the alternatives considered may still be applicable for failures that could occur after the year 2000, however, depending on the cause of later failures, others alternatives may need to be developed.

Purpose

The purpose of this plan is to identify the alternative studies that will provide information needed to reduce the risk of potential baseline failure modes. While the baseline plan is to authorize BNFL to proceed, alternatives are being developed to:

- Enhance the baseline plan and BNFL contract,
- Compare to BNFL contract for determining government "Best Value",
- Have an alternate path forward should DOE and BNFL fail to reach agreement on proceeding with the contract, and
- Gain support of DOE-Headquarters, Congress, and others by understanding alternatives to the BNFL contract.

Alternatives Studies

Potential program and contract failure modes were used to identify the areas in which mitigating actions need to be taken and alternatives developed. Table 1 identifies potential failure modes, the reason they should be addressed (either to improve the BNFL contract or to choose another path forward if the BNFL contract fails), the mitigating action being taken, and where alternative studies or analyses need to be developed. These alternative studies and their status are described below.

1. Low-activity waste form: Both grout and glass low-activity waste forms as monoliths and smaller pieces (i.e. cullet, marbles) and in various packaging configurations are evaluated. The primary objective is to reduce cost.
Study conducted by BNFL with input from Lockheed Martin Hanford Corp. (LMHC) and review and oversight by Office of River Protection (ORP).
DOE lead: Neil Brown
Status: Completed, April 1999 (Ref. 2).
2. Waste Processing Facility capacity and expandability: Various waste treatment and immobilization facility Phase I capacities and their expansion capability for Phase II are evaluated. The primary objective is to optimize cost within an acceptable level of technical risk resulting from scale-up.
Study conducted by BNFL with input from LMHC and review and oversight by the ORP.
DOE lead: Neil Brown
Status: Completed, April 1999 (Ref. 3).

3. Feed staging tanks: The number and selection of double-shell tanks DOE provides versus BNFL providing their own feed staging tanks is evaluated. The purpose is to optimize double-shell tank usage and reduce program costs.
Study conducted by BNFL with input from LMHC and review and oversight by ORP.
DOE lead: Neil Brown
Status: Completed, May 1999 (Ref. 4).
4. BNFL financing structure: Alternative financing methods are evaluated to determine the optimal financing structure addressing costs and risks. A May 1998 General Accounting Office (GAO) report (Ref. 5), addresses this subject. The Hanford Advisory Board has also requested DOE to evaluate financing alternatives.
Study to be conducted by Eric Knapp et al.
DOE lead: Eric Knapp
Status: Interim report describing alternative financing methods issued, August 1999 (Ref. 6).
Consideration and evaluation of these alternatives will continue until financial closure, scheduled for August 2000, is achieved.
5. BNFL contracting strategy: Alternative contracting strategies will be identified so they will be ready for consideration if agreement cannot be reached on the currently planned fixed-unit price contract.
DOE lead: Kay Fick
Status: An October 1996 report by McKinney et al. (Ref. 7) addressed this subject as does the GAO report referenced in 4. above. These two studies adequately describe the various contract strategies that could be considered and the advantages and disadvantages. As contracting and financing strategies are closely related, further consideration and evaluation of contracting strategies will be conducted as part of study number 12.
6. Technology/Technical alternatives to BNFL baseline: This study will evaluate the risk of baseline processes for waste retrieval, feed delivery, waste treatment and waste immobilization; and, will identify alternative technologies for those with high risk. These alternative technologies could be used as backups to process steps within BNFL facilities, be used if the BNFL contract fails, or used in Phase II facilities. The primary objectives are to reduce technical risk and cost.
Study conducted by independent consultants and coordinated by the Tank Focus Area with oversight by EM-38.
DOE lead: Ken Lang (Herb Sutter)/ Ted Pietrok
Status: Completed, September 1999 (Ref. 8).
7. Regulatory: The primary objective of this study is to identify potential regulatory failure modes that would impact the privatized waste treatment and immobilization facilities (such as major regulatory changes), and define mitigating measures.
Study conducted by EM-38 and support contractors.
DOE lead: Ken Lang (Herb Sutter)/Owen Thompson
Status: Completed, September 1999 (Ref. 9).
8. Business alternatives to current BNFL contract: This study is to identify and evaluate alternatives for waste treatment and immobilization assuming DOE does not authorize BNFL to proceed with the current privatization contract. The scope of this study will be limited to business alternatives that acquire waste processing capability on, or as near to, the BNFL schedule as practical.
Study conducted by EM-38 and support contractors.
DOE lead: Ken Lang (Herb Sutter)/Pramod Mallick
Status: Completed, September 1999 (Ref. 10).

9. **Constrained budget alternatives:** This study discusses alternatives outside the EIS Record-of-Decision that could be considered if the baseline cannot be funded. The objective of this preliminary study is to present the pros and cons of alternatives that could have significantly lower near-term or project life cycle cost.
DOE lead: Don Wodrich
Status: Draft report has been prepared and is scheduled for completion in December 1999.
10. **Summary of alternatives studies:** This report will summarize the nine alternatives studies listed above. It will identify the alternatives considered and any conclusions reached.
DOE lead: Don Wodrich
Status: Report preparation started, scheduled for completion in January 2000.
11. **ORP alternatives strategy:** This report will describe the ORP strategy for maintaining and pursuing alternatives to the current privatization approach. It will describe variations in the existing privatization approach with BNFL (e.g. financing and contracting options), and it will describe possible pathways for maintaining and executing an alternate to proceeding with BNFL. It will also support a near-term decision on whether to invest in the development of an alternate (also called a parallel path).
DOE lead: Kay Fick
Status: Strategy being developed, scheduled for completion in January 2000.
12. **Contract and Finance Alternatives analysis:** This analysis will examine the financial implications of variations in the current privatization contracting and financing approach. Mixed private and public funding and full government funding (including a traditional cost-type contract) will be considered. This report will provide a financial analysis for the alternatives that is comparable in detail and content to the existing analysis of the BNFL financing arrangement.
DOE lead: Kay Fick
Status: Analysis in progress, draft scheduled for completion, January 2000; final scheduled for completion, May 2000.
13. **Tank Waste Treatment Alternatives:** This report will describe the alternatives (technical, financial, and contractual) to treat Hanford tank waste. The report will identify and describe credible alternatives to the current privatization approach that meet DOE commitments to achieve hot operations by 2007, and treat no less than 10 percent of the tank waste by volume and 25 percent of the tank waste by activity by 2018. This report is an Interim Milestone in the Agreement on Principal Regulatory Commitments (to be incorporated into the Tri-Party Agreement). This report is to be released to Ecology, EPA, and the Public by March 1, 2000.
DOE lead: Don Wodrich/Kay Fick
Status: Alternatives are being identified and analyzed but report preparation has not started. Report due, March 1, 2000
14. **Strategic Assessment of the TWRS Baseline:** This study examines alternatives for completing the tank waste remediation mission with emphasis on Phase II and Closure. This work will extend the January 1999 "30 Day Assessment: Tank Waste Remediation System Baseline Plan and Strategic Options." The study will examine the total system cost and the implications for tank retrieval, SST stabilization, infrastructure requirements, Incidental Miscellaneous Underground Storage Tanks stabilization, storage and disposal options, and other programmatic factors.
DOE lead: Don Alexander
Status: Strategic analysis planning is underway. Report due: April 30, 2000.

Study Coordination

Several of the alternative studies will need to be coordinated as they are interrelated; for example, contracting methods and financing methods for both the BNFL contract and for an alternate path forward without a BNFL contract. The study leaders will coordinate with each other by sharing work as it progresses and review and comment on draft study results.

Schedule

The schedule for alternatives development and analysis, and their relationship to other activities leading up to the August 2000 authorization-to-proceed decision is shown in Figure 1.

References

1. *Office of River Protection Part B Decision Work Plan*, September 15, 1999, Rev. 2.
2. *Selection of ILAW Waste Form for TWRS Phase I Privatization*, ORPSAS No 2, April 22, 1999.
3. *Optimization of Treatment System and Facility Concepts-Phase I Plant Capacity*, ORPSAS No. 1a, April 22, 1999.
4. *LAW Feed Receipt Decision Paper*, ORPSAS No. 3a, May 12, 1999.
5. *Alternative Financing and Contracting Strategies for Cleanup Projects*, GAO/RCED-98-169, May 1998.
6. *Financing Overview and Analysis of Alternatives for BNFL Contract*, United States Department of Energy Office of River Protection, August 31, 1999.
7. *Report on Alternate Path Procurement Strategies if TWRS Privatization Effort Is Unsuccessful*, Gary C. McKinney et al. October 1996.
8. *Technical Alternatives to Reduce Risk in the Hanford Tank Waste Remediation System Phase I Privatization Project*, U.S. Department of Energy, Office of Environmental Management, Office of Science and Technology, Tanks Focus Area – DOE/EM-0493. H. D. Harmon et al, September 1999.
9. *Regulatory Alternatives for the TWRS Privatization Project*, Department of Energy, Office of Hanford Operations (EM-38), September 24, 1999.
10. *Business Alternatives Analysis Report*, Department of Energy, Office of Environmental Management, September 1999.

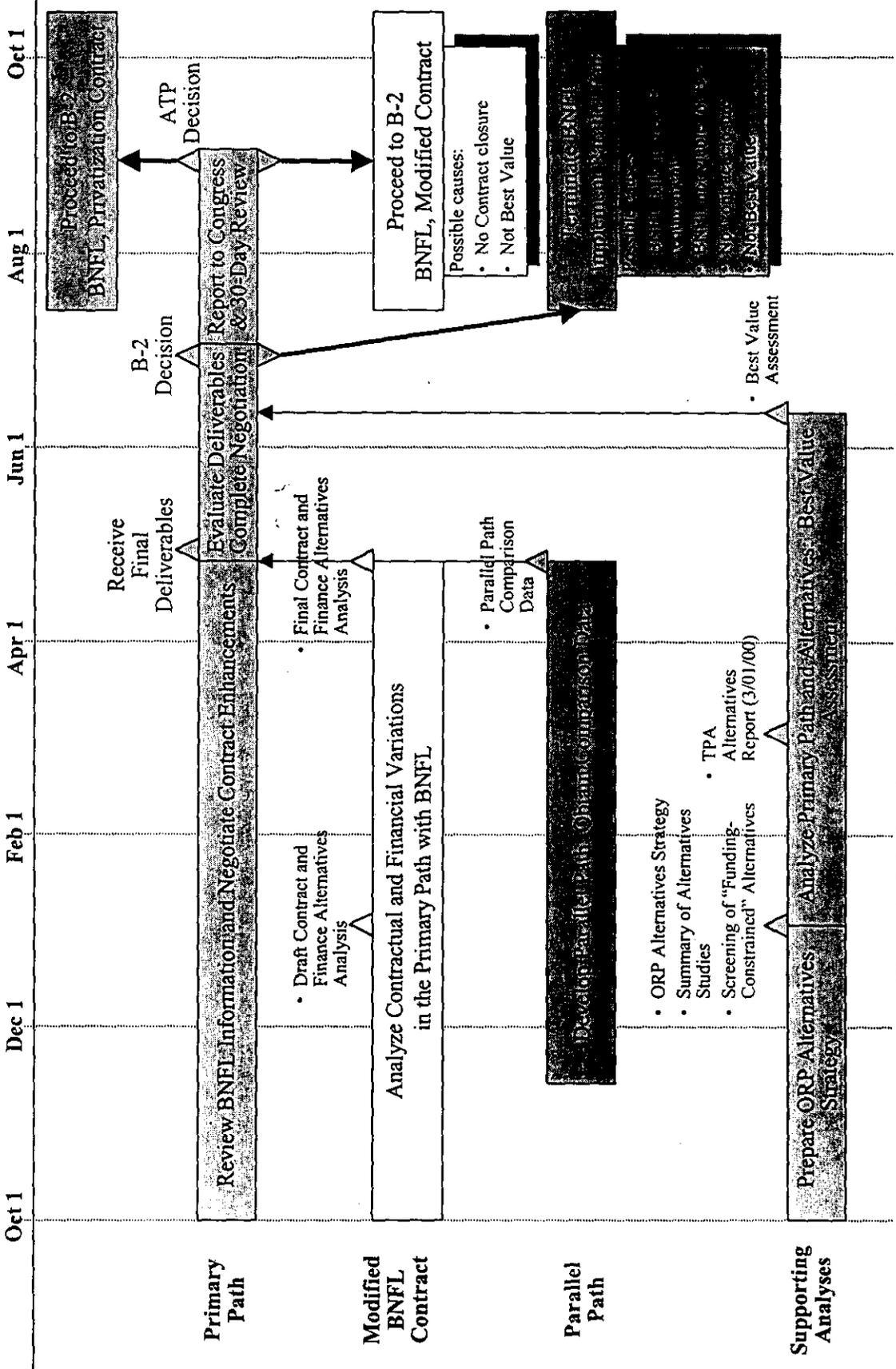


Figure 1. Schedule for Alternatives Development and Analysis

Table 1. Potential Failure Modes and Mitigating Actions/Alternatives

Potential Failure Mode	BNFL Contract Improvement	Mitigating Action/Alternatives	BNFL Contract Fails	Mitigating Action/Alternatives
Technology/Technical				
Treatment processes may not achieve separation efficiency or capacity	X	BNFL conducting tests	X	Identify technology/technical weaknesses and identify and evaluate alternatives that may be in use or being developed (6)
Low-activity waste vitrification system may not meet specification or capacity, or be too costly	X	BNFL prototype melter, glass formulation tests, alternatives study on other waste forms (1)	X	Same as above
Immobilized low-activity waste may not be acceptable for near-surface disposal	X	Leach testing, Performance Assessment, NRC concurrence and pursuing delisting	X	Same as above
Immobilized high-level waste may not meet repository acceptance criteria	X	BNFL testing vitrified waste and canister		
BNFL process may not be able to treat all waste within specification	X	BNFL conducting process tests, waste feeds may be blended	X	Same as above
Alternate technology proposed that has significant impact on schedule or cost	X	Evaluate when issue arises	X	Same as above
Proposed processes and facilities may be too costly	X	Conducting optimization and alternatives studies (i.e. plant capacity, feed staging) (2&3)	X	Same as above
DOE/PHMC cannot support BNFL facility needs (i.e. infrastructure, feed delivery, etc.)	X	PHMC developing detailed plans and moving ahead with critical work.		

() identifies alternatives study or analysis

Table 1. Potential Failure Modes and Mitigating Actions/Alternatives (cont'd)

Regulatory					
DOE/Reg Unit unable to authorize BNFL to proceed based on deficiencies identified in documentation	X	Reg Unit review and comment on BNFL documents			
External regulators will not provide permit to proceed with construction because of deficiencies in documentation	X	DOE reviewing and monitoring BNFL/Regulator interactions			
Cannot reach agreement on TPA milestones	X	Working with regulators to develop an acceptable set of milestones			
Regulatory changes or conditions are such that BNFL is unable to meet them			X	Evaluate alternatives that could meet regulatory requirements (7)	
Financial					
Financial markets signal BNFL project will not receive financing acceptable to DOE	X	Evaluate financing alternatives that may be acceptable to DOE (4, 12)	X	Evaluate financing alternatives without BNFL contract (8, 12)	
BNFL will not commit to an acceptable level of equity	X	Same as above			
Financial closure cannot be achieved at end of Part B-1	X	Aggressively work with BNFL to achieve closure			
Budget allocation does not fully fund privatization set aside	X	Continue to work with OMB and Congress, evaluate schedule impact	X	Determine if alternatives to BNFL privatization contract have better chance of being funded (8, 12)	
Near term funding profile too high	X	Evaluate constrained funding alternatives (9)	X	Evaluate constrained funding alternatives (9)	
Changes in Part B-2 contract cause OMB to change scoring	X	Same as above	X	Same as above	
Budget allocation does not fully fund PHMC for work to support BNFL	X	Same as above	X	Same as above	

() identifies alternatives study or analysis

Table 1. Potential Failure Modes and Mitigating Actions/Alternatives (cont'd)

Congress unwilling to fund program because cost is too high				X	Develop study on other alternatives and the issues associated with them. (9)
Business/Contractual					
BNFL Part B-1 deliverables and progress unacceptable	X	Evaluate throughout 24 month Period		X	Evaluate alternative contracting methods and business plans to acquire waste processing capability (11, 12)
Agreement cannot be reached on pricing (unit-prices, idle facility, equitable adjustments)	X	Review cost/price data and Negotiate			
BNFL schedules do not meet needs--indicate adverse trends	X	Review BNFL schedules, request work arounds		X	Same as above
BNFL cost estimates too high--indicate adverse trends	X	Independent cost estimates, identify and evaluate cost drivers		X	Same as above
Unacceptable amount of financial and contractual risk shifted to DOE	X	Evaluate alternatives to achieve appropriate balance of risk (4, 11, 12)		X	Same as above
Contract changes are so great that a COCO fixed-price contract is no longer feasible	X	Evaluate alternative contract conditions to develop the best contract that DOE and BNFL can agree to (11, 12)		X	Same as above
BNFL decides to terminate the contract				X	Same as above
DOE decides to terminate the contract				X	Same as above

Date: December 17, 1999

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*CHRIS,
PLEASE PUT THIS IN DOC CONTROL
THANKS
Don*

From: Don Wodrich

Subject: Plan for Developing Hanford Tank Waste Processing Alternatives

Attached for your action and/or information is revision 1 of the subject plan. It includes references to those alternatives studies that have been completed and identifies those that are still needed.