HANFORD SITE CONTACT-HANDLED TRANSURANIC MIXED WASTE TREATMENT AND PACKAGING SYSTEM PROCESS DESCRIPTION

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FIGURES

TERMS

CH	contact-handled
HEPA	high efficiency particulate air
HIHTL	hose-in-hose transfer line
SST	single-shell tank
TRU	transuranic
WIPP	Waste Isolation Pilot Plant

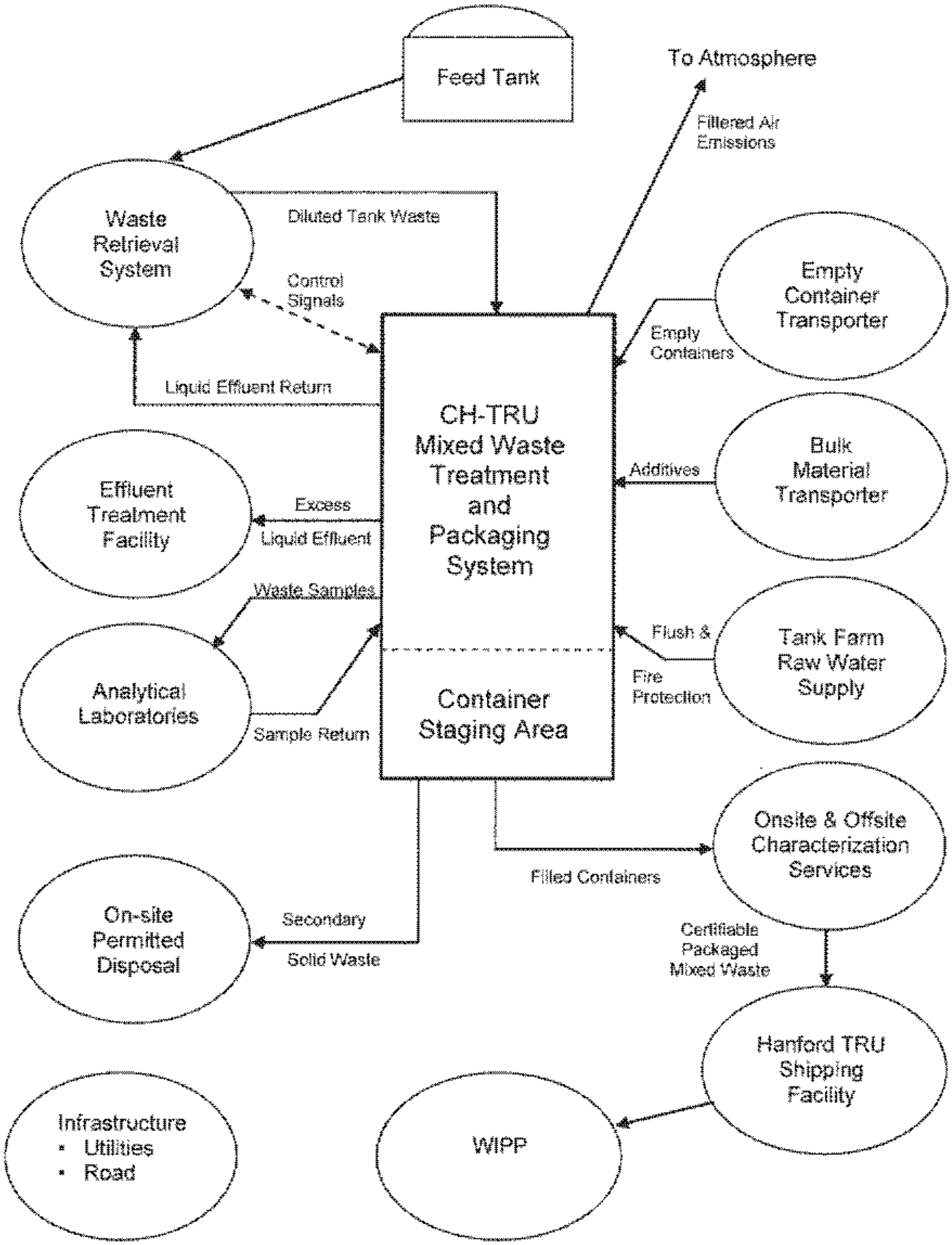
1.0 INTRODUCTION

(b)(5) [redacted] (b)(5) [redacted] The CH-TRU Mixed Waste Packaging System is a modular, mobile, system that will be initially installed and operated at the 241-B Tank Farm in the 200 East Area and will then be remobilized to the 241-T Tank Farm in the 200 West Area. The dewatered SST waste will be packaged and staged for final characterization before being loaded for shipment to the Waste Isolation Pilot Plant (WIPP) facility. Liquid effluent will be treated and disposed at the Hanford Site permitted Effluent Treatment Facility.

The CH-TRU Mixed Waste Treatment and Packaging System will receive mixed waste from the waste retrieval system. The waste will be batch-transferred from the waste retrieval system's slurry tank and pump skid into the CH-TRU Mixed Waste Treatment and Packaging System. In the CH-TRU Mixed Waste Treatment and Packaging System the waste will undergo a drying process with the resulting water vapor being condensed into a liquid effluent stream and conveyed to storage tanks where it can be sampled. The liquid effluent stream will either be transferred to the waste retrieval system's vessel and pump skid for use as process water, or transferred to a tanker truck for final disposition at the Effluent Treatment Facility. The offgas from the drying process will be routed through the Offgas Treatment System where it will be filtered and subsequently vented through a stack to the atmosphere.

The dewatered mixed waste will be combined with a desiccant and packaged in a waste form that will be certified for final disposal at the WIPP in New Mexico. Temporary storage will be either at an existing permitted storage facility on the Hanford Site or container storage areas that will be built as a part of the CH-TRU Mixed Waste Treatment and Packaging System. Figure 1 shows the interface relationships between the waste retrieval system, the CH-TRU Mixed Waste Treatment and Packaging System, the container storage areas, and other systems. A process flow overview for the CH-TRU Mixed Waste Treatment and Packaging System is presented in Figure 2.

Figure 1. CH-TRU Mixed Waste Treatment and Packaging System Interfaces

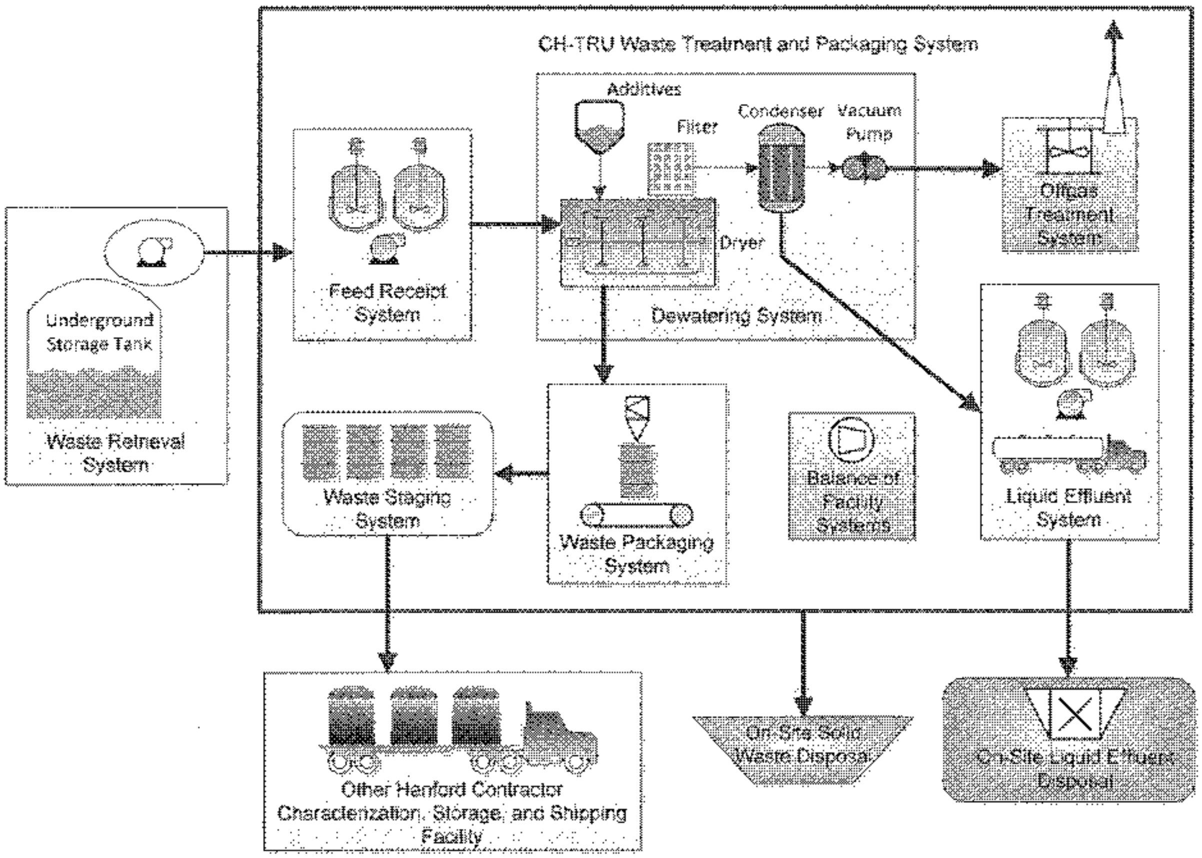


2.0 SYSTEM DESCRIPTION

The CH-TRU Mixed Waste Treatment and Packaging System will be comprised of the following primary process systems:

- Feed Receipt Process System which includes the waste receipt tanks, pumps, piping, and ancillary equipment necessary to collect, mix and transfer the diluted tank waste from the Retrieval System to the Dewatering System
- Dewatering System, which includes dryer(s), condenser(s), and the condensate holding tank and pump conveyance system for drying the waste
- Waste Packaging System, which includes a container handling and fill system for packaging of the waste and desiccant additives into 55-gallon drums
- Liquid Effluent System, which includes liquid effluent holding tanks, pumps, piping, and ancillary equipment necessary to store and transfer liquid effluent from the Dewatering System
- Liquid Effluent Transfer Station, which includes connections and ancillary equipment to load a tanker truck with dryer condensate for transport to the Effluent Treatment Facility for treatment and disposal
- Off-gas System, which includes an exhauster, piping, and ancillary equipment to filter and release the air effluent
- Control System which includes a control trailer that houses the monitoring and control support systems used to operate the CH-TRU Mixed Waste Treatment and Packaging System.
- Balance of Facility, which includes the steam supply, chilled water, electrical distribution, compressed air, change trailer, container staging area, and other miscellaneous systems, that are required for support of the CH-TRU Mixed Waste Treatment and Packaging System.

Figure 2. Process Flow Overview



2.1 WASTE RETRIEVAL SYSTEM

The Waste Retrieval System will be deployed and set up at the 241-B Tank Farm and the 241-T Tank Farm for use in conjunction with the CH-TRU Mixed Waste Treatment and Packaging System. Waste retrieval system activities are covered under the SST Part A Interim Status Permit and discussed in detail in the Tank Waste Retrieval Plan(s) that are currently being developed. The components include a pump skid, which includes a 1,800 L (475 gal) slurry tank.

Waste will be retrieved from the (b)(5) using a vacuum retrieval system consisting of a series of high-pressure jets located around a vacuum head. The tank waste/water slurry (slurry) will be collected at the vacuum head and conveyed through an articulated mast through a hose-in-hose transfer line (HIHTL) to a slurry tank in the pump skid. The vacuum produced to collect and convey the slurry will be produced by tandem vacuum pumps connected to the slurry tank. The discharge air from the vacuum pumps will pass through a water separator within the vacuum skid before being returned to the SST via a HIHTL. The recovered slurry placed in the slurry tank will be mixed and diluted as necessary for transfer through HIHTL to the Feed Receipt Process System waste receipt tanks.

After completion of waste retrieval activities at the 241-B Tank Farm, the Waste Retrieval System will be decontaminated and dismantled. This system may be reassembled or a newly procured system installed at the 241-T Tank Farm.

2.2 CH-TRU MIXED WASTE TREATMENT AND PACKAGING SYSTEM

The CH-TRU Mixed Waste Treatment and Packaging System will be sited north of the 241-B Tank Farm tanks and west of the 241-T Tank Farm tanks, in areas previously not used for storage or processing. The system will be secured with fencing and administrative controls.

2.2.1 Feed Receipt System.

The tank waste will be conveyed through one of two Waste Retrieval System HIHTLs installed over-ground and connected directly to the tanks within the Feed Receipt Process System. The Feed Receipt Process System tanks will perform the following functions:

- Receive the diluted tank waste from the Waste Retrieval System and measure for volumetric flow
- Use an agitator to maintain the solids in suspension, and
- Feed the Dewatering System dryer through a recirculation line.

The Feed Receipt Process System will be comprised of multiple skid-mounted waste receipt tanks with agitators. Each waste receipt tank and all associated waste-containing piping and pumps will be fabricated and installed with secondary containment leak detection systems for any potential leakage.

The HIHTL used to convey tank waste slurry between systems with secondary containment will include a double-walled hose in which the outer hose serves as secondary containment for the inner hose. Once the HIHTL extends within or connects to systems with secondary containment it will transition to single-walled piping.

The tank waste in the Feed Receipt Process System waste receipt tanks will be pumped to the Dewatering System using a progressive cavity pump. The Feed Receipt Process System will also include HIHTL along with valve manifolds to allow the tank waste slurry to be recirculated from the Feed Receipt Process System tanks to the pump skid and then back into any of the Feed Receipt Process System tanks. This manifold system will allow waste from any Feed Receipt Process System tank to be conveyed through the pump skid to the dryer(s) or back to any of the Feed Receipt Process System tanks to allow flexibility in the management of the tank waste and to provide capability for process sampling.

2.2.2 Dewatering System

The primary functions of the Dewatering System will be to (1) remove a sufficient percentage of water by volume to meet the waste acceptance criteria to allow eventual disposal at WIPP; (2) transfer the dewatered waste to the Waste Packaging System's fill compartment; (3) condense evaporated liquid effluent; and (4) transfer the collected condensed liquid effluent to the Liquid

Effluent System. The Dewatering System will consist of up to two dryers equipped with exhaust filters and a liquid effluent recovery system, including a vacuum pump and condenser.

A dryer will be the main component of the Dewatering System with the primary function to dewater the waste. Up to two dryers may be installed to facilitate process throughput. The dryer will dry the waste using heat and vacuum to drive off the water in the waste feed. A vacuum of 10-100 torr will be generated within the dryer using a vacuum pump. Steam will be supplied to an outer shell. Rotating mixer blades will move wet material into contact with the heated shell where, because of the significant vacuum, the system will evaporate water from the mixture at temperatures less than 180 °F. The dryer will dry the solids to 5 - 20 weight % water. This will ensure no observable liquids, providing more than sufficient quality to meet the WIPP moisture acceptance criteria.

Two operational batch drying modes are available. The specific mode will be selected on the basis of waste characteristics and final integrated cold simulant testing to ensure the least risk of agglomeration while balancing waste processing throughput. The first mode is termed "wet-batch" and involves charging the dryer with a full batch load of wet material and then activating vacuum and steam flow. After this batch reaches its final moisture end-point it is released to the drum filling station in the Waste Packaging System. This is the typical vacuum mixer/dryer batch operation method in commercial industry. The challenge with this approach is that should the waste develop a high viscosity in its drying process it could agglomerate/coat the rotating blades and/or inner drum wall, reducing drying efficiency. The second approach, termed "dry batch," minimizes this potential agglomeration by preloading the dryer for its initial run with an inert dry mineral solid (e.g., vermiculite). After the dryer is brought down to operating vacuum and heated up a small waste slip stream from the Feed Receipt system pumping loop is fed into the dryer. Any waste agglomeration on the walls and mixer blades is minimized by the waste drying on a micro scale with the already dried solids. Periodically, when the proper dryer volume is reached, a small batch of dried material is discharged to the drumming station. This operation mode minimizes the risk of agglomeration but at the sacrifice of throughput rate, being a slower drying and unloading process. Other small amounts of inert mineral material, such as sand, may be added during either operational mode as a scouring agent.

Water vapor will exit the dryer through a filter assembly to minimize any solids carryover, and then flow into the condensate recovery system. This system consists of a condenser, vacuum pump, and condensate collection tank and pumping equipment. The vacuum pump maintains near total vacuum conditions within the dryer chamber. The condenser is a typical shell and tube heat exchanger supplied with chilled water from the Chilled Water System. The condenser will drain condensed liquid effluent into liquid effluent holding tank. Liquid effluent will drain into a collection tank and then pumped to the Liquid Effluent System holding tank. High volumes of water are expected to be collected per unit waste value with a typical removal of 35,159 L (9,288gal) of liquid effluent from each 37,850 L (10,000 gal) of waste feed processed.

Lastly, the Dewatering System will contain water supply, valves, and piping to allow flushing and decontamination of the dryer system, with return of diluted waste material to the Feed Receipt System tanks.

2.2.3 Waste Packaging System

The dried waste from the Dewatering System will be gravity discharged from the dryer, metered into WIPP-acceptable 55-gallon drums, and covers installed. Drum filling will be monitored and documented to WIPP acceptance criteria to ensure proper quality of the filled container.

This fill-station will have strict airlock controls to ensure confinement of the dried solids. The Waste Packaging System will also include quality-controlled stations for empty and filled drum staging. Empty drum staging operations include drum inspection, liner placement, vent filter installation, and labeling. Filled drum activities include drum securing on the transfer pallet, final quality inspection, and decontamination check and cleaning if necessary.

The Waste Packaging System includes the capability for drum overpacking or repacking should final characterization result in the drum not meeting WIPP acceptance criteria, or in the event of drum failure or damage prior to shipment. The fill and repacking station area will have secondary confinement in the event of drum spillage.

2.2.4 Waste Staging System

The filled waste containers will be moved out of the Waste Packaging System containment structure and transported to temporary staging area using a forklift. This Waste Staging System will be located within close proximity to the Waste Packaging System containment structure to minimize the distance that the forklift has to carry filled drums. The Waste Staging System will have separate controlled areas; one area for storing empty containers, one area for filled drums and one area for staging of non-conforming waste. Secondary confinement will be installed in the appropriate staging area as required. The waste staging area will also include a trailer loading area for transporting the filled drums to the Hanford TRU Shipping Center.

An additional area will be located within the Waste Staging System to queue drums undergoing waste characterization. While the majority of drum characterization effort will be accomplished through WIPP services managed by another Hanford contractor, some basic drum characterization may be coordinated at the CH-TRU Mixed Waste Treatment and Packaging System. The DOE has currently subcontracted final drum characterization and loading for shipping to WIPP through a separate Hanford contract other than the Tank Farm Contractor managing and operating the CH-TRU Mixed Waste Treatment and Packaging System. Regardless of whether this contracting structure is maintained the Tank Farm Contractor will ensure proper characterization, including record management, of the dried product drums to all WIPP acceptance criteria prior to loading for shipment. After validation of characterization the drums will be loaded into WIPP-approved shipping containers. The shipping containers will then be transported to WIPP and unloaded per other DOE contracts.

2.2.5 Liquid Effluent System

The Liquid Effluent System will receive condensed liquid effluent from the Dewatering System. The effluent will then be routed from the Liquid Effluent System pump skid to the liquid effluent holding tanks via HIHTL. The liquid effluent tanks will be double-walled tanks used to temporarily store the liquid. Liquid effluent stored in these tanks will be pumped to the Liquid

Effluent System pump skid using transfer pumps and HIHTLs. At the Liquid Effluent System pump skid, the liquid effluent water will then pass through a 5-micron filtration system before being either batch transferred to the Effluent Treatment Facility via a tanker truck for treatment and disposal or recycled back to the waste retrieval system via HIHTLs for use in the retrieval and waste transfer activities. Each Liquid Effluent System tank will be provided with a sample port to obtain samples of the liquid effluent for analysis.

The tanker truck loading station will be located near the Liquid Effluent System pump skid, and will include a confinement pad serving as secondary containment. The HIHTL conveying the liquid effluent to the tanker truck loading station will terminate at a fixed manifold system within the secondary containment of the loading station. A flexible hose with quick-connect fittings will be used to transfer the condensate into the tanker truck once the valves are properly aligned, and the Liquid Effluent System pumps will be activated to direct the liquid effluent to the loading station.

This liquid effluent will then be transported to the Hanford Liquid Effluent Treatment Facility, a permitted facility for final treatment and disposal of contaminated waste water.

2.2.6 Offgas Treatment System

Air emissions from the CH-TRU Mixed Waste Treatment and Packaging System will be filtered by an Offgas Treatment System, which is a self-contained system adjacent to the Dewatering System containment system. The Offgas Treatment System will meet conditions set forth in the State of Washington and U.S. Environmental Protection Agency air permits. The Offgas Treatment System will collect air and interface with the following systems:

- The Feed Receipt Process System waste receipt tanks to allow nominal ventilation of the tank's headspace
- The Dewatering System vacuum pumps discharge and the Dewatering System containment system
- The Waste Packaging System feed conveyance, the drum fill station and airlock within the Waste Packaging System containment, and separate connections to sample stations or gloveboxes.

Ductwork from each of these systems will be used to transfer the air from each system to the Offgas Treatment System skid. The main components associated with the Offgas Treatment System include: (1) a heating system to increase the air temperature; (2) a pre-filter to extend the service life of the High Efficiency Particulate Air (HEPA) filters; (3) HEPA filters with testing sections, and injection and sampling ports; (4) a variable speed exhaust fan; and (5) Exhaust stack with a continuous radiological emissions monitoring system and sample ports. The Liquid Effluent System tanks will be outfitted with HEPA filters that allow the tanks to vent to atmosphere and will not be tied into the Offgas Treatment System.

2.3 BALANCE OF FACILITY

The Balance of Facility will include, by definition, support systems and utilities required for the operation of the CH-TRU Mixed Waste Treatment and Packaging System. Specific operational facilities, including other mobile trailers and skid-mounted containment systems, will be established to provide the Balance of Facility support systems and utilities. These will include, but not be limited to, process and instrument air; process service water; steam supply; filtered water system; chilled water generation system; heat pump; power supplies; process and administrative support areas; and the bulk material (i.e., additive/sand) handling system. Components of the Balance of Facility will not manage nor come in contact with dangerous wastes and are therefore not regulated.

2.3.1 Compressed Air System

The Compressed Air System will provide a continuous supply of compressed air in an on-demand basis for operation of pneumatically operated solenoid valves, pneumatic instrumentation, air-driven pumps, and other miscellaneous uses and will interface with the Feed Receipt Processing System, Dewatering System, Waste Packaging System, Bulk Material Handling System, and the Filtered Water System. The Compressed Air System will be comprised of two major components: (1) an air compressor with associated components and (2) the compressed air distribution skid.

2.3.2 Process Support Area

The Process Support Area will consist of the control trailer containing the monitoring and control system. The function of the monitoring and control system will be to provide active indication, alarm, and control of selected processing and support operations throughout the CH-TRU Mixed Waste Treatment and Packaging System. The monitoring and control system will provide automatic operation of selected processing subsystems and will accept operator commands and overrides. This system will be the interface between the operators and the systems, is designed to be on-line and operating at all times, and will consist of interactive computers, logic circuits, panels, cabinets, I/O modules and wiring. The monitoring and control system will provide the operator with displays and controls for system alarms, process data, set point controls, annunciator outputs, and digital visual records.

2.3.3 Electrical Distribution System

The electrical demand for the CH-TRU Mixed Waste Treatment and Packaging System will be supplied by the main Hanford Site power grid. During operations the Electrical Distribution System will receive power from an existing 13.8 kilovolt line along with a 7,500 kilovolt amps transformer.

2.3.4 Change Trailer Area

The change trailer will contain a changing room and will be housed in a singular modular building erected close to the CH-TRU Mixed Waste Treatment and Packaging System. The change trailer will contain change rooms and showers and will be used to allow personnel decontamination prior to access from the tank farm to the outside area or personnel to dress-out in appropriate personnel protective equipment when entering radiation-controlled zones.

2.3.5 Steam Supply System

The primary function of the Steam Supply System will be to provide steam to the Dewatering System dryer(s) jacket to evaporate water from the liquid waste feed. Steam will be transported from the Steam Supply System containment system to the dryer inlet steam connection. Steam condensate generated at the dryer will be collected in a condensate receiver tank containing liquid level controls tied to a pump. The pump will convey the collected steam condensate back to the Steam Supply System where the condensate will be collected in the boiler feed tank. This closed-loop system is designed to allow for heat exchange with the dryer so that the steam will not directly contact the waste.

2.3.6 Filtered Water System

A filtered water pump skid and the filtered water/compressed air distribution manifold will comprise the Filtered Water System. The Filtered Water System pump skid is designed to receive raw water from the Hanford Site's raw water supply through a quick disconnect. Raw water will be filtered through a 60-mesh strainer located upstream of the Filtered Water System water tank that will provide water in an on-demand manner for normal daily system operation.

2.3.7 Chilled Water System

The function of the Chilled Water System will be to provide the proper flow of chilled water to Dewatering System components in an on-demand manner. The chilled water will consist of a 35 percent propylene glycol and 65 percent water solution to prevent freezing of the chilled water loop. The chilled water will absorb heat from the Dewatering System components and be returned to the chillers where the heat will be removed from the returning water and the water re-chilled.

2.3.8 Bulk Material Handling System

The primary functions of the Bulk Material Handling System will be to:

- Receive bulk bags of additive material
- Store the additive material onsite
- Convey the additive materials to delivery vessels located above the dryer for metered delivery.

The Bulk Material Handling System is designed to handle two different additives: 1) a clay agent needed for dry-batch processing in the dryer that will consist of non-biodegradable inorganic materials (e.g., vermiculite) and that will also be used to absorb any free moisture within the drum after packaging, and 2) sand that will be used as required to scour the dryer wall to prevent solids accumulation.

SENSITIVE AND PRE-DECISIONAL
DO NOT SCAN INTO RMIS

April 30, 2003

U.S. Department of Energy
Office of River Protection
Leif Erickson
Deputy Manager
P.O. Box 450 (MS H6-60)
Richland, WA 99352

cc: U.S. Department of Energy
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1.

RE: *YAHSGS LLC April 30, 2003 Task 2 "Final Report on Enhanced RPP WIR Approach" Deliverable for U.S. Department of Energy, Office of River Protection, Contract No. DE-AT27-01RV14289*

This deliverable is in accordance with Task 2 in YAHSGS' contract with ORP which calls for YAHSGS to submit a report setting forth its evaluation of DOE M 435.1-1 waste incidental to reprocessing (WIR) approaches taken by other DOE sites for tank waste retrieval and waste treatment operations (does not include tank and ancillary equipment residuals or contaminated soils). Recommend the adoption or adaptation of approaches that would be applicable to and of value to ORP. The evaluations shall consider available information related to NRC evaluations and comments on previous DOE WIR evaluations as well as third party challenges to such determinations. The report shall also include recommendations for new or hybrid approaches, consistent with DOE 435.1 that may be better suited for addressing specific Hanford tank waste operations. Draft report submitted to ORP 12/16/02. Final report submitted to ORP 4/30/03.

Background

This letter report updates our letter report to Leif Erickson dated December 16, 2002 regarding "RPP Enhanced WIR Approaches". In that report we made the following recommendations:

A. (b)(5)

B.

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(b)(5)

The status of activities related to those two recommendations is discussed below.

Status Discussions

I. Prior Recommendation A. (b)(5)
(b)(5)

Status -- (b)(5) CHG did submit "*DOE 435.1 Implementation Plan*", RPP-6556, Revision 1, dated April 4, 2003 to ORP for approval. We reviewed and commented on the plan on April 15, 2002 (Item (e) below), (b)(5)

(b)(5)

(b)(5)

(b)(5)

This working group is on a fast track to expedite moving forward with (b)(5) (b)(5) which is a positive sign. The question remains open, however, regarding (b)(5) (b)(5)

We also understand that the (b)(5) (b)(5)

Updated Recommendation -- (b)(5) (b)(5)

II. Prior Recommendation B. (b)(5) (b)(5)

Status -- We prepared and submitted a draft procedure for ORP comment, approval, and implementation. That draft procedure entitled (b)(5) (see (a) below) was submitted on January 2, 2003. It is our belief that the procedure, modified as appropriate to best serve ORP's needs, provides a means to build the impetus and guidance to further CHG's efforts relative to recommendation A above. Actions on that draft procedure (review, comments) have not occurred.

Updated Recommendation -- (b)(5) (b)(5)

(b)(5)

Recent YAHSGS WIR Related Reports[2]

Since our December 16th report referenced above, we have prepared and delivered several WIR related reports and papers to ORP as listed below:

(a) YAHSGS prepared a draft "*ORP WIR Implementation Procedure*" for ORP's review, comment, and/or approval and forwarded that document to the ORP Assistant Manager for Tank Farms and members of his staff for review in January 2, 2003 (Attachment A)[3]. As discussed above, in this draft procedure YAHSGS sets forth a proposed ORP approach for (b)(5) [redacted]

(b) Memo to R. Schepens and L. Erickson from W. Hewitt, "*Hanford Tanks Potentially Not Requiring Pretreatment Due to Already Low Radionuclide Inventories*", January 28, 2003 (Attachment B). This is a letter report that (b)(5) [redacted]

(c) Draft White Paper, "*Proposed Classification Approach for Hanford Tank Waste Materials*", Preliminary Draft, February 6, 2003 (Attachment C). This is a white paper that laid out an (b)(5) [redacted]

(d) Letter to L. Erickson from W. Hewitt, "*Task 2 Letter Report on WIR Status*" April 7, 2003 (Attachment D). This is a letter report that provided a (b)(5) [redacted]

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[2] Issued subsequent to the December 16, 2002 draft of this report.
[3] Discussed in Recommendation B above.

(b)(5)

(e) E-mail to C. Louie from D. Wodrich (Attachment E)[4], April 15, 2003 with attachment entitled, "Comments on the Tank Farm Contractor's Draft DOE M 435.1 Implementation Plan, RPP-6556, Revision 1", dated April 4, 2003. This document contains our comments on the April 4, 2003 Tank Farm Contractor's draft DOE M 435.1 Implementation Plan. While our comments were minimal, the primary issue is that (b)(5)

(b)(5)

In general, the RPP remains behind the power curve relative to getting on with WIR determinations, however, the initiatives described in I above indicate an increasing awareness that it needs to get on with the job. If there are any questions, please feel free to contact me by telephone at 509-539-7629 or by e-mail at bill@yahsgs.com.

Very truly yours,

Bill Hewitt
President, YAHSGS LLC

cc: K. Yuracko
D. Wodrich

Attachments:

Attachment A:	Draft "*ORP WIR Implementation Procedure*", January 2, 2003
Attachment B:	Memo to R. Schepens and L. Erickson from W. Hewitt, "*Hanford Tanks Potentially Not Requiring Pretreatment Due to Already Low Radionuclide Inventories*", January 28, 2003
Attachment C:	Draft White Paper, "*Proposed Classification Approach for Hanford Tank Waste Materials*", Preliminary Draft, February 6, 2003
Attachment D:	Letter to L. Erickson from W. Hewitt, "*Task 2 Letter Report on WIR Status*" April 7, 2003

[4] Discussed in Recommendation A above.

Attachment E: E-mail to C. Louie from D. Wodrich (Attachment E)[5], April 15, 2003 with attachment entitled, "Comments on the Tank Farm Contractor's Draft DOE M 435.1 Implementation Plan, RPP-6556, Revision 1", dated April 4, 2003

Attachment F: 435.1 Team Nondisclosure Agreement

[5] Discussed in Recommendation A above.

ORP-669
05/01

U.S. DEPARTMENT OF ENERGY
OFFICE OF RIVER PROTECTION

TITLE: (b)(5)	Number:	ORP PD 435.1
	Issued:	xx-xx-03
	Page:	1 of 6
	Prepared by:	AMTF
	Approved by:	[review draft]

1.0 PURPOSE

(b)(5)

2.0 CANCELLATION

None.

3.0 APPLICABILITY

(b)(5)

4.0 DEFINITIONS

4.1 ACRONYMS

AMTF	Assistant Manager for Tank Farms
DOE	U.S. Department of Energy
DTOC	Director of the Tank Farms Division
EM	U.S. Department of Energy Office of Environmental Management
HLW	High-Level Waste
LAW	Low-Activity Waste
LLW	Low-Level Waste
NRC	U.S. Nuclear Regulatory Commission
ORP	U.S. Department of Energy Office of River Protection
TFC	Tank Farm Contractor
TOD	Tank Farms Operations Division
TRU	Transuranic Waste (Based on DOE M 435.1-1 definition)
WIR	Waste Incidental to Reprocessing
WTPOC	Waste Treatment Plant Operating Contractor

4.2 DEFINITION OF TERMS

High-Level Waste (HLW). The highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. (From DOE M 435.1-1)

Low-Activity Waste (LAW). Radioactive waste that remains after separating from HLW as much of the radioactivity as is technically and economically practicable and when solidified may be disposed of as LLW in a near-surface facility.

Low-Level Waste (LLW). Radioactive waste that is not HLW, spent nuclear fuel, TRU waste, byproduct material (as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended), or naturally occurring radioactive material. (From DOE M 435.1-1)

Transuranic (TRU) waste. Radioactive waste containing more than 100 nanocuries (3700 bequerels) of alpha-emitting TRU isotopes per gram of waste, with half-lives greater than 20 years, except for the following:

a. HLW.

b. Waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations.

c. Waste that the NRC has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61. (From DOE M 435.1-1)

Waste Incidental to Reprocessing (WIR). A process set forth in DOE M 345.1-1 by which certain waste resulting from reprocessing spent nuclear fuel, if determined to be incidental to reprocessing, is classified as being other than HLW. This waste is then managed under DOE's regulatory authority in accordance with the requirements for TRU or LLW, as appropriate.

5.0 RESPONSIBILITIES

(b)(5)

6.0 PROCEDURE

6.1 INTRODUCTION

Radioactive waste resulting from reprocessing spent nuclear fuel is classified as HLW unless it is determined to be LAW, LLW, or TRU waste by the WIR process. Most of Hanford's tank waste is from reprocessing spent nuclear fuel and is now managed as HLW. Therefore to classify any tank waste as non-HLW requires a (b)(5)

(b)(5)

6.2 REVIEW AND APPROVAL PROCEDURE

(b)(5)

6.3 EXAMPLE

(b)(5)

7.0 REFERENCES

DOE M 435.1-1, *Radioactive Waste Management.*

DOE G 435.1-1, *Radioactive Waste Management*

Technical Basis for Classification of Low-Activity Waste Fraction from Hanford Site Tanks, WHC-SD-WM-TI-699, Rev. 2, Westinghouse Hanford Company, September 18, 1996.

Letter from J. Kinzer, Office of Tank Waste Remediation System, DOE, to C. J. Paperiello, Office of Nuclear Materials Safety and Safeguards, NRC, Subject: Classification of Low-Activity Tank Waste Fraction, dated November 7, 1996, 96-TWR-020.

Letter from C. J. Paperiello, Office of Nuclear Materials Safety and Safeguards, NRC, to J. Kinzer, Office of Tank Waste Remediation System, Subject: Classification of Hanford Low-Activity Tank Waste Fraction, dated June 9, 1997.

Memorandum from Jessie Hill Roberson, Assistant Secretary for Environmental Management, Guidelines for Actions Involving Waste Incidental to Reprocessing Determinations Under DOE M435.1, *Radioactive Waste Management,* December 16, 2002

ORP-11931, *Classifying Hanford Tank Low-Activity Waste Fraction (Historical Records 1988-2002), August 2002.*

8.0 RECORDS

The following records shall be retained in a quality records management system:

a. The WIR determinations submitted by the contractor.
b. Any NRC and EM consultation documentation.
c. The DOE review and approval documentation.

9.0 ATTACHMENTS

9.1 WIR Determination Review and Approval Flow Diagram

Attachment 9.1

(b)(5)

Attachment B

MEMO

SENSITIVE AND PRE-DECISIONAL -- DO NOT SCAN INTO RMIS

DATE: January 28, 2003

TO: Roy Schepens
Leif Erickson

FROM: Bill Hewitt

RE: *Hanford Tanks Potentially Not Requiring Pretreatment Due to Already Low Radionuclide Inventories*

At your request, we have analyzed the Hanford tanks to determine additional possible waste treatment acceleration opportunities. (b)(5)

(b)(5)

Method 1 — (b)(5)

(b)(5)

Method 2 - (b)(5)

(b)(5)

Method 3 - (b)(5)

(b)(5)

(b)(5)

(b)(5)

The results are displayed in the following table.

Method	(b)(5)
1	
2	
3	

(b)(5)

(b)(5)

Attachment A

MEMO

SENSITIVE AND PRE-DECISIONAL -- DO NOT SCAN INTO RMIS

Background

(b)(5)

(b)(5)

[redacted]

Approach

(b)(5)

[redacted]

(b)(5)

Finding

(b)(5)

[17] E-mail from Karyn Wiemers, DMJM H+N, to Bill Hewitt, YAHSGS LLC, dated December 13, 2002, regarding total (b)(5) Hanford tanks.

Figure 1 – Listing of Potential Tank Wastes for Near-Term Immobilization Without Pretreatment

TANK	(b)(5)
(b)(5)	

TANK	(b)(5)
(b)(5)	

References:

WHC 1996. Technical Basis for Classification of Low-Activity Waste from Hanford Site Tanks, WHC-SD-WM-TI-699, Rev. 2, September 1996.

DOE 1996. Letter from Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office, Richland, WA, to Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C., Re: Classification of Hanford Low-Activity Tank Waste Fraction, November 7, 1996.

NRC 1997. Letter from Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C., to Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office, Richland, WA, Re: Classification of Hanford Low-Activity Waste Fraction, June 9, 1997.

CHG 2003. *Integrated Mission Acceleration Plan,* RPP-13678, Revision D, CH2MHill Hanford Group, Inc. (CHG), Richland, WA, January 2003

Overview

The definition of high-level radioactive waste (HLW) set forth in the Atomic Energy Act of 1954, as amended (AEA) states that HLW consists of the highly radioactive materials from spent fuel reprocessing as well as other highly radioactive materials that the Nuclear Regulatory Commission (NRC) determines by rule to require permanent isolation. (b)(5) [redacted]

(b)(5) [redacted]

Introduction

(b)(5) [redacted]

AEA HLW Definition

The AEA HLW definition[1] is as follows:

> "The term "high-level radioactive waste" means –
>
> (A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and (B) other highly radioactive material that the

---

(b)(5) [redacted]

Commission, consistent with existing law, determines by rule requires permanent isolation."

Interpretation and Assumptions

(b)(5)

(b)(5)

---

2 (b)(5)
3
4
5
6

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

Concept Application to Hanford Tank Waste

(b)(5)

(b)(5)

(b)(5)

(b)(5)

Figure A – Use of Table 1 and Table 2 Sum of the (b)(5)

Sum of the Fractions Relative to Class C

(b)(5)

Tank Waste Residuals

(b)(5)

Appendix -- Application to Three Hanford Tanks for Illustrative Purposes

(b)(5)

Figure B – Example Deployment of AEA HLW Definition Classification Approach

(b)(5)

[15] BBI, October 2002.

(b)(5)

Attachment D

SENSITIVE AND PRE-DECISIONAL
DO NOT SCAN INTO RMIS

April 7, 2003

Leif Erickson
Deputy Manager
U.S. Department of Energy
Office of River Protection
P.O. Box 450 (MS H6-60)
Richland, WA 99352

cc: U.S. Department of Energy
Office of River Protection
Clo Reid, Contracting Officer
Contract Management Division
P.O. Box 450 (MS H6-60)
Richland, WA 99352

RE: ***YAHSGS LLC April 7, 2003 Task 2 "Letter Report on WIR Status" Deliverable for U.S. Department of Energy, Office of River Protection, Contract No. DE-AT27-01RV14289***

This deliverable is in accordance with Task 2 in YAHSGS' contract with ORP which calls for YAHSGS to evaluate (b)(5)

(b)(5)

Update letter reports are due to ORP on 11/4/02, 4/7/03, and 9/15/03.

Background

A letter report was submitted November 4, 2002 on this subject. That report was updated in a 2nd letter report dated December 16, 2002. This letter report describes WIR related activities since December 16, 2002.

Waste Incidental to Reprocessing (WIR) Implementation in the River Protection Project (RPP)

(b)(5)

(b)(5)

WIR Litigation

(b)(5)

Recommendations

YAHSGS offers several recommendations consistent with Task 2 as follows:

1. (b)(5)

2.

3.

1 (b)(5)
2
3

(b)(5)

4. [redacted]

If there are any questions, please feel free to contact me by telephone at 509-539-7629 or by e-mail at bill@yahsgs.com.

Very truly yours,

Bill Hewitt
President, YAHSGS LLC

(b)(5) [redacted]

ATTACHMENT E

Bill Hewitt

From: Don Wodrich [ddwodrich@worldnet.att.net]
Sent: Tuesday, April 15, 2003 9:28 AM
To: Cathrine_S_Louie@rl.gov
Cc: Michael_J_Royack@rl.gov; bill.hewitt@att.net
Subject: Comments on DOE O 435.1Implementation Plan

Attached are my comments on the subject document for your consideration.

Don Wodrich

COMMENTS ON DOE O 435.1 IMPLEMENTATION PLAN

Comments on the April 4, 2003 CHG submittal of the DOE O 435.1 Implementation Plan, RPP-6556, Revision 1 are as follows:

(b)(5)

4/15/03
DDW

NONDISCLOSURE AGREEMENT

The U. S. Department of Energy ("DOE") has entered into an Agreement with [NOTE: include the person's corporate employer where non-self-employed]__________________ ("RPP 435.1 TEAM PARTICIPANT") under which RPP 435.1 TEAM PARTICIPANT will participate in a Team that is reviewing documents and other materials that are predecisional, internal documents prepared by YAHSGS LLC (hereinafter RPP 435.1 documents) not subject to release outside the Office of River Protection (ORP) and not subject to disclosure to anyone not participating on this team or otherwise signing this nondisclosure agreement. By execution of this Agreement by TEAM PARTICIPANT's employer, said employer agrees to be bound by the terms and conditions of this Agreement. In participating in the RPP 435.1 TEAM, there is the potential for RPP 435.1 TEAM PARTICIPANT to have access to RPP 435.1 documents prepared for consideration by DOE that have not been reviewed for release, approved, or adopted by DOE and do not represent a position taken or under active consideration by the DOE. In such event, RPP 435.1 TEAM PARTICIPANT, his/her employer and its subcontractors and their respective employees agree that RPP 435.1 documents will be handled and protected in accordance with the terms of this Agreement and that they will refrain from any unauthorized use or disclosure of RPP 435.1 documents and information relating to those documents as long as it remains protected information in accordance with the following conditions:

A. The RPP 435.1 documents will be used solely in connection with the conduct of the 435.1 TEAM.

B. The RPP 435.1 documents will not be copied in any manner by RPP 435.1 TEAM PARTICIPANT, his/her employer or its subcontractors or their respective employees excepting solely where such copies are necessary in connection with their direct participation in the 435.1 TEAM, with all such copies to be maintained in either CH2MHILL Hanford Group, Inc. (CHG) or DOE's offices and destroyed, or returned to DOE, upon completion of the 435.1 TEAM activities.

C. RPP 435.1 TEAM PARTICIPANT will, prior to any RPP 435.1 TEAM PARTICIPANT employee, subcontractor, or subcontractor's employee having access to RPP 435.1 documents, ensure that each such employee subcontractor or subcontractor employee does not have a conflict of interest. Further, RPP 435.1 TEAM PARTICIPANT shall ensure that any RPP 435.1 TEAM PARTICIPANT subcontractor or employee of RPP 435.1 TEAM PARTICIPANT or a subcontractor having access to RPP 435.1 documents is made aware of, and agrees to abide by, the terms of this agreement with respect to the RPP 435.1 documents or information relating to those documents, and agrees that they will not use or disclose of the RPP 435.1 documents or information relating to those documents in any manner inconsistent with this agreement. Such agreement shall be documented by signing this Nondisclosure Agreement by each RPP 435.1 TEAM PARTICIPANT and the responsible corporate official of said TEAM PARTICIPANT's employer.

D. RPP 435.1 TEAM PARTICIPANT, its subcontractors and their respective employees shall not be liable for use or disclosure of RPP 435.1 documents if the same:

a) Is in the public domain at the time it is used or disclosed; or
b) Was known, as demonstrated by written documentation, to RPP 435.1 TEAM PARTICIPANT prior to the time of disclosure; or
c) Is used or disclosed with the prior written approval of the DOE; or

d) Becomes known to RPP 435.1 TEAM PARTICIPANT from a source other than DOE, CHG, or YAHSGS LLC under conditions not requiring obligations of confidentiality; or
e) Is disclosed under legal compulsion (in which event it is agreed that RPP 435.1 TEAM PARTICIPANT will provide DOE with prompt notice of any such request and afford DOE the opportunity to seek appropriate protective orders).

E. Upon completion of RPP 435.1 TEAM PARTICIPANT's services to the RPP 435.1 TEAM, RPP 435.1 TEAM PARTICIPANT shall ensure that said RPP 435.1 TEAM PARTICIPANT have taken possession of or retained any documentation or copies thereof of RPP 435.1 documents or information relating to those documents. TEAM PARTICIPANT's employer shall likewise be bound by this provision.

F. In addition, RPP 435.1 TEAM PARTICIPANT is responsible for any breach of this Nondisclosure Agreement. TEAM PARTICIPANT's employer shall likewise be bound by this provision. DOE will receive advance notification and shall approve or disapprove of additional RPP 435.1 TEAM PARTICIPANT employees, subcontractors and subcontractor employees.

G. RPP 435.1 TEAM PARTICIPANT will provide DOE copies of signed employee, subcontractor and subcontractor employee copies of this agreement prior to the provision of any RPP 435.1 documents or information relating thereto to said persons for purposes of achieving the objectives of the RPP 435.1 Team..

H. RPP 435.1 TEAM PARTICIPANT acknowledges that breach of this agreement would cause harm to DOE which harm is difficult to estimate and that, in addition to other rights and remedies, DOE shall be entitled to seek injunctive relief, damages, and specific performance.

I. This Nondisclosure Agreement shall be governed by applicable Federal law and the laws of the State of Washington, and venue for any action brought hereunder shall be within a court of competent jurisdiction in the State of Washington.

DOE____________________ RPP 435.1 TEAM PARTICIPANT________________

Date:______________ Date:______________

RPP 435.1 TEAM PARTICIPANT'S EMPLOYER ______ (Date)

The following RPP 435.1 TEAM PARTICIPANT employees will provide services in connection with RPP 435.1 TEAM PARTICIPANT's Agreement with DOE and agree to the terms of this Nondisclosure Agreement.

(Name of RPP 435.1 TEAM PARTICIPANT Employee) (Signature and Date)

(Name)	(Signature and Date)
______________________	Agreed: ______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________

The following persons or companies will be subcontractors to RPP 435.1 TEAM PARTICIPANT, or employees of such subcontractors, in connection with the services provided to DOE by RPP 435.1 TEAM PARTICIPANT and agree to the terms of this Nondisclosure Agreement.

(Name of Subcontractor and Subcontractor employees) (Signature and Date)

(Name of Subcontractor and Subcontractor employees)	(Signature and Date)
______________________	Agreed: ______________________
______________________	______________________
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______________________	______________________

Hildman, Cynthia M

From:	Bryan, Catherine B
Sent:	Wednesday, August 24, 2011 10:32 AM
To:	Pfaff, Stephen H
Cc:	Koll, Ronald J; Bryan, Catherine B
Subject:	WIPP Class 3 Permit Modification.docx
Attachments:	WIPP Class 3 Permit Modification.docx

Been looking for you ... Two hard copies on your keyboard

Summary of the background, meeting, Feb 2005 permit, 2 draft white papers and SP 6 results

Two pages (YES!)

TRL of equipment NOT highlighted.

Will add to package next as I refine the data.

WIPP Class 3 Permit Modification

08/24/11

Background

- 11 SSTs contain waste that should be suitable for disposal at WIPP
- B201 – B204, T201- T204, T-104, T-110, T-111

Draft WIPP Class Permit Modification Meeting Discussion Points

- Steve Pfaff, Felix Meira, Rick Tedeshi, and Kitty Bryan met 08.18.11
- Strategy

(b)(5)

- Costs

  (b)(5)

- Schedule

  (b)(5)

- (b)(5)

Class 3 Permit Modification Request – February 2005

- Class 3 Permit was drafted in 2005 prior to consent decree
- Permit addresses B-200 and T-200 tanks
- Permit does not address the T-100 tank waste
- Waste stream history for T-100 tanks is required
- Decision to go to WIPP was based on lack of HWL capacity to make 2028 treatment deadline

Draft White Paper R1, TOC TRU Program Proposal - 04.13.11

- Draft prepared for WRPS Sr. Management and does not represent a formal WRPS position
- Project Managers recommendation – stay on baseline for FY 14 start or delay 1-2 years
  - Allows for DOE waste designation
  - Allows for completion of TC&WM EIS
  - Allows for deployment of the "Wiped Film Evaporator"
  - Allows for reevaluation of leaker status for three B-200 tanks
  - Allows for retention of staff expertise during low retrieval period
- TRU Program started in 2002 – 3 Projects (Retrieval, Packaging, CSS); 2 phases (CH-TRU/RH-TRU)
- TRU Program Value – mitigate the waste and allow closure of SSTs without impacting DST space
- Project scheduled FY 14 – FY 21
- Baseline total cost ***without retrieval*** $112.1 M

Draft Near-Term Regulatory Path Forward for 11 SSTs Containing CH-TRU

(b)(5)

SP6 Comparison – Case 1 "Baseline" to Case 2 "TRU to WTP"

Cost

- Baseline life-cycle cost - $59.9B
- TRU to WTP life cycle cost - $61.6B
- Increase of 2.8% ($1.7 B) over baseline to process through WTP
- Most of increase is due to extra year in WTP mission to process CH-TRU
- Near Term Funding Targets and TRU to WTP Results

FY	Target ($M)	TRU to WTP Results ($M)
2011	410	394
2012	510	482
2013	510	459
2014	610	465
2015	710	600

- TRU to WTP Near term funding requirements are less due to lack of construction of a separate CH-TRU waste treatment system
- TRU to WTP saves $220M during 2021 - 2023

Schedule

- Both Cases begin potential CH-TRU retrievals 04/2018 into the DST system
- Baseline case treatment of all tank waste – April 2043
- TRU to WTP treatment of all tank waste – May 2044
- Baseline Case retrieves potential CH-TRU tanks 2019 – 2024
  TRU to WTP retrieves potential CH-TRU tanks later
- TRU to WTP out year costs are greater 2038 -2049

Hildman, Cynthia M

From:	Pfaff, Stephen H
Sent:	Thursday, May 31, 2012 6:47 PM
To:	Fletcher, Thomas W
Subject:	FW: Draft CH-TRU Presentation
Attachments:	2012-06-05 TRU Status to ORP - Draft.pptx

Tom, these are the slides Rick Tedeschi prepared for the meeting with Stacy.

Steve

From: Tedeschi, Allan R (Rick)
Sent: Wednesday, May 23, 2012 10:46 AM
To: Pfaff, Stephen H; Koll, Ronald J
Cc: Miera, Felix R Jr; Bryan, Catherine B; Simpson, Charles A; Kummer, David A
Subject: Draft CH-TRU Presentation

Steve/Ron,

Here is the electronic copy of the presentation I laid on your chairs yesterday.

Ron and Kitty – The background of this presentation is that Tom Fletcher requested a status/update presentation on the current state of the CH-TRU project in a meeting with Steve, I, and Charles Simpson last week. It is intended to be presented by Tom/Steve/myself to Stacy June 5th.

Thank you.

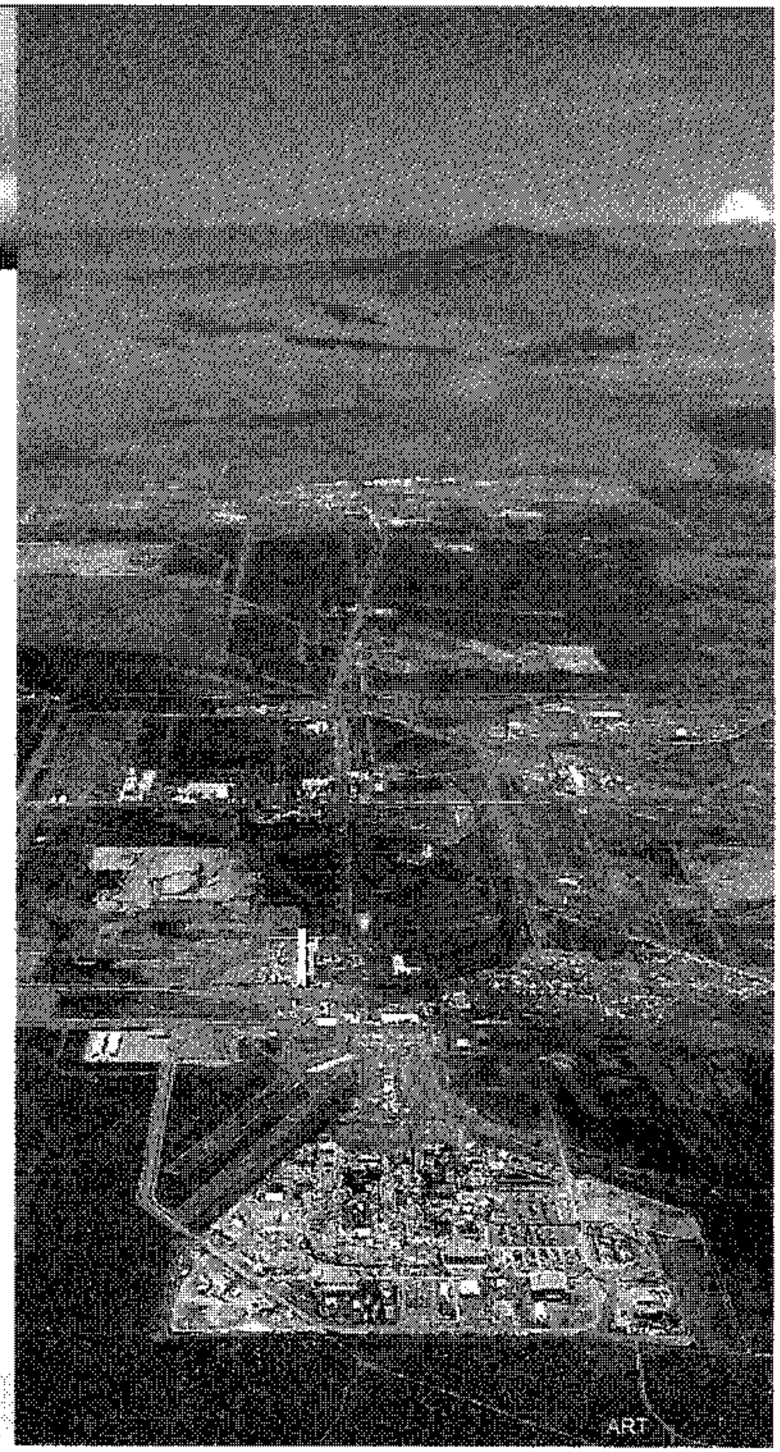
Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

washington river protection solutions

Hanford Tank Transuranic Waste Project Update

June 5, 2012

Rick Tedeschi, WRPS
Tom Fletcher, DOE-ORP
Steve Pfaff, DOE-ORP



Summary

- **TOC Transuranic Waste Project placed in "Standby" 2005**
  - Only interim scope performed was redraft in FY12 of WIPP permit
  - Draft WIPP Class 3 Permit modification request on hold at WIPP

- **ORP Lifecycle Baseline/System Plan 6 plans FY14 project restart**
  - $266M over 8 years (Retrieve, Treat, Package, & Ship from 11 tanks)
  - Cost/schedule rebaselined for 2009 PMB – not reconciled nor updated

- **Sub-CLIN 4.5 (apart from WIPP permit scope) not activated/reconciled**
  - ORP has requested WRPS proposal for REA
  - TOC awaiting ORP technical direction for project restart schedule

- **Last window of opportunity to support Consent Decree milestone for SST retrieval of 9/2022 = FY16 restart**
  - (3) 100-series tanks (T-104, T-110, & T-111) retrieved

- **"Scenario C" pushes current CH-TRU lifecycle restart to 2024**
  - Retrievals occur 2028 – 2032

Contents

- Key Events Timeline
- Lifecycle Details
- CH-TRU Waste
- Project Strategies
- Packaging Design Status
- Standby Status
- Long –Lead Equipment Disposition
- Permitting Status
- Risks and Opportunities
- Value and Next Steps

Key Events Timeline

FY03

Project initiated from Integrated Mission Acceleration Plan (IMAP)

FY04

- Sub-projects initiated: Retrieval, Packaging, & Characterization
- Design/build (fast-track) Packaging project awarded
  - -NEPA Supplement Analysis completed
  - -RCRA Part B certified by TOC
  - -Long-lead equipment procured

FY05

Packaging sub-project slowed to mitigate environmental permitting issues (NEPA)

FY06

- Project placed on "Standby" : equip & records dispositioned & rebaselined
- TC&WM EIS is finalized for NEPA strategy rather than Supplement Analysis

FY07

New TOC RFP distributes major Characterization scope to PRC

FY08

- Project rebaselined for FY09 PMB
- Planned for FY14 restart
- ORP issues FR notice in FY10 stating preferred alternative for CH-TRU is WTP

FY11

RH-TRU removed from EPA inventory, and baseline scope, to match new System Plan strategy

FY12

Re-drafted WIPP Class 3 Permit Modification and distributed to WIPP

Lifecycle Details

Retrieval

- Vacuum and modified sluicing retrieval
- 1/1/14 – 11/29/21
- Deployment thru Operations = $150M
- Design completed but will re-evaluate based upon MARS equipment and C-farm experience

Packaging

- Deployment is project startup critical path
- 10/1/13 – 3/31/18 (4.5 yrs)
- Deployment = $50M; Operation = $33M
- 7500 to 8400 55 gal drums
- Highest technology maturation risk (dryer, solids packaging, mobility)

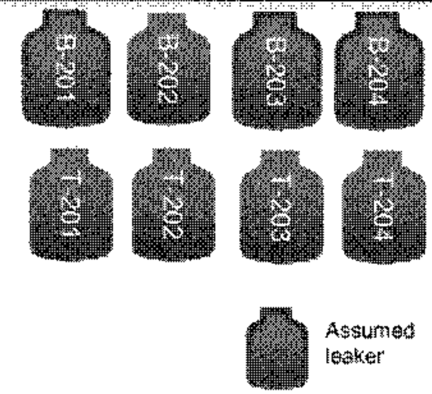
Characterization, Storage, & Shipping (CSS)

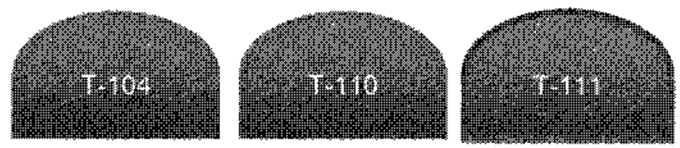
- Characterize via PRC and CCP (WIPP)
- 10/1/13 – 6/1/21
- Development thru Operations = $30M
- Pass-through costs to PRC/CCP need re-evaluated

Total Lifecycle = $266M ~ 8 years

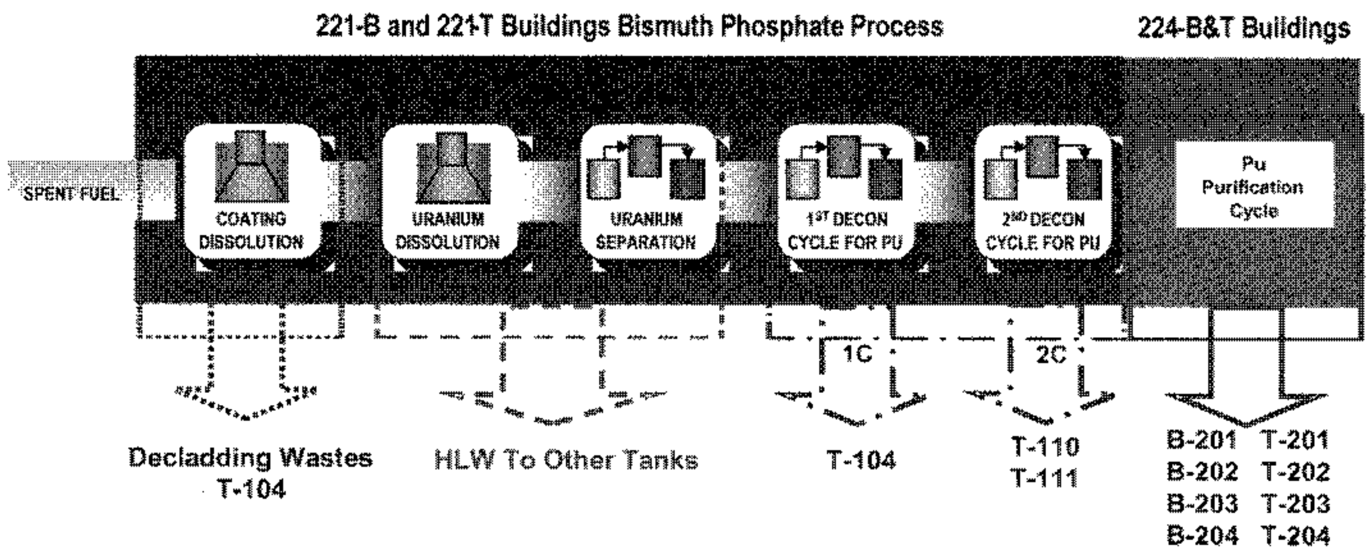
CH-TRU Waste

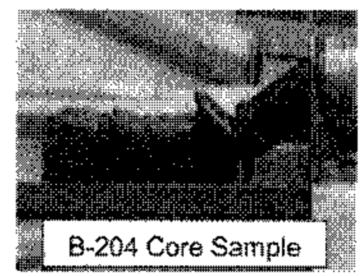
- Eight 200-Series Tanks totaling 279k gallons of sludge
- Three 100-Series Tanks totaling 1,134k gallons of sludge





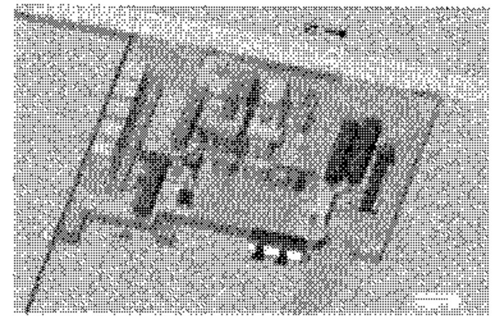
- Candidate TRU sludge originated in the Bismuth Phosphate Process



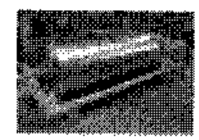


Project Strategies

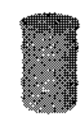
- **Packaging System is modular and mobile**
  - Builds off modular retrieval experience
  - Eliminates need to install WRFS, use cross-site system, or potentially contaminate TRU with high-level waste transfer piping



- **Vacuum dryer for Packaging treatment**
  - Condensate relatively free of radioactive constituents – can go to ETF
  - Decouples issue of limiting water volume for retrieval
  - No impact to DST space regardless of water volume

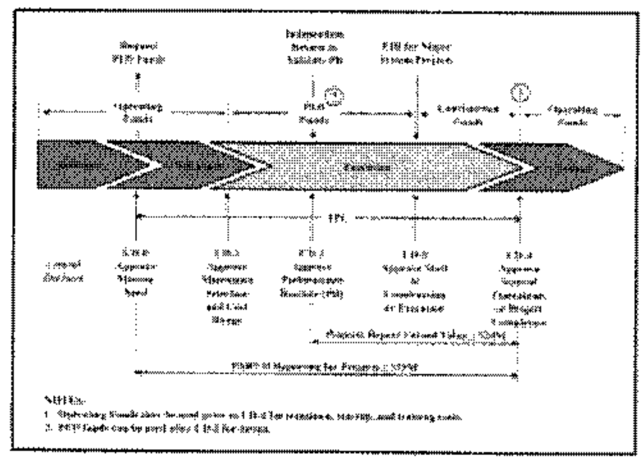


- **Use of 55-gallon drums for packaging**
  - Allows cost-effective characterization and flexibility for shipping
  - Mitigates potential high dose material
  - Easier for handling and rework if needed



Packaging Design Status

- Packaging Project was performed as "fast-track" without CD process
- Typical CD design phases were performed in parallel
- Mapping to current 413.3 CD process
  - CD-0 95% Complete
  - CD-1 80% Complete (Conceptual Design)
  - CD-2 50% Complete (Preliminary Design)
  - CD-3 25% Complete (Final Design)
- Program impacts affecting design completion
  - Technology Maturation Program (new)
  - Commercial Grade Dedication (revised)
  - DNFSB issues over last 10 years (new)
  - Procurement strategies (revised)
  - Loss of project knowledge
- Today
  - TOC Category 1 project (risk, $, schedule)
  - Requires CD process



Typical CD Process per DOE O 413.3

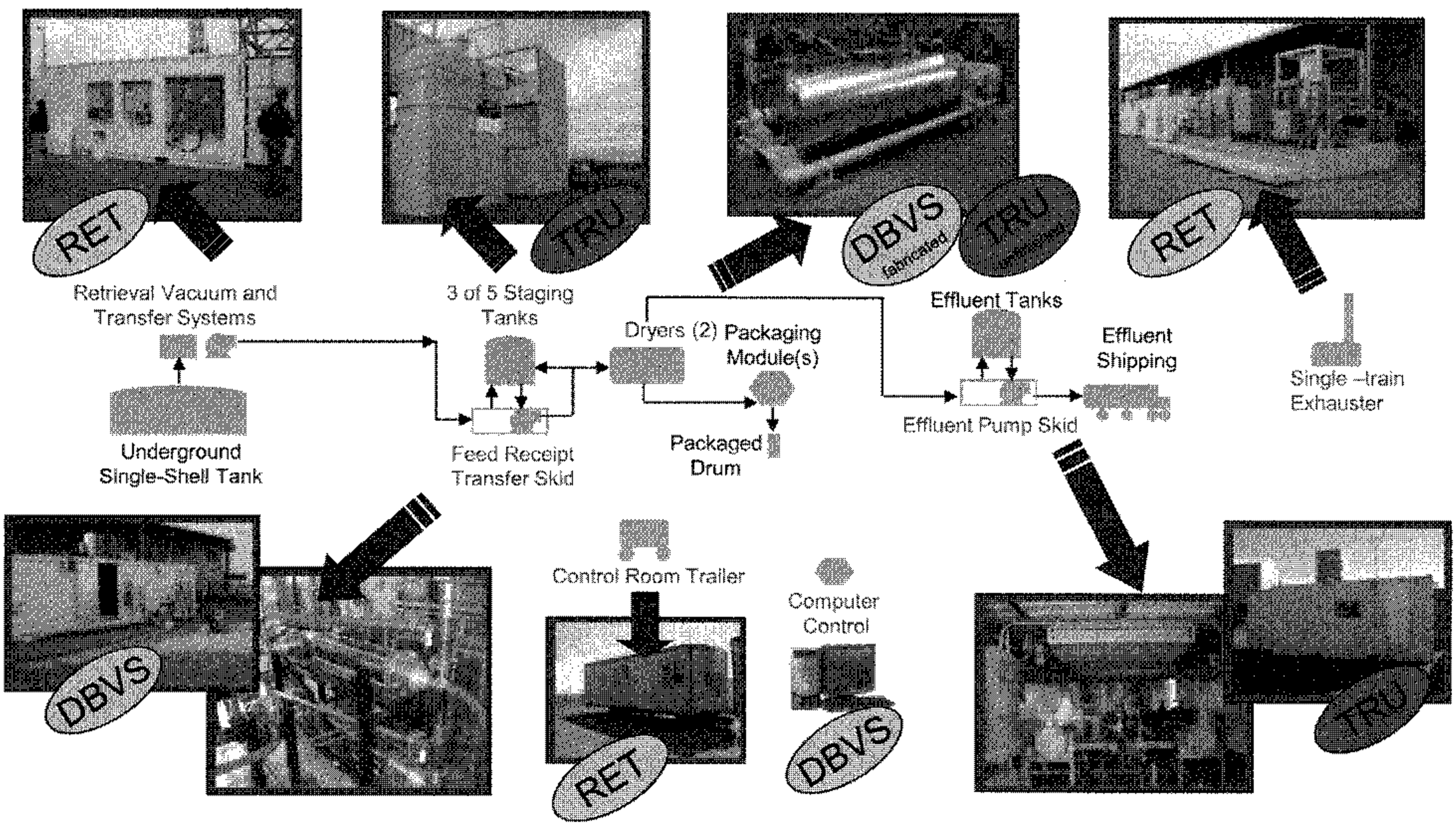
Standby Status

- Records (native and pdf) staged in Project Files and IDMS
  - IDMS site informally maintained with updated data
- Past Packaging Project Manager maintaining cognizance of records and lead for strategic planning
  - Several project engineers still available along with original Environmental lead, but personnel with WIPP knowledge no longer with company
- Hanford TOC not represented at routine WIPP Corporate Board meetings
- Majority of all long-lead procured equipment dispersed to other projects; remaining equipment may be too costly to qualify under new procurement and safety protocols, and/or may not fit revised strategies
  - Only equipment left connected to project is one 50% completed dryer, three tanks, and secondary waste pumping module

Standby Equipment Dispersal

Minimal remaining hardware & Minimal value

<u>Key</u> (Items in red words were procured and dispositioned)
RET: Turned over to Retrieval project
DBVS: Turned over to Demonstration Bulk Vitrification System project
TRU: Staged at 200 Area project marshalling yard for future TRU usage



Permitting Status

- All environmental and safety permits were drafted during original project
  - Environmental: SA and TWRS EIS ROD modification; RCRA Part B; Air Permits/NOCs
  - Safety: HazCat 2 Determination; PDSA
- All existing permitting documents will need revision and resubmittal
- TC & WM EIS will provide necessary NEPA coverage
- (b)(5)

Risks and Opportunities

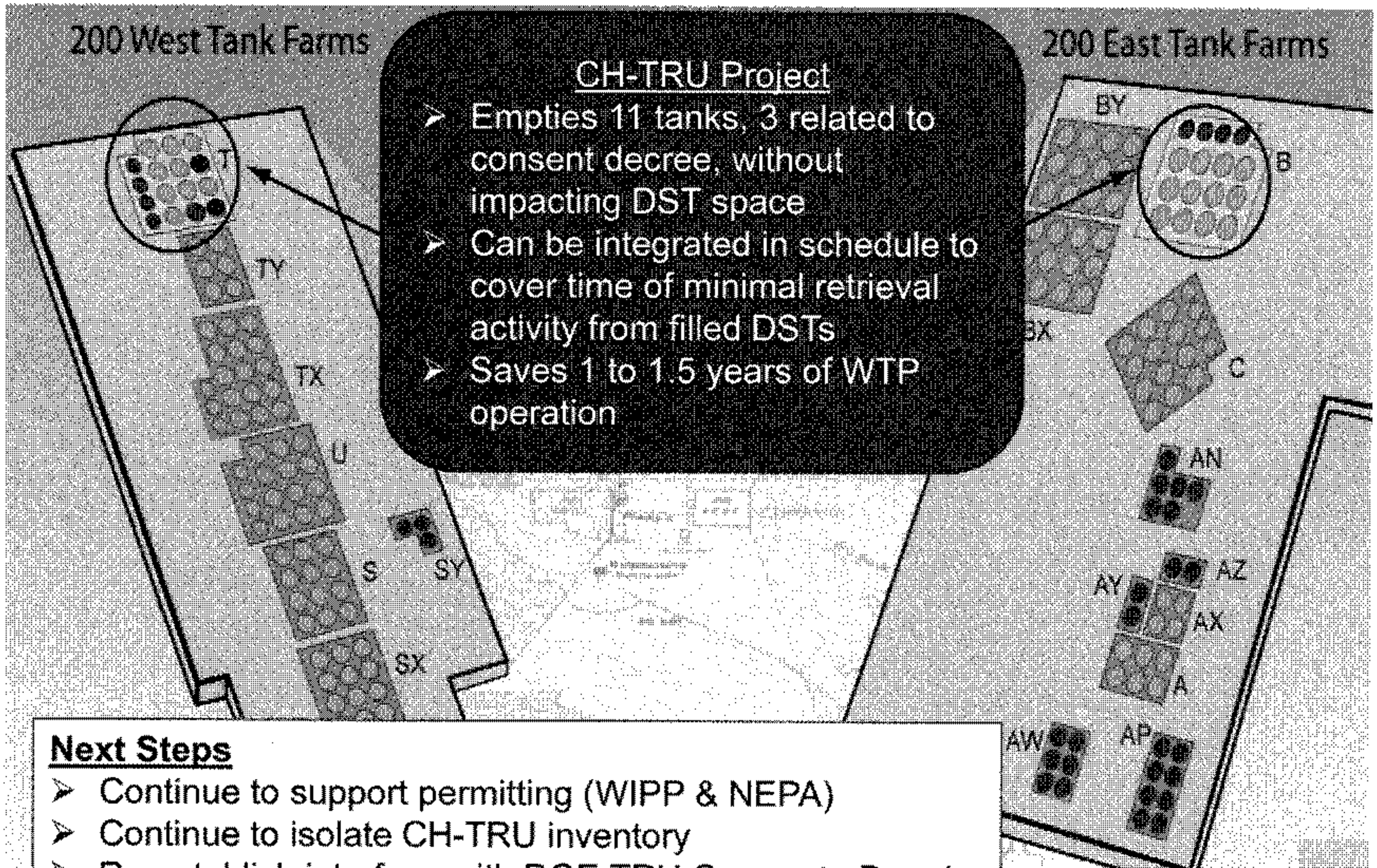
RISKS

- Environmental permit approvals, NEPA, and waste designation
- Restart costs and implications the longer project remains in Standby
- Technology Maturation implementation
  - Do not have a single simulant that reflects both chemistry and rheology
- Integration with PRC/CCP for Characterization
  - Some characterization must be done at the Packaging facility

OPPORTUNITIES

- Revision of design to Hazard Category 3 from current qualification of 2
- Implement major lessons learned from C-farm sludge retrievals
- Integration of Wiped Film Evaporator: use of laboratory-scale system in 222-S, and pilot/full-scale system at Columbia Energy
- Time to refine estimates

Value and Next Steps



CH-TRU Project

- Empties 11 tanks, 3 related to consent decree, without impacting DST space
- Can be integrated in schedule to cover time of minimal retrieval activity from filled DSTs
- Saves 1 to 1.5 years of WTP operation

Next Steps

- Continue to support permitting (WIPP & NEPA)
- Continue to isolate CH-TRU inventory
- Re-establish interface with DOE TRU Corporate Board
- Evaluate strategic options (e.g., Wiped Film Evaporator)

Kemp, Christopher J

From: Mauss, Billie M
Sent: Thursday, March 21, 2013 11:53 AM
To: Mauss, Billie M; Burandt, Mary E; Stubblebine, Scott D; Huffman, Lori A; Kemp, Christopher J; Silberstein, Mark
Subject: RE: Talking Points (b)(5) SDS.docx
Attachments: Talking Points for (b)(5) SDS.DOCX

Sorry, Chris just pointed out that I left off the file. Billie

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From: Mauss, Billie M
Sent: Thursday, March 21, 2013 8:46 AM
To: Burandt, Mary E; Stubblebine, Scott D; Huffman, Lori A; Kemp, Christopher J; Silberstein, Mark
Cc: Grindstaff, Joanne F
Subject: RE: Talking Points for (b)(5) SDS.docx

Scott and Lori,

Per Scott's request, I have added some notes and comments (for what it's worth).
Billie

From: Burandt, Mary E
Sent: Wednesday, March 20, 2013 4:41 PM
To: Stubblebine, Scott D; Huffman, Lori A; Kemp, Christopher J; Silberstein, Mark; Mauss, Billie M
Subject: RE: Talking Points for (b)(5) SDS.docx

Lori,
I added my comments to Scotts and tried to address some of his points.
MB

From: Stubblebine, Scott D
Sent: Wednesday, March 20, 2013 4:18 PM
To: Huffman, Lori A; Burandt, Mary E; Kemp, Christopher J; Silberstein, Mark; Mauss, Billie M
Subject: Talking Points for (b)(5) SDS.docx
Importance: High

(b)(5)

Attorney – Client Privileged; Attorney Work Product;
Not Subject to Discovery or Release Under FOIA;
Prepared in Anticipation of Litigation;
Do Not Disclose - Confidential

Scott D. Stubblebine
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Ex. 5 Atty-Client Privileged

Attorney Client Privileged, Internal working Document.

Talking Points for (b)(5)

- FR notice (March 11, 2013) announced DOE's preferred alternative to send treated tank waste that can be determined legally classified as TRU to WIPP. (b)(5)

- In the FR notice, DOE committed to not initiating retrieval until waste classification (b)(5) (b)(5)
  (b)(5)

- TC&WM EIS ROD is under development with HQ: The EIS ROD already includes the (b)(5)
  (b)(5) March 11, 2013 FR notice.
  (b)(5)

- (b)(5)

- (b)(5)

- Currently WIPP permit prohibits Hanford tank waste from going to WIPP (b)(5)
  (b)(5)

- (b)(5)

-

- Without the determination that the tanks are TRU, the permit restriction lifted and the pathway defined a ROD at this stage may not be allowed because It cannot legally be done, or it would be written so vague a revision would be necessary once the evaluation was complete if there were any limits, restrictions etc. ~~The best a ROD can do is basically say what we already said. We do not have the specific tanks identified or logistics worked out, and~~ It would be difficult to write the Basis for the ROD section since we have not completed the process for making the TRU decision. ~~basis for making any decision on this TRU waste dispositionour basis for any decision without that is unclear~~.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
TTY 711 or 800-833-6388 (for the speech or hearing impaired)

January 2, 2007

Mr. Keith Klein, Manager
Richland Operations Office
United States Department of Energy
P.O. Box 550, MSIN: A7-50
Richland, Washington 99352

Re: Final Determination Pursuant To the Hanford Federal Facility Agreement and Consent Order (HFFACO) in the Matter of HFFACO Milestone M-91-42

Dear Mr. Klein:

This letter follows expiration of the time allotted for HFFACO dispute resolution in this matter between the Washington State Department of Ecology and the United States Department of Energy. Ecology's Final Determination in this matter pursuant to HFFACO Part Two, Article VIII, Paragraph 30(D) is enclosed.

Sincerely,

Jay J. Manning
Director

cc w/enc:
Nick Ceto, EPA Region 10
Dave Bartus, EPA Region 10
Mark French, USDOE-RL
Matt McCormick, USDOE-RL
Ken Quigley, DFSH
Judy Vance, FFS
Rob Piippo, FHI
Gabriel Bohnee, NPT
Stuart Harris, CTUIR
Russell Jim, YN
Todd Martin, HAB
Ken Niles, ODOE
Andy Fitz, WA AGO

bcc electronic w/enc:
Laura Cusack, Ecology
Jane Hedges, Ecology
Deborah Singleton, Ecology
Ron Skinnarland, Ecology

bcc w/enc: NWP Central File: M-91

bcc: NWP Reader File

FINAL DETERMINATION

Final Determination pursuant to the Hanford Federal Facility Agreement and Consent Order (HFFACO) in the matter of HFFACO Milestone M-91-42, and the treatment / certification of Hanford Site transuranic (TRU) and transuranic mixed (TRUM) wastes.

I. Introduction

This determination resolves a dispute under the HFFACO between the United States Department of Energy (DOE) and the Washington State Department of Ecology (Ecology). As such, this constitutes my Final Determination pursuant to HFFACO Part Two, Article VIII, paragraph 30(D). This determination has been made following review and consideration of Ecology's Administrative Record in this matter.

The specific matter in dispute concerns two requirements of the HFFACO M-91-42 milestone due on December 31, 2006.[1] Both requirements relate to treating contact handled transuranic mixed waste to meet certain requirements, or in the alternative, certifying that such waste is ready for shipment to a disposal facility in New Mexico. DOE has requested that the M-91-42 requirements be adjusted. Through this determination, Ecology is denying DOE's request.

II. Transuranic Waste at Hanford

The 560-square-mile Hanford site is located in south central Washington State. Since the 1940's, it has served as one of the federal government's key facilities in the United States' nuclear weapons complex. In doing so, its activities focused on the irradiation, production, and reprocessing of nuclear fuels to extract and purify weapons grade nuclear materials. Hanford's processes were dependent on the use of a wide array of chemicals. Examples of resulting waste streams include highly radioactive and hazardous liquid tank wastes, solid wastes contaminated with long-lived radioisotopes (transuranic waste [TRU]), wastes containing both long-lived radioisotopes and non-radioactive hazardous wastes (transuranic mixed waste [TRUM]), and hazardous wastes containing low-levels of radioactive contamination and non-radioactive hazardous substances (mixed low-level waste [MLLW]).

Since the close of the Cold War, the Hanford mission has focused on cleanup and achieving compliance with federal and state hazardous waste law. In documenting associated requirements, Ecology, DOE, and the U. S. Environmental Protection Agency (EPA) developed and approved the HFFACO. Issued initially in May of 1989, the HFFACO stands as an Administrative Order issued pursuant to Washington's Hazardous Waste Management Act (Chapter 70.105 RCW) and as an enforceable Federal Facility Cleanup Agreement pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The HFFACO serves as the centerpiece document governing Hanford cleanup. Its terms are enforceable and binding on the Parties. Enforceable milestones and associated (non-enforceable) target dates are located at HFFACO Appendix D (Work Schedules).

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[1] Although the milestone date for the requirements is December 31, 2006, the due date for the milestones has been extended day-for-day pending the resolution of this dispute. HFFACO Article VIII, paragraph 30(F). Therefore, the due date for the requirements now coincides with the date of this Final Determination.

The federal Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act[2], which establishes WIPP as a national disposal facility for transuranic waste, defines transuranic waste as "waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste."[3] Such wastes are contaminated with radioisotopes having half lives greater than 20 years, and heavier than Uranium on the Periodic Chart of the Elements, e.g., Plutonium, Americium, and Curium.

TRU wastes generated over Hanford's operational history include items such as discarded equipment, soils, sludges, protective clothing, glassware, and other wastes resulting from DOE's defense activities. A significant volume of suspected TRU has been "retrievably stored" in shallow, unlined "burial ground" trenches at the facility.

DOE's "Record of Decision" for the Hanford Defense Waste Environmental Impact Statement[4] selected its preferred alternative for the management of Hanford site retrievably stored and newly generated TRU wastes[5]: "Retrievably stored and newly generated TRU-contaminated solid waste will be retrieved, processed as necessary, and sent to WIPP for disposal." DOE has thus recognized that Hanford's burial grounds contain contact-handled and remote-handled TRU. It has also recognized that due to changes in the definition of TRU waste, some burial ground wastes would now classify as low-level waste (LLW).

DOE has also recognized that a portion of these stored TRU and LLW contain non-radioactive hazardous substances, and would designate under Washington's Hazardous Waste Management Act as regulated "mixed waste."[6] For example, DOE has estimated that approximately 20% of retrieved TRU wastes currently stored at its Central Waste Complex would designate as TRUM waste. Similarly, DOE estimates that approximately 20% of retrieved LLW at the Central Waste Complex would also designate as MLLW.

III. Ecology efforts to bring DOE's Hanford TRUM treatment / certification into compliance with the HFFACO

The M-91 milestone series has a long and complex history. Starting in 1989 with the establishment of the M-33 Major Milestone, DOE agreed that by 1995 it would complete a site-wide systems analysis to determine the volume and nature of regulated expected to require treatment, storage, and/or disposal as a result of the cleanup of the Hanford site. Based on that

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[3] The Waste Isolation Pilot Plant Land Withdrawal Act, (Public Law 102-579) October 1992.

[3] Certain wastes are excluded from this definition, including high-level radioactive wastes, wastes determined by the Secretary of Energy and the Administrator of EPA as not requiring deep geologic disposal, and wastes otherwise approved for disposal by the U. S. Nuclear Regulatory Commission on a case-by-case basis.

[4] Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington; Record of Decision (ROD), U. S. Department of Energy, April 1988.

[5] DOE's ROD also covered Hanford's 618-10 & 11 burial grounds, which it noted as "the only pre-1970 buried suspect TRU-contaminated solid waste site outside the [Hanford] central (200 Area) plateau".

[6] Waste containing both radioactive and non-radioactive hazardous waste.

comprehensive analysis, it would submit an HFFACO change package proposing milestones for the acquisition of facilities necessary to treat, store, and dispose of those solid wastes and materials.

In 1995, DOE proposed and Ecology agreed that additional time for the development of such milestone schedules was appropriate. On December 31, 1996, the Parties signed HFFACO Change Package M-91-96-01, which established the M-91 series and a schedule for DOE to develop Project Management Plans (PMP) for specific waste streams. This change package also established requirements for the PMPs in Section 11.2 of the HFFACO Action Plan.

On June 28, 2000, DOE submitted its TRU/TRUM PMP and proposed HFFACO milestones. Ecology found significant deficiencies with both the plan and the proposed milestones. This started a long and complicated dispute. By 2003, disagreement about state authority over TRUM destined for disposal at WIPP caused the Parties to initiate negotiations at the Director of Ecology level. These negotiations included the Assistant Secretary of Energy for Environmental Management, the Director of Ecology, and the EPA Hanford Project Manager. From January through March of 2003, the Parties engaged in detailed negotiations in an effort to resolve the concerns related to the M-91 milestones. A significant issue was whether TRUM was subject to Resource Conservation and Recovery Act/Hazardous Waste Management Act Land Disposal Restrictions (LDR), specifically the storage prohibition that attaches to LDR restricted waste under WAC 173-303-140(2)(a). Those negotiations failed.

Independent of the M-91 negotiations, DOE issued an amended Record of Decision on September 6, 2002, in which it decided to send certain volumes of TRU (including TRUM) to Hanford for "interim storage." In March 2003, the state filed a lawsuit, *Washington v. Abraham*, in federal district court to enjoin these shipments. The state alleged that DOE had failed to undertake sufficient National Environmental Policy Act analysis before deciding to move the waste to Hanford, and that any off-site TRUM moved to Hanford would, once on site, be stored in violation of the LDR storage prohibition.

On March 10, 2003, the state issued a Final Determination on M-91 under the HFFACO dispute process. The Final Determination required DOE to revise its TRU/TRUM PMP by specific dates and provided language in the major milestone requiring DOE to maintain internal work schedules and directives consistent with the milestone requirements.

On April 30, 2003, Ecology issued an administrative order (No. 03NWPKW-5494) establishing schedules for retrieving "retrievably stored waste" (RSW); treating retrieved, stored, and newly generated transuranic mixed waste to meet LDR requirements (or, as an alternative to treatment, certifying that such waste meets WIPP waste acceptance requirements); and managing MLLW. DOE appealed or otherwise challenged the Final Determination and Ecology's order in separate administrative, state court, and federal court actions.

On October 23, 2003, the Parties entered into a settlement agreement to resolve the issues associated with DOE's appeal of Ecology's Final Determination and administrative order. The settlement agreement included a tentative HFFACO M-91 change package with enforceable schedules for:

1. The retrieval, characterization, and storage of RSW.

2. The treatment of MLLW.
3. The acquisition of facilities or capabilities to treat MLLW and TRUM wastes that are either remote-handled or in boxes and large containers.

Because the Parties still could not agree on whether the LDR storage prohibition applied to Hanford's stored TRUM, the tentative change package also included "contingent" milestones for the treatment or certification of TRUM. The final HFFACO change package incorporating these agreements was signed by the Parties in May 2004.

Because of the storage prohibition issue, the Parties agreed to make the yearly contact-handled TRUM (CH-TRUM) treatment/certification requirements contingent on the outcome of a summary judgment motion in the *Washington v. Abraham* lawsuit. In January 2005 the federal district court ruled in the state's favor, but the decision did not become final until the case was settled in January 2006. On February 8, 2006, DOE submitted a HFFACO change request (M-91-05-01), in accordance with the October 23, 2003, Settlement Agreement, to make the contingent milestone enforceable based on the district court's decision. On March 9, 2006, DOE appealed the decision to the Ninth Circuit Court of Appeals. The milestones remain enforceable.

History of this Dispute

In October 2005, DOE and Ecology started informal discussions related to requirements in M-91 as a whole, intending to reach resolution by December 2005. DOE was unable to meet the requirements of the "contingent" milestone due December 31, 2005. As discussions continued, it became apparent to Ecology that the discussions needed to extend beyond December 31, 2005, to give the parties the chance to review all the pertinent information regarding the TRU / TRUM program and the basis for the requested changes. From November 2005 through April 2006 the parties met bi-weekly to share information on the initial basis of the milestones, perceived changes, and new information. By mid-April 2006, the parties were still far apart on these milestone negotiations. Ecology notified DOE that it did not feel DOE had provided sufficient information to justify making most of the requested changes. Ecology suggested that if DOE wanted to continue discussions, it should submit a signed change request to initiate the formal HFFACO dispute process.

On April 17, 2006, Ecology initiated an inspection to document DOE's progress on TRUM certification and whether DOE was applying adequate resources and had increased its efforts to meet the December 2006 certification requirements. Through that inspection, Ecology reviewed DOE's data on processing rates, communications between DOE and Flour Hanford (FH), and contract documents. Ecology concluded that DOE was not on a path to meet the December 31, 2006, TRUM certification requirements. In addition, DOE had not, as it had been asserting, increased its efforts to meet the milestone requirements.

On July 28, 2006, DOE notified Ecology that it had completed the December 31, 2005, requirement to certify1,800 cubic meters of TRUM and identified actions taken to increase throughput and maintain as best as possible the M-91-42 certification rates. On August 24, 2006, Ecology notified DOE of the results of the April 2006 inspection. Ecology identified concerns that DOE had not met the requirements to certify 1,800 of TRUM by December 2005, and it was not on track to meet the December 2006 TRUM certification requirements. Ecology also expressed concern that DOE had reduced the work scope deliverables for the Waste Receiving and Processing (WRAP) facility under the Project Hanford Management Contract (DE-AC06-96RL13200). In addition, DOE had reduced the scope of the Performance Incentives (PIs) associated with TRUM certification.

On September 29, 2006, DOE submitted a signed change request seeking to change many requirements of the M-91 milestone series. This change request was significantly different from any proposal discussed in the parties' earlier meetings and would require time to understand and negotiate a resolution. The change package was denied on October 13, 2006, and DOE initiated dispute on October 20, 2006. With the initiation of dispute, DOE asked for an extension of the dispute at the project manager level until January 31, 2007. Ecology notified DOE that it would not extend the entire dispute. Ecology was, however, willing to discuss how the parties could split the dispute and grant an extension for elements not associated with the December 31, 2006, requirements.

On November 9, 2006, Ecology issued a letter to DOE granting the extension for those elements not associated with the December 31, 2006, requirements and denying an extension for the December 31, 2006, requirements. Following discussion between Ecology and DOE, Ecology issued a letter on November 16, 2006, clarifying that any Statement of Dispute (SOD) regarding the December 31, 2006, M-91-42 requirements would be due on November 27, 2006.

On December 4, 2006, Ecology initiated another inspection to document the actions DOE and FH have taken to increase their certification capacity and meet the December 31, 2006, milestone.

On November 27, 2006, DOE delivered a SOD for the December 31, 2006, M-91-42 requirements. Ecology reviewed the SOD and found no new information or adequate justification for the requested changes. Interagency Management Integration Team representatives from Ecology, DOE, and EPA met on December 5, 2006, but could not agree on a resolution.

IV. Ecology's rebuttal of DOE's Statement of Dispute and proposed resolution

This dispute involves two requirements of the HFFACO M-91-42 milestone that were originally due on December 31, 2006, and are now due at the time of issuance of this Final Determination:

1. Treat to meet LDR requirements or certify to meet WIPP requirements a cumulative of 3,000 cubic meters TRUM.

2. If DOE chooses to certify in lieu of treatment, it may meet the volume requirements specified in this milestone for any given year by certifying CH-TRU or CH-TRUM, provided that all CH-TRUM in permitted storage as of December 31, 2002, is treated to meet LDR requirements or certified.

Changing Conditions and Good Cause

DOE asserts that certain changes, all of which were beyond its control, occurred in assumptions on which the above milestones were based. These assumptions relate to:

1. The condition of the containers to be retrieved.
2. The percentage of drums that would require repackaging for disposal at the Waste Isolation Pilot Plant (WIPP).
3. The amount of newly-generated transuranic waste available for certification.

DOE infers that "assumptions" regarding these matters were held by all parties at the time of the 2003-2004 negotiations and were considered when the milestone requirements were set. DOE argues that these changing conditions warrant Good Cause under Article XL of the HFFACO.

With regard to assumption 1, Ecology asserts that this assumption was never discussed in the 2003-2004 negotiations. The RSW has been stored below grade for more than thirty years. One of the major drivers for requiring DOE to remove this waste was that the integrity of the containers was highly suspect. In Ecology's Administrative Order No. 03NWPKW-5494, Ecology cited DOE's own documents, which stated inspections conducted in 1994 showed that "the majority of drums inspected (probably over three-fourths) had appreciable areas where paint had flaked off or corrosion begun." In addition, Ecology cited the fact that 20% of the drums inspected ultrasonically had measurable corrosion and one drum was found to be breached in two areas about 0.25 inch in diameter. This investigation reported a maximum corrosion rate of 2 mil/year. It was not unforeseeable that these containers would now, more than 10 years later, be in an unstable and deteriorating condition.

With regard to assumption 2, Ecology again asserts that this assumption was never discussed in the 2003-2004 negotiations. Furthermore, in its SOD, DOE does not document the "changing conditions," but only states that the number of retrieved drums that require additional repackaging is higher than originally anticipated. DOE does not quantify the original assumption, nor does it document the current situation.

With regard to assumption 3, DOE asserts that it planned on an additional 700 cubic meters of waste from Hanford's Plutonium Finishing Plant (PFP) that would not require repackaging and could be easily certified. Ecology agrees that there was discussion of this waste in the 2003-2004 negotiations, and in fact documented the assumption of newly generated waste from PFP and elsewhere. However, this volume was determined to add to the estimated volume of RSW and waste currently in storage in order to estimate the total volume of waste that would need to be certified. There was no discussion about what wastes would be easier or harder to certify. The fact remains, as DOE admits in its SOD, that "there is in fact enough waste in storage to meet the 2006 milestone for certification of TRUM, but it requires significantly more effort and resources to sort through and repackage ...."[7] Again, DOE does not quantify "significantly more effort."

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[7] U.S. Department of Energy, Statement of Dispute (SOD) for Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Change Control Form M-91-06-01 Milestones M-91-00 and M-91-42, page 3, Transmittal letter 07-AMCP-0043, November, 27, 2006.

HFFACO Article XL discusses the concept of "Good Cause" and identifies circumstances justifying good cause for changing milestone requirements. Most of these circumstances are very specific and relate to unforeseeable weather events, acts of God, fire, war, insurrection, inability to obtain permits, and insufficient funds. DOE has repeatedly stated that its budget requests and appropriated funds have been adequate to assure compliance with HFFACO requirements. None of the specific circumstances of HFFACO Article XL apply. Even under these specific circumstances, DOE still must show that the events are "unforeseeable" or that delays occurred or will occur despite DOE exercising "reasonable diligence" to prevent them. (See HFFACO Article XLVII.) DOE has not supported the notion that these changes were unforeseeable or that DOE has exercised reasonable diligence to prevent delay in the presence of these changes.

DOE's actions to increase throughput

In DOE's July 28 letter,[8] DOE identifies actions it has taken to increase throughput on certification rates. These actions include:

1. Going to two full shifts at WRAP in October 2004.
2. Starting one repackaging permacon unit in T-Plant canyon in July 2005.
3. Adding two more repackaging permacon units in T-Plant in June 2006.
4. Discussion of sending some TRU waste to another DOE site.

With regard to action 1, DOE did increase its operations at the WRAP facility to two shifts per day in October 2004. This was early in the program, just seven months after the milestone package was signed. This increase to two shifts occurred long before any concerns of missing the milestone were made known and represents the level of effort DOE expected was necessary to meet the milestone requirements. Ecology's concern is what DOE did in 2006 to increase its efforts when it was obvious it would not meet the milestone even with the two shifts operating at WRAP. DOE did not take any actions, or document that it took any actions, at this time to increase processing efficiency at the WRAP facility. In fact, in October 2006 and on the verge of missing the milestone, DOE dropped back to one shift per day. Certainly this action was not aimed at increasing throughput.

With regard to actions 2 and 3, DOE did provide three permacon units at T-Plant by June 2006. However, Ecology's recent inspection revealed that there are only two operating crews for these units. The third crew is for surveillance and maintenance activities. One crew is dedicated to processing TRU, and the second crew processes TRU about 50% of the time. These crews are operating 4 days a week, 9 hours per day. Each unit is typically down for maintenance 1 day per week. On average, the crew is actually repackaging waste for about 4 hours per day. While Ecology applauds DOE's actions to get additional permacon units, Ecology thinks there are additional actions DOE could take to make these operations more efficient. With three units available, DOE could theoretically be processing waste for a total of 120 hours per week. With only two operating crews, processing waste only 4 hours a day for 4 days per week, DOE is only getting 32 hours of waste processing time from these units. This is about 27% efficiency.

[8] Letter (06-AMCP-0227) COMPLETION OF CERTIFICATION OF 1,800 CUBIC METERS OF TRANSURANIC WASTE TOWARD TRI-PARTY AGREEMENT MILESTONE M-91-42 REQUIREMENTS, from Keith A. Klein to Jane Hedges, July 28, 2006.

With regard to action 4, Ecology is pleased that DOE is discussing options with other sites. However, Ecology is confused that it could cost less to send Hanford waste to another site to be repackaged and then be returned to Hanford or sent directly to WIPP. It seems it would be less expensive to hire additional crews, work overtime, or otherwise better utilize the capabilities already available at Hanford.

DOE unilateral direction to contractor inconsistent with HFFACO

Section 11.4 of the HFFACO Action Plan requires DOE to maintain internal planning documents (baselines, multi-year work plans, and site-wide systems engineering control documents) consistent with the HFFACO. DOE has acted contrary to this requirement with respect to the December 31, 2006, M-91-42 requirements. DOE admits in its SOD that it changed the contractor's performance incentives (PIs) on more than one occasion as a result of the changing conditions discussed above. Table 1 shows a history of contract and PI changes starting in 2005. The issue of most concern to Ecology in this dispute is that DOE unilaterally, without notifying Ecology, changed its direction to the contractors. As early as March 2005, DOE reduced the requirements of the contract and performance incentives to volumes below the M-91 TRUM certification requirements.

Milestone M-91-42 requires DOE to certify a cumulative 3,000 cubic meters of TRUM by December 31, 2006. A letter from Fluor Hanford documents that "on March 25, 2005, FH and RL verbally agreed to a revised PI to ship 2,132 m3 of TRU by September 30, 2006."[9] On September 12, 2005, that agreement was formally incorporated into the PI. In March 2006, while in the middle of discussions with Ecology about adjusting the milestone (and with Ecology not responding favorably), DOE again reduced the contract requirements, as well as the incentives, further below HFFACO milestone requirements. Ecology cannot accept that DOE was doing all it could to meet the December 31, 2006, M-91-42 requirements when the contractor was not given incentive, or even required by the contract, to meet the milestone requirements.

DOE argues that changing conditions outside the control of the contractor necessitated changes to the contractor's performance incentives. For instance, in Attachment 3 of FH-0501961A R1, FH requests an equitable adjustment due to DOE's failure to obtain WIPP approvals and supply adequate TRUPACT shipping casks.[10] None of the documentation DOE supplies to justify changing the contractor's PIs, however, relates to changes in the three assumptions on which DOE maintains the December 31, 2006, M-91-42 requirements are based, and on which DOE based its SOD. On December 20, 2006, in preparing this Final Determination, Ecology identified this point to DOE and requested[11] it provide any documentation from the contractor requesting an equitable adjustment because of changes in any of the assumptions on which the December 31, 2006, M-91-42 requirements are allegedly based. No such information was provided.

[9] Letter, (FH-0401789.3), IMPACTS RESULTING FROM INTERFERENCE PER PHMC SECTION H.33 DUE TO DELAYS IN APPROVAL OF WIPP CERTIFICATION AUDIT REPORTS AND FAILURE TO PROVIDE SHIPPING CAPACITY, from Mr. Ronald G. Gallagher to Mr. Keith A. Klein, June 14, 2005.

[10] Letter (FH-0501961A R1), EQUITABLE ADJUSTMENT FOR MISSED GFS/I AND FUNDING LIMITATION IMPACTS, from Mr. Ronald G. Gallagher to Mr. Keith A. Klein, June 8, 2005.

[11] Email, from Laura Cusack to Mark French and Greg Sinton, December 20, 2006, 8:04 a.m.

Table 1. History of DOE Contract and Performance Incentive Adjustments

Date	Contract Modification NO.	Contract Deliverable (TRUM shipment or certification due September 30, 2006	Performance incentive Deliverable (TRUM shipment or certification due September 30, 2006	Incentive Amount
6/14/04	M205[12]	2,132 m^3	8 increments of 256 m^3 2,900 m^3 cumulative	$11.2 M $1.5 M
7/20/05*	Letter: 05-PRO-0335[13]	2,132 m^3	6 increments of 256 m^3 2,900 m^3 cumulative	$11.2 M $1.5 M
9/12/05	Letter: 05-PRO-0431[14]	2,132 m^3	6 increments of 256 m^3 **2,132** m^3 cumulative	$11.2 M **$1.1 M**
3/16/06	Letter: 06-PRO-0204[15]	2,132 m^3	6 increments of 256 m^3 **1,864** m^3 cumulative	$11.2 M $1.1 M
4/25 /06	M238[16]	**1,732** m^3	6 increments of 256 m^3 1,864 m^3 cumulative	$11.2 M $1.1 M

* Flour Hanford was paid performance incentive fee, through an equitable adjustment, for two increments never shipped.

V. Findings and Final Determination

I.

DOE failed to meet the requirements of M-91-42 in that it did not, by December 31, 2006:

1. Treat to meet LDR requirements or certify to meet WIPP requirements 3,000 cubic meters of TRUM.
2. Treat to meet LDR requirements of certify to meet WIPP requirements all the CH-TRUM in permitted storage as of 12/31/02.

[12] Amendment of Solicitation/Modification of Contract No. DE-AC06-96RL13200, M205, signed by Keith Klein, June 15, 2004.

[13] Letter (05-PRO-0335), CONTRACT NO. DE-AC06-96RL13200 – EQUITABLE ADJUSTMENT FOR MISSED GFI/S AND FUNDING LIMITATION IMPACTS, from Mr. Keith Klein to Mr. R. G. Gallagher, June 20, 2005.

[14] Letter (05-PRO-0431), CONTRACT NO. DE-AC06RL13200 – EQUITABLE ADJUSTMENT FOR MISSED GFI/S AND FUNDING LIMITATION IMPACTS, from Mr. Keith Klein to Mr. R. G. Gallagher, September 12, 2005

[15] Letter (06-PRO-0204), CONTRACT NO. DE-AC06-96RL13200 – 2006 PHMC FEE INCENTIVES, from Mr. Keith Klein to Mr. R. G. Gallagher, March 16, 2006.

[16] Amendment of Solicitation/Modification of Contract No. DE-AC06-96RL13200, M238, signed by David E. Stromberg, April 25, 2006.

As DOE became aware that the milestone requirements were in jeopardy, it did not respond adequately or in a manner sufficient to support completion of the milestone. To the contrary, DOE reduced contract requirements and performance incentives to well below the HFFACO milestone requirements. In doing so, DOE violated Section 11.4 of the HFFACO Action Plan by not maintaining internal planning documents and directives to the contractor consistent with HFFACO milestone requirements.

Consequently, in light of the Administrative Record and the findings outlined above, in order to resolve the parties' HFFACO dispute regarding milestone M-91-42, and in order to ensure the safe and timely treatment or certification of Hanford site transuranic and transuranic mixed waste, my final determination in this matter is as follows:

1. The existing M-91-42 milestones will not be revised as requested by DOE, but will remain enforceable as is.

2. DOE has missed the M-91-42 milestone requirement to certify 3,000 cubic meters of TRUM by December 31, 2006.

3. DOE has missed the M-91-42 milestone requirement to certify, by December 31, 2006, all CH-TRUM in storage as of December 31, 2002.

4. DOE shall direct its contractor to take necessary actions to improve performance and meet all future M-91 requirements.

5. Pursuant to HFFACO Article VIII, paragraph 30(I), DOE shall perform and complete all work necessary to comply with the terms of this Final Determination.

II.

In accordance with HFFACO Article IX, Ecology may issue stipulated penalties for each violation of the HFFACO. Ecology is not assessing stipulated penalties at this time. Potential penalties will accrue for as long as DOE is out of compliance with the identified M-91 requirements; i.e., until DOE has certified at least 3,000 cubic meters of TRUM and has certified all the CH-TRUM in permitted storage as of 12/31/02. Potential penalties will accrue at a rate of up to $5,000/violation for the first week and $10,000/violation for each additional week until DOE has completed these requirements. At the time DOE completes these requirements, Ecology will determine the final amount of penalties that may be assessed against DOE. In making that determination, Ecology will consider all the circumstances, including actions taken by DOE and FH in meeting these requirements as quickly as possible.

ESQ / ED & QIS/ H6-60

ENVIRONMENTAL DIVISION and QUALITY INDUSTRIAL SAFETY TEAM

DOCUMENT/LETTER #:	ACTION:	ACTION DUE DATE:
NA	On going NO [ ] YES [X]	

OFFICE OF ENVIRONMENT, SAFETY & QUALITY	I	A
ROBERT C. BARR Director		
Hunemuller, Neal K [Training Policy]		
McKay, Larry R [RadCon] STA		
MD (Dianne) Hopkins (Secretary)		
ENVIRONMENTAL DIVISION (ED)		
Rasmussen, JE [Jim] Director	✓	
B. (Becky) Gano Secretary	✓	
Bowser, Dennis W (Environ Permit)		
Burandt, MaryBeth (Environ Permit)		
Gardner-Clayson, Tom Matrixed		
Hanson, Jackie L [Innov]	✓	
Huffman, Lori A (AMWTP/WTP Permit)	✓	
McNulty, RR [Rick] (Permitting)	✓	
Neath, Gae M (NEPA)		✓
Russell, R [Woody] (Environ. Permit)	✓	
QUALITY & INDUSTRIAL SAFETY TEAM (QIS)		
Hunemuller, NK Team Leader		
DA [Debbie] Mosby Secretary		
Brown, DH [Dennis] (QA)		
George, Jack B (SME; Indust Hygiene)		
Hernandez, Paul R (QA)		
Vega, Sam A (QA)		

~ OTHERS ~	I	A
RJ Schepens - CD Poynor	✓	
Erickson, L		
Gnann, Howard		
Jones, GA - Brazil K	✓	
Olds, TE [Erik]		
Stubblebine, Scott D	✓	
Barrett, MK		
Bevelacqua, JJ		
Bosted, CJ		
Brown, Mark C	✓	
Bryson, Dana C		
Carier, Pat		
Ensign, KR		
Hamel, WF [Bill]		
Hawkins, AR [Al]	✓	
Miller, LF [Lew]		
Noyes, DL	✓	
O'Connor, Judith S		
Swailes, JH - Struthers DJ		
Taylor, WJ [Bill] - Hanson, Arlene J	✓	
Billie Mauss	✓	
P Carier	✓	

I = Information Copy
A = Action Party

Scan: Yes [X]
Yes w/o att [ ]
No [ ]

ORPCC Contacts:
Patricia Deaton - 376-2145
Joy Hervey - 376-2143

Notes:
Ref: 03-ED-061

No original Rec'd

Date Rec'd

RECEIVED
JUL 16 2003
DOE-ORP/ORPCC

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

July 14, 2003

Mr. James E. Rasmussen, Director
Environmental Division
Office of River Protection
United States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Dear Mr. Rasmussen:

Re: **Completion of Dangerous Waste Notice of Intent (NOI) for the Contact-Handled Transuranic Mixed Waste Packaging and Interim Storage Facility.**

Completion of Notice of Intent

On May 15, 2003, the United States Department of Energy (USDOE), Office of River Protection submitted a Notice of Intent (NOI) to the Washington State Department of Ecology (Ecology) for the Contact-Handled Transuranic Mixed Waste Packaging and Interim Storage Facility pursuant to Washington Administrative Code (WAC) 173-303-281. This letter serves as notification of Ecology's written tentative decision to approve the demonstration of compliance with the requirements of WAC 173-303-281. Ecology will hold a public hearing in accordance with WAC 173-303-282-(4)(c)(ii) and accept comments on its tentative decision for a minimum of 45 days. Subsequent to evaluation of all public comments, Ecology shall make a final decision regarding demonstration of compliance with WAC 173-303-281. While achieving compliance, there was a lack of robustness to the submittal, and Ecology would like to reiterate clarification of the following two key issues:

- The USDOE has described proposed activities in this unit as "packing" and "storage"; however, the activities described in Section 2.2. also meet the following definition of "Treatment" provided in WAC173-303-040:

  "Treatment" means the physical, chemical, or biological processing of dangerous waste to make such wastes non dangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage, or reduced in volume, with the exception of compacting, repackaging, and sorting as allowed under WAC-173-303-400(2) and 173-303-600(3).

RECEIVED
JUL 16 2003
DOE-ORP/ORPCC

- *This proposed activity does not qualify as an expansion under interim status as described in WAC-173-303-805.* However, the unit may be added to the existing Hanford Facility Permit provided final status permitting requirements are met.

To avoid delays in the permitting process, Ecology anticipates a more fully developed Part B Permit Application (Revision 0). Again, USDOE and contractor staff are strongly encouraged to discuss issues associated with this unit, with Ecology, to clarify any questions and/or concerns. If you have any questions or comments regarding this letter, please contact me at (509) 736-5705 or Jean Vanni at (509) 736-3046.

Sincerely,

Suzanne Dahl
Tank Waste Disposal Project Manager
Nuclear Waste Program

cc: Nick Ceto, EPA
Keith Klein, DOE
Billie Mauss, ORP
Roy Schepens, ORP
Robert Yasek, ORP
Ed Aromi, CHG
Felix Miera, CHG
Al Conklin, DOH
Todd Martin, HAB
J. Wilkinson, CTUIR
Donna Powaukee, NPT
Russell Jim, YIN
David Mears, WA AG
Gary Ballew, Benton County
Adam Syall, Benton County
Ken Niles, OOE
Administrative Record: Tank waste treatment requirements

U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

JUN 0 3 2003

03-TPD-056

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Wilson:

PLAN FOR IMPLEMENTING RECOMMENDED DOUBLE-SHELL TANK (DST) SPACE SAVINGS OPTIONS

References:
1. Ecology letter from J. J. Lyon to J. E. Rasmussen, ORP, "Response to Single-Shell Tank Retrieval Sequence and Double-Shell Tank Space Evaluation," RPP-8554 Revision 1, dated April 21, 2003.
2. "Tank Space Options Report," RPP-7702, Revision 0, dated April 2001.
3. "Integrated Mission Acceleration Plan," RPP-13678, Revision 0, dated March 2003.
4. Combined report on "Single-Shell Tank Retrieval Sequence and Double-Shell Tank Space Evaluation," RPP-8554 Revision 1, dated September 2002.

The U.S. Department of Energy, Office of River Protection (ORP) is submitting to the State of Washington Department of Ecology (Ecology) in accordance with the request for a plan describing space-saving options planned for the DST (Reference 1). A description of the activities being implemented that increase the effective available space in the existing twenty-eight DSTs is attached. The options were originally compiled in the Tank Space Options Report (Reference 2). These options have been subsequently incorporated in the Integrated Mission Acceleration Plan (IMAP) (Reference 3) which describes the management strategies that will reduce the time and cost to close the Hanford Site Tank Farms.

Space savings are being achieved by reducing the volume of wastes already stored in the DSTs, by utilizing space that historically had been reserved for other purposes that are no longer part of the current tank farm mission, and by retrieving a portion of the Single-Shell Tank (SST) waste directly to treatment without it entering the DST system.

These initiatives, when completely implemented, could recover or avoid the use of nearly 10.0 million gallons of DST space (equivalent to about 9 DSTs) between now and 2018. These initiatives represent a recovery of more than one-half of the tank space shortage cited in your letter that would be needed to meet the 2018 SST retrieval Hanford Federal Facility Agreement and Consent Order (HFFACO) Milestone M-045-05. To date we have identified space-savings initiatives that achieve 7.4 million gallons of the 9.4 million gallon goal established in the IMAP to achieve 40 tank retrievals by 2006. The space-savings already identified substantially exceed the amount contemplated by HFFACO Milestone M-46-21 for implementing the Tank Space Options Report (Reference 2).

These space-saving options are not exhaustive. As ORP and CH2M HILL Hanford Group, Inc. gain additional SST retrieval and closure operating experience, other opportunities are expected to become apparent. Traditionally, these have included benefits derived from process optimization, such as efficiencies in recovery technologies, and reduced working volumes. We expect that continued judicious management of the DST space will make additional inroads on the predicted shortfall, and allow us to complete the mission without relying on construction of additional costly DST storage.

Even more significant will be ORP's efforts to initiate treatment by utilization of the Waste Treatment and Immobilization Plant currently under construction, and by the deployment of supplemental technologies to further enhance Low-Activity Waste treatment. The extent to which waste can be treated and disposed, when combined with the effective DST space-savings options, will enable ORP's accelerated SST retrieval and closure initiatives.

ORP discusses the results of these space-saving activities with Ecology staff on a regular basis. Both of the RPP-8554, "Single-Shell Tank Retrieval Sequence and Double-Shell Tank Space Evaluation" (Reference 4), and RPP-13678, "Integrated Mission Acceleration Plan" (Reference-3) provide information on our progress. These formal reports are supplemented and updated between revisions by milestone progress discussions scheduled for the HFFACO Quarterly Review meetings.

If you have any questions, please contact me, or your staff may contact Cathy Louie, Tank Farms Programs and Projects Division, (509) 376-6834.

Sincerely,

James E Rasmussen

James E. Rasmussen, Director
Environmental Division

TPD:CSL

cc: See page 3

cc w/attach:
K. E. Carpenter, CHG
S. B. Fowler, CHG
M. N. Jarayssi, CHG
T. L. Hissong, CHG
J. O. Honeyman, CHG
R. Ni, CHG
D. J. Washenfelder, CHG
J. J. Lyons, Ecology
TPA Administrative Record

Attachment 03-TPD-056

Activities Underway to Increase Effective Available Space Within the Existing Twenty-Eight Double-Shell Tanks (DSTs)

Activities Underway to Increase Effective Available Space within the Existing Twenty-Eight Double-Shell Tanks (DSTs)

The schedule to retrieve and close Single-Shell Tanks (SSTs) is currently dependent on available DST space and Low Activity Waste (LAW) waste treatment and disposal. Based on recent cases analyzed utilizing the Hanford Tank Waste Operations Simulator model, the equivalent of about 9.4 million gallons of additional storage space will be necessary to support accelerated retrieval of 40 SSTs through 2006.

Work is underway to implement the following initiatives that maximize DST space availability, and, in two cases, bypass the need for DSTs in the waste treatment process.

1. (b)(5)

(b)(5)

2. (b)(5)

(b)(5)

(b)(5)

3. (b)(5)

(b)(5)

4. (b)(5)

(b)(5)

5. **Bypass DSTs for Selected SST Retrievals**

Direct retrieval of SST waste to supplemental waste processing will bypass the DST system and reduce the need for additional tank space for retrieval and treatment of those wastes. Direct retrieval of SST transuranic waste to supplemental processing without utilizing DST space for staging and transfer will make an additional 0.5 mGal of DST space available. (b)(5)
(b)(5)

Timing of Initiatives

The accompanying table shows the expected results from these multiple space-saving options between present day and the end of FY 2006, when the existing CHG contract completes. To date we have identified options that are expected to recover about 7.4 mGal of additional DST space during this period.

Table. Projected DST Space-Savings through FY 2006 (kGal)[1]

	FY03				FY04				FY05				FY06				TOTALS
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
(b)(5)		300	200	100		100	200			100		100					1100
	138	359	319	169	161	202	438	114	66	174	0	107	73	80	82	131	2613
			1014														1014
			50	41	15		33		700								839
Direct Retrieval of SST Transuranic Waste to Supplmental Processing3						265	106	166									537
(b)(5)										660				656			1316
Total by Quarter	138	659	1583	310	176	567	777	280	766	934	0	207	73	736	82	131	
Cumulative DST Space Gained	138	797	2380	2690	2866	3433	4210	4490	5256	6190	6190	6397	6470	7206	7288	7419	7419

Table Notes

1. (b)(5)
2.
3. TRU tanks for the BCR projection--B-201, T-201, T-202, T-203, T-204, B-202, B-203, and B-204.
4. (b)(5)

5/15/03

ESQ / ED/ H6-60

ENVIRONMENTAL DIVISION

DOCUMENT/LETTER #:	ACTION:	ACTION DUE DATE:
NA (DOE)	NO [ ] YES [✓]	03/30/2004

OFFICE OF ENVIRONMENT, SAFETY & QUALITY		I	A
ROBERT C. BARR	*Director [S]*	✓	
Larry R. McKay	STA RadCon		
Becky Gano	(Secretary)		*
ENVIRONMENTAL DIVISION [ED]			
Jim E. Rasmussen	***Director [S]***		*
Dennis W. Bowser	Air/Water Permit		
MaryBeth Burandt	TPA Milestone Mgr/TSCA	✓	
Lori A. Huffman	TSCA Permit	✓	
Rick R. McNulty	RCRA Reporting		
Gae M. Neath	NEPA/EMS		
R. Woody Russell	TPA Milestone Mgr/Environ C	✓	
VERIFICATION & CONFIRMATION TEAM [ESQ]			
Pat P. Carier	Team Leader/Official	✓	
Jim E. Adams	*ConOps*		
Dave H. Brown	QA; Software QA		
Robert W. Griffith	SME;Fire Protection;BOF		
Paul R. Hernandez	QA;ISMS;IH&S		
Jeanie L. Polehn	RadCon		
Sam L. Vega	QA; PAAA; Beryllium		

~ OTHERS ~	I	A
RJ Schepens	✓	
Leif Erickson		
HB Gnann	✓	
GA Jones - K. Brazil [Mgr Rdg File]	✓	
TE Olds	✓	
SD Stubblebine	✓	
MK Barrett		
JJ Bevelacqua	✓	
CJ Bosted	✓	
MC Brown	✓	
DC Bryson		
DL Clark	✓	
KR Ensign		
JR Eschenberg	✓	
WF Hamel		
LF Miller		
DL Noyes	✓	
JS O'Connor		
JJ Short		
JH Swailes		
A Almaraz	✓	
B. Mauss	✓	
R. Yasek	✓	
	✓	
J Leng	✓	

I = Information Copy
A = Action Party

Scan: Yes [✓] No [ ]
Sensitive: Yes [ ] No [✓]
Sensitive Att: Yes [ ] No [✓]

ORPCC Contacts:
Patricia Deaton 376-2145
Joy Hervey 376-2143

Notes:
NOI
Completion

Date Rec'd:

RECEIVED
MAR 23 2004
DOE-ORP/ORPCC

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

March 22, 2004

Mr. James E. Rasmussen, Director
Office of River Protection
United States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Dear Mr. Rasmussen:

Re: Completion of Dangerous Waste Notice of Intent (NOI) for the Contact Handled-Transuranic Mixed Waste Packaging and Interim Storage Facility

Completion of Notice of Intent

On May 15, 2003, the United States Department of Energy (USDOE)-Office of River Protection (ORP) submitted a Notice of Intent (NOI) to the Washington State Department of Ecology (Ecology) for the Contact Handled (CH)-Transuranic Mixed Waste (TRUM) Packaging and Interim Storage Facility pursuant to the Washington Administrative Code (WAC) 173-303-281. The NOI process requirements have been completed. This letter serves as notification of Ecology's written decision to approve the demonstration of compliance with the requirements of WAC 173-303-281. While achieving compliance, some information provided in support of the NOI needs to be updated in Part B application. Ecology would like to reiterate clarification of the following issue:

- The USDOE has described proposed activities in this unit as "packing" and "storage"; however, the activities described in Section 2.2 also meet the following definition of "Treatment" provided in WAC 173-303-040:

  "Treatment" means the physical, chemical, or biological processing of dangerous waste to make such wastes non dangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage, or reduced in volume, with the exception of compacting, repackaging, and sorting as allowed under WAC-173-303-400(2) and 173-303-600(3).

To avoid delays in the permitting process, Ecology anticipates a more fully developed Part B Permit Application (Revision 0). Again, USDOE and contractor staff are strongly encouraged to discuss issues associated with this unit with Ecology to clarify any questions or concerns.

If you have any questions or comments regarding this letter, please contact me at (509) 736-5705 or Jean Vanni at (509) 736-3046.

Sincerely,

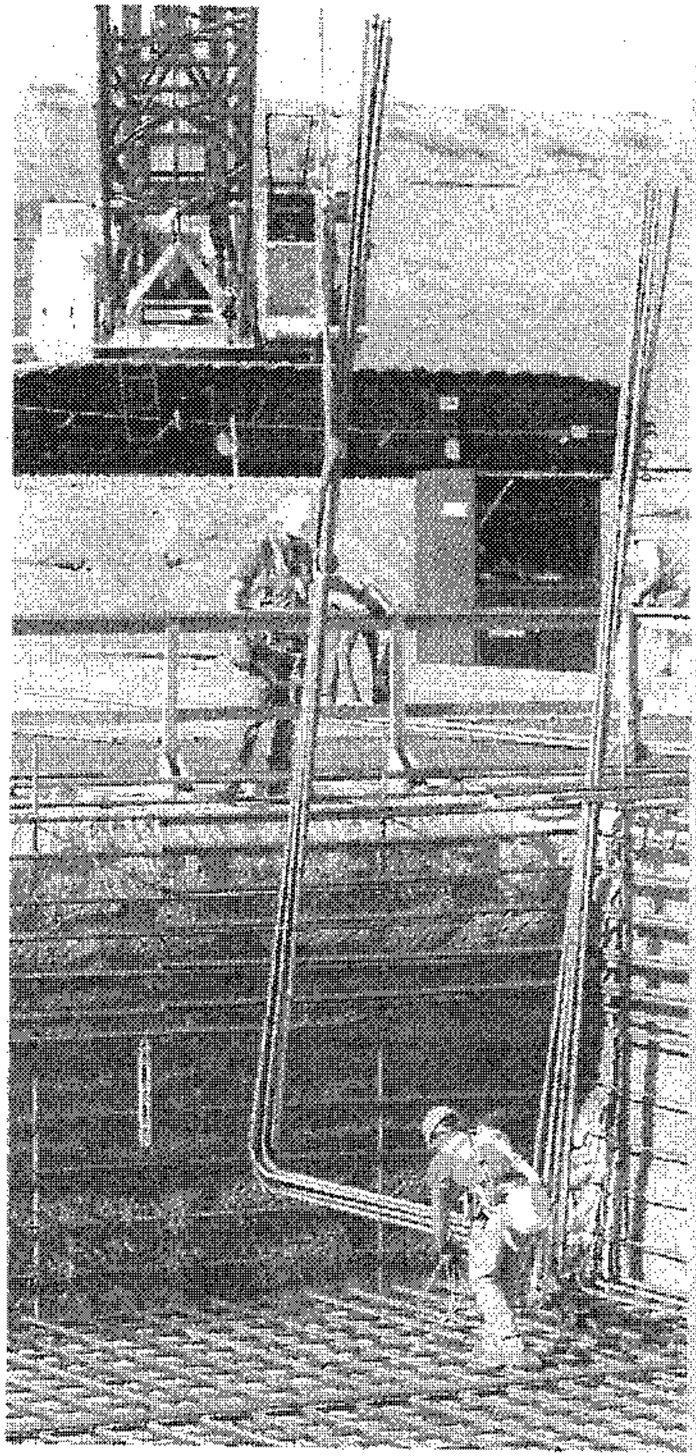
Suzanne Dahl
Tank Waste Disposal Project Manager
Nuclear Waste Program

SD:JV:jc

cc: Nick Ceto, EPA
Keith Klein, USDOE
Billie Mauss, USDOE-ORP
Roy Schepens, USDOE-ORP
Robert Yasek, USDOE-ORP
Ed Aromi, CHG
Felix Miera, CHG
Al Conklin, DOH
Todd Martin, HAB
Ken Niles, ODOE
Stuart Harris, CTUIR
Pat Sobotta, NPT
Russell Jim, YIN
Environmental Portal, FH
Administrative Record: Contact Handled-Transuranic Mixed Waste

The U.S. Department of Energy's
Office of River Protection

Preliminary Discussions on the Disposal Approach for Hanford's Tank Waste Residuals Containing Actinides



Office of River Protection

CH2MHILL Hanford Group, Inc.

Bechtel National, Inc.

(b)(5)

[redacted]

(b)(5)

(b)(5) [redacted]

(b)(5) [redacted]

40 CFR 191
Applicable to DOE Sites

- Applicability
- Sec 191.01 (b) … transuranic wastes at any disposal facility that is operated by the Department of Energy and that is not regulated by the Commission or by Agreement States

Definition of TRU 40 CFR Part 91

- Sec 191.02 (i) Transuranic radioactive wastes, as used in this part, means waste containing more than 100 nCi of alpha-emitting transuranic isotopes, with half lives greater than 20 years, per gram of waste, except for:
- (1) High level radioactive wastes;
- (2) *Wastes that the Department (of Energy) has determined, with the concurrence of the Administrator (of EPA), do not need the degree of isolation required by this part; or*
- (3) Wastes that the Commission (NRC) has approved for disposal on a case by case basis in accordance with 10 CFR Part 61

(b)(5)

(b)(5)

(b)(5)

Corollary Issue

- Need to re-examine the extent of the waste matrix needed
  - This matrix includes the waste material itself, as well as any stabilization media that must be added to meet waste acceptance criteria for mobility, physical form, structural stability or free liquids.

INCOMING CORRESPONDENCE COVERSHEET

CORR-2012-0065

Author	Addressee	Correspondence No.
S. E. Bechtol/ORP	A. B. Dunning/WRPS	1201159 DOE-ORP: 12-AMD-0072

Subject: CONTRACT NO. DE-AC27-08RV14800 – (b)(5)
(b)(5)

DISTRIBUTION

Washington River Protection Solutions
WRPS Correspondence Control
JC Allen-Floyd
AD Basche
C Burrows
RE Gregory
JN Holloway
GJ Johnson
DB Little
JA McDonald
RS Page
GA Parkhurst
CA Simpson ((Assignee))
RJ Skwarek
DK Smith
BR Thomas
RE Wilkinson

Priority:	**NORMAL**
Assignee:	C. A. Simpson
Received:	April 16, 2012
Due Date:	6/16/2012 – Provide a FAR compliant proposal for the scope of work as requested by ORP.

WRPS Correspondence Control
For Questions call: 376-0271
Outlook Address: **^WRPS Correspondence Control**

U.S. Department of Energy
[redacted]
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

APR 12 2012

12-AMD-0072 1201159

Mr. Abel B. Dunning, Contracts Manager
Washington River Protection Solutions LLC
2440 Stevens Center Place
Richland, Washington 99354

Dear Mr. Dunning:

CONTRACT NO. DE-AC27-08RV14800 – (b)(5)
(b)(5)

Reference: ORP letter from S. E. Bechtol to A. B. Dunning, WRPS, "Transmittal of Contract Modification 133," 11-AMD-239, dated September 28, 2011.

The U.S. Department of Energy (DOE), Office of River Protection (ORP) requests a (b)(5)
(b)(5)

(b)(5)

(b)(5)

Detailed Scope and Requirements

(b)(5)

WRPS CC Recv'd 04/16/2012

(b)(5)

Please address technical or schedule questions to Mr. Ronald Koll at (509) 376-4434. If there are questions regarding the proposal preparation, please contact me at (509) 373-7914, or Susan Bechtol at (509) 376-3388.

Sincerely,

Susan E Bechtol

Susan E. Bechtol
Contracting Officer

AMD:SEB

cc: W. J. Neff, RL
WRPS Correspondence

RL-F-1325.6 (02/98)

United States Government | Department of Energy

memorandum

Richland Operations Office

DATE: MAY 0 2 2003

REPLY TO ATTN OF: WMD:TAS/03-WMD-0200

SUBJECT: REQUEST FOR NEW WASTE CODES FOR TRANSURANIC (TRU) WASTE DISPOSAL AT THE WASTE ISOLATION PILOT PLANT (WIPP)

TO: Donald C. Gadbury, Acting Assistant Manager
Office of National TRU Program, CBFO

In developing plans for the shipment of TRU waste from the Hanford tank farms to the WIPP, it has been determined that two additional waste codes are required in the WIPP permit. RL requests the following two waste codes be added: D033 (Hexachlorobutadiene) and D041 (2,4,5-Trichlorophenol).

If you have any questions, please contact Todd Shrader, Waste Management Division, on (509) 376-2725.

Matthew S. McCormick, Acting Assistant Manager
for the Central Plateau

cc: R. P. Dunn, DFSH
D. W. Hamilton, CH2M
J. G. Kristofzski, CH2M
D. Moody, CBFO
K. W. Watson, CBFO

RL-F-1325.6 (02/98)

United States Government **Department of Energy**

memorandum

Richland Operations Office

DATE: MAR 19 2003

REPLY TO ATTN OF: WMD:TAS/03-WMD-0118

SUBJECT: HANFORD SITE TRANSURANIC (TRU) WASTE PROGRAM KEY PERSONNEL

TO: Kerry Watson, Assistant Manager
Office of National TRU Program, CBFO

There have been a number of recent personnel changes for the Hanford TRU Program. As a result, the U.S. Department of Energy, Richland Operations Office is providing an updated key personnel list for the Hanford TRU Program, along with contact information. The list is provided in the Attachment. In addition, points of contact are provided for the U.S. Department of Energy, Office of River Protection and its respective tank farms contractor, CH2Hill Hanford Group.

If you have any questions regarding this matter, please contact Todd Shrader, Waste Management Division, on (509) 376-2725.

acting FM Roddy for
R. F. Guercia, Acting Director
Waste Management Division

Attachment

cc w/attach:
D. C. DeRosa, FHI
R. P. Dunn, FHI
L. Greene, WRES
D. W. Hamilton, CH2M
J. G. Kristofzski, CH2M

03-WMD-0118

Attachment

Hanford Site TRU Program Key Personnel

Consisting of 2 pages
including coversheet

ORGANIZATION	POSITION	NAME	PHONE	FAX	MSIN	E-MAIL
DOE TRU Program Manager	Primary:	Todd Shrader	509-376-2725	509-372-1926	A6-38	Todd_A_Shrader@rl.gov
	Alternate:	Paul J. Valcich	509-373-9947	509-372-1926	A6-38	Paul_J_Valcich@rl.gov
Site Project Manager	Primary:	Rick P. Dunn	509-373-9574	509-372-1033	R3-12	Richard_Dunn@rl.gov
	Alternate:	David C. DeRosa	509-376-7900	509-373-5251	T4-05	David_C_DeRosa@rl.gov
Site Waste Certification Official	Primary:	Ken Svoboda	509-372-8213	509-373-5251	T4-05	Kenneth_J_Ken_Svoboda@rl.gov
	Alternate:	Karola Kover	509-373-7300	509-373-1091	T4-05	Karola_Kover@rl.gov
Site Transportation Certification Official	Primary:	Kathryn A. Smith	509-372-3300	509-373-5251	R3-12	Kathryn_A_Smith@rl.gov
	Alternate:	Kathy M. Leonard	509-373-0373	509-373-9101	T4-05	Kathleen_M_Leonard@rl.gov
Site Quality Assurance Officer	Primary:	Stewart L. Huggins	509-373-3630	509-373-1091	T4-05	Stewart_L_Huggins@rl.gov
	Alternate:	James L. Maupin	509-373-6420	509-373-1091	T4-05	James_L_Maupin@rl.gov
DOE ORP Representative	Primary:	Billie Mauss	509-373-5113	509-372-2781	H6-60	Billie_M_Mauss@rl.gov
Tank Farms Contractor - CHG	Primary:	John G. Kristofzski	509-373-4225	509-373-9093	H6-03	John_G_Kristofzski@rl.gov
	Alternate:	Dennis W. Hamilton	509-376-2423	509-376-6399	H6-22	Dennis_W_Hamilton@rl.gov

Addresses:

DOE-RL

US Department of Energy
Richland Operations Office
Attn: (as appropriate)
PO Box 550, MSIN (as appropriate)
Richland, WA 99352

DOE-ORP

US Department of Energy
Office of River Protection
Attn: (as appropriate)
PO Box 550, MSIN (as appropriate)
Richland, Washington 99352

TRU Project

Fluor Hanford, Inc.
Attn: (as appropriate)
MSIN: (as appropriate)
Richland, WA 99352

Tank Farms

CH2M Hill Hanford
Attn: (as appropriate)
MSIN: (as appropriate)
2440 Stevens Drive
PO Box 1500
Richland, WA 99352

Preliminary Draft

Technical and Regulatory Basis Supporting the Designation of Waste in 11 Hanford Single-Shell Tanks as Contact-Handled Mixed Transuranic Waste

W. Hewitt, YAHSGS LLC

September 2008

Prepared by YAHSGS LLC, Richland, WA under Contract ORP-YAH002 to the Project Assistance Corporation in Support of the Department of Energy, Office of River Protection

Attorney-Client Privileged; Prepared in Anticipation of Litigation; Not Subject to Discovery or Release Under FOIA

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Executive Summary

The U.S. Department of Energy (DOE) Office of River Protection (ORP) is responsible for the safe storage, retrieval, treatment, and disposal of radioactive and hazardous waste stored in underground tanks at the Hanford Site near Richland, Washington. The large volume and complex chemical and radioactive characteristics associated with those wastes present substantial technical and regulatory challenges. A key element in ORP's cleanup strategy is to provide treatment and disposal pathways for all wastes that are protective of human health and the environment as well as appropriate to the level and nature of risks associated with each specific waste stream. This document focuses on contact-handled wastes in 11 Hanford single-shell tanks that, on the basis of waste origin and radioactive characteristics, do not fall within the definition of high-level radioactive waste (HLW) that is set forth in the Nuclear Waste Policy Act of 1982 as amended (NWPA). The radioactive characteristics of those wastes are consistent with transuranic wastes (TRU) as defined in the Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act.

Background – The wastes in the Hanford tanks came from a variety of sources, however, much of the waste originated during the reprocessing of spent nuclear fuel (SNF). The NWPA defines high-level radioactive wastes (HLW) as follows:

> "(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and (B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation."

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[1] As a matter of operations management policy, DOE "manages" all of the wastes stored in the Hanford tank farms as HLW, regardless of the specific origin of the waste in any particular tank. That policy ensures that the highest standards of care are applied to the management of all tank waste, regardless of origin or waste characteristics.

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A review and analysis of historical Hanford process records and waste transfer records has confirmed that:

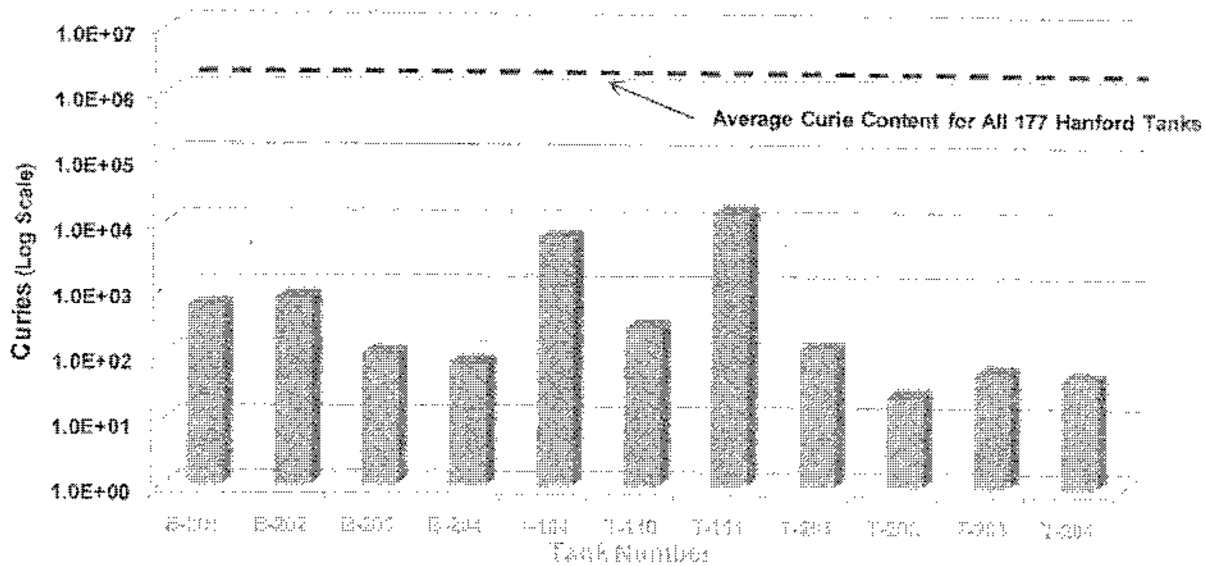
- The waste in eight of the 11 tanks (B-201, B-202, B-203, B-204, T-201, T-202, T-203, T-204) were created in the 224-B/T buildings. Neither of those facilities is a SNF reprocessing facility. Both the 224-B and 224-T facilities were used to conduct the final plutonium concentration steps to qualify the plutonium product material for weapons use. As such, the wastes from those facilities are contaminated with plutonium isotopes to a sufficient degree to qualify as TRU but have very low fission product content and do not exhibit the highly radioactive characteristics of HLW. All are contact-handled waste.

- The waste in T-104 was produced by two non-SNF reprocessing operations. The first operation removed metal coating/cladding from SNF in preparation for reprocessing. Prior to the actual reprocessing of SNF, the aluminum cladding (or coating) had to be removed to expose the uranium fuel to acid that would be used to dissolve the uranium. A boiling sodium nitrate/sodium hydroxide solution was used to dissolve cladding. While virtually all of the radioactive fission products remained within the intact spent fuel matrix, small amounts of radioactive materials at the surface of the fuel slugs entered decladding solutions. Decladding operations are considered a "head end" process and not part of spent fuel reprocessing since the spent fuel remained intact throughout the decladding process. The decladding wastes were subsequently combined with 1st Decontamination Cycle waste to use the excess sodium hydroxide in the decladding wastes to neutralize acids used in the 1st Decontamination Cycle process. The 1st Decontamination Cycle process was not a HLW process. The HLW stream was previously separated from the plutonium product stream during the Uranium Separation operation and any "liquids produced directly in reprocessing" (LPR) were washed from the plutonium solids prior to those solids entering the 1st Decontamination Cycle operation. Similarly, liquid waste produced directly in reprocessing was so extensively removed during Uranium Separations and its multiple rinses that virtually none moved forward to the 1st Decontamination Cycle operation.

- The waste in T-110 was also produced by two non-SNF reprocessing operations. Part of the waste is from the 2nd Decontamination Cycle operation, a process that is one step removed (and even lower in radioactivity) than the wastes discussed for T-104 that resulted from the 1st Decontamination Cycle. The remaining waste in T-110 is from the T-224 building, which as discussed above for the first eight tanks, is not a reprocessing facility.

- The waste in T-111 was produced by three non-SNF reprocessing operations. Two of those operations are the same as described above for T-110. The third operation was 221-T Plant equipment decontamination which did not involve the reprocessing of SNF.

- The curie content in the 11 tanks is less than 1% of the average curie content for all 177 Hanford tanks – very low levels of radioactivity exist within the 11 tanks.



Conclusion – The information provided in this document provides a technical and regulatory basis for DOE to consider, along with other relevant factors, in reaching its decisions whether to:

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Table of Contents

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1.0 Introduction

The U.S. Department of Energy (DOE) Office of River Protection (ORP) is responsible for the safe storage, retrieval, treatment, and disposal of radioactive and hazardous waste stored in underground tanks at the Hanford Site near Richland, Washington. The 18 Hanford tank farms include 149 single-shell tanks (SSTs) and 28 double-shell tanks (DSTs). Together those tanks currently contain approximately 53 million gallons of radioactive mixed waste in the form of supernatant (liquid), saltcake, and sludge. The radioactivity inventory in the tanks is approximately 190 million curies (including Ba-137^{m} and Y-90, the equilibrium daughter products of Cs-137 and Sr-90, respectively).

The large volume and complex chemical and radioactive characteristics associated with the tank wastes present substantial technical and regulatory challenges. One key element in ORP's cleanup strategy is to select treatment and disposal pathways for wastes that are protective of human health and the environment as well as appropriate to the level and nature of risks associated with specific wastes. Fission product and alpha-emitting transuranic isotope inventory data are key to making informed treatment and disposal path decisions.

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1.1 Hanford Wastes Vary Significantly Tank-to-Tank

Hanford tank wastes originated from several diverse processes. While SNF reprocessing generated the bulk of the tank wastes, a number of other diverse operations also generated wastes stored in the tanks today. Those other operations include removing fuel cladding prior to SNF reprocessing, purifying plutonium for weapons use, decontaminating equipment/facilities, separating Cs-137 and Sr-90 for commercial use (Cs and Sr capsules), recovering uranium from tank wastes for reuse in reactor fuel, specialty separations conducted to support industrial needs, DOE weapons research, and DOE laboratory wastes.

Hanford's large tank-to-tank radionuclide concentration differences are graphically illustrated in Figure 1. That figure plots the total curies in each of the 177 Hanford tanks from the highest number of curies per tank (to the left) to the lowest number of curies per tank (to the right).

All of the 11 tanks discussed in this document are in the bracketed area to the right of the plot. The insert in Figure 1 compares the curie content in each of the 11 tanks with the average curie inventory considering all 177 Hanford tanks. The highest curie candidate TRU tank inventory is only one percent of the average inventory considering all 177 tanks.

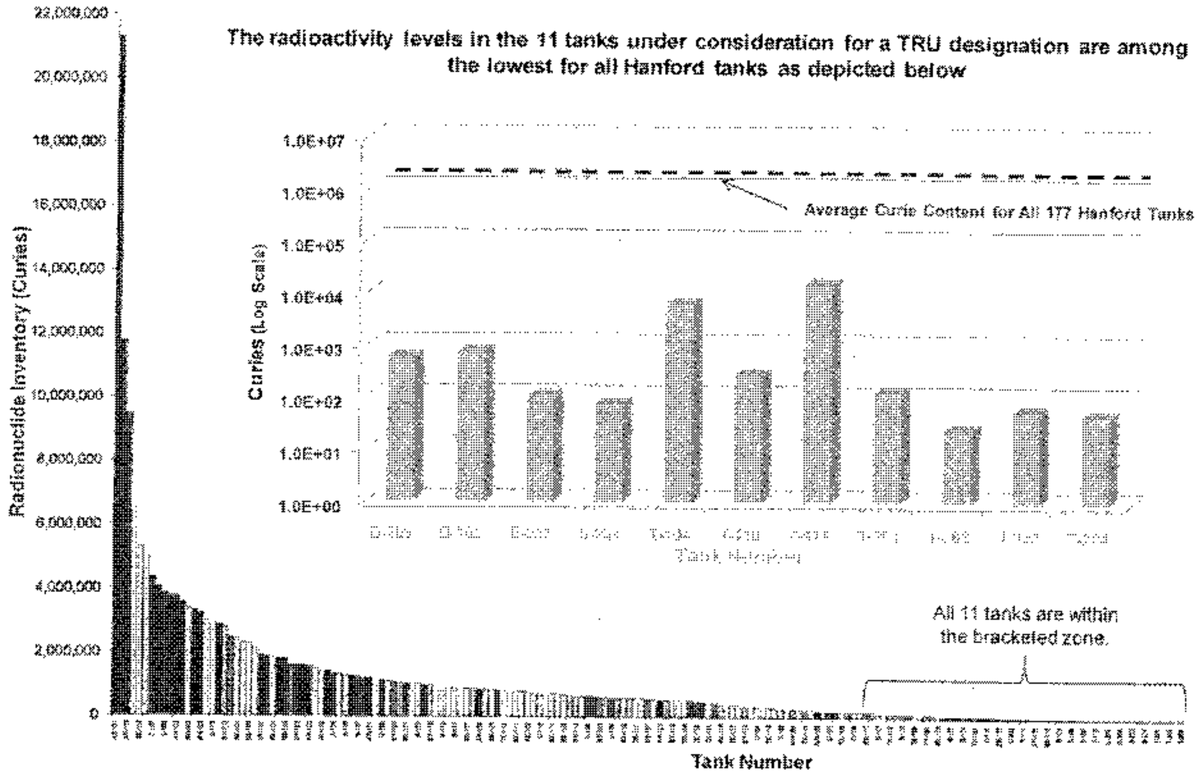

Figure 1. Radionuclide Inventories in the Hanford Tanks Span Over Four Orders of Magnitude.
Source: Best Basis Inventory in the TWINS Database

Understanding the chemical and radioactive properties associated with the wastes in each tank is important to sound waste management decisionmaking. This includes selecting treatment and disposal approaches that are protective of human health and the environment and suited to the level of risk mitigation required for each waste stream.

1.2 Relevant Historical Facts

The Hanford Site came into being during the World War II as the part of the Manhattan Project. The Army Corps of Engineers selected Hanford in December 1942 based on its remote location and the ample cooling water provided by the Columbia River. Hanford's role was to produce plutonium-239 in the first production nuclear reactors and chemically separate the plutonium from other chemicals in the SNF to produce chemically pure plutonium for nuclear weapons. The first SNF separations and plutonium recovery took place in the BPP, which was used from late 1944 to 1956. BPP operations were conducted in the 221-B Building and the 221-T Building in the 200 East Area and 200 West Area, respectively. Relatively early in Hanford's history (Figure 2), BPP operations in T-Plant and B-Plant were phased out in favor of continuous

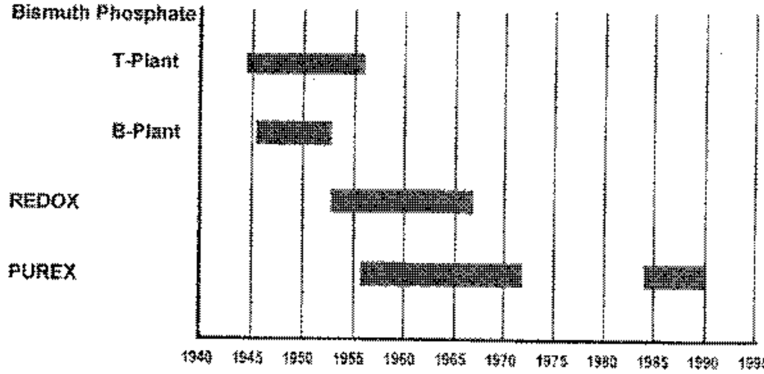

Figure 2. Operating Time Frames for Spent Nuclear Fuel Reprocessing Processes at Hanford

solvent extraction processes that were more efficient, i.e., produced far less waste per ton of plutonium recovered and also recovered uranium for reuse.

The BPP's sole purpose was to recover plutonium. Uranium was discharged as with the metal wastes. Conversely, both the REDOX and PUREX processes recovered both plutonium and uranium as separate product streams. Both processes used a small fraction of the chemical additives that the BPP required for separations, e.g., the BPP created over 200 times more waste[3] than PUREX per ton of uranium fuel processed. This resulted in BPP wastes having substantially lower fission product concentrations than other reprocessing wastes. For example, the highest fission product concentration wastes discharged from the BP Uranium Separation process was reported to have Cs-137 concentrations of approximately 60 Ci/m^3 (GE 1955). That is less than 0.5 percent of the Cs-137 concentrations in PUREX 1st cycle raffinate wastes following neutralization, 13,000 Ci/m^3 (ARHCO 1968).

The wastes in the 11 SSTs addressed in this document were all from BPP operations and all are contact-handled, low curie wastes.

1.3 DOE Has Not Yet Classified the Hanford Tank Wastes

As a matter of operations management policy, DOE "manages" all of the wastes stored in the Hanford tank farms as HLW, regardless of the specific origin of the waste in any particular tank. That policy ensures that the highest standards of care are applied to the management of all tank waste. Most of the radioactivity in the tanks resulted from SNF reprocessing and following retrieval, those radioactive materials will be concentrated and vitrified as HLW in the Waste Treatment and Immobilization Plant (WTP) Facility. Some Hanford tank waste did not originate during SNF reprocessing, however. Waste in any specific tank may actually be HLW, TRU, or mixed low-level waste (MLLW) depending on its origin, its process history, its radioactive characteristics, and treatment it may receive that could potentially change its radioactive characteristics. DOE plans to take those factors into account when it formally designates waste into appropriate and protective categories for treatment and disposal.

In cases where a waste that did not originate during the reprocessing of SNF but has alpha-emitting transuranic radionuclide concentrations that are too high for on-site disposal, DOE will evaluate whether it should manage and dispose of the waste as mixed TRU (TRUM) at the WIPP facility. There are several regulatory steps DOE must progress through in order to use that disposal pathway. These include formally designating the waste as TRUM based on waste origin and radioactive characteristics; submitting a WIPP Class 3 Permit Modification Request (PMR) and obtaining approval of the PMR by the New Mexico Environment Department (NMED) to

[3] The BP Uranium Separations process created approximately ~3800 gallons of high-level waste per ton of uranium (GE 1951) while PUREX created ~40 gallons per ton (ARHCO 1968).

dispose of the waste at WIPP; ascertaining and certifying that the waste meets the WIPP Waste Acceptance Criteria (WAC); requesting and receiving a Resource Conservation and Recovery Act (RCRA) permit from the Washington State Department of Ecology (Ecology) to retrieve, treat, and package the TRUM; and including the waste in the WIPP Compliance Recertification Application (CRA) which requires U.S. Environmental Protection Agency (EPA) approval every five years.

This document evaluates the (b)(5)
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1.4 Objectives

The objectives of this document are to develop the technical and regulatory basis for DOE to use in reaching its classification and disposition decisions for the wastes in the 11 tanks. This document provides information supporting the premises that:

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4.
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2.1 (b)(5) [redacted]

(b)(5) [redacted]

2.2 (b)(5) [redacted]

(b)(5) [redacted]

(b)(5) [redacted]

2.3 (b)(5) [redacted]

(b)(5) [redacted]

2.4 (b)(5) [redacted]

(b)(5) [redacted]

(b)(5) [redacted]

2.5 (b)(5) [redacted] Summary

(b)(5) [redacted]

3.0 (b)(5) [redacted]

(b)(5) [redacted]

3.1 (b)(5) [redacted]

The HLW definition set forth in the NWPA[9] defines HLW as follows:

> "High-level radioactive waste means:
>
> (A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and (B) other highly radioactive material that the Commission, consistent with existing laws, determines by rule requires permanent isolation." [emphasis added][10]

(b)(5) [redacted]

(b)(5) [redacted]

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3.2 (b)(5)

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4.0 (b)(5)

4.1 (b)(5)

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4.2 (b)(5)

The Waste Isolation Pilot Plant Land Withdrawal Act defines transuranic waste as:

> "…waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for (A) high-level radioactive waste; (B) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with Part 61 of title 10, Code of Federal Regulations…"

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5.0 CONCLUSION

The information provided in this document provides a technical and regulatory basis that indicates:

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NWPA 1. Nuclear Waste Policy Act of 1982 as amended, Section 2, Definitions.

PNNL 1998. "International Waste Management Fact Book", PNNL-11677, Pacific Northwest National Laboratory, Richland, WA, 1998.

PNNL 2007. "Laboratory-Scale Bismuth Phosphate Extraction Process Simulation to Track Fate of Fission Products", PNNL-14120, R.J. Serne, M.J. Lindberg, T.E. Jones, H.T. Schaef, K.M. Krupka, Pacific Northwest National Laboratories, Richland, WA, February 2007.

APPENDIX A. (b)(5) [redacted]

(b)(5) [redacted]

Appendix A

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Appendix A

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<u>Historical References for the Development of the Appendix A Flowsheets:</u>

HW-10475-C, 1944, *Hanford Technical Manual Section C*, General Electric Hanford Atomic Products Operation, Richland, Washington

HW-23043, 1951, *Flow Sheets and Flow Diagrams of Precipitation Separations Process*, General Electric Company, Richland, Washington

HW-26365, 1952, *Brief Summary of Separations Processes*, General Electric Company, Richland, Washington

Options to Package and Ship Hanford Tank Farm Transuranic Waste to WIPP

March 6, 2013

TRU Tank Processing Challenge

Objective: Explore options to begin treating Transuranic (TRU) tank waste as soon as possible

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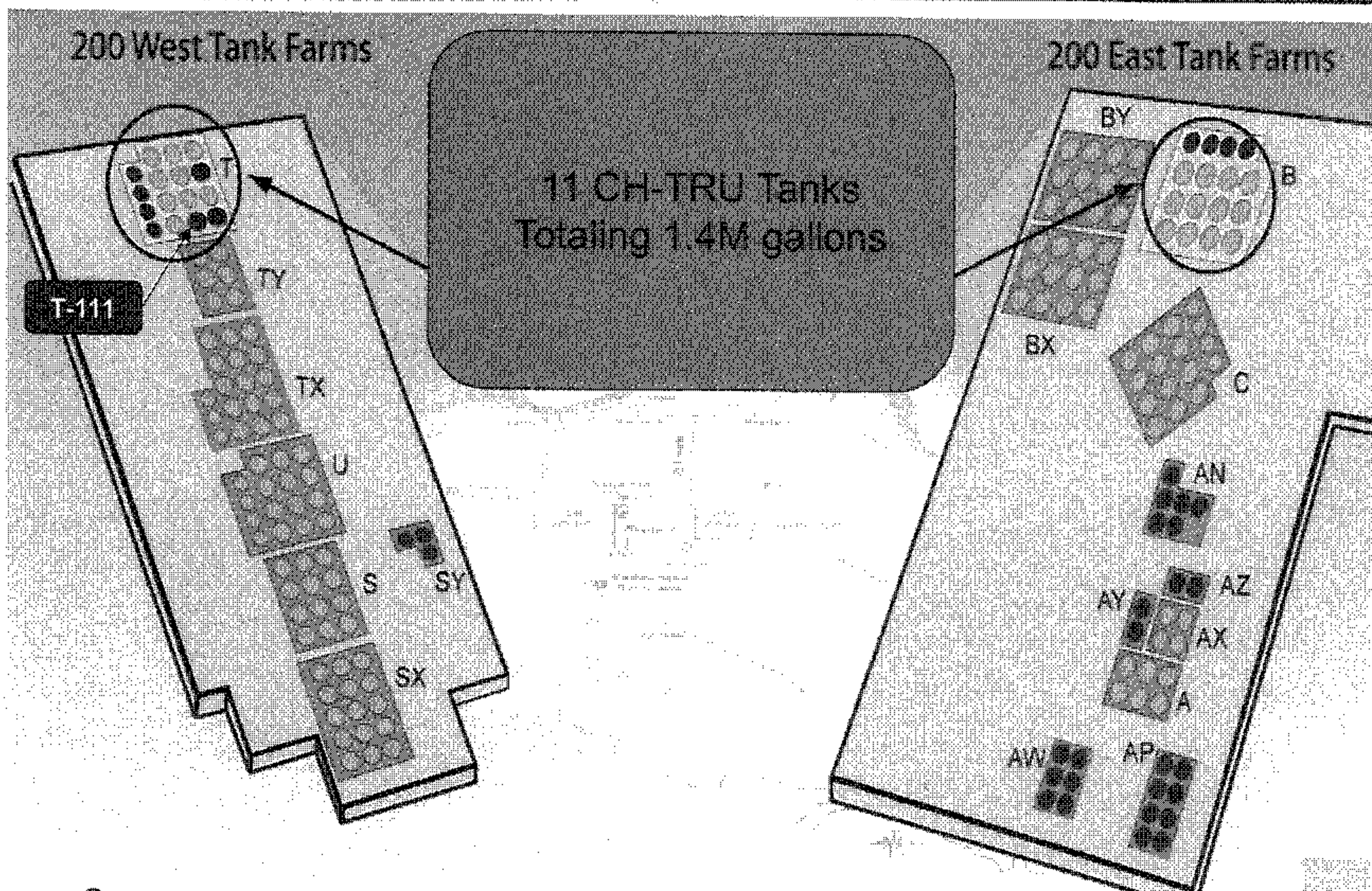
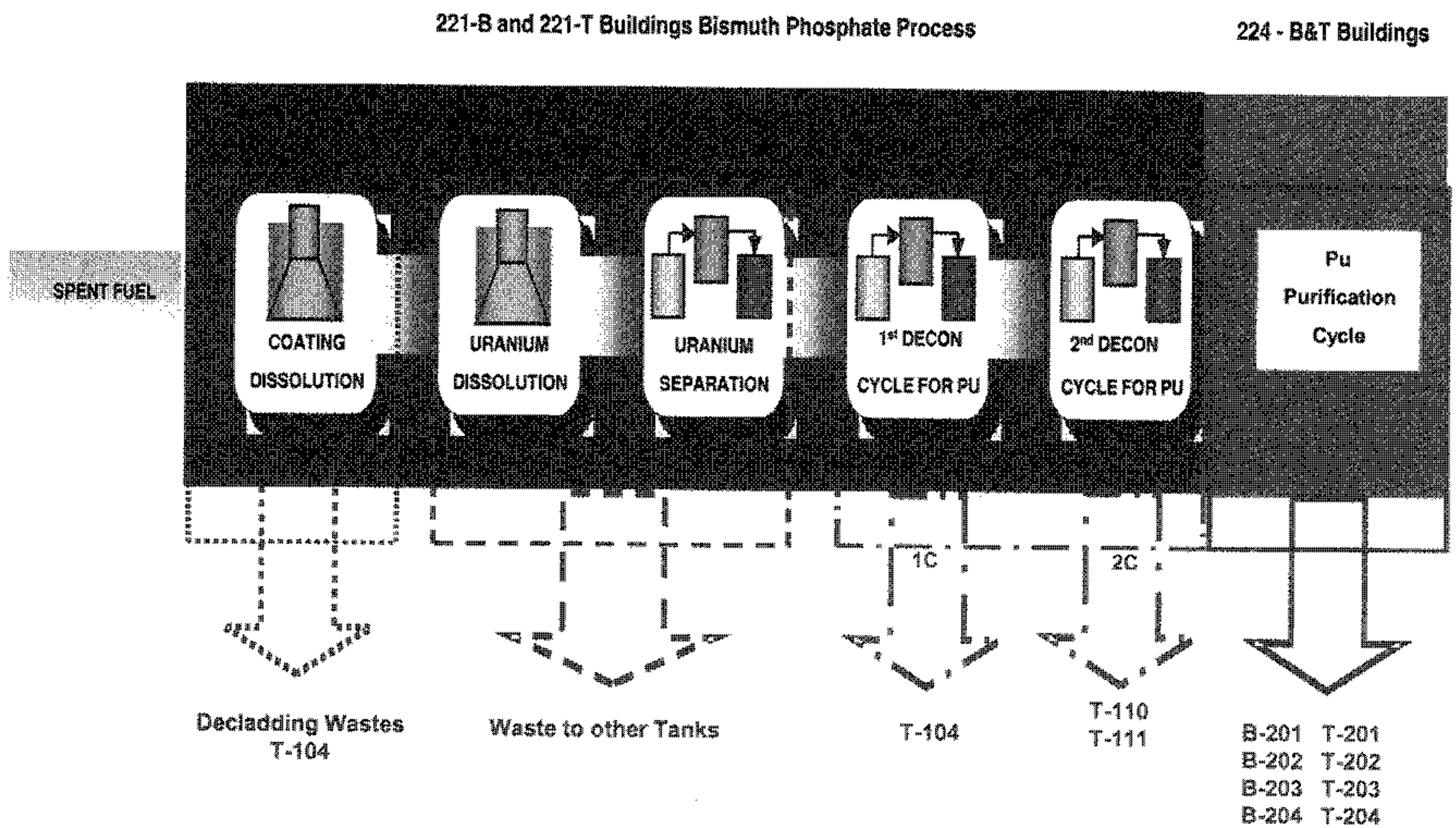
Potential TRU Tanks



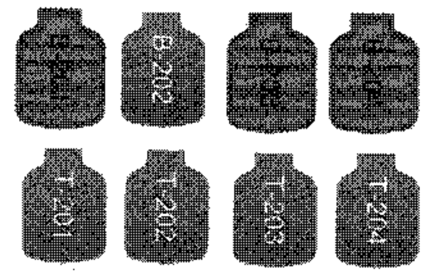
- Potential CH-TRU Tanks
- Potential CH-TRU Tanks Declared Leakers
- Remaining SSTs
- DSTs

TRU Waste Derivation – By Process Knowledge



TRU Waste Storage

3 100-Series (500k gal) Tanks
Containing 1,134 kgal waste sludge
High Probability CH-TRU



8 200-Series (55k gal) Tanks
Containing 279 kgal waste sludge
Very High Probability CH-TRU


Declared "Assumed Leaker" (HNF-EP-0182)

Option 1 – River Protection Project (RPP) Baseline

ORP Baseline Approach Defined in 2002

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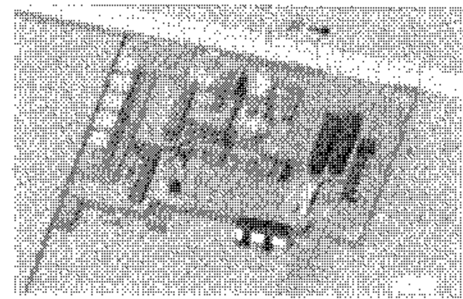

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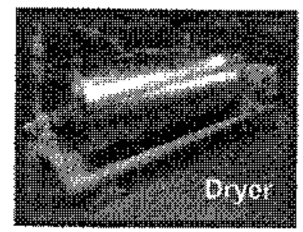

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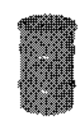

Timeline – Option 1 (b)(5)

FY13 | FY14 | FY 15 | FY 16 | FY 17 | FY 18 | FY 19 | FY 20 | FY 21 | FY 22 | FY 23

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Option 2 – (b)(5)

(b)(5)

Timeline – Option 2

(b)(5)

FY13 FY14 FY 15 FY 16 FY 17 FY 18 FY 19 FY 20 FY 21 FY 22 FY 23

(b)(5)

Rob Gilbert
has all risks

High and Medium Risks

Option 1 – (b)(5)	Description

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Option 2 – (b)(5)	Description

(b)(5)

High Risk: (b)(5)

Medium Risk: (b)(5)

Conclusion

(b)(5)

(b)(5)

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Back-up Slides

ROM Cost Estimates

Existing Baseline (2009)

(b)(5)

(b)(5) Option

(b)(5)

Container Analysis

Existing Baseline and Current Approach

(b)(5)

(b)(5) Process

(b)(5)

Multiple (b)(5) Actions

(b)(5)

Alternative Approach to Accelerate (b)(5)

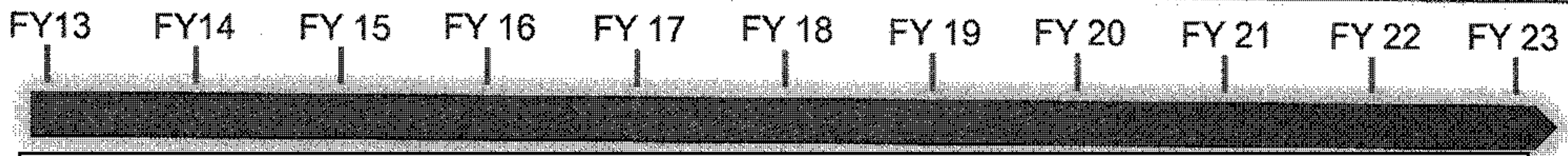
- Recent changed circumstances
  - (b)(5)

- Immediate Possible Mitigation Actions
  - (b)(5)

Alternative Approach (cont)

(b)(5)

(b)(5) Option Schedule



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Huffman, Lori A

From: Bowers, Elizabeth M (Liz)
Sent: Wednesday, May 01, 2013 11:08 AM
Subject: FW: Mythbusters: Getting the facts right on Hanford's tank waste]
Attachments: Mythbusters.pdf

Pretty well written article

Liz
509-373-9276 office
509-205-9610 cell

From: news@carlsbadnuclearnexus.com [mailto:news@carlsbadnuclearnexus.com]
Sent: Tuesday, April 23, 2013 10:29 AM
To: news@carlsbadnuclearnexus.com
Subject: Mythbusters: Getting the facts right on Hanford's tank waste]

Hello- attached is a press release from the Carlsbad Mayor's Nuclear Task Force. This document is also posted in the "Hanford Tank Waste" tab at www.carlsbadnuclearnexus.com. The public meetings on this subject will be May 14 (in Santa Fe) and May 16 (in Carlsbad).

Some Hanford Tank Waste is

TRU Waste and Eligible for Disposal at WIPP

Carlsbad Mayor's Nuclear Task Force Release

Background:

The Department of Energy recently issued a Notice of DOE's preferred alternative indicating a preference to send transuranic (TRU) radioactive waste from about 20 tanks at the Hanford site in Washington State to the Waste Isolation Pilot Plant near Carlsbad for permanent disposal in deep salt beds.

In pursuit of this goal, the DOE has submitted a Class 2 permit modification request asking the New Mexico Environment Department (NMED) to modify an excluded waste prohibition and associated text from WIPP's hazardous waste permit pertaining to TRU mixed waste "that has ever been managed as high-level waste and waste from specified tanks listed in the Permit."

Essentially, this prohibition was put into the permit in 2004 to keep Hanford tank waste from coming to WIPP, and the DOE is asking to undo this prohibition. The Carlsbad Mayor's Nuclear Task Force encourages the state to remove the excluded waste prohibition. We would also like to address some of the myths being spread by opponents of the modification of this prohibition.

MythBusters

Myth: This is high-level waste, so it should not come to WIPP.

Fact: This permit modification request does not propose to allow DOE to accept and dispose of high-level waste at the WIPP facility. High-level waste is prohibited by the WIPP Land Withdrawal Act (LWA). Just because waste was managed as high-level waste at some time in its history does not mean it was high-level waste.

Only tank waste found to meet the definition of TRU waste in the LWA and that meets WIPP's Waste Acceptance Criteria would be sent to WIPP. This radioactive waste would be the same type of waste as the contact-handled TRU and remote-handled TRU waste already at WIPP. The waste would be sent to WIPP and disposed of using routes and procedures that already exist.

Myth: It would be illegal for this waste to go to WIPP due to a state prohibition.

Fact: It is accurate that a state prohibition currently prevents Hanford tank waste from being sent to WIPP unless a Class 3 permit modification request is processed to allow such waste on a waste stream-by-waste stream basis. The DOE is attempting to remove this prohibition through the proper permit modification process, which involves the public and the NMED.

Myth: This process is taking place without the opportunity for public comment.

Fact: This is not accurate. The DOE has submitted a Class 2 permit modification, which includes public meetings in northern and southern New Mexico and a 60-day period for public comment. The NMED will consider all public feedback and potentially respond to individual comments.

Myth: This is supposed to be a Class 3 (lengthier) process.

Fact: A Class 3 process is more extensive than a Class 2 because it can also include several days of hearings, followed by deliberation and response periods. The original prohibition on tank waste was put into the permit using a Class 2 process, so logically it should be removed the same way. Another equally important recent permit modification to revise a prohibition on PCBs was also handled as a Class 2, and according to our interpretation of NMED guidelines, it is the appropriate procedure for this type of request.

It is worth noting that the 2004 prohibition on tank waste at Hanford stated a Class 3 permit modification would be needed to send this waste to WIPP. But asking to send tank waste to WIPP with the prohibition in place is not the same as asking to remove the prohibition itself.

Myth: Many public comments were made the last time this issue came up, so this should be a Class 3 process.

Fact: The DOE's permit with the NMED includes a list to help decide whether something should be a Class 2 or Class 3 permit modification, there is a reference to "significant public interest," but there is no definition of this term. At this point, there is no way to measure "significant public interest," but it could certainly be hoped that proximity to a given facility would be a defining variable. Also, since the difference between a Class 2 and a Class 3 process is a detailed technical hearing, it would seem logical that this would relate to significant technical concerns.

Groups opposed to WIPP have frequently used delaying tactics as a way to hamper progress. Arguing that all modifications should be Class 3 modifications is one traditional delay tactic.

Myth: This waste would be liquid and would seep into the soil.

Fact: Because of assorted media reports describing the tank waste as leaking, it's easy to picture a vat of liquid being sent to WIPP. This is not the case. Liquid waste is prohibited at WIPP and will remain so. The Hanford tank waste sent to WIPP would be solidified, as is other similar waste that is sent to WIPP.

Myth: The tank waste would not be chemically compatible with the waste that is already at WIPP.

Fact: The NMED's basis for initiating the tank waste prohibition in 2003 was a belief that the chemicals in the Hanford tank waste had not been evaluated for compatibility with the chemicals in the waste at WIPP. This was not and is not the case since the original (1996) compatibility evaluation considered chemicals and not the particular waste stream or source. Since then, the DOE updated the chemical compatibility study in 2012 demonstrating that the chemical constituents in the Hanford tank waste believed to contain TRU waste are compatible with the chemical constituents of the waste at WIPP. This study showed that the original concern was not an issue.

Myth: Taking on the TRU Hanford tank waste mission would interfere with WIPP's important mission to clean up New Mexico's own nuclear waste at Los Alamos National Laboratory.

Fact: The Los Alamos clean-up effort is and will remain WIPP's first priority. A permitting discussion, such as this one, is concerned with waste that would be sent to WIPP further in the future and would not interfere with WIPP's transportation or disposal process.

Myth: This is going to weaken the New Mexico Environment Department's authority.

Fact: The state permit is part of the New Mexico Hazardous Waste Act, which under authority granted by the federal Resource Conservation and Recovery Act, regulates the hazardous chemical components of waste. The NMED does not regulate radioactive waste.

This proposed change would eliminate a provision that appears to be concerned with TRU waste classification, which is beyond RCRA authority.

Myth: This sounds like a very expensive way of resolving this problem.

Fact: Treating the waste and sending it to WIPP would actually be much more affordable than building new tanks and then vitrifying (turning into glass) the waste. As important, TRU waste could be moved to WIPP and be permanently disposed of relatively quickly. It would not solve all of Hanford's problems, but it would remove the waste that has a disposal path from the state of Washington and eliminate that much of a risk to the Columbia River.

Myth: The tank waste would use up all the capacity of WIPP and other wastes around the complex would be orphaned when WIPP was full.

Fact: The total volume of solid tank waste in question is about 11,000 cubic meters (about 55,000 drums). WIPP already has emplaced about 8 times that much solid waste so far, and is only about half full. Depending on how much of the tank waste is determined to be remote handled TRU waste, that volume could challenge WIPP's artificially limited remote handled TRU capacity. Emplacement schemes other than putting canisters in the walls of disposal rooms may need to be proposed to accommodate more remote handled TRU waste than current limits would allow.

Myth: Shipping this waste to WIPP will subject New Mexicans along the shipping routes to more radioactivity.

Fact: When DOE considered the impacts of transportation in the 1997 Supplemental Environmental Impact Statement they assumed a maximum number of shipments related to the allowable volume of TRU waste. Each shipment must meet NRC and DOT requirements for nuclear safety. Therefore, the addition of this waste will not increase the number of shipments or the doses to persons along the route beyond those considered in the analysis.

ATTORNEY/CLIENT PRIVILEGE (NOT FOR DISTRIBUTION)

(b)(5)

[redacted]

The ORP tank waste strategy is as follows. A timeline that illustrates this schedule is attached.

BACKGROUND

(b)(5)

[redacted]

- (b)(5) [redacted]
- The EPA issued a completeness determination for the 2004 CRA on September 29, 2005. The EPA is required to reach a decision on whether or not to approve the CRA by March 29, 2006.
- During discussions with the EPA regarding the CRA, EPA has indicated that it wants to approve any waste previously managed as HLW currently stored in Department tanks that that the Department intends to dispose of as TRU in WIPP.
- (b)(5) [redacted]

DISCUSSION

- (b)(5) [redacted]
- (b)(5) [redacted]

(b)(5)

[redacted]

(b)(5)

[redacted]

DOE/EIS-0189-SA4

SUPPLEMENT ANALYSIS FOR HANFORD TANK FARM CONTACT HANDLED TRANSURANIC MIXED WASTE TREATMENT, PACKAGING, AND STORAGE

U.S. Department of Energy
Office of River Protection

December 2003

CONTENTS

APPENDIX

TABLES

LIST OF TERMS

CH-TRU	contact-handled transuranic [waste]
CH-TRUM	contact-handled transuranic mixed [waste]
CSB	Canister Storage Building
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DST	double-shell tank
EIS	environmental impact statement
ETF	Effluent Treatment Facility
FR	*Federal Register*
ft^2	square feet
FY	fiscal year
GWh	gigawatt hours
HEPA	high-efficiency particulate air (filter)
HLW	high-level waste
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
kgal	thousand gallons
km	kilometer
LAW	low-activity waste
L	liter
m	meter
m^2	square meters
m^3	cubic meters
MEI	maximally exposed individual
Mgal	million gallons
MW-hr/day	megawatt-hours per day
NEPA	*National Environmental Policy Act of 1969*
NRC	Nuclear Regulatory Commission
PVC	polyvinyl chloride
RCRA	*Resource Conservation and Recovery Act of 1976*
ROD	Record of Decision
SST	single-shell tank
SWB	solid waste box
TRU	transuranic [waste]
TRUM	transuranic mixed [waste]
TWRS	Tank Waste Remediation System
WAC	Washington Administrative Code
WIPP	Waste Isolation Pilot Plant
WIPP Act 2-4	*Waste Isolation Pilot Plant Land Withdrawal Act*
WTP	Waste Treatment Plant
yd^3	cubic yard
°C	degrees Celsius
°F	degrees Fahrenheit

1.0 INTRODUCTION

The Record of Decision (ROD) (62 FR 8693) for the *Tank Waste Remediation System (TWRS) Environmental Impact Statement* (EIS) (DOE/EIS-0189) stated, "The Final EIS evaluates alternatives for the management and disposal of mixed, radioactive, and hazardous waste currently stored or projected to be stored in 177 underground storage tanks and approximately 60 active and inactive miscellaneous underground storage tanks associated with the Hanford Site's tank farm operations….." The ROD selected the Phased Implementation alternative. This alternative would consist of two phases. Phase I activities would last for approximately 10 years. Some of the activities would include: construct demonstration-scale facilities, install and operate tank retrieval systems to retrieve selected waste, perform separations, and transport low-activity and high-level wastes to onsite interim storage facilities.

In presenting the selected alternative the ROD stated, "The Phased Implementation alternative was selected because it provides a balance among short- and long-term environmental impacts, meets all regulatory requirements, addresses the technical uncertainties associated with remediation, and provides the flexibility necessary to accommodate future changes in the remediation plans in response to new information and technology development" (62 *Federal Register* [FR] 8693). In describing the selected alternative the ROD goes on to state, "While carrying out this decision, DOE will continually evaluate new information relative to the tank waste remediation program." The ROD further stated, "…The U. S. Department of Energy (DOE) will obtain additional information on the effectiveness of retrieval technologies, characteristics of the tank wastes, effectiveness of waste separation and immobilization techniques, and more definitive data on the costs of retrieval, separation, and immobilization of the waste" (62 FR 8693). One of the advantages of the Phased Implementation alternative is that the separation processes would reduce the volume of high-level waste (HLW), permanently isolating the waste from humans and the environment by disposing of the bulk of the radionuclides offsite in a national geologic repository (62 FR 8693).

DOE has continued to evaluate new and existing information related to waste characteristics and treatment technologies (e.g., DOE/EIS-0189, SA2; RPP-13678). DOE has identified approximately 11,700 cubic meters (m^3) (3.1 million gal) of transuranic mixed waste in storage in the tank farm system. Approximately 5,500 cubic meters (m^3) (1.5 million gal [Mgal]) has been identified as contact handled-transuranic mixed (CH-TRUM) waste. The CH-TRUM waste is stored in 11 single-shell tanks (SSTs). Through this review, DOE has determined that the CH-TRUM waste can be retrieved, packaged, characterized, certified, and temporarily stored in accordance with waste acceptance criteria at an interim facility pending decisions on final disposition of the waste in the geologic repository at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. Retrieval and packaging of this waste could accelerate the remediation schedule and may reduce the loading on the Waste Treatment Plant (WTP).

WIPP is currently not permitted to receive RH-TRUM. For the approximately 6,200 m^3 (1.6 million gal) of remote handled-transuranic mixed (RH-TRUM) waste contained in 6 SSTs and 4 double-shell tanks (DSTs), DOE will continue to review and evaluate options that would potentially lead to the early retrieval and processing of this RH-TRUM waste. However, it is not a part of this analysis, but it is anticipated that this will be addressed in future NEPA documentation.

Transuranic waste is defined in the Waste Isolation Pilot Plant Land Withdrawal Act as "waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for a (A) high-level radioactive waste; (B) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with Part 61 of Title 10, Code of Federal Regulations." Mixed waste contains both a radioactive component (e.g., transuranic waste) subject to regulation by DOE under the *Atomic Energy Act of 1954*, as amended, and other authorities, and a hazardous component subject to regulation under the *Resource Conservation and Recovery Act of 1976*, as amended, (RCRA) and applicable state laws (e.g., the Washington State *Hazardous Waste Management Act*, as amended) and their implementing regulations.

The proposed action would accelerate DOE's cleanup strategy of reducing risk while protecting human health, safety, and the environment. The proposed action would retrieve approximately 5,500 m^3 (approximately 1.5 Mgal) of CH-TRUM currently stored in tanks that would otherwise not be scheduled for retrieval and treatment until after calendar year 2022 (RPP-8554). The proposed action is considerably smaller than the demonstration-scale scope of the Phased Implementation alternative selected in the TWRS EIS ROD. The volume of waste to be retrieved and packaged is also a small portion of tank waste to be treated.

Consistent with the tank waste treatment activities described under the Phased Implementation alternative, the proposed action would allow the dewatered TRUM waste to be directly sent to WIPP.

1.1 PURPOSE OF THIS SUPPLEMENT ANALYSIS

The purpose of this Supplement Analysis is to determine whether additional *National Environmental Policy Act* (NEPA) analysis is required pursuant to 10 CFR 1021.314(c) before DOE undertakes the proposed action, or whether the proposed action falls within the scope of the TWRS EIS and ROD.

2.0 DESCRIPTION OF PROPOSED ACTION

DOE is proposing to construct and operate one or two CH-TRUM treatment/packaging units (Units), and to provide for onsite interim storage of the packaged waste. The Units would process tank waste retrieved from up to 11 SSTs in the 241-B and 241-T Tank Farms containing approximately 5,500 m^3 (approximately 1.5 Mgal) of CH-TRUM (DOE/ORP-2003-07) in accordance with applicable waste acceptance criteria. The proposed action consists of one or two processing and packaging systems that would receive, dewater, and package the waste for storage at onsite permitted storage facilities. Following construction offsite, the Unit(s) would be transported, set up, and operated adjacent to the 241-B Tank Farm and adjacent to the 241-T Tank Farm. It is the intent of DOE to temporarily store the packaged CH-TRUM at existing facilities or, if adequate existing storage is not available when required, at a new interim storage facility on the Hanford Site pending final disposal at the WIPP in Carlsbad, New Mexico. A conceptual process flow diagram for the proposed action is included in Appendix A, Figure A-1.

2.1 SITING, CONSTRUCTION AND PERMITTING

For operations, Units would be located north and adjacent to the 241-T Tank Farm in the 200 West Area and north and adjacent to the 241-B Tank Farm in the 200 East Area of the Hanford Site Central Plateau. For both farms it is anticipated that the tank farm fence line would be extended to include the Units. The locations where these facilities would be sited are in already disturbed areas designated for industrial use in the *Final Hanford Comprehensive Land Use Plan EIS* (DOE/EIS-0222F). A general overview of the Hanford Site is depicted in Appendix A, Figure A-2.

The facilities would comply with siting criteria as required under WAC 173-303-282.

Construction would be completed by the end of fiscal year (FY) 2004, followed by start-up and operations at the beginning of FY 2005 (i.e., October 2004). Operations would continue through the end of FY 2006, or approximately 24 months of operation (DOE/ORP-2003-07). Standard construction practices to minimize the impact to the environment would be utilized.

The Washington State Department of Ecology would require DOE to obtain a RCRA permit to construct and operate these Units (*Washington Administrative Code* [WAC] 173-303-800). The proposed Units meet the definition of a Treatment, Storage, and Disposal facility pursuant to WAC 173-303-040. The proposed action will be executed consistent with applicable laws and regulations.

2.2 WASTE RETRIEVAL AND TRANSFER

Tank waste from the designated tanks would be retrieved as described in the TWRS EIS and sent to the Units for processing. The retrieval process would not introduce substantial volumes of new liquids into the tanks (DOE/ORP-2003-06). The transfer of the retrieved waste would be consistent with the description in the TWRS EIS which requires waste retrieval and transfer lines to be double-walled (e.g., hose-in-hose) pipelines (DOE/EIS-0189, page 3-63). Secondary containment is required both under RCRA and WAC (DOE/EIS-0189, Appendix B, page B-19).

2.3 SEPARATIONS AND PROCESSING, INCLUDING SECONDARY WASTE STREAMS

The proposed action would utilize a solid/liquid separations technology to dewater the retrieved waste prior to packaging (DOE/ORP-2003-07). The separation systems would operate within cargo boxes with dimensions measuring approximately 3.7 m by 3.7 m by 12.1m (12 by 12 by 40 feet). Up to two Units would be constructed offsite and transported by truck onto the Hanford Site. One Unit would be located in the 200 East Area in the vicinity of the 241-B Tank Farm to process and package retrieved CH-TRUM from the four 241-B-200 series tanks. Upon completion of waste packaging at the 241-B Tank Farm, that Unit, along with possibly a second Unit, would be located in the vicinity of the 241-T Tank Farm. The Unit(s) would process and package retrieved CH-TRUM from the four 241-T-200 series tanks, 241-T-104, 241-T-110 and 241-T-111.

The total footprint of the two Units at the 241-B and the 241-T Tank Farms would be approximately 885 square meters (m^2) (9,600 square feet (ft^2)) for each Unit (0.1 hectares or 0.25 acres). The total estimated quantity of waste from the tanks proposed to be processed by these systems is 5,500 m^3 (approximately 1.5 Mgal) (DOE/ORP-2003-02). Based on a packaging throughput of approximately 10.9 m^3 per day (2,880 gal/day) and a total operating efficiency of approximately 50%, waste processing would require approximately 24 months to complete (DOE/ORP-2003-07).

The Unit(s) would route tank wastes through a solid/liquid separations dewatering system. The dewatered solids would be mixed with sorbent to prevent free liquid formation. Secondary containment would be integrated into specific components of the Unit(s) to prevent accidental releases to the environment. The Unit(s) would be constructed to minimize the impacts to human health and the environment during operation and to be consistent with the criteria of WAC 173-303.

Liquid effluent generated from the separations process would be reused within the retrieval equipment to prevent pipeline plugging during waste slurry conveyance and initially to charge the retrieval system. Remaining liquid effluent would be characterized and transported via container truck to onsite liquid effluent treatment facilities or stabilized for onsite disposal as a secondary waste. The total volume of liquid generated from dewatering and the handling of the liquid waste stream is not yet defined and depends upon the specific liquid content in each tank, the liquid content and physical characteristics of the waste sludge, and the efficiency of the dewatering system. The liquid waste profiling process described for the Effluent Treatment Facility (ETF) waste acceptance criteria would be used as the basis for acceptance of the secondary liquid effluent streams.

The proposed CH-TRUM dewatering process would not produce any combustion offgas. The Unit(s) would have an active ventilation system to maintain both a negative pressure and airflow in the area housing the processing systems that would be routed through redundant high-efficiency particulate air (HEPA) filters before being discharged to the atmosphere (DOE/ORP-2003-07). The proposed air-handling system would provide the necessary engineering controls to comply with the regulated parameters of a notice of construction air emissions permit. An emergency back-up diesel-electric generator would be housed at the facility. Air emissions from the generator are anticipated to be minimal because the generator would have emission controls and would only be operated during power outages and for approximately one hour monthly for testing and maintenance. It is not anticipated that air emissions discharged from these Unit(s) would result in any degradation of air quality.

2.4 PACKAGING

After dewatering, the solid sludge-adsorbent mixture would be packaged in standard waste boxes (SWB) or 55-gal drums. The specification of the SWB is presented in Table 2-1.

Table 2-1. Standard Waste Box Specifications

Box Type: Suitable for storage/disposal and transport of CH-TRUM.	SWB that is qualified as a Type A packaging per DOT Specification 7A (49 CFR 178.350) and meeting the following applicable requirements: 49 CFR 173. 24 Standard Requirements 49 CFR 173.411 General Design Requirements 49 CFR 173.412 Additional Requirements for Type A packages 49 CFR 173. 465 Type A packaging test (water spray, free drop, compression, and penetration
External Dimensions, m (in)	Height: 0.94 (37) Width: 1.38 (54.5) Length: 1.80 (71)
Weight, kg (lb)	Empty: 290 (640) Maximum Gross: 1,815 (4000)
Construction Material	Sides, tops, ends, bottom: 10-gauge, ASTM A569 low carbon hot rolled steel.
Volume	1612 L (426 gal)

Source: DOE/WIPP-02-3122.

Each Unit would have a package handling system that would remotely fill containers by gravity, place a removable lid to allow inspection at a later time, and permit decontamination of the outer container surface (DOE/ORP-2003-07).

2.5 ONSITE STORAGE

Once packaged, the decontaminated and sealed CH-TRUM containers would be stored temporarily at existing above ground permitted onsite facilities (e.g., Central Waste Complex [CWC], see DOE/EIS-0113). If adequate existing storage were not available when required, temporary storage units would be constructed and permitted onsite. Typical temporary compliant storage pads would support a sprung steel frame that would be covered with weather resistant polyvinyl chloride (PVC) impregnated polyester fabric or metal. Up to two storage units (one near the 241-B Tank Farm and one near the 241-T Tank Farm) potentially could be required with a total area of approximately 0.2 hectares (0.5 acres) (DOE/ORP-2003-04 and DOE/ORP-2003-07).

2.6 ORIGIN OF WASTES

Tank waste selected for retrieval, treatment, and eventual shipment to WIPP for disposal is based on requirements as set forth in the *Waste Isolation Pilot Project Land Withdrawal Act* (WIPP Act). The WIPP Act term "transuranic waste" means waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for:

- High-level radioactive waste
- Waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations
- Waste that the Nuclear Regulatory Commission (NRC) has approved for disposal on a case-by-case basis in accordance with part 61 of Title 10, Code of Federal Regulations.

The WIPP Act adopted the definition high-level radioactive waste found in the Nuclear Waste Policy Act. As set forth therein, high-level radioactive waste means:

- The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and
- Other highly radioactive material that the Commission, consistent with existing laws, determines by rule requires permanent isolation.

The WIPP Act also adopted the definition of Spent Nuclear Fuel found in the Nuclear Waste Policy Act. As set forth therein, spent nuclear fuel means:

- Fuel withdrawn from a nuclear reactor following irradiation. The constituent elements of which have not been separated by reprocessing.

DOE is authorized under the WIPP Act to dispose of transuranic waste meeting this definition at the WIPP. Thus for purposes of discussion, if the waste retrieved from the selected tanks is greater than 100 nanocuries and is not high-level radioactive waste, it is TRU waste by definition and is to be disposed of accordingly at WIPP.

Extensive characterization work has been conducted in the past decade on the history, origin, chemical, physical and radiological properties of the tank farm waste. This work was conducted in response to Defense Nuclear Facility Safety Board Recommendation 93-5 and for Hanford Federal Facility Agreement and Consent Order milestone M-44 and resulted in numerous technical publications (RPP-13300, RPP-16129, and RPP-13873). Based on this extensive review, Hanford Site SSTs 241-B-201 through 241-B-204, 241-T-201 through 241-T-204, 241-T-104, 241-T-110, and 241-T-111 are identified as containing CH-TRUM. Table 2-2 summarizes the transuranic mixed (TRUM) waste identified in the Hanford Site tanks and the source of the waste.

Table 2-2. Summary of TRUM Waste Source Material and Volume By Tank

Single-Shell Tanks Containing 224 Building Waste					
Tank	**Handling**	**Volume (kgal)**	**Activity[2] (Ci)**	**Waste Types[1]**	**Series Volume Totals (kgal)**
241-B-201	Contact	30	700	224/DW1	284
241-B-202	Contact	29	938	224/DW1	
241-B-203	Contact	51	119	224/DW1	
241-B-204	Contact	50	714	224/DW1	
241-T-201	Contact	29	161	224	
241-T-202	Contact	21	31	224	
241-T-203	Contact	37	64	224	
241-T-204	Contact	37	52	224	
Single-Shell Tanks Containing 224 Building Waste and 2nd Decontamination Cycle Waste					
Tank	**Handling**	**Volume (kgal)**	**Activity[2] (Ci)**	**Waste Types[1]**	**Series Totals (kgal)**
241-T-110	Contact	369	301	224 / 2C	816
241-T-111	Contact	447	19,380	224 / 2C / DW2	
Single-Shell Tanks Containing 1st Decontamination Cycle Waste					
Tank	**Handling**	**Volume (kgal)**	**Activity[2] (Ci)**	**Waste Types[1]**	**Series Totals (kgal)**
241-T-104	Contact	317	7,687	1C / CW	317

1 – Waste types are described as follows:

Waste Type	Description
1C	First Pu Decontamination Cycle Waste from Bismuth Phosphate Plant
2C	Second Pu Decontamination Cycle Waste from Bismuth Phosphate Plant
224	224-B/T Plutonium Concentration Building Waste
CW	Coating Removal Waste from Dissolution of the Coating on Irradiated Nuclear Fuel Elements
DW1	Equipment decontamination waste from 221-B Plant
DW2	Equipment decontamination waste from 221-T-Plant

2 - Source: RPP-7625. Includes 46 radionuclides: fission products, decay daughters, uranium isotopes, and TRU isotopes.

2.6.1 B-200 and T-200 Series Tanks

Assay results from physical samples taken of the wastes stored in Tanks 241-B-201 through 241-B-204 and 241-T-201 through 241-T-204 show that the waste contains more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years (RPP-13300).

The waste from these tanks originated from batch type chemical precipitation process activities (not solvent extraction processes) conducted from October 1946 through June 1952 in the 224-B and 224-T concentration buildings. Tanks 241-B-201 through 241-B-204 also received miscellaneous flush solutions from deactivation activities conducted at the 221-B bismuth phosphate plant and 224-B plutonium product concentration building. No other types of waste were transferred to these tanks (RPP-13300). The 224-B and 224-T plutonium product concentration buildings received plutonium nitrate product solution from the 221-B and 221-T bismuth phosphate plants. The 224-B and 224-T building concentrated the plutonium product. The product concentrated in these buildings was plutonium nitrate solution, which is not spent fuel nor liquid waste produced directly in reprocessing nor solid material derived from such liquid waste. Therefore, the waste from these buildings transferred to the 241-B and 241-T 200 series tanks is not high-level waste.

2.6.2 T-100 Series Tanks

Assay results from physical samples taken of the wastes stored in Tanks 241-T-104, 241-T-110, and 241-T-111 indicate that the treated and packaged waste will contain more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years (RPP-16129 and RPP-13873).

The waste from Tanks 241-T-110 and 241-T-111 originated from batch type chemical precipitation process activities (not solvent extraction processes) conducted from 1945 through 1956 in the 221-T buildings and also from the 224-T building plutonium product concentration processes (RPP-13873). The 224-T waste is discussed Section 2.6.1.

The 221-T neutralized waste was known as the second decontamination cycle waste. The second decontamination cycle received "product (i.e. plutonium) precipitation" from the preceding first decontamination cycle. The "plutonium product precipitation" was a plutoniun and bismuth precipitate, which is not spent fuel nor liquid waste produced directly in reprocessing nor solid material derived from such liquid waste. Therefore, the waste transferred to Tanks T-110 and T-111 is not high-level waste.

Tank 241-T-104 was used to periodically receive first decontamination cycle waste and coating removal waste (dissolved hulls from uranium fuel) from the 221-T Bismuth Phosphate Plant from 11 March 1946 through 19 October 1956. No other waste types were received and stored in this tank (RPP-16129). Similar to the waste discussed above for Tanks 241-T-110 and 241-T-111, the "product precipitation" from this predecessor first decontamination cycle waste was also a plutonium and bismuth precipitate, which is not spent fuel nor liquid waste produced directly in reprocessing nor solid material derived from such liquid waste. Therefore, the waste transferred to Tank 241-T-104 is not high-level waste. DOE has a high level of confidence that the waste in these three tanks will be characterized as CH-TRUM following the completion of the on-going review of historic and new information.

2.7 CERTIFICATION PROCESS FOR DISPOSA AT WIPP

Waste designated for treatment and packaging through the proposed Unit(s) will be verified as CH-TRUM waste prior to processing, to ensure that the waste can be disposed at WIPP.

Additional requirements must be met prior to disposal of TRUM at WIPP. As a generator of transuranic (TRU) and TRU mixed waste destined for disposal at the WIPP, the Hanford Site must ensure that its TRU waste meets the requirements of DOE O 435.1, *Radioactive Waste Management* and DOE/WIPP-02-3122 *Contact handled (CH) Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*. Contact handled transuranic waste acceptance criteria requirements are derived from the *WIPP Technical Safety Requirements, WIPP Safety Analysis Report, TRUPACT-I-Certificate of Compliance, WIPP Land Withdrawal Act, WIPP Hazardous Waste Facility Permit* and Title 40 *Code of Federal Regulations* 191/194 "Compliance Certification Decision."

The contact handled transuranic (CH-TRU) waste acceptance criteria establish the specific physical, chemical, radiological, and packaging criteria for acceptance of defense TRU waste shipments at WIPP. The CH-TRU waste acceptance criteria also require that participating DOE TRU waste generator/treatment/storage sites produce site specific documents, including a certification plan that describes their program for managing TRU waste and TRU waste shipments before transferring waste to WIPP. In addition, the quality assurance program document specifies the need to develop a quality assurance plan that meets all applicable requirements of the quality assurance program document.

The proposed treatment and packaging system would produce a packaged waste that is expected to be compliant with the waste acceptance criteria for disposal of CH-TRUM waste at the WIPP. The final certification of the waste for disposal at WIPP cannot be completed until the waste has been treated, packaged, placed in interim storage, and the required certification processes completed.

3.0 TWRS EIS ALTERNATIVES/TECHNOLOGIES AND FACILITIES EVALUATED IN THE TWRS EIS

The following section presents a discussion of the alternatives, technologies, and facilities that were evaluated in the TWRS EIS, and the Phased Implementation alternative selected in the TWRS EIS ROD.

3.1 TWRS EIS ALTERNATIVES AND TECHNOLOGIES

The TWRS EIS evaluated alternatives for the safe management and disposal of the radioactive, mixed, and hazardous waste currently stored or projected to be stored in the Hanford Site tank farm system. Technologies were identified and constructed into alternatives that would achieve: tank farm waste retrieval, conditioning, pretreatment, and immobilization; storage of immobilized high-activity waste; and storage/disposal of immobilized low-activity waste. The total tank waste inventory included an integrated inventory in all 177 tanks that was being managed as if it were high-level, mixed waste.

In compliance with NEPA and DOE guidance, representative alternatives were developed to support the comparison of choices across a range of reasonable alternatives to DOE's proposed action. The alternatives consisted of *in situ, ex situ,* and combinations of *in situ* and *ex situ* treatment and immobilization technologies. The alternatives presented in the TWRS EIS were chosen to be representative of the many possible variations of the alternatives. A more comprehensive list of technologies was screened and the choices among these technologies are presented in a detailed analysis in Appendix B of the TWRS EIS (DOE/EIS-0189).

The facilities needed to implement the technologies were to be located in the 200 East Area and 200 West Area of the Hanford Site Central Plateau, and ranged from small-scale tank-side activities to complex large-scale activities.

The tank waste alternatives addressed in the TWRS EIS included:

- No Action
- Long-term Management
- *In Situ* Fill and Cap
- *In Situ* Vitrification
- *Ex Situ* Intermediate Separations
- *Ex Situ* No Separations
- *Ex Situ* Extensive Separations
- *Ex Situ/In Situ* Combination 1
- *Ex Situ/In Situ* Combination 2
- Phased Implementation (preferred alternative selected in the ROD).

3.1.1 No Action and Long-Term Management Alternatives

The No Action and Long-Term Management alternatives provided for continued storage and monitoring of tank waste. The SST waste would have minimal free liquid remaining and would be left in place and monitored.

3.1.2 *In Situ* Fill and Cap and *In Situ* Vitrification

The *In Situ* Fill and Cap alternative would remove liquid from the SSTs prior to filling the tanks with gravel and capping the tanks using the Hanford Barrier. The resultant waste form would comprise tank solids (sludges and saltcake covered with gravel). The *In Situ* Vitrification alternative is similar to *In Situ* Fill and Cap alternative except that the vitrification process would produce a glass waste form in the tanks. These *in situ* alternatives would involve siting facilities such as retrieval equipment for removal of liquids, filling equipment, and vitrification equipment including an extensive emissions containment structure adjacent to each of the existing tank farms.

3.1.3 *Ex Situ* Alternatives

The *ex situ* alternatives evaluated in the TWRS EIS can be summarized in terms of the following actions:

- Waste retrieval and transfer
- Separations and treatment
- Waste processing and immobilization
- Packaging and interim storage prior to disposal.

Within each of these actions, DOE identified options and from these options representative technologies and facilities were used to best construct the individual alternatives evaluated. The degree of separations considered in the alternatives included: no separations, intermediate separations, and extensive separations. In developing and screening alternatives that were dropped from further consideration, one of the principal considerations was whether the alternative would produce a final waste package that would meet waste acceptance criteria for disposal. Those that did not meet waste acceptance criteria were determined to not be acceptable.

The facilities for *ex situ* alternatives would involve activities in both the 200 East and 200 West Areas, with the siting of the major treatment facilities in the 200 East Area.

3.1.3.1 Waste Retrieval and Transfer

Many different technologies to retrieve the tank waste were identified and evaluated (WHC-EP-0616). The function of a retrieval technology is to remove the waste from the underground storage tanks in a safe, effective, and efficient manner that meets defined retrieval criteria for the volume of waste retrieved. Several retrieval technologies were identified in the TWRS EIS to retrieve tank waste during any of the *ex situ* alternatives. These included hydraulic jet, (also called hydraulic sluicing or sluicing), mechanical retrieval, robotic crawler, robotic arm-based retrieval systems and pneumatic retrieval (DOE/EIS-0189, pages 3-60, B-65, B-89, and B-183). The Phased Implementation alternative as selected in the ROD does not describe a specific retrieval technology but references the system described for the Ex Situ Intermediate Separation alternative that included both hydraulic sluicing and robotic arm-based retrieval systems.

3.1.3.2 Separations and Treatment

The separations processes were part of the pretreatment technologies and the WTP. Separations would consist of performing solid/liquid separations followed by additional chemical processing steps on the liquid stream to separate a low-activity waste (LAW) stream from the HLW. Separations would remove HLW constituents to the extent required to meet specifications for the immobilized LAW (ILAW). This separation would reduce the volume of HLW to be immobilized by transferring most of the chemicals to the LAW and leaving most of the radioactivity in the HLW. Pretreatment solid/liquid separation could be performed either in tank or outside of the tank and included technologies such as cross-flow filters and centrifuges.

3.1.3.3 Waste Processing and Immobilization

Additional solid/liquid separation technologies were included as part of the HLW vitrification process following pretreatment that could use centrifuges and evaporators. In order to compare the alternatives for both the high- and low-activity fractions of the waste, vitrification was used as a representative technology to conduct the EIS analysis. In addition, calcining was evaluated as an alternative to HLW vitrification in the *Ex Situ* No Separations alternative.

3.1.3.4 Packaging and Interim Storage

The scope of the *ex situ* alternatives evaluated in the TWRS EIS included processing the tank waste into either a borosilicate glass or non-stabilized, calcined waste form that would meet the waste acceptance criteria for disposal. The immobilized HLW (IHLW) would be placed into canisters, and into over-pack containers for handling and transport. New onsite interim storage facilities would be constructed under each *ex situ* alternative to receive the HLW canisters before being shipped to the potential geologic repository. The size of proposed new onsite interim storage facilities evaluated in the TWRS EIS for each *ex situ* alternative was sufficient to store all of the IHLW produced above ground; the area depends on the volume of waste generated under the specific *ex situ* alternative.

3.1.4 Separations Alternatives

The Phased Implementation, *Ex Situ* Intermediate Separations, and *Ex Situ* Extensive Separations alternatives included a range of technologies for solid/liquid separation and separating selected chemical constituents as part of the pretreatment and HLW vitrification processes. Separations processes are typically designed to remove specific constituents from material flow streams within a processing plant while at the same time, concentrating constituents. These processes fall into the general categories of chemical, physical, or a combination of chemical and physical and can be carried out in either a continuous or batch process. Cross-flow filters, centrifuges, and evaporators are all identified as representative technologies for solid/liquid separation

(DOE/EIS-0189, pages 3-65, B-68, 3-72, B-71, B-80, B-87, B-93, B-102, B-118 and B-120). The process of solid/liquid separations is described as part of the process that would follow sludge washing and enhanced sludge washing in the pretreatment phase.

3.1.4.1 *Ex Situ* Intermediate Separations Alternative

Under the *Ex Situ* Intermediate Separations alternative, as much of the tank waste as practicable would be retrieved from each tank. This was assumed to be a minimum of 99% of the waste volume in each tank. The recovered waste stream then would be separated into HLW and LAW streams for vitrification in separate facilities. Separating the waste streams into HLW and LAW fractions would allow for treatment and disposal methods best suited to the waste types and requirements.

The HLW stream would be vitrified and placed in canisters for disposal at the potential geologic repository. The LAW stream would be vitrified and quenched into glass cullet and placed into onsite near-surface vaults for retrievable disposal. Retrievable disposal means that the design of the disposal facility would be for permanent disposal, but the waste could be retrieved from the disposal facility within a certain amount of time (assumed to be approximately 50 years) if a different disposal method was determined to be necessary.

Two vitrification facilities, one for HLW and one for LAW, as well as the shared support facilities, would be constructed. The HLW facility would be designed to produce 20 metric tons (22 tons) of IHLW glass per day. The LAW facility would produce 200 metric tons (220 tons) of ILAW glass per day. The vitrification facilities would be designed to treat all of the tank waste during a 21-year operating period (DOE/EIS-0189).

The following major operations would be implemented to treat waste under the *Ex Situ* Intermediate Separations alternative:

- Retrieve the waste
- Pre-treat the waste by sludge washing and enhanced sludge washing followed by separation of the liquid and solids
- Remove cesium from the liquid waste stream and transfer cesium to the HLW vitrification stream
- Transfer liquid and dissolved solids to the LAW vitrification facility
- Transfer solids (as a slurry) to the HLW vitrification facility
- Vitrify both HLW and LAW
- Pour the molten HLW into canisters
- Package the canisters into Hanford Multi-Purpose Canisters for interim storage and shipment
- Place the vitrified LAW in disposal containers
- Place the LAW disposal containers in onsite near-surface disposal vaults
- Ship the HLW canisters to the potential geologic repository.

Following the treatment phase, the processing facilities and storage tanks would be decontaminated and decommissioned. Contaminated materials and equipment from the processing facilities would be disposed of onsite in the low-level or mixed low-level waste burial grounds. Uncontaminated materials and equipment from the processing facility would be entombed in place. Closure activities would be performed on the LAW disposal vaults and tank farms.

The TWRS EIS for the *Ex Situ* Intermediate Separation Alternative, which is the basis for the Phased Implementation alternative selected in the ROD, describes tank waste processing and interim storage prior to final treatment. Following "receiving the waste from the separations operations, the waste would be sent to lag storage tanks within the vitrification facilities where it would be characterized before entering the melter feed section in either the HLW or LAW facility. In this area, the waste would be sampled, evaporated to remove excess water, and provided as a concentrated liquid or slurry feed stream to the melter" (DOE/EIS-0189, page 3-65).

3.1.4.2 *Ex Situ* Extensive Separations Alternative

The *Ex Situ* Extensive Separations alternative was similar to the *Ex Situ* Intermediate Separations alternative but utilized additional complex chemical separations processes to separate the HLW components from the recovered tank waste. The purpose of the *Ex Situ* Extensive Separations alternative was to process tank waste to produce a minimum number of vitrified HLW canisters, and to reduce the curie loading of LAW to NRC Class A standards or as low as reasonably achievable, whichever is lower (DOE/EIS-0189, Appendix B, Section 3.7.1, page B-113).

The *Ex Situ* Extensive Separations alternative described many but not all of the techniques that potentially could be used to extract specific components from the waste. Other concepts were proposed that would potentially enhance the separation of other HLW components. However, the TWRS EIS concluded that adding other processes to the flowsheet would have a negligible effect on the impacts of this alternative. The *Ex Situ* Extensive Separations alternative would use centrifuges for separating liquid and solids in various stages of processing. Several stages of liquid/solid separation would be used because of supernate entrainment in the solids.

Under the *Ex Situ* Extensive Separations alternative, the waste would be recovered from the tanks and a complex series of processing steps performed during pretreatment to separate HLW from LAW. A series of chemical processing operations would be used to separate HLW elements such as U, Pu, Np, Th, Am, lanthanide- (rare earth metals-) series elements, Cs, Sr, and Tc from the waste. Under this alternative, the activities to be performed following pretreatment would be very similar to those included in the *Ex Situ* Intermediate Separations alternative. The HLW would be vitrified, stored onsite, and disposed of at the potential geologic repository. The LAW would be vitrified and placed in an onsite disposal facility at the Hanford Site. This alternative would create a smaller volume of HLW being sent to the geologic repository. The resulting LAW requiring onsite disposal would be approximately the same volume but would have a lower radionuclide concentration than the *Ex Situ* Intermediate Separations alternative DOE/EIS-0189, Appendix B).

3.1.4.3 *Ex Situ* No Separations Alternative

The retrieved waste from all tanks in *Ex Situ* No Separations alternative would either be vitrified or calcined and placed into containers for disposal at the potential geologic repository. All of the tank waste would be HLW and there would be no onsite LAW disposal of tank waste associated with this alternative.

This alternative evaluated the construction of a single processing facility that would produce between 200 metric tons (220 tons) of glass per day or 92 metric tons of calcined briquettes per day. This alternative would produce the largest number of waste canisters and require the largest area for a new interim storage facility.

3.1.5 *Ex Situ/In Situ* Combination Alternatives

The combination alternatives would retrieve between 25 and 50 percent of the tank waste and the balance, 50 to 75 percent of the waste solids, would remain in the tanks that would be filled with gravel and capped. The retrieved waste would be processed as described for the *Ex Situ* Intermediate Separations alternative.

3.1.6 The Phased Implementation Alternative

In the TWRS EIS, DOE had identified two approaches to implementing the alternatives: Full-Scale Implementation and Phased Implementation. Under Full-Scale Implementation, full-scale facilities would be designed, constructed, and operated to remediate the tank waste. Under Phased Implementation, demonstration-scale facilities would be designed, built, and operated to prove that the remediation concept would function before constructing and operating a full-scale facility. All *ex situ* alternatives involved the application of technologies that had not been previously applied to tank waste. The Phased Implementation approach was considered to have the potential to prove that the technologies work before committing large capital expenditures that could not be recovered. It was concluded in the TWRS EIS that a phased approach could be developed for any of the alternatives, but not all phased approaches would involve changes to environmental impacts from the full-scale approach (DOE/EIS-0189).

The Phased Implementation alternative separations technologies would be based on "waste product specifications, which would set the requirements for the physical properties, chemistry, radionuclide content, and volume of immobilized LAW and HLW. During the demonstration phase, different types of waste would be processed to demonstrate process capability for easy, moderate and difficult-to-process waste. For purposes of this analysis, the technologies employed would be assumed to be similar to those described for the other ex situ alternatives" (DOE/EIS-0189, pages 3-95).

The Phased Implementation alternative was included in the TWRS EIS to bound the impacts for the *ex situ* alternatives (DOE/EIS-0189, page 3-26). The alternative was based on the features of the *Ex Situ* Intermediate and Extensive Separations alternative (DOE/EIS-0189, Appendix B, page B-140). It incorporated retrieval, treatment, and storage strategies that provided for the application of technologies and intended to reach a balance between separation processes, volumes of immobilized waste produced, costs, and environmental impacts.

3.2 WASTE INVENTORIES AND FORMS CONSIDERED IN TWRS EIS

The TWRS EIS waste inventory consisted of tank waste, Cs and Sr capsules, miscellaneous underground storage tanks, and anticipated future tank waste additions (DOE/EIS-0189, page 1-1). The major component by volume of the overall waste is the tank waste inventory. Waste in the SSTs consists of liquid, sludge, and saltcake. The tank waste inventory at the time the TWRS EIS was prepared accounted for approximately 70 percent of the radiological activity of the four waste groups (DOE/EIS-0189, Appendix A). The tank waste inventory data provided an estimate of the overall chemical mass and radioactivity level for the SSTs and double-shell tanks (DST). The volume of tank waste in the SSTs was approximately 135,000,000 liters (36,100,000 gal) (DOE/EIS-0189, page 1-7). Over the years, much of the liquid stored in the SSTs has been transferred to a permitted evaporator or has been pumped to DSTs.

Appendix A of the TWRS EIS presents a discussion of how different areas utilized the waste inventory to ensure that impacts were neither overstated nor understated in the EIS. The areas included engineering (retrieval and processing), groundwater exposure, air emissions, exposure risks, exposure from remediation accidents, exposure from transportation accidents, and post-remediation exposure.

The engineering functions used the inventory data as the basis for conservative estimates of releases during retrieval and subsequent processing; the dissolution of residual material remaining in the tanks; the effects of blending; and composition of the volume of high-level waste forms. Releases from the tanks during ongoing operations were obtained directly from analytical data with no additional conservative factors applied.

The TWRS EIS considered the DSTs and SSTs as representing 177 potential sources of contaminant release. For purposes of groundwater modeling these sources were grouped together into source areas (tank groupings). These groupings were based upon tank configurations, tank proximity, and groundwater flow direction. The inventory from the individual tank farms was combined to create a waste inventory by source area. Eight tank groupings were created: three in the 200 West Area and five in the 200 East Area. The 241-T Tank Farm was included in the source area that included a total of 40 SSTs and included tanks from the TX and TY Tank Farms. The 241-B Tank Farm was included in the source area that included a total of 40 SSTs including tanks from the 241-BX and 241-BY Tank Farms. For groundwater modeling the inventories generated by the engineering function were used without change. To ensure that the groundwater impacts were not understated, conservative distribution coefficients were used.

The air modeling inputs were the routine emissions from the tank farms and emissions from the remediation facilities. The analytical results by direct measurement from ongoing current operations were used to predict the concentrations of contaminant that would be released from the tank farms. Emissions from remediation facilities were determined to be directly related to the tank inventories because their origin is the tank contents being processed. Because the models that predicted air contaminants concentrations were felt to be conservative, the calculated emissions from the remediation facilities were used without further modification.

Inventory data were used to calculate risks from routine exposures and accidents during remediation and post-remediation activities. The assessment of risk from routine exposures during remediation used the same inputs as the air modeling function. As noted above, the analytical results from ongoing operations of the tank farms and calculated emissions from the remediation facilities were used. Because the results of the groundwater modeling were used as inputs to the assessment of risk during post-remediation, the conservativism employed by groundwater modeling was directly reflected in the risk assessment modeling. Consequently, further conservative assumptions concerning the contaminant concentrations were not postulated.

The accepted practice for assessing risk from accidents during remediation combines the overall inventories of contaminants to form the contents of a "super tank." The super tank inventory is intended to present the most conservative impacts from an accident so that the effects of the accident will not be underestimated. The super tank concentration of a chemical or radionuclide is the highest reported value that has been measured or calculated for that substance. This means that for assessing the impacts of an accident, a uniform inventory is used for every accident scenario. For assessment of impacts, the use of this inventory data provides an equitable and bounding comparison of impacts. The development of a super tank was a unique use of the tank inventory in the TWRS EIS and was intended to ensure that the consequences of accidents invariably involve exposures to the same quantities of contaminants. This concept was used solely for the accident analysis in the TWRS EIS. The assessment of risks during post-remediation and as consequences of transportation accidents used the inventory of the waste form and the inventory provided by the engineering functions.

3.2.1 Waste Form

Waste form and the container it resided in were not evaluated in the TWRS EIS relative to container performance. Waste form and associated containers ranged from sludges left in tanks, sludges in tanks mixed with gravel, sludges left in tanks and grouted, waste vitrified in tanks, waste vitrified and placed in canisters, waste grouted and placed in canisters or vaults, and waste calcined and placed in canisters. Depending upon the alternative, the impact analysis of the TWRS EIS considered different forms of the waste. The No Action and Long-Term Management alternatives provided for continued storage and monitoring of tank waste. The SST waste would have minimal free liquid remaining and would be left in place and monitored (DOE/EIS-0189, page 3-41 and 3-44). The pumpable liquid would be removed and the remaining SST waste would consist primarily of sludges and saltcake with some interstitial liquid.

The *In Situ* Fill and Cap alternative would remove liquid from the SSTs prior to filling the tanks with gravel and capping the tanks. The resultant waste form would be tank solids (sludges and saltcake) covered with gravel. The *In Situ* Vitrification alternative is similar to the *In Situ* Fill and Cap except that the vitrification process would produce a glass waste form in the tanks.

Ex situ alternatives involved the retrieval of liquids and solids from the SSTs. Sludge would be separated into LAW and HLW and depending upon the alternative the waste would be vitrified (Intermediate and Extensive Separations) or possibly calcined (No Separations). "The final form of the calcined waste would be a dry powder material that would be hot processed in a roll-type compactor machine to produce small pellets or briquettes of high density that would be loaded into 10-m^3 (360-cubic foot [ft^3]) canisters, seal welded and then placed into Hanford Multi-Purpose Canisters for interim storage and transport to the potential geologic repository" (DOE/EIS-0189, page 3-74).

Ex Situ/In Situ Combination alternatives would retrieve between 25 and 50 percent of the tank waste and the balance, 50 to 75 percent of the waste solids, would remain in the tanks that would be filled with gravel and capped. The final waste forms would be a combination of sludges left in the tanks filled with gravel and immobilized retrieved waste in the form of glass.

In addition to these waste forms, the TWRS EIS also discussed grouting the retrieved tank wastes (DOE/EIS-0189, page 3-37). Grouting of the LAW was selected as the treatment method in the *Hanford Defense Waste EIS* (DOE/EIS-0113) (DOE/EIS-0189, page 3-37). The TWRS EIS evaluated waste forms that would meet the waste acceptance criteria of the appropriate disposal facility. .

3.3 SECONDARY WASTES

The TWRS EIS assumed that, "Liquid effluent processing for all alternatives would be provided by the secondary radioactive liquid-waste processing system. To be accepted into the effluent treatment facilities, waste must meet specific waste acceptance criteria. It is assumed that the liquid effluent streams generated at the waste processing facilities identified for the various alternatives would meet the waste acceptance criteria for the Liquid Effluent Retention Facility and the Effluent Treatment Facility" (DOE/EIS-0189, page 3-30).

Depending upon the alternative, the offgas systems would involve collection and treatment of the gases before releasing them to the atmosphere. The offgases would contain the reaction products resulting from the thermal destruction of nitrates, nitrites, organic compounds, and some of the more volatile radionuclides contained in the waste. The offgases would undergo substantial treatment before being released to the atmosphere. Specific control equipment used in the treatment of the offgases would quench and cool the offgases, remove radionuclide particulates, and remove nitrogen oxides and sulfur oxides. The design of offgas treatment systems was to ensure that emissions of radionuclides would be below regulatory limits. For the technology used in the Phased Implementation alternative, the probability of a cancer fatality to the maximally exposed individual (MEI) in the general public from exposure to routine offgas emissions would be 3.3E-06 (DOE/EIS-0189, App. B, page B-192).

3.4 PACKAGING

The packaging system for vitrified waste produced in the Phased Implementation alternative would involve a complex system for managing the containers for loading molten glass, including a canister handling system that would remotely fill canisters with molten glass, weld on a lid, and decontaminate the outer canister surface. The final package would have to meet the waste acceptance criteria for disposal. The TWRS EIS also evaluated the option of calcining the HLW into a non-stabilized form and then packaging the material in a canister for interim storage and disposal.

Canister filling of HLW waste would involve moving the empty canister from storage, positioning it under a filling tube, filling the canister with molten glass, transferring the filled canister to the canister weld cell, and welding it shut. A transfer cart would move the sealed canister into the decontamination cell where it would be lifted by crane for decontamination spray followed by a water rinse. The dried canister would be transported to the smear test cell. Canisters that pass the smear test would be moved on to the load-out cell where a crane would place the canister in an overpack container (DOE/EIS-0189, Appendix B, pages B- 102 to103).

3.5 INTERIM STORAGE

Each of the *ex situ* alternatives evaluated in the TWRS EIS included construction of sufficient interim onsite storage capacity to store the entire IHLW product inventory while awaiting shipment to the potential geologic repository (DOE/EIS-0189, page 3-41). Interim storage would consist of an above ground concrete storage pad and placing a concrete shielding cover over each canister. This method of interim storage was used for all *ex situ* alternatives except for Phase I of Phased Implementation which relied on grout vaults and the Canister Storage Building (CSB) for storage.

The range in number of canisters that would be produced and interim stored under the different alternatives would vary widely based upon the amount of separations. The maximum number of IHLW canisters produced requiring interim storage would occur under the No Separation alternative, 29,100 canisters (DOE/EIS-0189, page 3-188). This would equate to 291,000 m^3 for canister space alone based upon a canister size of 10 m^3. The cask pad, as illustrated in Figure B.3.6.1 in the TWRS EIS (DOE/EIS-0189, page B-106), for the *Ex Situ* No Separation alternative has a surface area of approximately 315,870 m^2 (3,400,000 ft^2) or approximately 30 hectare (75 acres). The impacts associated with interim storage of the IHLW waste were assessed for a 50-year period in the TWRS EIS (DOE/EIS-0189, Appendix B, page B-40).

The Phased Implementation alternative as described in the ROD stated that HLW would be stored at either the treatment facilities or in the CSB (62 FR 8693). Supplement Analysis 3 goes on to clarify that, "Adequate interim onsite storage was included to allow for storage of all the vitrified HLW in the event there were delays in opening the geologic repository" (DOE/EIS-0189-SA3, page 2-17). The report goes on to identify new information, "Interim storage of all Phase I and Phase II vitrified HLW would require approximately 11 times the storage capacity of the entire spent fuel CSB. Larger interim storage facilities are being considered, which would reduce the number of additional facilities required" (DOE/EIS-0189-SA3, page 2-17). Supplement Analysis 3 concluded that this new information would not substantially change the impact analysis in the TWRS EIS (DOE/EIS-0189-SA3, page 1-6).

3.6 RELEASES

Retrieval of SST waste under each of the *ex situ* alternatives was assumed to result in the release of 15,000 L (4,000 gal) from each SST to the soils surrounding the tank during retrieval operations. The source term for the release was the super tank inventory. It was also assumed that the contaminant concentrations in the liquids released were at maximum predicted concentrations using the congruent dissolution model. See Volume Four, Section F.2.2.3 for a discussion on the congruent dissolution model. No leakage was assumed to occur from the DSTs during retrieval operations because DSTs have provisions for leak containment and collection. This assumption is based on having 67 known or suspected SSTs that have leaked in the past

(WHC-EP-0182). Most of the SSTs were built in the 1940s and now are about 50 years old. The leakage volume estimate was based on current information from the waste retrieval program and on the assumption that the average leakage from an SST would be one order of magnitude lower than the maximum release estimated for Tank 241-C-106 during sluicing operations. The maximum leak estimated from Tank 241-C-106 during sluicing operations was 150,000 L (40,000 gal). The leak estimate for Tank 241-C-106 assumes that the leak occurs early in the sluicing operation, leak detection devices and controls fail, sluicing operations proceed without these leak detection devices, the leak(s) occur at the bottom of the tank, and the remaining sludge does not plug any leaks (DOE/EA-0933).

The assumption that each of the 149 SSTs leaks 15,000 L (4,000 gal) during retrieval is conservative and provides an upper bound of 2,260,000 L (596,000 gal) on the calculated impacts from tank leakage during retrieval. Total leakage from all SSTs during retrieval operations would be expected to be lower than the bounding values (DOE/EIS-0189, page 3-33 and Appendix B, page B-173).

4.0 TWRS EIS BOUNDING IMPACT ASSESSMENT METHODOLOGIES

This section summarizes the methodology used to identify the potential impacts to the existing environment from implementing the alternatives described in the TWRS EIS. Much of the following discussion represents excerpts from Section 5.0, Environmental Consequence of the TWRS EIS (DOE/EIS-0189).

The environmental components addressed in the TWRS EIS include impacts of each alternative on:

- Geology and soil
- Water resources
- Air quality
- Biological and ecological resources
- Cultural resources
- Socioeconomics
- Land use and land use plans
- Visual resources
- Noise
- Transportation
- Human and ecological health effects
- Potential accidents.

Appendices to the TWRS EIS were prepared to support the more complex impact assessments for:

- Human and ecological health (Volume Three, Appendix D, which supports the discussion of health effects)
- Potential accidents (Volume Four, Appendix E, which supports the discussion of accidents)
- Groundwater quality (Volume Four, Appendix F, which supports the discussion of groundwater)
- Air quality (Volume Five, Appendix G, which supports the discussion of air impacts)
- Socioeconomics (Volume Five, Appendix H, which supports the discussion of socioeconomics).

Each appendix details the data sources, major assumptions, uncertainties, methodology, and results that are summarized in the main body of the TWRS EIS.

4.1 COMPARABILITY OF ENVIRONMENTAL CONSEQUENCES

The proposed action is described under Section 2.0 of this Supplement Analysis. The CH-TRUM tank inventories identified in Section 2.6 were included in the inventory of tank waste provided in Appendix A of the TWRS EIS that were common to all alternatives. The CH-TRUM tank waste to be retrieved and processed in this proposed action is a subset of the TWRS tank waste inventory and does not constitute new inventory; it was accounted for in the impact analysis of all alternatives in the TWRS EIS. The following sections compare the potential impacts of the proposed action to those analyzed in the TWRS EIS and the selected alternative in the ROD. When computer modeling was used to predict the environmental consequences, the same computer model and protocol were used for all alternatives.

4.1.1 Presentation of Remediation and Post-Remediation Analysis

The impacts provided in the TWRS EIS include short-term environmental impacts and the combined impacts of remediation and post-remediation activities, which provide the long-term impacts. Remediation activities are those that would occur during the period from 1996 to 2096 with most impacts occurring during the retrieval, treatment, interim storage and disposal activities which would occur up to 2040. Post-remediation activities would occur for a period of 10,000 years from 2096. To provide an even comparison of the long-term impacts of the alternatives, the EIS considered a representative closure scenario (closure as a landfill) for all tank waste alternatives.

The environmental impacts presented in the TWRS EIS were described, in part, by whether the impacts would be related to the remedial or post-remedial phase of the alternative. The environmental components analyzed in the TWRS EIS that would have their peak impacts during the remedial phase (1996 to 2096, with most impacts from 1996 to 2040) include:

- Geology and soil (except post-remediation changes to topography associated with post remediation actions)
- Air quality (most impacts directly result from routine waste management or treatment emissions)
- Biological and ecological resources (impacts largely related to remediation except post-remediation impacts related to permanent commitment of land to waste disposal)
- Socioeconomics (all impacts associated with the level of remedial activities)
- Visual resources (impacts largely related to remediation except changes to topography associated with post-remediation actions)
- Noise (all impacts associated with the level of remedial activities)
- Transportation (all impacts associated with the level of remedial activities)
- Human and ecological health effects (worker health most impacted during remedial activities)
- Potential accidents (all impacts associated with remedial activities).

Environmental components with peak impacts during the post-remediation phase (2096 to up to 10,000 years in the future) would include:

- Water resources (impacts to groundwater would influence groundwater quality for thousands of years following completion of remediation)
- Human and ecological health effects (health of the general public most impacted by post-remediation groundwater impacts and impacts associated with contact with waste remaining onsite following remediation)
- Land use and land-use plans (permanent commitment of land in the 200 Areas to waste disposal)
- Cultural resources (impacts would be permanent).

The impacts of the proposed action considered in this Supplement Analysis address short-term environmental impacts as defined in the TWRS EIS. Short-term impacts are associated with the 100-year period of institutional control assumed for all alternatives. Impacts would be related to routine operations, remediation activities, and post-remediation monitoring and maintenance activities. Since the proposed action involves treatment, packaging, and temporary storage of tank waste onsite, it does not change the assumptions that were the basis for evaluating any of the long-term impacts in the TWRS EIS, including that tanks would be retrieved to the same level, waste would be disposed offsite, and the processing facilities would be dismantled. Therefore, the long-term impacts previously evaluated in the TWRS EIS are not considered in this evaluation.

Short-term impacts that were evaluated in the TWRS EIS associated with retrieval and post-remediation monitoring are also not effected by the construction and operation of the proposed project and therefore are not considered in this Supplement Analysis.

4.1.2 Relationships Among Key Variables and the Results of the Impact Analysis

Three variables were identified as the most important to understanding the relationship between the impacts presented Section 5.0 of the TWRS EIS and the comparison of impacts among the alternatives:

1) **The amount and type of waste that remained onsite under each alternative.** A major variable that would influence the post-remediation risks for each alternative in the TWRS EIS was the amount of waste form remaining in the tanks or on the Hanford Site following remediation. Generally, for post-remediation impacts to groundwater, which would be the major contributor to post-remediation routine health risks, the larger the volume of waste that remained onsite the more severe the levels of groundwater contamination would be and thus, more adverse health impacts would be expected. The retrieval of waste from the tanks under the proposed action would be 99 percent or to the extent technically practical. This is consistent with the level of waste retrieval that was used for the Phased Implementation alternative in the TWRS EIS. As indicated in Section 3.6.1, there have been no substantial changes in the retrieval alternatives for the proposed action.

2) **The number of labor hours for construction, operations, and other activities under each alternative.** Another variable that would influence many of the short-term impacts identified in the EIS was the number of labor hours associated with each alternative. The number of labor hours for each alternative would directly affect the magnitude of many of the impacts discussed; the more labor hours worked the higher the level of impact. This relationship would most directly affect the impacts addressed for nonradiological accidents during remediation, routine worker health risks, socioeconomics, and transportation. Non-radiological accidents during remediation included workplace injuries or fatalities associated with constructing or operating the facilities and injuries and fatalities to workers driving to and from work. In each of these cases, the higher the number of labor hours the higher the number of injuries or fatalities. For each of these short-term impacts of the alternatives it was noted that the accidents and fatalities identified would not be based upon the unique problems associated with working with tank waste. Rather, they would be products of working in a construction or industrial environment or driving to and from work. These same impacts would be associated with any similarly sized construction project or industrial facility operations. The number of fatalities associated with construction provides a good example of this relationship.

   The number of construction fatalities for each alternative was calculated by multiplying the historic construction fatality rate (0.0032 fatalities per 100 worker years) by the number of worker years estimated for each alternative. If an alternative required 100,000 worker years for construction, the number of expected fatalities would be approximately three (100,000 worker years times 0.0032 fatalities per 100 worker years equals 3.2 fatalities). However, if the alternative required 700,000 worker years, the expected number of worker fatalities would be 22, or about seven times the number of fatalities for 100,000 worker years (700,000 worker years times 0.0032 fatalities per 100 worker years equals 22.4 fatalities). This same relationship (the more hours worked the higher the impact) would exist for injuries associated with construction and injuries and fatalities associated with operating facilities.

For worker transportation injuries and fatalities, the number of fatalities and injuries is based on the distance driven to and from work by the employees. The TWRS EIS used Washington State highway accident reports and determined that, for every kilometer driven, there would be 8.98E-09 fatalities. The number of employee transportation fatalities was therefore calculated by multiplying the number of kilometers that the workers would drive to and from work by the historic fatality rate. In this case, a doubling of the number of kilometers driven would result in a doubling of the number of employee transportation fatalities and injuries.

Impacts that would not be directly related to the number of labor hours would tend to be associated with differences in technologies and processes unique to each alternative or the post-remediation amount of waste or waste form remaining onsite. Impacts that would be largely independent of the influence of labor hours worked would include: 1) post-remediation health risks; 2) remediation-phase radiological and chemical accidents; and 3) the ability of an alternative to comply with environmental regulations such as air quality; water quality; and hazardous and radiological waste storage, treatment, and disposal.

The labor hours associated with the proposed action and the relationship these hours have on short-term impacts is discussed in Section 4.3.

3) **The amount of previously undisturbed habitat that would be disturbed by each alternative.** Another variable that would influence several of the environmental impacts addressed in the TWRS EIS was the amount of habitat disturbance associated with the alternatives. The amount of impacts to vegetation and wildlife habitat and archeological and cultural sites would be directly related to the amount of undisturbed land required to implement each alternative. Much of the Hanford Site has been undisturbed by Site activities and the native habitat remains intact. However, in the 200 Areas, where the remediation activities addressed in this EIS would occur, a sizable portion of the land has been previously disturbed by the construction of roads, processing facilities, pipelines, and other facilities and infrastructure associated with the production of plutonium and waste management.

The Phased Implementation alternative requires the construction of waste treatment facilities and new onsite disposal facilities, would require varying levels of disturbance to previously undisturbed habitat and consequently would have relatively larger biological and ecological and archeological and cultural site impacts. The vast majority of the habitat disturbances would occur in areas close to previously disturbed areas and within the 200 Areas, which have been identified as the area in which DOE is consolidating as much waste management and environmental restoration activities as possible to minimize potential impacts to the remainder of the Hanford Site.

The construction and operation of the proposed action would not produce any impacts outside of the 200 Areas and would be confined to the areas around the 241-B and 241-T tank farms. Further, the amount of land disturbed would be very small and temporary in nature. As stated in the TWRS EIS, "Alternatives … which would focus much of their activities directly at the tank farms, would disturb relatively small amounts of previously undisturbed land and consequently would have very low levels of biological and ecological or archeological and cultural site impacts" (DOE/EIS-0189, Section 5.0.4). The proposed action will not impact any areas that have not been previously disturbed in the tank farm areas. Information on the area affected is presented in Section 4.3.

4.2 BOUNDING ANALYSES FOR ENVIRONMENTAL IMPACT AREAS

This section of the Supplement Analysis evaluates whether the construction and operation of the proposed action would result in changes to the assumptions or the data that were used in the impact analysis of alternatives in the TWRS EIS such that the identification of impacts would substantially change with the implementation of this action.

The impacts of the Phased Implementation alternative were evaluated for both the Phase I demonstration phase and the Phase II full operational phase. Phase I would construct two facilities and would be operated over a 10-year period. Phase I would include retrieval, pretreatment, treatment, and interim storage. Phase II involved scaling up the Phase I facilities, retrieval of all remaining tank waste and provides for disposal of the immobilized LAW onsite and onsite interim storage of the IHLW pending offsite disposal at a geologic repository. To determine if the impacts of the proposed action are bounded within the impacts of the Phased

Implementation alternative this review focuses on Phase I of the Phased Implementation alternative. Phase I is selected for this evaluation for the following reasons:

- Phase I represents the smallest scope of action evaluated in the EIS; all other alternatives involve all tanks and tanks farms and full-scale treatment facilities
- The proposed action is small in scale when compared to all of the alternatives evaluated in the TWRS EIS, even when compared to Phase I
- Phase I utilizes all of technologies of the proposed action
- Phase I impacts would occur over a relatively short time frame, 10-years, which is consistent with the short time frame of the proposed action.

The impacts of the Phased Implementation alternative (Phase I and Phase II) are considered in this review as appropriate.

4.2.1 Summary of the Proposed Action Compared to TWRS Alternatives

Presented in Table 4-1 (at the end of Section 4) is a comparison between the proposed action activities and the Phase I activities of the Phased Implementation alternative as evaluated in the TWRS EIS. The information in Table 4-1 focuses on health and environmental risk effects for each action element. Where appropriate, information from the TWRS EIS is incorporated by reference. The following highlights the distinction between the proposed action and the Phased Implementation facilities evaluated in the TWRS EIS:

- The proposed CH-TRUM treatment and packaging unit(s) are small in comparison to the physical size of the Phase I treatment facilities. The proposed project would utilize existing onsite storage capacity.
- If additional new storage were required for interim storage of the CH-TRUM containers, it would be small in comparison to the above ground storage areas evaluated in the TWRS EIS. Additionally, the volume of waste to be stored would be small in comparison to the storage volume evaluated in the TWRS EIS (See Section 3.5).
- The proposed Units are temporary, and would operate for a short duration, approximately two years, compared to the treatment systems of the Phased Implementation alternative of 25 years.
- Physical impacts to the environment would occur within the already extensively disturbed areas of the 200 East and 200 West Areas of the Hanford Site (See Section 2.1).
- The small physical size of the facilities and the short operating duration of the proposed action would not change any of the assumptions used to calculate the long-term impacts to human health and the natural environment evaluated for the Phased Implementation alternative in the TWRS EIS (See Section 4.1.2).
- Most of the short-term construction impacts of the treatment and packaging units would occur offsite in a vendor's existing fabrication and assembly facility so construction impacts would be limited and confined to an existing construction and assembly location. This limits the potential for impacts to occur during the construction activities that could have an impact on human health and the environment (See Section 4.3.16 and 4.3.17).

- The CH-TRUM inventory of the designated tanks in the 241-B and 241-T Tank Farms is approximately 30,147 curies (RPP-7625). Table 4-2 summarizes the inventory for the CH-TRUM tanks. This inventory is bounded by the total tank farm system inventory that was used in the TWRS EIS impact analysis and is also bounded by the inventory used in the super tank which was developed for accident analysis purposes based upon the maximum concentrations from all tanks (See Section 4.1). The total SST inventory reported in the TWRS EIS is approximately 104,000,000 curies (DOE/EIS-0189, Table A.2.1.3).
- The retrieval of waste from the designated CH-TRUM tanks is consistent with the continuing operations of the tank farm system as analyzed in the TWRS EIS and selected in the ROD.

Table 4-2. Waste Inventory for the CH-TRUM Tanks

Tank	Volume (kgal)	Radioactivity (curies)
241-B-201	30	700
241-B-202	29	938
241-B-203	51	119
241-B-204	50	714
241-T-104	317	7,687
241-T-110	369	301
241-T-111	447	19,380
241-T-201	29	161
241-T-202	21	31
241-T-203	37	64
241-T-204	37	52
TOTAL	**1,417**	**30,147**

(Source: RPP-7625). Includes 46 radionuclides: fission products, decay daughters, uranium isotopes, and TRU isotopes.

4.3 COMPARISON BETWEEN PROPOSED ACTION AND PHASED IMPLEMENTATION ALTERNATIVE

The CH-TRUM packaging units would receive waste from up to 11 SSTs to process using liquid/solid separation technology. This waste would be considered an "easy waste to process" under Phase I of the Phased Implementation alternative (DOE/EIS-0189, page 3-95). The CH-TRUM dewatering system of the proposed action would utilize a separations technology that would dewater retrieved waste prior to packaging (DOE/ORP-2003-07). The Unit would consist of a one-step physical separations process whereas the separations systems evaluated in the TWRS EIS consisted of several technologies that would consist of a series of chemical washes and dissolution steps each followed by a liquid-solid separation step. This action enhances the retrieval and separation of tank liquids from sludges that is part of Phase I as described in the ROD (62 FR 8693). The proposed action is consistent with the processing described for Phase I of the Phased Implementation alternative that involved sludge washing and solid liquid separations (DOE/EIS-0189, page 3-96).

The CH-TRUM processing units of the proposed action would be smaller than the solid/liquid separations system contemplated for use in the Phased Implementation alternative. This system would also be operational for a shorter period of time (approximately 24 months) compared to the separation systems of Phase I of the Phased Implementation alternative that would operate for approximately 10 years.

The proposed processing units do not involve the addition of acids and caustics as included in the phased implementation alternative but only water to aid waste conveyance, would operate for a shorter period of time, and are considerably smaller in scale. Consequently, the associated impacts would be less than those identified for the separation technologies used in the Phased Implementation alternative in the TWRS EIS. The TWRS EIS impact analysis associated with the construction of the pretreatment and HLW treatment systems provides the bounding analysis for solid/liquid separators and waste concentrators.

4.3.1 Waste Form

The proposed CH-TRUM treatment/packaging units would produce a waste form that can be certified as CH-TRUM waste that is acceptable for disposal at the WIPP. The physical form of the waste is a dewatered solid. The retrieval of the sludges from the tanks supports interim stabilization actions by moving sludges that would have remained in the SSTs and packaging them in a compliant waste box which can be monitored, controlled, and maintained in a RCRA compliant storage facility pending final disposition. Following dewatering the CH-TRUM may be further dehydrated by the addition of sorbent, if necessary to meet waste acceptance criteria, but would maintain a high cohesive strength. This waste form would be comparable to the waste that would undergo initial separations operations and would be sent to the storage tanks for characterization before entering the melter feed section in either the HLW or LAW facility (DOE/EIS-0189, page 3-65). The waste form produced by the proposed action would have a lower radioactive exposure source term than the HLW forms created by the Phased Implementation alternative. The pre-treatment waste form of the Phased Implementation alternative would provide the bounding characteristics of this waste form.

4.3.2 Secondary Waste Generation, Treatment, and Disposal

Liquid effluents generated in the Phased Implementation alternative evaluated in the TWRS EIS (DOE/EIS-0189, pages 3-30, 3-38, 3-70 and 3-76) were to be transferred to the DST system or treated at the ETF. The TWRS EIS assumed liquid effluents would meet the waste acceptance criteria for effluent treatment and disposal. The liquid effluents generated in the proposed action would be treated and disposed of in the same manner as described in the TRWS EIS.

Vitrification is a high-temperature thermal process that produces a molten glass in which the waste would be combined with glass-formers. The melter would take the waste material and glass-formers, heat the feed material to a temperature of approximately 1,200 degrees Celsius (°C) (2,200 degrees Fahrenheit [°F]) where chemical and organic destruction occurs, and output a molten glass product containing the waste. The Phased Implementation alternative involved the construction and operation of two facilities and emissions from the vitrification processes would be released through two stacks (DOE/EIS-0189, page 5-63).

These extremely high operational temperatures generate a substantial offgas stream with organic components in addition to radiological constituents that require mitigation measures to minimize air emissions. The extensive air handling and treatment systems are discussed in DOE/EIS-0189, Appendix B. Treatment equipment would capture and recycle contaminants from the offgas stream back into the treatment process.

The proposed CH-TRUM treatment and packaging units use a process that would not produce any combustion offgas. The system would have an active ventilation system to regulate pressure and maintain airflow in the area housing the system. Ventilated air would be heated for moisture removal and discharged through HEPA filters. The ventilated air is heated to extend the life of the HEPA filters and not as a treatment process. The proposed air handling system would provide the necessary engineering controls to comply with the regulated parameters of air emissions permits. Unlike the vitrification and calcination processes, the offgases from the proposed action would contain none of the reaction products resulting from the thermal destruction of nitrates, nitrites, organic compounds, or any of the more volatile radionuclides contained in the waste. The offgases would not require nor undergo treatment but the effluent would be filtered before being released to the atmosphere. This system would not generate emissions of I-129 or C-14, which would be generated by the calcination or vitrification processes. It is not anticipated that the proposed system would have air emissions that would result in any degradation of air quality. The air emissions generated by the proposed Units for processing and packaging the waste from up to 11 tanks would be within the volume bounded by the air emissions analyzed in the TWRS EIS for any of the *in situ* or ex *situ* alternatives, including the Phased Implementation alternative.

4.3.3 Packaging

The packaging system for vitrified waste produced in Phased Implementation alternative would consist of two different systems, one for LAW and one for the HLW. These would involve complex systems for managing the containers for loading molten glass, including a canister handling system that would remotely fill canisters with molten glass, weld on a lid, and decontaminate the outer canister surface. The final package would have to meet the waste acceptance criteria for disposal.

The packaging system of the proposed action is significantly less complex than the system to be employed for the vitrified HLW waste or the vitrified LAW (See Section 3.4). The packaging process would move an empty SWB from a staging area by forklift to the packaging Unit where: 1) it would be remotely filled by gravity, 2) a removable lid would be placed to allow inspection at a later time, and 3) the outer surface of the container would be decontaminated and radiologically screened. The decontaminated waste box would be staged at the Unit and then placed in a temporary onsite storage unit.

Packaging of SWBs (4,000 pounds each [SWBs are not filled completely because of weight restrictions for over-the-road shipment]) or 55-gallon drums (1,000 pounds each) would be within the bounds of impacts of packages of vitrified or calcined canisters, (as much as 3.2 metric tons each). The HLW packaging system impacts identified in the TWRS EIS would bound the packaging for the proposed action.

4.3.4 Interim Storage

While the proposed project anticipates using existing above ground permitted storage in the 200 Areas for interim storage of waste pending certification and shipment to WIPP, it is assumed for purposes of this review that two new above ground storage units would be constructed and be approximately 0.2 hectares (0.5 acres) in area. However, these additional storage areas would only be constructed if existing permitted storage areas were not adequate and available when required.

Each of the *ex situ* alternatives included sufficient onsite storage capacity to store all of the IHLW produced while awaiting shipment to the potential geologic repository (DOE/EIS-0189, Section 3.4.1.11, page 3-41).The *Ex Situ* No Separations alternative provides the bounding conditions for storage in the TWRS EIS. The maximum number of canisters produced requiring interim storage under the No Separation alternative is 29,100 canisters (DOE/EIS-0189, page B-110). This would equate to 291,000 m^3 for canister space alone based upon a canister size of 10 m^3. The cask pad for the *Ex Situ* No Separation facility layout has a surface area of approximately 315,870 m^2 (3,400,000 ft^2) or approximately 75 acres (DOE/EIS-0189, Appendix B, Figure B.3.6.1). The impacts associated with interim storage of the HLW waste were assessed for a 50-year period in the TWRS EIS for all ex situ alternatives (DOE/EIS-0189, Appendix B, page B-40). For the Phased Implementation alternative the existing CSB would be modified to accommodate interim storage of HLW canisters. This would include modifying the underground vaults and ventilation system to accommodate the physical and thermal leaching associated with interim storage of all HLW produced during Phase I (DOE/EIS-0189, Appendix B, page B-147).

The estimated volume of CH-TRUM to be stored under the proposed action would total approximately 5,500m^3 (1.5 Mgal). This volume includes the addition of dehydrating sorbent. The actual waste volume will depend on the efficiency of the dewatering process and is expected to be less than 5,500m^3 (1.5 Mgal). Existing permitted onsite storage facilities (e.g., CWC) will be used. If it is determined existing storage is not available when required or that additional storage was needed the storage units would be constructed onsite using a slab on grade construction. The storage units would be concrete pads with a curb to preclude releases from storage. The pads would support a sprung steel frame that would be covered with weather resistant PVC impregnated polyester fabric. Up to two storage units (one near the 241-B Tank Farm and one near the 241-T Tank Farm) potentially could be required with a total area of approximately 0.2 hectares (0.5 acres). The volume of these above ground storage areas is within the envelope of the volume of the storage areas in the Phased Implementation alternative.

4.3.5 Comparison of Environmental Parameter Impacts

The parameters and data for the proposed action are compared to the TWRS EIS Phased Implementation alternative Phase I to provide a quantitative comparison of the impacts.

The following sections present a discussion of the impacts identified for the Phase I of the Phased Implementation alternative compared to the proposed action. The proposed action includes one CH-TRUM treatment and packaging unit at the 241-T Tank Farm, one unit at the 241-B Tank Farm, and new interim storage in the 200 Area. While the proposed project anticipates using existing permitted storage in the 200 Areas for interim storage of filled waste containers pending certification and shipment to WIPP, it is assumed for purposes of this review that two new storage units would be constructed and be approximately 0.2 hectares (0.5 acres) in area. However, these additional storage areas would only be constructed if existing permitted storage areas were not available when required.

4.3.6 Geology and Soil

The bounding conditions associated with impacts to geology and soil for the facilities required for Phase I of the Phased Implementation alternative exceed those anticipated for the proposed action. As noted in the TWRS-EIS, mineral resources (i.e., borrow areas) necessary for the larger scale actions considered are readily available onsite and would have limited impact. The Environmental Assessment for the use of existing borrow-areas further discusses impacts to geology and soils on a site-wide basis and resulted in a Finding of No Significant Impact (DOE/EA-1403).

Topographic and soil impacts caused by the Units would be limited to the site preparation for placement of the mobile treatment facilities in the tank farms, and mitigated at the end of the action with the removal of the equipment and restoration of the area. As indicated in Table B-1, Appendix B, the proposed action would require less than approximately 500 m^3 (650 cubic yards [yd^3]) of sand and gravel (DOE/ORP-2003-07). Construction of interim storage units would require approximately 9,152 m^3 (11,970 yd^3) of sand and gravel (DOE/ORP-2003-04). Based upon the magnitude of the impact of the Phase I, which would require approximately 1.20E+06 m^3 (1.57E+06 yd^3) of sand and gravel (Table B-1, Appendix B) (DOE/EIS-189), the proposed action would contribute approximately 0.8% of the total impact to geology and soils. Additionally, DOE/EA-1403 considered use of 7.6E+06 m^3 (1.0E+07 yd^3) to supply raw aggregate for use at the site over a 10-year period. The proposed action would constitute less than 0.15% of the amount evaluated in the environmental assessment.

The Units would be located in the vicinity of the 241-T Tank Farm and in the vicinity of the 241-B Tank Farm where extensive soil disturbance and topographic changes have already occurred for construction of the tank farms. Localized soil disturbance and topographic changes would occur within approximately 0.1 hectares (0.25 acres) in the area immediately adjacent to the tank farms. Interim storage units would be constructed with each Unit where localized soil disturbance and topographic changes would result within approximately 0.2 hectares (0.5 acres). The Phase I treatment activities under the Phased Implementation alternative would disturb approximately 35 hectares (86 acres) of soil, or nearly 90 times the area required for the proposed treatment and packaging units and the interim storage units.

The TWRS EIS evaluation of geology and soil concluded, "For both geology and soil, the potential impacts of each alternative ... would be small and similar both in nature and magnitude." "For both geology and soil issues, the level of impacts would be linked directly to the amount of land disturbance. Generally, the more land disturbed, the higher the level of impacts to geologic resources and soils" (DOE/EIS-0189, Section 5.1).

4.3.7 Water Resources

4.3.7.1 Groundwater

The TWRS EIS evaluated only the long-term impacts to groundwater. Potential releases to the groundwater system were associated with: 1) releases during retrieval from the waste tanks; 2) releases from residuals; and 3) releases from the LAW disposal facility. Tank waste retrieval under the proposed action would be consistent with the waste retrieval evaluated for the Phased Implementation alternative. Assumptions used in the TWRS EIS impact analysis concerning releases from residuals in the retrieved tanks would be the same. Assumptions concerning releases from the LAW disposal facility would not be applicable to the proposed action. The proposed action does not change the assumptions or the data used in the evaluation of retrieval and residual waste impacts in the TWRS EIS (DOE/EIS-0189, Appendix F, Section F.2.2.3.5) while accomplishing retrieval of waste from up to 10 SSTs.

In the proposed action, handling, transport, and interim storage of the containerized dewatered CH-TRUM also present the potential for a release that could impact water resources. The use of approved containers that are suitable for waste containment and disposal and compliant with WAC 173-303 requirements would mitigate the potential for releases and potential impacts on water resources. Further, the waste form of the CH-TRUM in the disposal container (dewatered sludge with sorbent) limits the waste's mobility and the potential impacts, which are discussed in Section 4.3.17).

4.3.7.2 Surface Water Drainage

The proposed action does not change the assumptions or the data used in the evaluation of surface water impacts in the TWRS EIS. The TWRS EIS evaluation of surface water drainage system concluded, "All facilities would be constructed on relatively flat, semi-arid terrain, which slopes gently to the northeast. No major drainage features are present. While each of the tank waste alternatives would result in slightly altered localized drainage patterns, the area around all temporary structures and all permanent facilities would be designed to conform with the surrounding terrain. Small increases in surface water runoff during heavy precipitation events or rapid snow melt would occur from temporary structures, but there would be no flooding of drainage systems" (DOE/EIS-0189, Section 5.2.2.3).

4.3.8 Air Quality

Solid/liquid separation technologies from the Intermediate Separation and Extensive Separations alternatives were evaluated as components of the Phased Implementation alternative. The air modeling performed for the TWRS EIS based bounding impacts of the Phased Implementation alternative on continued tank farm operations, operation of the evaporator and separations and vitrification plant operations. The assumptions used in the air emissions modeling provided more conservative assumptions to bound air emissions for the entire system. The impacts from operating the two Phase I facilities were analyzed using peak hourly rates from all processes simultaneously (DOE/EIS-0189, page 5-63).

The air dispersion modeling evaluated sources from continued operation and two high temperature, combustion treatment (vitrification) systems that would have active air emissions, whereas the proposed action would only have passive air emissions treated through a HEPA filter system. The modeling for the Phased Implementation alternative indicated no exceedance of radiological, National Ambient Air Quality Standards, or hazardous air pollutants using the conservative assumptions associated with the high temperature treatment. The air emissions from construction and operation of the proposed action (DOE/ORP-2003-07) are minimal compared with the emissions from the continued operations activities and the construction and operation of Phase I and, are bounded by that assessment. Furthermore, engineering controls designed into the air handling system (HEPA filters) and compliance requirements of the air permits mitigate the potential for any degradation in air quality.

Air emissions from the storage facility are bounded by evaluation in the TWRS EIS of the larger storage facilities required for the Phased Implementation alternative. The storage of the containers would only include passive venting of the containers through Nu-Chem vents which include filters, but the air emissions would include priority air pollutants, such as PM_{10} and NO_x, from construction activities (e.g., fugitive dust and heavy equipment emissions). Construction of the larger storage unit evaluated in the TWRS EIS, which included construction of an approximately 25 hectares (60 acres) unit, would include similar construction requirements and would therefore bound the analysis of air emissions during construction of the proposed 0.2 hectares (0.5 acres) storage units.

Radiological air emissions for the proposed action are estimated to be between two and five orders of magnitude less than the Phase I estimate (i.e., the air emissions from the proposed action would contribute from 0.3% to 0.0002% of the total impact to air quality) as presented in Table 4-3 (DOE/ORP-2003-07).

4.3.9 Biological and Ecological Resources

Three factors are considered for impacts to biological and ecological resources in and around the tank farms in the 200 East and 200 West Areas: 1) past disturbance in the proposed construction area, 2) the extent of potential impacts on sensitive shrub-steppe habitat, and 3) potential impacts on plant and animal species of concern. The Phased Implementation alternative requires construction of facilities that would include equipment and facilities that far exceed the requirements to operate the small CH-TRUM treatment, packaging, and storage units of the proposed action. The proposed action does not change the assumptions or the basis used in determining the impacts to biological and ecological resource in the TWRS EIS.

Table 4-3. Comparison of Air Emissions

Air Quality	Phase I Phased Implementation Alternative (TWRS EIS, Section 5.3)	Treatment and Packaging Units (DOE/ORP-2003-07)	CH-TRUM Storage (DOE/ORP-2003-07)
NOx	332.5 tons	47.8 tons	4.1 tons
SOx	38.9 tons	2.8 tons	0.2 tons
CO	3,748 tons	217.7 tons	1.4 tons
Hydrocarbons	176 tons	0.3 tons	0.2 tons
Am-241	1.4 x 10-3 curies	4.4 x 10-6 curies	NA
Cs-137	1.1 curies	5.7 x 10-5 curies	NA
Pu-239/240	3.4 x 10-3 curies	5.6 x 10-5 curies	NA
Sr-90	33.2 curies	7.6 x 10-5 curies	NA
Ammonia	3.3 tons	0.96 tons	NA
HAPs	0.66 tons	0.20 tons	NA

NA = Not applicable

The total areal extent of the disturbance would be approximately 35 hectares (86 acres) for the Phase I activities under the Phased Implementation alternative. By comparison, each CH-TRUM treatment and packaging unit including new storage would occupy approximately 0.32 hectares (0.8 acres) or approximately 0.01% of the area required for Phase I activities. These units would be constructed adjacent to the tank farms on previously disturbed areas that do not support biological or ecological resources. Further, each treatment and packaging unit would be operational for less than two years, after which the sites would be restored to pre-action conditions.

The TWRS EIS concludes that,

> "In all cases, the impacts would be less than 1 percent of the total remaining shrub-steppe habitat on the Central Plateau and a fraction of 1 percent of the Hanford Site's remaining shrub-steppe habitat. When considering only the area that would be designated for future waste management uses, the TWRS alternatives would impact up to 6 percent of the undisturbed shrub-steppe within the designated waste management area. For remediation activities impacts would range from 10 hectares (25 acres) for the Long-Term

Management alternative to 81 hectares (200 acres) for the Phased Implementation alternative. Total alternative impacts (remediation and post-remediation closure actions) would add from 40 ha (100 ac) to 80 hectares (200 acres) to the impacts from remediation. Most remediation impacts would occur in the 200 Areas, while post-remediation impacts would more heavily impact potential borrow sites, two of which are located outside the Central Plateau of the Hanford Site. All of the alternatives except No Action, Long-Term Management, and *In Situ* Fill and Cap, would result in noise and transportation impacts that would impact wildlife. None of the alternatives would adversely impact Hanford Site aquatic, wetland, or riparian habitats and none would impact Federal or State threatened or endangered species. Potential impacts to other species of concern would be limited to a relatively small portion of the overall habitat" (DOE/EIS-0189, Section 5.4).

4.3.9.1 Wildlife

The TWRS EIS states that, "Under all tank waste alternatives except No Action, some loss of individual members of wildlife species would occur. However, when considering the total Hanford Site population of the affected species, the number of individual members lost is not expected to be large enough to have substantial impact on any species as a whole. As described previously, activities in currently undisturbed areas would affect wildlife habitat, while activities in currently disturbed areas would not affect wildlife habitat. The impact analysis focused on impacts in undisturbed wildlife habitat areas" (DOE/EIS-0189, Section 5.4.2). The proposed action would be conducted in the disturbed areas of the tank farms and would not affect wildlife.

4.3.9.2 Radiological and Chemical Impacts to Biological and Ecological Resources

The TWRS EIS analysis of radiological and chemical impacts to biological and ecological resources assumed one percent of the tank waste remained as residual contamination. The proposed action does not change this assumption and therefore radiological and chemical impacts to biological and ecological resources are bounded by the TWRS EIS analysis.

4.3.10 Cultural Resources

The construction of each proposed treatment and packaging unit would occupy approximately 0.01% of the area required for the Phase I activities of the Phased Implementation alternative and would have less impact in the area because the Units would not require extensive excavation for foundations or footings. The ground preparations for placing the CH-TRUM treatment and packaging units would require minimal excavation compared to that required for the foundations for structural facilities evaluated in the TWRS EIS Phased Implementation alternative. Therefore, the proposed action would have less potential to disturb any possible cultural resources within an already disturbed area.

Any new storage units would occupy much less area than the storage required under the Phased Implementation alternative. New storage units would be constructed in previously disturbed areas where the opportunity to encounter cultural resources would be limited. The larger storage unit evaluated in the TWRS EIS would therefore bound the new storage units.

It is unlikely that any archaeological resources would be encountered during the construction of the proposed action, and any resources encountered likely would not be in their original cultural context. However, if unexpected cultural resources were encountered during the construction, work would be halted and the DOE-Richland Operations Office Manager of the Hanford Historical and Cultural Resources Program would be notified to determine the appropriate disposition of the resource and any mitigation actions that would be required prior to continuing with the action.

4.3.11 Socioeconomics

The construction of the CH-TRUM treatment and packaging units would be offsite at a vendor's location with existing personnel. The prefabricated units would be shipped to the Site for placement, connection of utilities, and startup. Construction of any new storage units would require a small workforce for approximately four months. The operation of the storage units would use the same personnel for operation of the treatment and packaging units. Operation of the systems would require a maximum staff of 160 personnel. The total impact to the socioeconomics of the Tri-Cities area would be a small fraction of the up to 3,000 additional workers required by Phase I of the Phased Implementation alternative.

Energy requirements for the proposed action include electricity for the treatment and packaging of the CH-TRUM and fuel oils associated with labor transportation and construction, operation, and decommissioning of the project. The Phase I activities include vitrification of the retrieved waste in addition to solid/liquid separation processes, so the electrical demand for this multi-year project averages approximately 438 megawatt-hours per day (MW-hr/day) or a total of approximately 1,650 gigawatt-hours (GWh). The electrical demand for the proposed action, in contrast, averages approximately 29 MW-hr/day for approximately two years, or a total of approximately 21 GWh. Fuel oil consumption for the Phase I activities would total approximately 6.7 Mgal, whereas the proposed action would require approximately 0.2 Mgal. Energy requirements, including electricity and fuel oils, are approximately 1.3% and 3% of the electrical and fuel oil requirements of the Phase I activities, respectively.

4.3.12 Land Use

Land-use impacts in the TWRS EIS were addressed in terms of the compatibility of temporary and permanent land-use commitments under each alternative with past, present, and planned and potential future uses of the land and the surrounding area. Also addressed were potential conflicts with uses of land adjacent to the land that would be impacted under each alternative and unique land uses in proximity to the proposed TWRS sites, including the Hanford Reach of the Columbia River and the Fitzner Eberhardt Arid Land Ecology Reserve. The proposed action does not change the assumptions or the basis used in determining the impacts to land use in the TRWS EIS. The impacts of the proposed action are within those identified in the TWRS EIS.

Land use evaluated in the TWRS-EIS included alternatives that had facilities/structures adjoining the tank farms. The facilities required for the proposed action are within the 200 Area and the 241-B and 241-T Tank Farms. They are consistent with the industrial nature of the tank farms and would not alter land use in the area. Further, the facilities would be a temporary, and mobile and the CH-TRUM treatment and packaging units would be removed within approximately three years. Storage would be used for up to 10 years. No permanent land use commitments (i.e., no radiological contamination of an area requiring long-term commitment of the land) would be required for the proposed action.

The structures and supporting facilities for the Phase I activities would require approximately 3 hectares (7.4 acres) of land that would be considered a radiologically contaminated area, or permanently committed land-use. Another 32 hectares (79 acres) of land would be disturbed in the 200 Areas, but would be considered temporary because no radiological contamination would remain and the land could eventually returned for other land uses. The proposed action would commit 0.32 hectares (0.8 acres) of land for approximately three years whereas the Phase I activities would require a total of 57 hectares (140 acres) of land for over a decade.

The storage units in the alternatives in the TWRS EIS evaluated the same land use in the 200 Area as any new storage units. Both units would include container storage facilities consistent with the industrial use of the area. Further, any new storage units would impact less area for a shorter duration than the storage units evaluated in the TWRS EIS.

4.3.13 Visual Resources

Due to the use of temporary portable dewatering equipment, low profile of the facilities, and brief duration the proposed action would be bounded by the TWRS EIS impact analysis of the larger, higher, and longer duration of the facilities constructed in Phase I of the Phased Implementation alternative. The CH-TRUM treatment and packaging units in the 200-Areas would not be visible outside of the 200 Areas because the maximum height of the Units is less than approximately 7.5 m (25 ft). The CH-TRUM treatment, packaging, and new storage units would occupy a total area of approximately 0.32 hectares (0.8 acres), and would generally be hidden from view outside the 200 Areas by the existing permanent structures. The CH-TRUM treatment and packaging units would be present for approximately three years.

The Phase I structures evaluated in the TWRS EIS would be present at least through calendar year 2012, would occupy approximately 35 hectares (86 acres), and would have a height up to 46 m (150 ft) for the stacks. While the Phase I structures would not be visible from the Columbia River, they would be visible from elevated locations such as Gable Mountain, Gable Butte, and Rattlesnake Mountain.

The TWRS EIS concludes that, "...the Hanford Site landscape is characterized primarily by its broad plateau (Section 4.8). This visual setting provides for sweeping vistas of the area broken up by more than a dozen large Hanford Site facilities (e.g., processing plants and nuclear reactors) located around the Hanford Site" (DOE/EIS-0189, Section 5.8). For the Phased Implementation alternative the TWRS EIS concludes that because of the distances involved, potential visual impacts would be minor and similar to impacts that currently exist (DOE/EIS-0189, Section 5.8).

4.3.14 Noise

The TWRS EIS evaluated potential noise impacts to onsite workers, the public, and wildlife from the construction and operations phase of each alternative. Potential construction noise impacts were compared with the General Service Administration construction noise specifications, and a bounding case scenario was evaluated to estimate the probable distance from construction activities that would be impacted. For operations phase noise, noise impacts of activities within facilities and exterior to facilities were addressed. Noise impacts to workers would be mitigated by hearing protection.

The peak noise levels would occur during construction from operation of heavy equipment. Examples of construction activities evaluated in the TWRS EIS include Phase I construction for a period of approximately four years and construction of the Hanford Barrier. Similarly, the installation of the prefabricated CH-TRUM treatment and packaging units and storage would have peak noise levels from heavy equipment, but for a shorter duration. The installation of the prefabricated CH-TRUM treatment and packaging units would require less than six months, a portion of which would be offsite in an established fabrication facility and construction of any new storage units would require approximately four months. The TWRS EIS concluded that, "Potential noise impacts of all alternatives would be minor" (DOE/EIS-0189, Section 5.9).

Noise impacts from the operation of the proposed action would be less than from the construction activities and would be confined to the area immediately surrounding the operating system. The operation of the proposed units would be completed within approximately 24 months whereas the noise impacts from operation of some alternatives with similar processes would last for over a decade. The noise impacts evaluated in the TWRS EIS included vitrification facilities that also contained pre-treatment processes including solid/liquid separation processes similar to the proposed treatment and packaging units to bound the evaluation of these noise impacts during operation.

Noise impacts from storage operations would also be less than from construction activities and would be limited to noise from forklifts and trucks transporting containers to storage. The activities would be consistent with those evaluated for storage in the Phased Implementation alternative.

4.3.15 Transportation

The total employment for the operations period of the system would peak at 160 workers, each of whom is assumed to drive to the site each day; this is approximately 5% of the up to 3,000 employees required for the Phase I project. However, the proposed action would not be concurrent with the employment peak anticipated for the Phased Implementation alternative, so impacts to traffic from the proposed action would not be cumulative.

WIPP is receiving waste and is updating information across the entire DOE complex concerning the inventories of TRUM waste that is anticipated to be shipped and disposed of at their facility. Evaluation of impacts associated with transportation and disposal of Hanford TRUM waste at WIPP is more appropriately considered in the context of the entire DOE complex. WIPP has facilities designed to receive TRUM waste shipments either by truck or by rail. The proposed action would ship by truck to the WIPP. The results of the analysis of truck transport are used to assess the transportation impacts associated with shipments by rail. (WIPP SEIS-II, Appendix E, Volume 2) Transportation by truck is providing the bounding analysis.

The volumes of waste that are currently in storage and projected to be generated through the year 2003 were estimated from information provided in the *Transuranic Waste Baseline Inventory Report, Revision 3* (BIR-3) (DOE 1996b) The number of shipments needed to transport this waste were calculated on a site-by-site basis, with Action Alternative 3 providing the bounding number of 33,131 shipments from Hanford.

4.3.15.1 Onsite Transportation

Onsite project related vehicle movement would include a tanker truck that would transfer liquids to the ETF or DSTs in the 200 Area at a rate of up to three vehicle trips per day and forklift and truck movement to move waste boxes from the staging site and to storage. Traffic would not be impacted outside of the 200 Area.

It is anticipated that approximately 3.5 shipments per day of waste containers would be required. Any new storage units would be located adjacent to each of the CH-TRUM treatment and packaging units within the 200 Areas, so traffic would be limited to the immediate vicinity of the CH-TRUM treatment and packaging facilities. No impacts to traffic outside of the 200 Area would be anticipated.

The TWRS EIS evaluated onsite transport of waste and concluded that, "There could be occasional interference with normal traffic flow onsite during these waste transport activities to ensure safety during the waste transport operations; however, the impact of these disruptions to peak community employee traffic could be mitigated by scheduling truck traffic during non-peak hours" (DOE/EIS-0189, Section 5.10). The transport of liquids to the ETF would be confined to the 200 Areas and would not disrupt peak traffic moving on and off site.

4.3.16 Anticipated Health Effects

The TWRS EIS evaluated the anticipated risk to human health for the Phased Implementation alternative. The categories of anticipated risk were:

1) risk associated with baseline conditions

2) risk associated with the TWRS EIS remediation alternatives

3) risk associated with residual (post-remediation) contamination (DOE/EIS-0189, Appendix D, page D-1).

The proposed action does not change the TWRS EIS baseline conditions or post-remediation assumptions and inputs used to evaluate risk under these two categories. The baseline is based upon the No Action alternative. Post-remediation risks were based upon releases and exposures from the residuals left in the SSTs and the onsite disposal of immobilized LAW. The worker and public health risks of the proposed action do not change the assumptions or inputs used in calculating risk in the TWRS EIS for these two categories.

4.3.16.1 Remediation Risks

Radiological and chemical risk from remediation activities for the Phased Implementation alternative were evaluated for Hanford Site workers involved in remediation activities (involved worker); Hanford Site workers not involved in remediation activities (noninvolved workers); the general public; and a MEI (i.e., an individual who is assumed to receive the highest possible exposure) from the workers, noninvolved workers, and general public.

Risks during remediation were evaluated based upon various operational and accident scenarios. Operational and accidents considered continued operations, retrieval, and pretreatment and vitrification scenarios. The following accident scenarios were considered in the TWRS EIS for the Phase Implementation alternative:

- Continued operations:
  - Tank waste transfers - Postulated that a jumper was mispositioned and pinhole leaks develop at both ends of the jumper resulting in a pressurized spray release of tank waste. (This accident would result in a pressurized spray release due to a mispositioned jumper.)

  - Waste storage tanks - Postulated that a hydrogen deflagration occurs because of hydrogen gas generating in the tank, rising into the tank headspace, and reaching concentrations exceeding the lower flammability limit. Rapid combustion suspends waste as aerosols and release particulate.

- Retrieval:
  - Postulated that a ventilation heater failure could occur due to an electrical fault resulting in humid air plugging the HEPA filter and filter blow out.

- Pretreatment:
  - Postulated that a line break could occur within a ventilated vault because of an earthquake, resulting in a pressurized spray release.

- Treatment:
  - Postulated that a canister of vitrified HLW was dropped because of mechanical failure or human error in the HLW vitrification facility.

- Beyond Design Basis Accident:
  - Postulated that a tank dome collapses as a result of an earthquake.

The risk associated with the continued operations, retrieval, and beyond design basis accident scenarios bound the proposed action because these events could occur independent of the proposed action.

The analysis of the pretreatment and treatment risk scenarios for the Phased Implementation alternative were evaluated based upon emissions and occupational accidents. The latent cancer fatality risk to workers, noninvolved workers, and the general public could result from direct exposure and atmospheric emissions from the Phased Implementation alternative. The risks for this alternative were determined by analyzing the source term, transport mechanism, exposure, and the risk associated with exposure.

Source term used for the noninvolved worker and the general public was the atmospheric radiological emissions from continued operations of the tank farm and the evaporator and the two separations and treatment systems of the Phased Implementation alternative. Source term from the tank farm systems during operation of the proposed project would be consistent with source terms of the system during operation of the Phased Implementation alternative. As presented in Section 4.3.8 the air emissions from the proposed action are minimal when compared to the Phased Implementation alternative. The proposed action would not have an effect on the source term values used in the remediation risk calculations and the emissions values are bounded by those used for the Phased Implementation alternative.

The atmospheric transport parameters for the Phased Implementation alternative were modeled as a ground release while the evaporator and the separations and vitrification facilities were modeled as an elevated release in at a representative location in the 200 Areas of the Hanford Site. Transport parameters would remain unchanged because they are based upon meteorological conditions in the 200 Area.

The worker would receive a combined dose from air emissions and direct exposure from radiation fields (DOE/EIS-0189, Appendix D, page D-227). The involved worker would only be exposed to emissions from the tank farm area and retrieval operations because emissions from the evaporator and the vitrification facilities occur through a stack-release and were considered not to impact the onsite worker (DOE/EIS-0189, Appendix D). The operation of the proposed treatment and packaging units are of short duration and the small labor force that is included in the worker population is within the population of the involved worker. The non-involved worker and general public considered in the remedial risk analysis would remain unchanged. Therefore it can be concluded that the Phased Implementation alternative operational impacts bound the proposed project.

The TWRS EIS did not evaluate the direct exposure risks to the involved worker as a result of daily operations associated with any of the alternatives. The involved worker MEI dose is based upon a current Hanford Site administrative control of 0.5 rem/yr (HNF-5183). Operation of the proposed project would be in compliance with these standards that mitigate impacts to workers from daily routine operations.

There is an extensive evaluation of the possible health effects and risks presented in the TWRS EIS, Appendix D Anticipated Risk. Table 4-1 presents a general comparison of the various health and environmental risks between the Phased Implementation alternative and the proposed action.

The EIS concluded that, "During tank waste remediation activities, all of the alternatives involving waste retrieval would result in a similar number of latent cancer fatalities to involved and noninvolved workers (two to four depending upon the alternative) and similar levels of cancer risk from chemical exposure from 2.52E-06 to 8.22E-07 LCF. These health effects would be the result of the large number of tank waste remediation workers for the *ex situ* alternatives and retrieval, treatment, and handling of the waste. All of the tank waste alternatives would result in less than one latent cancer fatality and cancer risk of less than 3.35E-06 to the general public during remedial activities" DOE/EIS-0189, Section 5.11).

4.3.17 Accidents

The TWRS EIS evaluated various accident scenarios from occupational risks, including the non-radiological/non-toxicological injuries, illnesses, and fatalities from construction, operation, or transportation accidents common to the workplace such as falls, cuts, and operator-machine impacts (the risk associated with an accident was defined as the product of the probability of an accident occurring and the consequence of the accident); and radiological and toxicological risks associated with transportation and operations. The TWRS EIS evaluated an accident analysis of an inadvertent drop and rupture of a high-level canister. The bounding analysis for the CH-TRUM based upon the bounding waste form (See Section 3.6.3) is a release of non-stabilized, friable calcined HLW waste (DOE/EIS-0189, App. E, pg. E-212 and E-219).

Interim storage was considered in the TWRS EIS as part of all alternatives. The TWRS EIS interim storage was for vitrified waste in a sealed canister. The proposed action would interim store dewatered tank waste in SWBs. Disposal and storage accidents were not identified in the TWRS EIS for the vitrified waste largely due to the vitrified waste form of the material and the engineered structural packaging (DOE/EIS-0189, Appendix E, page E-346). The accidental release of the packaged CH-TRUM in the storage facility would be consistent with an accident release of a dropped canister described above. The release of the waste in storage would be bounded by the same analysis

The environmental pathway for this release is limited to the soil and groundwater pathway. Assuming the SWB waste is completely full with no sorbent added, the maximum potential release would be 1598 L (426 gal) of tank waste into the environment. Because of the moisture content of the damp sludge, there would not be any airborne dispersal of contaminants outside of the storage unit from an accidental release. There would be no air or surface water pathway because the waste form would not generate an emission and there is no surface water in the area. Further, the sludge would not have any ignitable characteristics. To assess the bounding impacts of a release of the dewatered tank waste in storage to the soil/groundwater pathway the representative release of 15,000 L (4,000 gal) from the SSTs is used. The TWRS EIS assumed that the contaminant concentrations in the release would be at the maximum predicted concentrations, the super-tank. This release was assumed to occur at each of the 149 SSTs (DOE/EIS-0189, Appendix B, page B-173). The TWRS EIS release analysis assumed no intervening barrier and there was a direct release into the environment. The stored dewatered tank waste from the proposed action would have a secondary containment system in the waste box as well as the containment system of the storage units itself to mitigate the impact of the release. The TWRS EIS release scenario was applied to the Phased Implementation alternative selected in the ROD and bounds the release and accident analysis for the interim storage of the dewatered tank waste.

4.3.18 Interim Action Analysis

Pursuant to 40 CFR 1506.1(a) and 10 CFR 1021.211, the proposed action of this Supplement Analysis has been evaluated as to whether it has an adverse environmental impact, or limits the choice of reasonable alternatives in DOE/EIS-0356 that is in preparation.

As discussed in this Supplement Analysis, the proposed action does not have an adverse environmental impact and all impacts are bounded by those analyzed in the TWRS EIS (DOE/EIS-0189).

Table 4-1. Comparison of Health and Environmental Risks of the Phased Implementation Alternative and the Proposed CH-TRUM Treatment, Packaging, and Storage (4 pages)

	TWRS EIS Phased Implementation Alternative Phase I & II		Hanford Tank Farm CH-TRUM Treatment, Packaging, and Storage	
Proposed Action Element or Activity	**Description**	**Health and Environmental Risk**	**Description**	**Health and Environmental Risk**
Waste Inventory	177 tanks. [1]	Inventory to be processed represents reduction in environmental risk because some SSTs were presumed to be leaking in TWRS EIS.	Selected CH-TRUM tanks ~1.5 Mgal of tank waste.	Inventory to be processed represents reduction in environmental risk because some SSTs were presumed to be leaking in TWRS EIS.
Technology	Solid/liquid separation technologies with possible use of cross-flow filters, centrifuge, or evaporator (TWRS EIS, pg. 3-68 and pg. 3-95).		Solid/liquid separation (Dewatering).	
Construction	~140 acre footprint. Constructed onsite, fixed facility. Over 80 acres required for Phase I WTP. ~4 years for construction. Largest storage facility ~60 acres. Phase I storage concrete pads and buildings.	Large, diverse construction labor force with significant heavy equipment operation, which increases accident and occupational risks.	~1 acre footprint. Construction offsite, 1-2 mobile units. <0.5-acre footprint. ~6 months for fabrication (offsite) and construction (onsite). New storage footprint is ~0.5 acres	Small, specialized construction labor force with minimal heavy equipment requirements. Limited accident and occupational risks.
Operation	6 to 10 years Phase I (TWRS EIS, pg. 3-94 and 3-98). Phase II continues through 2028.	Operations anticipated to continue through 2012. Requires extensive ORR before operational. Operational risks associated with use of multiple, various caustic and acid wash cycles followed by separations.	~2 years for packaging.	Minimal ORR required because of simple technology and small size. Operations completed by 2006, reducing processing time for this portion of the inventory. Does not involve caustic or acid washes. Reduced operational risks.

Table 4-1. Comparison of Health and Environmental Risks of the Phased Implementation Alternative and the Proposed CH-TRUM Treatment, Packaging, and Storage (4 pages)

	TWRS EIS Phased Implementation Alternative Phase I & II		Hanford Tank Farm CH-TRUM Treatment, Packaging, and Storage	
Proposed Action Element or Activity	**Description**	**Health and Environmental Risk**	**Description**	**Health and Environmental Risk**
Decommissioning	~16 years, completed post-2028.	Decontaminated and entombed in place.	~1 year, completed in 2007.	Disassembled and disposed.
Waste Package	HMPC (TWRS EIS, pg 3-30). Canister = 41 cubic feet. (TWRS EIS, pg. B-178). 12,200 canisters required (TWRS EIS, pg. 3-118 and pg. 3-122).	This waste would be stored onsite for ~50 years before shipment would commence.	SWB = 67 cubic feet. <1,500 SWBs required. See SA Section 2, Table 2-1 for specifications.	The waste boxes would be stored onsite up to 10 year.
Secondary Waste Air	High-temperature, thermal process with complex offgases from two facilities. Mitigated by engineering controls and permit compliance.	O&M will produce additional waste by-products requiring special handling and disposal.	Non-high temperature, non-thermal process (no combustion) with no significant offgas. Mitigated by engineering controls and permit compliance.	Waste by-products limited.
Liquid	Liquid effluent, retention facility, ETF. State-approved land disposal site (TWRS EIS, pg. 3-30). Potential for liquid storage in DST during Phase I.	O&M will produce additional waste by-products requiring recycling, special handling, and disposal.	Same as TWRS EIS.	Same as TWRS EIS but much smaller volume over much shorter time frame. Anticipate reduction in loading from WTP effluent to treatment system in long-term.

Table 4-1. Comparison of Health and Environmental Risks of the Phased Implementation Alternative and the Proposed CH-TRUM Treatment, Packaging, and Storage (4 pages)

	TWRS EIS Phased Implementation Alternative Phase I & II		Hanford Tank Farm CH-TRUM Treatment, Packaging, and Storage	
Proposed Action Element or Activity	**Description**	**Health and Environmental Risk**	**Description**	**Health and Environmental Risk**
Interim Storage	All HLW assumed to be stored onsite for 50 yrs. at interim storage facilities (TWRS EIS, pg. 3-36, 3-41). All ILAW stored and disposed of onsite.		All CH-TRUM stored at onsite storage facilities.	Results in fewer IHLW canisters in long-term storage.
Interim Storage Period	~50-years. Waste package inventory does not diminish during this period (TWRS EIS, pg. B-197).		~10-years. During this period the waste package inventory is expected to diminish as waste is dispositioned.	
Facility	Cask pads and CSB (See SA Sections 3.5 for bounding facility ~75 acres above ground needed for pads)		Existing onsite permitted storage or small ~0.5 acres non-HLW storage site	

Table 4-1. Comparison of Health and Environmental Risks of the Phased Implementation Alternative and the Proposed CH-TRUM Treatment, Packaging, and Storage (4 pages)

	TWRS EIS Phased Implementation Alternative Phase I & II		Hanford Tank Farm CH-TRUM Treatment, Packaging, and Storage	
Proposed Action Element or Activity	**Description**	**Health and Environmental Risk**	**Description**	**Health and Environmental Risk**
Waste Form/Releases	Post pretreatment and pre-vitrification waste has undergone solid/liquid separation processing and is stored in lag storage facility. HLW glass monolith. Weight per canister ~3.2 metric tons. (~7,050 pounds). (See SA Section 3.2.1 for bounding waste form). Meets either existing waste acceptance criteria or waste acceptance criteria developed for a specific waste form (TWRS EIS, pg. 3-100 and App. B, B-195).	Bounding operations accident analysis is provided by direct release to the environment of 4000 gal from "super tank" with max. inventory concentration and inadvertent drop and rupture of high-level canister of vitrified waste (App. B, pg. E-212 and E-219).	Dewatered, sorbent added. Weight per SWB: ~1.8 metric tons (~4,000 pounds). Meets waste acceptance criteria for specific waste form.	Accident release is bounded by drop and rupture of CH-TRUM standard storage box would release max. 426 gal. Soil/groundwater release pathway of event is bounded with TWRS EIS analysis of release of 4,000 gal from "super tank." The proposed action provides secondary containment systems that mitigate potential accident release impacts.

1 = Includes Phase I and Phase II.

2 = the schedule for Phase I activities assumes a 1996 baseline in TWRS EIS.

3 =PhaseII activities commence as Phase I activities are completed, so decommissioning of Phase I facilities depends on utility for Phase II.

5.0 CONCLUSIONS

Based upon the review and evaluations of the alternatives and technologies analyzed and bounded by the TWRS EIS and ROD, the following conclusions are made concerning NEPA documentation and coverage of the proposed action:

1) DOE continues its commitment in the TWRS EIS ROD to evaluate new and existing information related to the disposition of waste in specific tanks. This information has led to the identification of approximately 5,500 m^3 (1.5 Mgal) of CH-TRUM that can be retrieved, treated, packaged, and temporarily stored pending final disposal.

2) DOEs' proposal to construct and operate the CH-TRUM treatment and packaging units is consistent with the Phased Implementation alternative selected in the ROD.

3) The potential impacts from the proposed action are bounded by the impacts evaluated in the TWRS EIS and Phased Implementation alternative selected in the ROD.

    - The proposed action is small in comparison to the facilities evaluated in the TWRS EIS preferred alternative. The land disturbing activities would be within already disturbed areas and the land-based impacts would be well within those identified in the TWRS EIS Phased Implementation alternative.
    - The waste inventories of the 11 tanks in the 241-B and 241-T Tank Farms are a small subset of the total waste inventory of the 177 tanks included in the TWRS EIS analysis. Therefore the inventory of the tanks in the proposed action is accounted for in the impact analysis of the Phased Implementation alternative.
    - The proposed action does not change the assumptions concerning the exposure scenarios that were evaluated in the TWRS EIS and the proposed actions fall within the activities evaluated for the Phased Implementation alternative.
    - Risks from routine operations and accidents analyzed in the TWRS EIS were a function of the labor hours. The short duration of the proposed action and the small number of personnel required to operate the proposed facilities place this action within the bounds of the impacts identified from the Phased Implementation alternative.

4) The proposed action is a permissible interim action during the preparation of DOE/EIS-0356 because it would not have an adverse environmental impact, nor limit the choice of reasonable alternatives in the EIS.

5) The proposed project is a variation of the actions considered in the TWRS EIS. It is consistent in the purpose and intent of the TWRS EIS alternatives in that it achieves retrieval, treatment and packaging of a portion of the tank waste and does so at a smaller scale than the TWRS EIS alternatives. DOE concludes in no instance would the impacts from the proposed project exceed those identified in the TWRS EIS.

6.0 DETERMINATION

Based on the evaluations in this SA, the retrieval, dewatering, packaging, and temporary storage on site of tank waste as CH-TRUM waste does make substantial changes or present significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts and, therefore, a supplement to the TWRS EIS is not required under 40 CFR § 1502.9 or 10 CFR § 1021.314 in order for DOE to implement this proposed action. The DOE will amend the TWRS EIS ROD issued in February 26, 1997 (62 FR 8693), pursuant to 10 CFR 1021.315.

Therefore I determine that pursuant to 10 CFR 1021.314(c)(2), no further NEPA documentation is required.

Issued at Richland, Washington, this _____ day of December 2003.

Roy J. Schepens, Manager
Office of River Protection

7.0 REFERENCES

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APPENDIX A

FIGURES

DOE/EIS-0189-SA4

Figure A-1. Waste Packaging Conceptual Process Flow Diagram

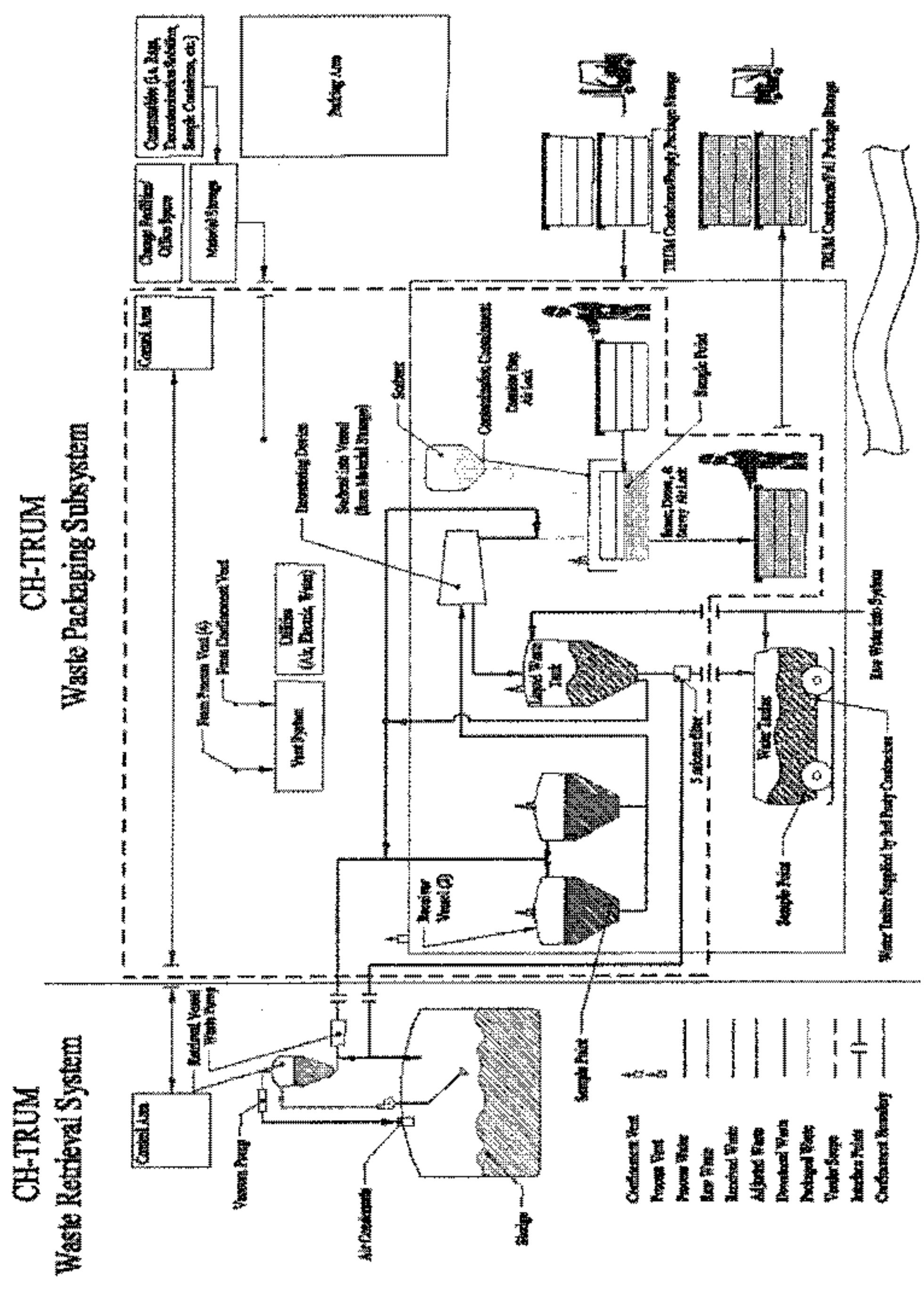
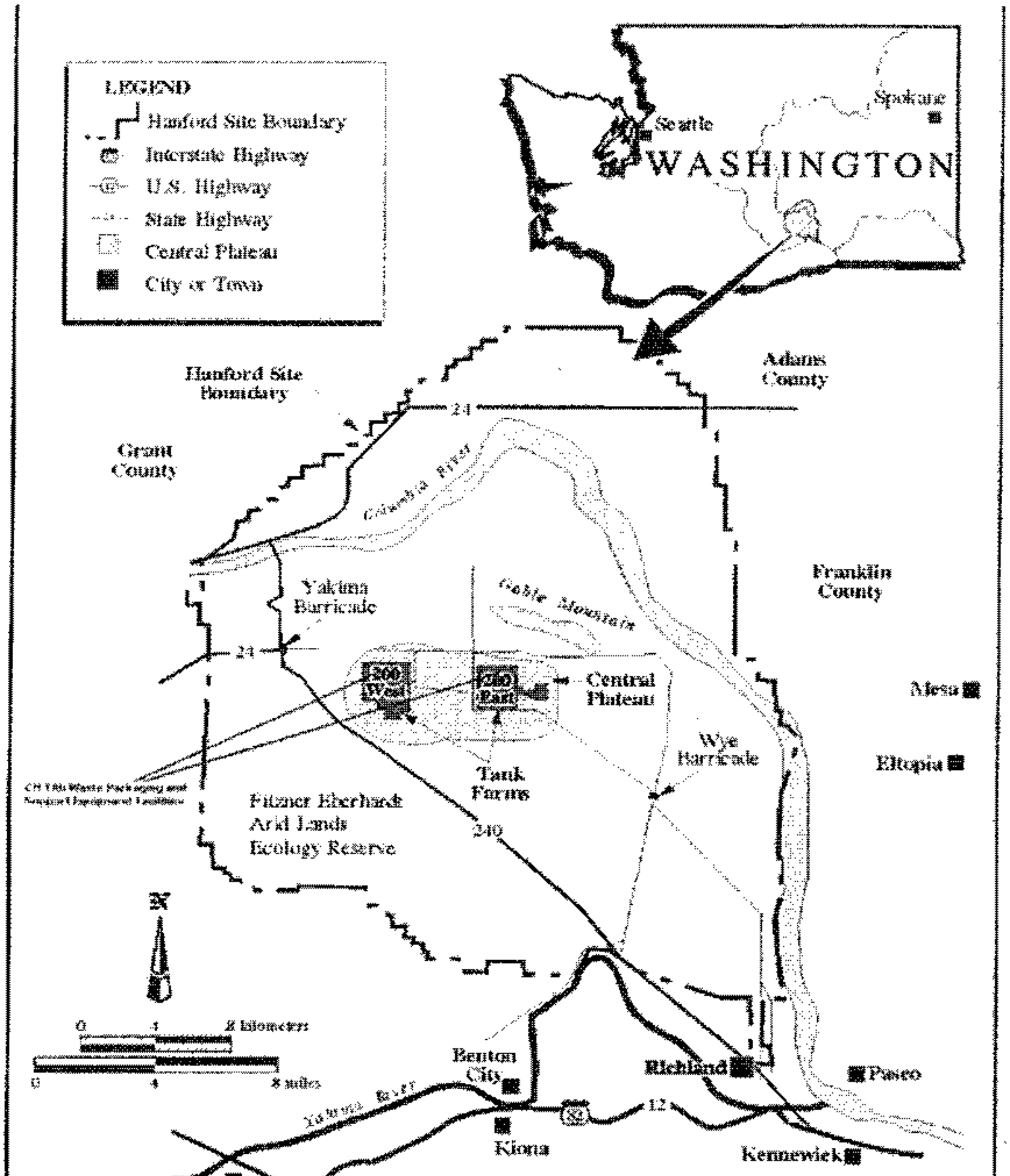


Figure A-2. General Overview of Hanford Site (H-6-958)



Tank Closure and Waste Management EIS for the Hanford Site, Richland, WA NEW OR CHANGED, DATA FORM #306	
Relevant data package: Waste Treatment and Supplemental Technology Data Package, DOE/ORP-2003-07	
New data request or notice of change to data submitted by: Jeffrey J. Daniels, DOE/ORP via text messaging	**Submittal date:** December 10, 2008 2:14p.m
Description of new data request or data change notice: Do you have a reference document calling out the 20 TRU tanks?	
Response from WRPS: The reference document is ORP-11242 Rev. 3a, Section B2.4.6 System Plan. This document was transmitted as emerging data under Data Set 302 and is still the latest version of the System Plan. The list presented in this system plan is consistent with the list identified in Data Set 109. The attached summary provides additional information related to what is in the referenced document as it relates to identifying the 20 tanks for contact-handled or remote handled TRU waste.	
Submitted by: Dwayne Crumpler representing WRPS Initial response by Danny Parker, WRPS via text messaging on December 11, 2008 11:59 a.m.	**Submittal date:** December 11, 2008
Distribution: Jeff Luke, WRPS Mary Burandt, ORP Charlotte Johnson (2), SAIC Diane Stock, Administrative Record	
Administrative Record Filing Number: TBD	

The information below reflects the number of tanks that are classified as TRU waste tanks for Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS) Alternatives 3A, 3B, 3C, 4 and 5.

The TC & WM Data Scaling Package (July 12, 2007) states that "Tank TRU treatment includes 20 tanks with an approximate waste volume of 3.0 million gallons." The data scaling package does not specify which tanks are included in the 20 tank population.

The latest revision of *River Protection Project System Plan*, ORP-11242, Revision 3A, Appendix B, provides the listing of CH and RH-TRU tanks. The list includes a total of 20 tanks. The reference that supports the volume and the number of tanks is RPP-21970, 2005, *CH-TRUM WPU&SE 11-Tank Material Balance*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington and the Baseline Change Request RPP-06-003, Rev. 1. This list is consistent with The New or Changed Data Form #109, submitted on March 3, 2004.

The New or Changed Data Form #109 provided the specific 20 TRU tanks classified as TRU waste tanks and delineated which tanks were Contact-Handled (CH) or Remote-Handled (RH) TRU tank. It also identified the total waste volume associated with CH and RH tanks.

The following text is directly quoted from ORP-11242, Appendix B, Section 2.4.6:

> *The SSTs assumed to provide contact-handled sludge are [B-201, B-202, B-203, B-204], [T-201, T-202, T-203, T-204], T-111, T-110, and T-104, in the stated order except that the tank order within the [brackets] can be changed (ORP-11242, River Protection Project System Plan, Draft Revision 3, Appendix B).*
>
> *The SSTs assumed to provide remote-handled sludge are T-105, T-107, T-112, B-107, B-110, and B-111; the DSTs assumed to provide remote-handled sludge are SY-102, AW-103, and AW-105 (ORP-11242, River Protection Project System Plan, Draft Revision 3, Appendix B).*
>
> *The remote-handled Supplemental TRU Treatment and Packaging process is initially assumed to be located near AW-Farm for treating water washed TRU tank waste from SY-102, AW-103 and AW-105; then near B-Farm for tanks B-107, B-110, and B-111; and finally near T-Farm for T-105, T-107, and T-112..*

The information provided in ORP-11242, Appendix B is consistent with the information provided in New or Changed Data Form #109.

Final, Senior Management Meeting Minutes

March 11, 2004, at 2440 Stevens, Conference Room

Participants or Attendees and Associated Organization:

Everett Orr, SAIC	Mary Beth Burandt, ORP	Steve Wiegman, ORP
Alan Page, CEES	Charlotte Johnson, SAIC	Jeff Daniels, ORP
Woody Russell, ORP	John Swailes, ORP	Dan Parker, CH2M HILL
Jim Rasmussen, ORP	Scott Stubblebine, ORP	Howard Gnann, ORP

Subject(s) Discussed/Summary of Discussions:

- Mary Beth led review of the TC EIS schedules (see attached). She reported that the schedule demonstrates a 19-week duration from post-HQ review to the Draft being sent to back HQ for another review. There is also approximately a 6-week duration for the PSO Briefing, Production of the Draft, etc. Mary Beth indicated that some adjustments had been made to the schedule since that last iteration (presented March 3). Previous schedule had some incorrect logic ties that have now been corrected. Additionally, the current schedule has a number of schedule activities that are finish-to-finish. Establishing more finish-to-finish activities does put the TC EIS project schedule at risk due to performing more activities in parallel. Schedule assumptions include a 5-day workweek and 8-hour workdays.
- Howard asked if it's possible to shorten the groundwater model activity (APSAIC3D40). Mary Beth responded that the activity is a finish-to-finish activity and doesn't present opportunities for reduction. John suggested that the TC EIS use PNNL's super computer to speed up the process. Woody responded that using the computer really wouldn't speed up the activity due to the length of time needed to set-up the model runs on the computer.
- Howard wanted to know the disposition of and are we adjusting Tc-99 and iodine. Mary Beth responded that the based on the review with Headquarters, where the line briefed EH on the inventory changes, it was decided that the TC EIS will use the current Tc-99 number. Text in the EIS will indicate will indicate that when the BBI is updated that those new numbers will be used. It is uncertain as to when the BBI will be update with Tc-99 numbers. The TC EIS is using different Tc-99 numbers than the Solid Waste EIS. Carol Borgstrom suggested waiting for the BBI to be updated, her feeling is that you needed to stay with your inventory basis and can address the sensitivity surrounding the inventory vs. changing one or two numbers…this process made more sense than updating the calculations.
- General discussion regarding the number of TRU tanks identified in the TC EIS. Mary Beth reported that SA 4 identifies 21 tanks as TRU; CH2M HILL has identified 20 tanks as TRU and that there was a typo error in SA 4. The EIS will align with CH2M HILL's tank count of 20. Scott Stubblebine requested a copy of the 20 tanks the EIS was going to use.
- General discussion regarding the status of conversations with Ecology. Mary Beth reported that the TC EIS team met with Ecology on Monday. Discussion with Ecology focused on the IDF location and bulk vitrification. Mary Beth is comfortable with the discussion and there is a path forward.
- Dan reported that CH2M HILL is on a path forward to providing mass balance data as requested.
- All attendees are satisfied with the current schedule written as is. Howard agreed that the schedule should be submitted into IMES and that it was the go forward schedule the team should execute to from the HQ review to draft.
- Mary Beth pointed out that due to software upgrades within the IMES system, that it will no longer be possible to view schedule activities prior to 2004. Formatting changes will also occur which will lead to printed schedules looking different.
- Howard indicated that SAIC and ORP have until the end of March to settle on contract issues.
- Howard asked all attendees to be aware of any opportunities to reduce duration of schedule activities.
- Mary Beth indicated that arrangements are being made for weekly teleconferences with DOE HQ.

Issues/Concerns Identified (Unresolved Questions):

-

Required Actions:

- Mary Beth is to send Scott Stubblebine the tank identification numbers to be used in the EIS.

Prepared by: Alan Page | **Date: 11 March 2004**

Distribution:			
Mary Beth Burandt, ORP	Project File	Everett Orr, SAIC	Danny Parker, CH2M HILL
Thomas Gardner-Clayson, ORP	Charlotte Johnson, SAIC	Woody Russell, ORP	Greg McLellan, CH2M HILL
Dave Nichols, CEES	Steve Wiegman, ORP	Brian Walker, CEES	Rob Barr, ORP
Jeff Daniels, ORP	Brandi Martin, CEES	John Swailes, ORP	Jim Rasmussen, ORP

The following documents will be submitted to the Administrative Record:

- Comparison of Unreviewed, Reviewed and Accelerated Schedule (1 page)
- Office of River Protection, Tank Closure EIS Schedule, Critical Path (5 pages)

Alan Page

From: Burandt, Mary E [Mary_E_Burandt@RL.gov]

Sent: Wednesday, March 31, 2004 4:58 PM

To: 'Alan Page'

Subject: FW: The TRU tanks and volumes from CHG

Alan,
Here is the completed action from the 3/11 meeting, please include with the notes when put into the AR.
Thanks
Mary Beth
-----Original Message-----
From: Burandt, Mary E
Sent: Friday, March 12, 2004 1:18 PM
To: Stubblebine, Scott D; Wiegman, Stephen A
Cc: Gnann, Howard
Subject: The TRU tanks and volumes from CHG

Here is we received last week from CHG concerning the number of tanks for the RH-TRU and the volumes associated with them. All: As I indicated yesterday this is what we are planning to go with in the EIS and what the mass balances are being revised to reflect 20 tanks total and approximately 3 million gallons. If there is direction contrary to this number I would need to know by Monday March 15th.

DST	241-AW-103	273,000 gal
DST	241-AW-105	264,000 gal
DST	241-SY-102	145,000 gal
SST	241-T-112	60,000 gal
SST	241-T-105	98,000 gal
ST	241-T-107	173,000 gal
T	241-B-107	86,000 gal
SST	241-B-110	244,000 gal
SST	241-B-111	240,000 gal

RH-TRU Total 1,583,000

The CH tanks remain the same between the SA and the TC-EIS as before.

Thanks
Mary Beth

Page 1

Comparison of Unreviewed, Reviewed and Accelerated Schedules				
Activity ID	Key Activity Description	Early Finish Unreviewed Version	Early Finish Post-SAIC Review Version	Early Finish Accelerated Schedule
APSAIC3D80	Produce Draft EIS	29-Jul-04	10-Aug-04	23-Jul-04
APORP0062	Publish Draft EIS	24-Sep-04	06-Oct-04	14-Sep-04
APSAIC0068	Public Comment Period	05-Dec-04	17-Dec-04	23-Nov-04
APORP0126	Publish TC EIS Record of Decision	11-Apr-05	25-Apr-05	31-Mar-05

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Description
APSAIC3D20	5	08MAR04	12MAR04	-127	SAIC	Consolidate Comments & Markups from HQ Review
APCHG3D10	10	15MAR04	26MAR04	-127	CHG	CHG Prepare Mass Balances by Alternative
APSAIC0051	80	18MAR04	09JUL04	-127	SAIC	Revise Concurrence Draft EIS per DOE Comments
APSAIC3D35	10	29MAR04	09APR04	-127	SAIC	Prepare Scaled Data Sets for TRU per SA-4
APSAIC3D90	10	29MAR04	09APR04	-127	SAIC	Prepare Scaled Data Sets for New Alt 6x
APSAICD11	9	12APR04	22APR04	-127	SAIC	Prepare Release to Vadose Zone Input Files
APSAICD12	9	23APR04	05MAY04	-127	SAIC	Run Release to Aquifer Model
APSAIC3D40	20	06MAY04	03JUN04	-127	SAIC	Run Groundwater Model for HQ Responses
APSAIC3D50	10	27MAY04	10JUN04	-127	SAIC	Incorporate GW Results into Appendix F
APSAIC3D65	10	27MAY04	10JUN04	-127	SAIC	Calculate Groundwater Dose and Risk Results
APSAIC3D55	5	11JUN04	17JUN04	-127	SAIC	Rerun Ecological Risk Models

FY04 FY05

Data Date 08MAR04
Run Date 11MAR04 12:11

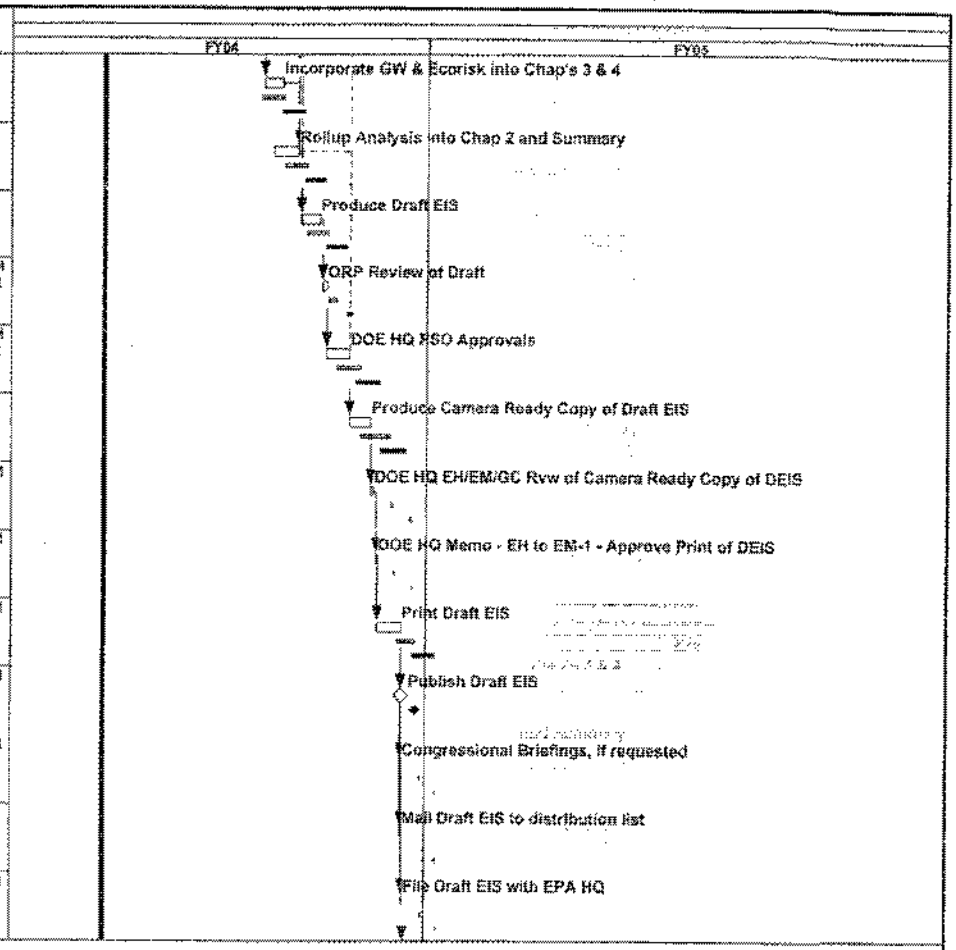
Accelerated Bar
Pre-SAIC Review Bar
Post-SAIC Review Bar
Progress Bar
Critical Activity

IMES - AP00

Office of River Protection
Tank Closure EIS Schedule
Critical Path

Sheet 1 of 5

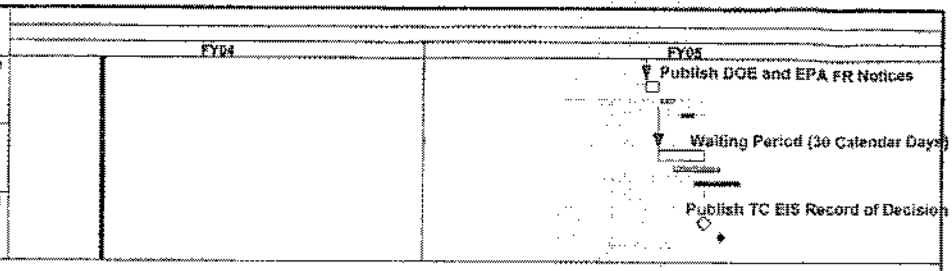
Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
APSAIC3D60	6	18JUN04	29JUN04	-127	SAIC
APSAIC3D70	10	25JUN04	09JUL04	-127	SAIC
APSAIC3D80	10	12JUL04	23JUL04	-127	SAIC
APORPD90	3	25JUL04	28JUL04	-127	ORP - M Burandt
APORPB674	10	25JUL04	11AUG04	-127	ORP - M Burandt
APSAIC0057	10	12AUG04	25AUG04	-127	SAIC
APORPB675	2	26AUG04	27AUG04	-127	ORP - M Burandt
APORP0056	1	30AUG04	30AUG04	-127	ORP - M Burandt
APORP0061	10	31AUG04	14SEP04	-127	ORP - M Burandt
APORP0062	0		14SEP04	-127	ORP - M Burandt
APORP0063	1	15SEP04	15SEP04	-127	ORP - M Burandt
APSAIC0064	1	15SEP04	15SEP04	-127	SAIC
APORP0065	1	16SEP04	16SEP04	-127	ORP - M Burandt



Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	FY04 / FY05
APORP0066	6	17SEP04	24SEP04	-127	ORP - M Burandt	Publish DOE and EPA FR Notices
APSAIC0068	60	25SEP04	23NOV04	-150	SAIC	Public Comment Period (60 Calendar Days)
APSAIC0079	30	19OCT04	01DEC04	-124	SAIC	Summarize Comments
APSAIC0085	45	19OCT04	22DEC04	-124	SAIC	Prepare Comment Response Document
APSAIC0080	1	02DEC04	02DEC04	-124	SAIC	Comp Entry of Summ Cmnts into Cmnt Resp System
APORP0081	4	03DEC04	08DEC04	-124	ORP - M Burandt	ORP Prepare Comment Responses
APSAIC0081	4	03DEC04	08DEC04	-124	SAIC	SAIC Prepare Comment Responses
APORP0082	3	09DEC04	13DEC04	-124	ORP - M Burandt	DOE Concurrence with Comment Responses
APORP0084	2	14DEC04	15DEC04	-124	ORP - M Burandt	Resolve All Non-concurrences/Issues
APSAIC0100	6	21DEC04	30DEC04	-124	SAIC	Production of Draft Final EIS
APSAIC0101	1	30DEC04	30DEC04	-124	SAIC	Deliver copies of Dft Final EIS to ORP for Rvw
APORP0102	2	31DEC04	04JAN05	-124	ORP - M Burandt	DOE-ORP Review of Draft Final EIS
APORP0103	3	05JAN05	07JAN05	-124	ORP - M Burandt	DOE/Dept of Ecology Sr. Rvw Grp/Conc Team Review

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	FY04	FY05
APORP0104	3	10JAN05	12JAN05	-124	ORP - M Burandt		Cmnt Resol Mtg w/ DOE Sr Rvw Grp/Team (WA, DC)
APSAIC0106	3	13JAN05	17JAN05	-124	SAIC		Revise Draft Final EIS according to DOE Comments
APSAIC0107	1	17JAN05	17JAN05	-124	SAIC		Pens Down
APSAIC0108	2	18JAN05	19JAN05	-124	SAIC		Technical Edit of Final EIS
APSAIC0109	4	20JAN05	25JAN05	-124	SAIC		Production of Final EIS
APSAIC0110	1	25JAN05	25JAN05	-124	SAIC		Deliver copies of Final EIS to DOE for Concur
APORP0111	3	26JAN05	28JAN05	-124	ORP - M Burandt		DOE Concurrence Review - Final EIS
APSAIC0112	3	31JAN05	02FEB05	-124	SAIC		Prepare Camera Ready Copy Final EIS
APSAIC0113	1	02FEB05	02FEB05	-124	SAIC		Send Final EIS to Printer/offer Cong'l Briefings
APORP0114	10	03FEB05	16FEB05	-124	ORP - M Burandt		Print Final EIS
APORP0117	0		16FEB05	-124	ORP - M Burandt		Publish Final EIS
APSAIC0119	1	17FEB05	17FEB05	-124	SAIC		Mail Final EIS to distribution list
APORP0120	1	18FEB05	18FEB05	-124	ORP - M Burandt		File Final EIS with EPA HQ

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
APORP0121	6	22FEB05	01MAR05	-124	ORP - M Burandt
APSAIC0122	30	02MAR05	31MAR05	-183	SAIC
APORP0126	0		31MAR05	-125	ORP - M Burandt



Management Meeting Minutes

November 25, 2003, at 2440 Stevens

Participants or Attendees and Associated Organization:

Woody Russell, ORP
Everett Orr, SAIC
Scott Stubblebine, ORP
Jeff Daniels, ORP
Jim Rasmussen, ORP
Dan Parker, CH2M HILL
Steve Wiegman, ORP
Howard Gnann, ORP
Alan Page, CEES
William Herrington, SAIC

Subject(s) Discussed/Summary of Discussions:

- Woody reported that after review of current data and anticipated scheduled delivery of additional EIS data, that a pre-Christmas delivery to HQ of a credible draft would not be feasible. It was discussed that HQ would rather read a more complete and thorough document, rather than read a "working in progress" document. Furthermore, due to schedule constraints, it would not have been practical to provide the "work in progress" document for review, and then provide a completed document for review in a relatively short time span.
- Bill indicated that a number of groundwater issues will be resolved by COB today.
- Woody and Bill led discussion regarding status of groundwater work. Bill reported that groundwater work is progressing, but at a slower pace than previously anticipated. However, due to the time spent on the groundwater data, said data is more accurate and better correlates to established assumptions. Specifically data regarding cribs and trenches has matured to reflect truer numbers. As a result of extra time spent on groundwater, three working days have been lost on the schedule.
- Woody reported on the status of air modeling issues. Work is continuing to mature and additional issues are being closed out. This extra time on air will not change the critical path of the project.
- General discussion regarding ORP Management review of the draft. Steve interested in performing review concurrent with project schedule activity APSAIC0054 (*Production of Draft EIS*). Steve indicated importance of being able to schedule ORP reviewers to read document in a piecemeal fashion. Woody reported that several chapters are in and available for review. Anticipates Chapter 4 to be available by mid-December (per project schedule).
- Scott indicated his desire to review a complete EIS, rather than to read and review in a piecemeal fashion.
- Bill reported that Chapter 1 was available for review as of 21 November. SAIC/ORP will continue to contact ORP Management personnel when chapters and appendices become available for review. Management will be contacted via email and phone.
- Bill explained to attendees the scope of project schedule activity APSAIC0054 (*Production of Draft EIS*). Indicated that among other activities, production includes word processing, QA review, and printing.
- Steve indicated that the ORP Management Review will not be a "go-no go" review. It is to provide Management with the opportunity to "tweak" data. Steve not concerned with reviewing for technical edit type issues, rather wants to review for heavy hitters. Bill indicated that "show stopper" issues have previously been identified and resolved.
- Howard indicated that by 22 December he would like all chapters and appendices available for ORP Management review.
- Steve indicated the need for the Draft EIS to be consistent with SA-4 (specifically issues surrounding TRU tanks).
- Dan explained the type of revised data expected to be delivered by COB today.
- Woody committed to providing by 22 December some form of the complete EIS for ORP Management review.
- Howard indicated that the next Management meeting will be held on 5 December and anticipates that groundwater modeling should be completed. Bill indicated that all rads for groundwater are being run this week and that non-rad runs will commence next week.

Issues/Concerns Identified (Unresolved Questions):

- Howard interested in identifying ways to reduce or eliminate the currently scheduled weeklong ORP Management review.
- Steve concerned with alternatives be credible enough (sufficient data and discussion) to perform a comparison against the baseline to assist with selecting the preferred alternative. In response, Woody indicated that language tweaks have been made in Chapter 2 to provide clearer understanding of alternatives.
- Scott concerned with there being enough time for a thorough production/edit of the Draft.

Required Actions:			
• Everett will develop and provide a one-page schedule to ORP Management showing when each piece (e.g., chapters, appendices, etc.), will be available for ORP review (12/3). This information will not be included on the project schedule but will provide data-certain when documents will be available for review.			
Prepared by: Alan Page			**Date: 25 November 2003**
Distribution:			
Mary Beth Burandt, ORP	Project File	Everett Orr, SAIC	Danny Parker, CH2M HILL
Thomas Gardner-Clayson, ORP	Charlotte Johnson, SAIC	Woody Russell, ORP	Greg McLellan, CH2M HILL
Gae Neath, ORP	Dave Nichols, CEES	Steve Wiegman, ORP	Brian Walker, CEES
Bill Herrington, SAIC	Jeff Daniels, ORP	Brandi Martin, CEES	Jim Rasmussen, ORP
Rob Barr, ORP	Howard Gnann, ORP	Scott Stubblebine, ORP	Roy Schepens, ORP

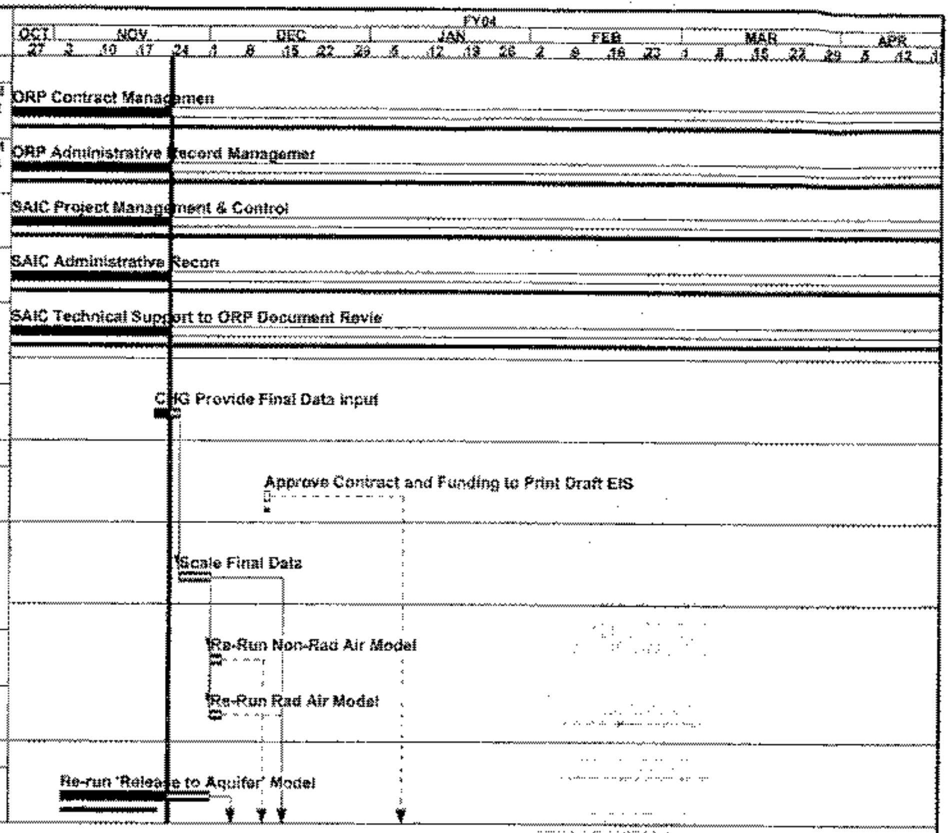
The following documents will be hard copied attached to the minutes for inclusion in the Administrative Record/ Project File:

- Meeting Agenda (1 page)
- Closure EIS Activities, Proposed Activities thru Publish Draft EIS (7 pages)

Tank Closure EIS Status 11/25/03

1. Groundwater Modeling
2. Data Issues
3. Sections Ready for ORP/Ops Review
   a. Chapter 1, Chapter 3 in Production
4. Schedule
5. Mid-month cost report

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS - Contract/ Project Management					
APORP0001B	199*	13JAN03A	08SEP04	-48	ORP - M Burandt
APORP0001C	199*	03MAR03A	08SEP04	-48	ORP - M Burandt
APSAIC1000	199*	12MAY03A	08SEP04	-48	SAIC
APSAIC2000	199*	12MAY03A	08SEP04	-48	SAIC
APSAIC4000	199*	12MAY03A	08SEP04	-48	SAIC
CEIS - Data Package Preparation and Support					
APCHGE002	2	21NOV03A	25NOV03	-64	CHG
CEIS - Guidance Document Preparation					
APORPA606	1	12DEC03*	12DEC03	-51	ORP
CEIS Development - Miscellaneous Analyses					
APSAICE118	2	26NOV03	01DEC03	-64	SAIC
CEIS Development - Air Modeling					
APSAICE120	2	02DEC03	03DEC03	-61	SAIC
APSAICE122	2	02DEC03	03DEC03	-64	SAIC
CEIS Development - Groundwater Modeling					
APSAICE002	4	03NOV03A	01DEC03	-67	SAIC



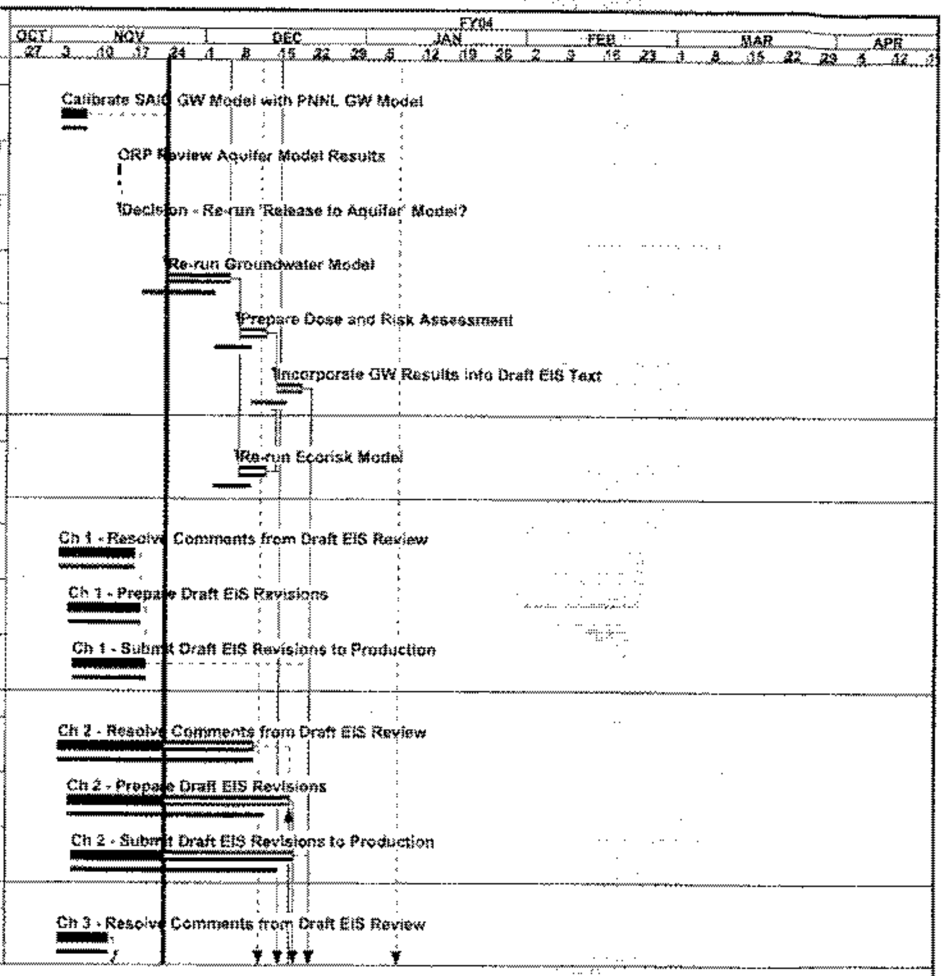
Data Date 24NOV03
Run Date 25NOV03 12:39

Proposed Bar
Last Week Bar
Progress Bar
Critical Activity

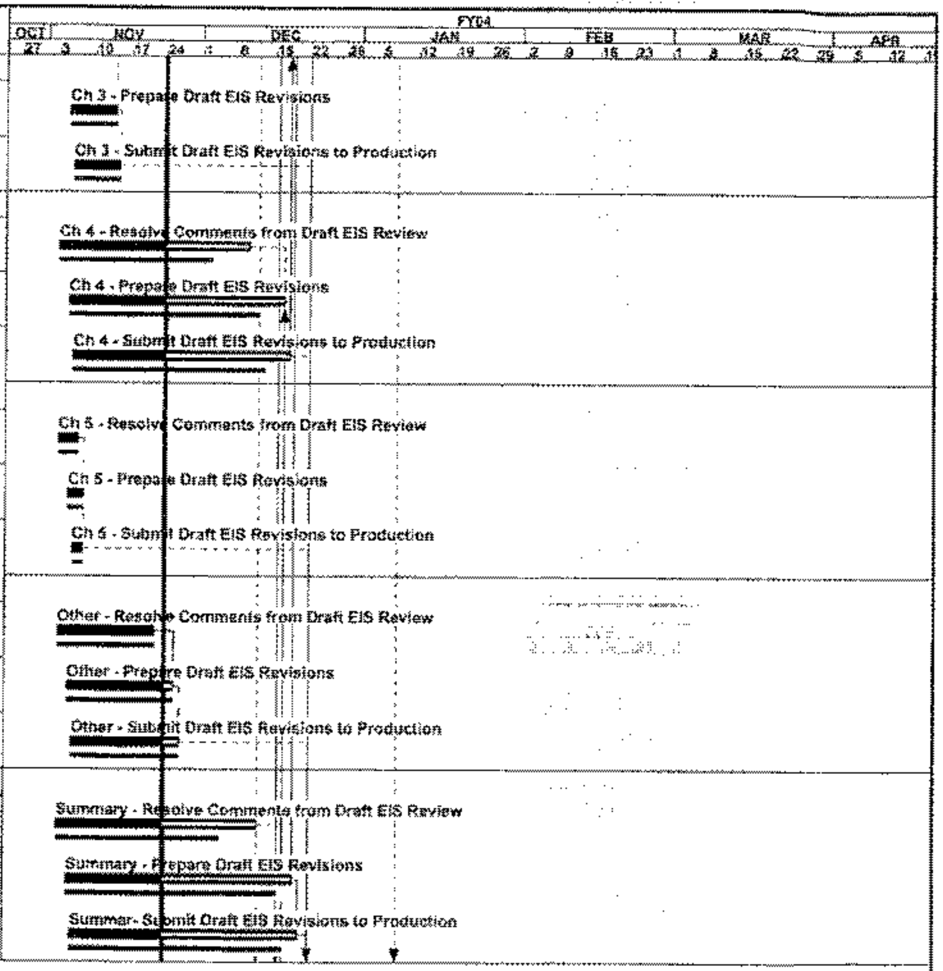
1103 - AP00

Office of River Protection
Closure EIS Activities
Proposed Activities thru Publish Draft EIS

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Groundwater Modeling					
APSAICE114	0	03NOV03A	07NOV03A		SAIC
APORPE002	0	14NOV03A	14NOV03A		ORP - M Burandt
APORPE004	0		14NOV03A		ORP - M Burandt
APSAICE006	8	24NOV03	05DEC03	-67	SAIC
APSAICE008	5	08DEC03	12DEC03	-67	SAIC
APSAICE012	5	15DEC03	19DEC03	-67	SAIC
CEIS Development - Ecorisk Analysis					
APSAICE010	5	08DEC03	12DEC03	-57	SAIC
CEIS Development - Chapter 1					
APSAICE016	0	03NOV03A	17NOV03A		SAIC
APSAICE018	0	05NOV03A	18NOV03A		SAIC
APSAICE020	0	06NOV03A	19NOV03A		SAIC
CEIS Development - Chapter 2					
APSAICE022	11	03NOV03A	10DEC03	-63	SAIC
APSAICE024	16	05NOV03A	17DEC03	-57	SAIC
APSAICE026	17	06NOV03A	18DEC03	-56	SAIC
CEIS Development - Chapter 3					
APSAICE028	0	03NOV03A	12NOV03A		SAIC

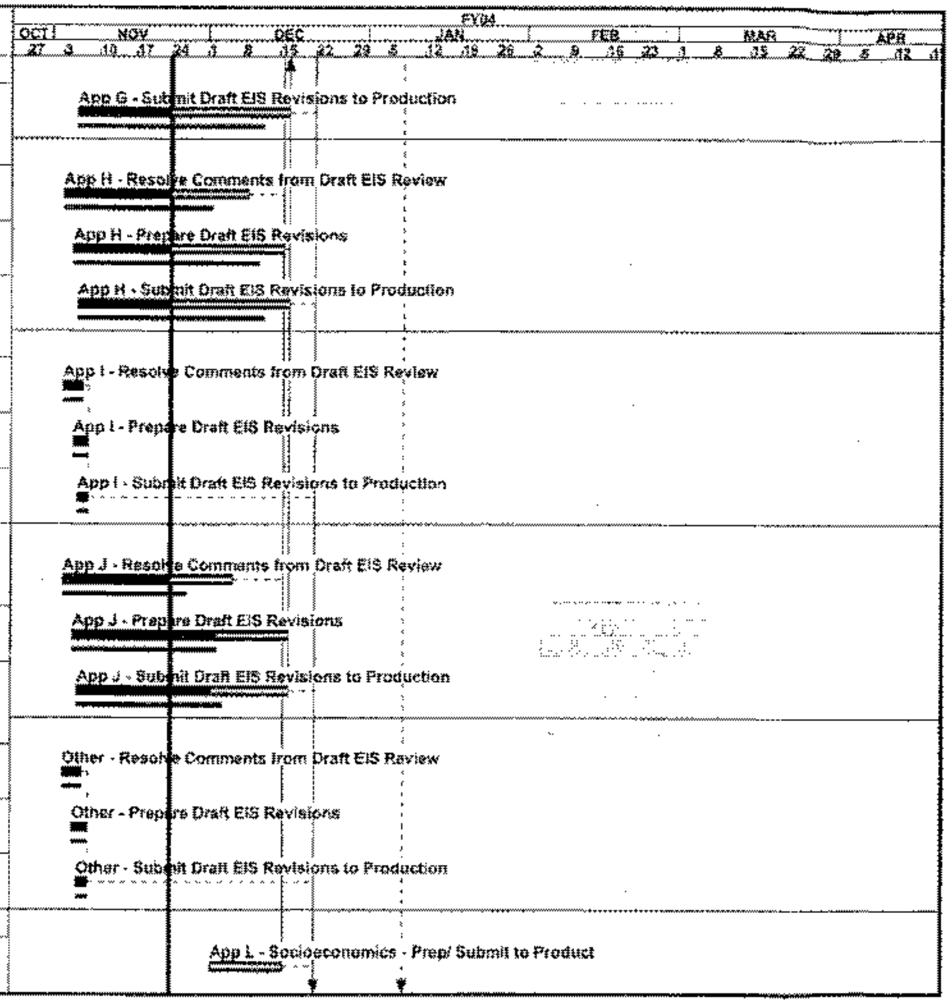


Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Chapter 3					
APSAICE030	0	05NOV03A	13NOV03A		SAIC
APSAICE032	0	06NOV03A	14NOV03A		SAIC
CEIS Development - Chapter 4					
APSAICE034	10	03NOV03A	09DEC03	-64	SAIC
APSAICE036	15	05NOV03A	16DEC03	-67	SAIC
APSAICE038	16	06NOV03A	17DEC03	-65	SAIC
CEIS Development - Chapter 5					
APSAICE094	0	03NOV03A	06NOV03A		SAIC
APSAICE096	0	05NOV03A	07NOV03A		SAIC
APSAICE098	0	06NOV03A	07NOV03A		SAIC
CIES Development - Other Chapters (6,7,8,9)					
APSAICE100	0	03NOV03A	21NOV03A		SAIC
APSAICE102	2	05NOV03A	25NOV03	-52	SAIC
APSAICE104	3	06NOV03A	26NOV03	-52	SAIC
CEIS Development - Summary					
APSAICE106	12	03NOV03A	11DEC03	-64	SAIC
APSAICE108	17	05NOV03A	18DEC03	-67	SAIC
APSAICE110	18	06NOV03A	19DEC03	-67	SAIC



Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	FY04: OCT, NOV, DEC, JAN, FEB, MAR, APR
CEIS Development - Appendix C						
APSAICE040	0	03NOV03A	21NOV03A		SAIC	App C - Resolve Comments from Draft EIS Review
APSAICE042	2	05NOV03A	25NOV03	-52	SAIC	App C - Prepare Draft EIS Revisions
APSAICE044	3	06NOV03A	26NOV03	-52	SAIC	App C - Submit Draft EIS Revisions to Production
CEIS Development - Appendix D						
APSAICE046	0	03NOV03A	21NOV03A		SAIC	App D - Resolve Comments from Draft EIS Review
APSAICE048	1	05NOV03A	25NOV03	-52	SAIC	App D - Prepare Draft EIS Revisions
APSAICE050	1	06NOV03A	25NOV03	-52	SAIC	App D - Submit Draft EIS Revisions to Production
CEIS Development - Appendix E						
APSAICE052	10	03NOV03A	09DEC03	-62	SAIC	App E - Resolve Comments from Draft EIS Review
APSAICE054	12	05NOV03A	11DEC03	-62	SAIC	App E - Prepare Draft EIS Revisions
APSAICE056	13	06NOV03A	12DEC03	-62	SAIC	App E - Submit Draft EIS Revisions to Production
CEIS Development - Appendix F						
APSAICE058	9	03NOV03A	08DEC03	-64	SAIC	App F - Resolve Comments from Draft EIS Review
APSAICE060	14	05NOV03A	15DEC03	-67	SAIC	App F - Prepare Draft EIS Revisions
APSAICE062	15	06NOV03A	16DEC03	-64	SAIC	App F - Submit Draft EIS Revisions to Production
CEIS Development - Appendix G						
APSAICE064	9	03NOV03A	08DEC03	-64	SAIC	App G - Resolve Comments from Draft EIS Review
APSAICE066	14	05NOV03A	15DEC03	-67	SAIC	App G - Prepare Draft EIS Revisions

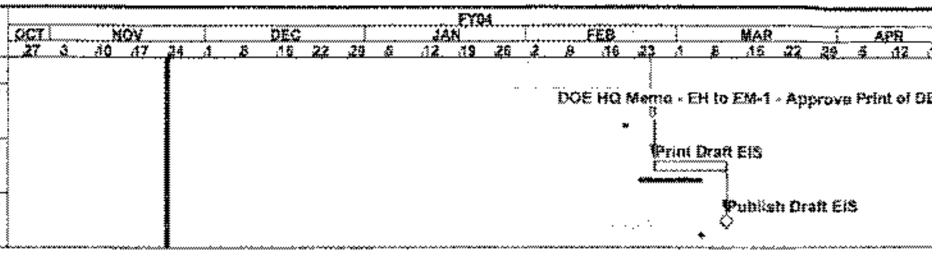
Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Appendix G					
APSAICE068	15	06NOV03A	16DEC03	-64	SAIC
CEIS Development - Appendix H					
APSAICE070	9	03NOV03A	08DEC03	-64	SAIC
APSAICE072	14	05NOV03A	15DEC03	-67	SAIC
APSAICE074	15	06NOV03A	16DEC03	-64	SAIC
CEIS Development - Appendix I					
APSAICE076	0	03NOV03A	06NOV03A		SAIC
APSAICE078	0	05NOV03A	07NOV03A		SAIC
APSAICE080	0	06NOV03A	07NOV03A		SAIC
CEIS Development - Appendix J					
APSAICE082	8	03NOV03A	05DEC03	-59	SAIC
APSAICE084	10	05NOV03A	16DEC03	-64	SAIC
APSAICE086	11	06NOV03A	16DEC03	-64	SAIC
CEIS Development - Other Appendices (A,B,K)					
APSAICE088	0	03NOV03A	06NOV03A		SAIC
APSAICE090	0	05NOV03A	07NOV03A		SAIC
APSAICE092	0	06NOV03A	07NOV03A		SAIC
CEIS Development - Appendix L					
APSAICE116	10	02DEC03	15DEC03	-63	SAIC



CEIS Development - Tech Editing and Production

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Activity
APORPE010	0	03NOV03A	05NOV03A		ORP - M Burandt	Meet w/ M Collins Re: HSW EIS
APSAICE112	18	03NOV03A	19DEC03	-67	SAIC	Incorp Chap/Appendix Revs into Production Draft
APORPE012	0	05NOV03A	07NOV03A		ORP - M Burandt	Identify Areas of Interest w/ HSW EIS
APORPE014	0	10NOV03A	18NOV03A		ORP - M Burandt	Prepare Text (M Collins & M Burandt)
APORPE016	3	19NOV03A	26NOV03	-62	ORP - M Burandt	Review Text (RL, ORP, EH)
APSAICE014	10	01DEC03	12DEC03	-62	SAIC	Incorp Consistency Changes into Draft EIS
APSAIC0054	10	22DEC03	07JAN04	-67	SAIC	Production of Draft EIS
APORPE008	5	08JAN04	14JAN04	-67	ORP - M Burandt	ORP Management Review of Draft EIS
APORP0048	5	15JAN04	21JAN04	-67	ORP - M Burandt	DOE HQ EH/GC Read Draft EIS
APORPB670	5	22JAN04	28JAN04	-67	ORP - M Burandt	DOE HQ EH/GC Integrate Comments for Draft EIS
APSAIC0059	1	22JAN04	22JAN04	-32	SAIC	Deliver Notice of Availability for Draft EIS
APORP0049	5	29JAN04	04FEB04	-67	ORP - M Burandt	DOE HQ EH/GC & ORP Staff/ Team Prep Resolutions
APORPB674	1	05FEB04	05FEB04	-67	ORP - M Burandt	DOE HQ PSO Approvals
APSAIC0051	6	05FEB04	12FEB04	-67	SAIC	Revise Concurrence Draft EIS per DOE Comments
APSAIC0057	6	13FEB04	20FEB04	-67	SAIC	Produce Camera Ready Copy of Draft EIS
APORPB676	2	23FEB04	24FEB04	-67	ORP - M Burandt	DOE HQ GC Review of Camera Ready Copy of DEIS

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Tech Editing and Production					
APORP0056	1	25FEB04	25FEB04	-67	ORP - M Burandt
APORP0061	10	26FEB04	10MAR04	-67	ORP - M Burandt
APORP0062	0		10MAR04	-67	ORP - M Burandt



Final, HQ Meeting Minutes

June 28, 2004, at 2440 Stevens, Conference Room

Participants or Attendees and Associated Organization:

Everett Orr, SAIC | Jeff Daniels, ORP | Woody Russell, ORP
Alan Page, CEES
Via teleconference:
Jeanie Loving, EH | Kurt Juroff, EM | Steve Wiegman, ORP
Dean Monroe, GC | Charlotte Johnson, SAIC | Mary Alice Spivey, SAIC

Subject(s) Discussed/Summary of Discussions:

- General discussion regarding overall status of HQ issue list. Woody stated that remaining open issues are dependent upon new, ongoing, analysis (mostly groundwater). Woody further stated that the team is reviewing the language for #21 (Representative Technologies). Dean stated that he believes that the EIS team has finished the HQ review list (with comments) and wants to get it turned around.
- General discussion regarding the HQ concurrence review scheduled for late August.
- Steve wanted to know who at HQ (senior level) ORP should be talking to in order to prep them for the draft review. Kurt suggested that both Dae Chung and Gene Schmidtt be contacted.
- General discussion regarding whom at HQ needs to receive a copy of the Draft EIS. Dean stated that Betty Nolan would need a copy. He also suggested that Steve Lerner at CI (Congressional and Intergovernmental Affairs) may need a copy as well. Jeanie stated that she wants six copies of the complete draft. Dean stated that he wants one complete draft and Kurt requested two copies. Jeanie stated that we send the Summary to congressionals, governors and select New Mexico representatives. Also, send envelop labels to Joyce in advance and she'll check for typos.
- In regards to press releases, Jeanie suggested that all press releases go through GC and EH for review. Kurt will inform Joe Davis (PA-1, Office of Public Affairs) of the need for him to also review press releases. Jeanie summed up the review process by stating that she wants all press releases, letters, etc. to the Hill, governors, etc. to run through the following: EH, GC, CI, and Joe Davis.
- Dean also stated that Betty would have to review and approve the revised Communication Plan. Jeanie suggested that the EIS team have a finished Communication Plan when the August review begins.
- General discussion regarding the August review session. Charlotte indicated that the project schedule supports a 10 working-day review at HQ. Jeanie stated that HQ will have to read the entire document.
- Woody stated that the EIS team is not expecting the SA 4 ROD to be signed before the TC EIS ROD. Both Dean and Jeanie stated that they believe that SA 4 is dead. Mary Alice stated that in section 1.7 of the EIS there is language regarding SA 4 that can be deleted if necessary.
- Kurt stated that he is concerned about how TRU waste is discussed in the EIS. Wants to know if there is adequate NEPA basis in the EIS to include TRU treatment as HLW. Woody stated that the EIS assumes that some of the waste is TRU. Dean stated that he believes that the TRU discussion in the EIS is adequate. Kurt asked if the EIS supports TRU designation. Jeanie responded that NEPA is not used to designate waste as TRU or not. The TC EIS merely assumes that waste is TRU it doesn't designate it. Further, none of the TC EIS TRU is covered in the WIPP ROD. Dean responded that it is too early to make any designation regarding TRU. Additionally he stated that we may know more after the August review session and that a TRU designation will be made when/if needed. Steve stated that he believes that the EIS is an enabling function for TRU; that many TRU waste processes need to be completed before waste can even be considered TRU. Jeanie stated that she believes that any TRU confirmation processes can continue to move forward while this EIS continues to mature.
- Dean stated that he would like to have a discussion to review the process that was used to address and close out HQ issues. He would like to know what work was done. Charlotte suggested that Dean and others could read the HQ Status Resolution Paper to gain more knowledge of the issue resolution process. Jeanie agreed with Charlotte and suggested that if any questions remain that further discussions could take place. Dean stated that he wants to ensure that all issues were adequately closed and to keep the process moving forward.
- All agreed to conduct a conference call next Thursday (July 8) at 10 a.m. Woody suggested that between now and next Thursday that everyone reviews the issue list and works any outstanding concerns through email.

Issues/Concerns Identified (Unresolved Questions):

-

Required Actions:	
•	
Prepared by: Alan Page	**Date: 28 June 2004**

Distribution:

Mary Beth Burandt, ORP	Project File	Everett Orr, SAIC	Danny Parker, CH2M HILL
Thomas Gardner-Clayson, ORP	Charlotte Johnson, SAIC	Woody Russell, ORP	Greg McLellan, CH2M HILL
Dave Nichols, CEES	Steve Wiegman, ORP	Brian Walker, CEES	Jeanie Loving, EH
Jeff Daniels, ORP	Brandi Martin, CEES	Kurt Juroff, EM	Dean Monroe, GC
Mary Alice Spivey, SAIC			

EPF 1375

RL-675 (03/99)

United States Government | Department of Energy

memorandum

Office of River Protection

DATE: DEC 1 6 2003

REPLY TO ATTN OF: TPD:RMY 03-TPD-130

SUBJECT: DRAFT AMENDED RECORD OF DECISION (ROD) AND SUPPLEMENT ANALYSIS FOR HANFORD TANK FARM CONTACT-HANDLED TRANSURANIC MIXED WASTE TREATMENT, PACKAGING, AND STORAGE, U.S. DEPARTMENT OF ENERGY (DOE), TANK WASTE REMEDIATION SYSTEM (TWRS) ENVIRONMENTAL IMPACT STATEMENT (EIS) (DOE/EIS-0189-SA4)

TO: Jessie Hill Roberson, Assistant Secretary
for Environmental Management, EM-1, HQ

Attached for your review and approval is a draft amended ROD for the TWRS EIS supported by the Supplement Analysis 4 for Hanford Tank Farm Contact-Handled Transuranic Mixed Waste Treatment, Packaging, and Storage (DOE/EIS-0189-SA-4). These documents were developed by the DOE Office of River Protection (ORP) and have undergone reviews with DOE Headquarters Environmental, Safety and Health (EH) and Office of General Counsel staff. Comments provided by these organizations from their respective reviews were incorporated these final documents, with one exception.

Staff comments from EH recommended that elements of the Supplement Analysis be written in the context of the alternatives described in the TWRS EIS (DOE/EIS-0189) instead of referencing the selected alternative under the EIS ROD. ORP has evaluated this recommendation and believes the planned action is bounded by the selected alternative under the EIS ROD and is therefore more conservative.

Based on the Supplement Analysis, I have determined that an amended TWRS ROD be approved and issued.

If you have any questions, you may contact me, or your staff may contact Delmar Noyes, Director, Tank Farms Programs and Projects Division (509) 376-5166.

Roy J. Schepens

Roy J. Schepens
Manager

Attachments
1. Draft TWRS EIS Amended ROD
2. DOE/EIS-0189-SA-4

cc See page 2

DEC 1 6 2003

cc w/attachs:

C. M. Borgstrom, EH-42
J. E. Loving, EH-42
S. Frank, EM-11
R. P. Detwiler, GC-1
L. S. Otis, GC-1
P. F. Dunigan, RL

Attachment 1
03-TPD-130

DRAFT

Hanford Site Tank Waste Remediation System
Environmental Impact Statement
(DOE/EIS-0189)
Amended Rod

(total pages including
coversheet 8)

DEPARTMENT OF ENERGY

Hanford Site Tank Waste Remediation System Environmental Impact Statement (DOE/EIS-0189)

AGENCY: U.S. Department of Energy, Office of River Protection, Hanford Site

ACTION: Amended Record of Decision

SUMMARY: The U.S. Department of Energy (DOE) is amending the Record of Decision (ROD) for the Tank Waste Remediation System Environmental Impact Statement (TWRS EIS) (DOE/EIS-0189) issued February 26, 1997, (62 FR 8693), pursuant to 10 CFR 1021.315. This is an amendment and does not replace or supercede the original ROD.

Based upon DOE review of the waste stored in the Hanford tank system, there is approximately 5,500 cubic meters (m^3) (1.5 million gallons [Mgal]) of contact handled-transuranic mixed waste (CH-TRUM) in single-shell tanks (SSTs). DOE has decided to proceed with the construction and operation of a CH-TRUM treatment and packaging system. This system will consist of up to two dewatering and packaging units. The CH-TRUM treatment and packaging system will initially process and package approximately 1,100 m^3 (approximately 290,000 gal) of CH-TRUM waste between fiscal year (FY) 2004 and FY 2006.

This initial treatment campaign for CH-TRUM waste will be retrieved from eight SSTs that are currently being managed as part of the Hanford Site River Protection Project, formerly known as the Tank Waste Remediation System (TWRS). The balance of the CH-TRUM will be processed if, following the completion of the on-going review of historic and new information, DOE determines to undertake the action.

The packaged CH-TRUM will be temporarily stored in existing facilities or, if adequate existing storage is not available when required, a new interim storage facility. The waste will be certified and stored pending transportation and disposal of the waste at the Waste Isolation Pilot Plant in

Carlsbad, New Mexico. All waste will be processed until waste acceptance criteria specifications for disposal are achieved.

Based on the environmental impact analysis of the Final TWRS EIS and after evaluating costs, regulatory compliance requirements, technical uncertainties, worker and public health and safety, and comments on the TWRS EIS, DOE decided to implement the preferred alternative identified in the Final TWRS EIS for retrieval, treatment, and disposal of tank waste, the "Phased Implementation alternative." DOE selected the Phased Implementation alternative in the ROD because it provides a balance among short-and long-term environmental impacts, meets all regulatory requirements, addresses the technical uncertainties associated with remediation, and provides the flexibility necessary to accommodate future changes in the remediation plans in response to new information and technology development.

DOE prepared a Supplement Analysis pursuant to the DOE procedures implementing the National Environmental Policy Act (10 CFR 1021.314), "Supplement Analysis for Hanford Tank Farm Contact Handled Transuranic Mixed Waste Treatment, Packaging, and Storage" (DOE/EIS-0819-SA4). On the basis of that Supplement Analysis, DOE concluded that the construction and operation of the CH-TRUM processing and packaging system and storage of the CH-TRUM waste pending transportation and disposal would not result in a substantial change in the potential environmental impacts identified in the TWRS EIS for the DOE preferred alternative, the Phased Implementation alternative. DOE also concluded that the proposed action is a permissible interim action during the preparation of the Environmental Impact Statement for Retrieval, Treatment, and Disposal of Tank Waste and Closure of Single Shell Tanks at the Hanford Site, Richland, WA (DOE/EIS-0356).

FOR FURTHER INFORMATION: Requests for copies of the Amended Record of Decision should be directed to Mr. Robert Yasek, U.S. Department of Energy, Office of River Protection, P.O. Box 450, Richland, WA 99352-0450, telephone: (509) 372-1270, fax (509) 373-1313, electronic mail: Robert_M_Yasek@rl.gov. For further information concerning the DOE *National Environmental Policy Act* (NEPA) process, contact Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (EH-42), U.S. Department of Energy, 1000 Independence Avenue S.W., Washington, D.C. 20585, telephone: (202) 586-4600, or leave a message at (800) 472-2756. Additional information regarding the DOE NEPA process and activities is also available on the Internet through the DOE NEPA homepage at http:/tis.eh.doe.gov/nepa.

SUPPLEMENTAL INFORMATION: The Record of Decision (ROD) (62 FR 8693) for the Tank Waste Remediation System (TWRS) Environmental Impact Statement (EIS) (DOE/EIS-0189) stated, "The Final EIS evaluates alternatives for the management and disposal of mixed, radioactive, and hazardous waste currently stored or projected to be stored in 177 underground storage tanks…." The ROD selected the Phased Implementation alternative. That alternative was to consist of two phases. Phase I activities would last for approximately 10 years. Some of the activities would include constructing demonstration- and full-scale facilities, installing and operating tank retrieval systems to retrieve selected waste, performing separations, and transporting low-activity and high-level wastes to onsite interim storage facilities.

In presenting the selected alternative, the ROD stated, "The Phased Implementation alternative was selected because it provides a balance among short- and long-term environmental impacts, meets all regulatory requirements, addresses the technical uncertainties associated with remediation, and provides the flexibility necessary to accommodate future changes in the remediation plans in response to new information and technology development" (62 FR 8693). In describing the selected alternative, the ROD also states, "While carrying out this decision, the DOE will continually evaluate new information relative to the tank waste remediation program." The ROD further states, "…DOE will obtain additional information on the effectiveness of retrieval technologies, characteristics of the tank wastes, effectiveness of waste separation and immobilization techniques, and more definitive data on the costs of retrieval, separation, and immobilization of the waste" (62 FR 8693). One of the advantages of the Phased Implementation alternative is that the separation processes would reduce the volume of high-level waste (HLW) and permanently isolate the waste from humans and the environment by disposing of the bulk of the radionuclides offsite in a national geologic repository (62 FR 8693).

Since issuance of the TWRS ROD, DOE has continued to evaluate new and existing information related to waste characteristics as well as treatment technologies. DOE has identified approximately 11,700 cubic meters (m^3) (3.1 million gal) of transuranic mixed waste in storage in the tank farm system. Of this volume, approximately 5,500 m^3 (1.5 Mgal) is CH-TRUM waste that is stored in 11 SSTs, and approximately 6,200 m^3 (1.6 million gal) of remote handled-transuranic mixed (RH-TRUM) waste contained in 6 SSTs and 4 double-shell tanks (DSTs). WIPP is currently not permitted to receive RH-TRUM, and DOE will continue to review and evaluate options that would potentially lead to the early retrieval and processing of this RH-TRUM waste. However, RH-TRUM is not a part of this analysis, but it is anticipated that this will be addressed in future NEPA documentation.

Through this review, DOE has determined that a portion of the CH-TRUM waste can be retrieved, packaged, characterized, certified, and temporarily stored pending transportation and disposal of the waste at the Waste Isolation Pilot Plant in Carlsbad, New Mexico. The CH-TRUM in the eight tanks addressed in this determination (241-B-201, 241-B-202, 241-B-203, 241-B-204, and 241-T-201, 241-T-202, 241-T-203, and 241-T-204,) is part of the SST inventory at the Hanford Site that was evaluated for retrieval, treatment, and disposal in the TWRS EIS (DOE/EIS-0189). The balance of the CH-TRUM will be processed if, following the completion of the on-going review of historic and new information, DOE determines to undertake the action. Retrieval and packaging of this waste could accelerate the remediation schedule and may reduce the loading on the Waste Treatment Plant (WTP).

Transuranic waste is defined in the Waste Isolation Pilot Plant Land Withdrawal Act as "waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for (A) high-level radioactive waste; (B) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with Part 61 of Title 10, Code of Federal Regulations." Mixed transuranic waste contains both a radioactive component (transuranic waste) subject to regulation by DOE under the *Atomic Energy Act of 1954*, as amended, and other authorities, and a hazardous component subject to regulation under the *Resource Conservation and Recovery Act of 1976*, as amended, and applicable state laws (e.g., the Washington State *Hazardous Waste Management Act*, as amended) and their implementing regulations.

DOE is proposing to construct and operate one or two CH-TRUM treatment/packaging units (Units), and to provide for onsite above ground interim storage of the packaged waste. The proposed processing and packaging systems would receive, dewater, and package the waste for temporary storage at existing onsite permitted storage facilities (e.g., Central Waste Complex [CWC]). If adequate existing permitted storage is not available when required, new interim storage facilities would be constructed.

The proposed action would accelerate the DOE cleanup strategy of reducing risk while protecting human health, safety, and the environment. The proposed action would retrieve approximately 1,100 m^3 (approximately 290,000 gal) of CH-TRUM currently stored in the eight designated tanks that would otherwise not be retrieved and treated until after calendar year 2022. This action is considerably smaller in size, scope, and duration than the Phased Implementation alternative selected in the TWRS EIS ROD. The volume of waste to be retrieved and packaged under the proposed action is also small when compared to the volume of the tank waste evaluated for treatment in the TWRS EIS.

Consistent with the tank waste treatment activities described under the Phased Implementation alternative, the proposed action would allow the packaged waste to be stored onsite and then sent to an offsite geologic repository for disposal.

BASIS FOR DECISION

Pursuant to 10 CFR 1021.314(c), DOE has prepared a Supplement Analysis (DOE/EIS-0189-SA4) to determine whether or not a new or supplemental EIS is required for the proposed action. Specifically, the Supplement Analysis was prepared to determine whether the proposed project was within the scope of actions evaluated in the alternatives of the TWRS EIS and if the potential impacts of the proposed action are bounded by those described in the TWRS EIS. The following highlights the distinction between the proposed action and the Phased Implementation facilities evaluated in the TWRS EIS:

- The two proposed CH-TRUM treatment and packaging units are small in comparison to the physical size of the Phased Implementation alternative.

- The volume of waste to be initially treated by the Unit (about 1,100 m^3 [290,000 gal]) is approximately 0.01% of the total volume of waste to be treated (about 53 Mgal) in the Phased Implementation alternative. The balance of the CH-TRUM (approximately 4,400 m^3 [1.2 Mgal]) to be treated in the future is also a small volume of the total waste volume.

- The proposed project would utilize existing onsite storage capacity. If additional new storage were determined to be needed for interim storage of the CH-TRUM containers it would be a small area, approximately 0.2 hectare (0.5 acre), in comparison with the above ground storage areas evaluated in the TWRS EIS of approximately 30 hectare (75 acres). Additionally, the volume of waste to be stored would be small in comparison to the storage volume evaluated in the TWRS EIS.

- The proposed Units are temporary and would operate for a short duration, less than two years, compared to the treatment systems of the Phased Implementation alternative that would operate approximately 25 years.

- Physical impacts to the environment would only occur within already extensively disturbed areas of the 200 East and 200 West Areas of the Hanford Site.

- The small physical size of the facilities and the short operating duration of the proposed action would not change any of the assumptions used to calculate the long-term impacts to human health and the natural environment evaluated for the Phased Implementation alternative in the TWRS EIS.

- Most of the short-term construction impacts of the treatment and packaging units would be limited to offsite fabrication and assembly facilities.

- The eight designated tanks in the 241-B and 241-T tank farms have a total inventory of 2,779 curies. This inventory is bounded by the total tank farm system inventory in the SSTs of approximately 104,000,000 curies that was used in the TWRS EIS impact analysis and is also bounded by the inventory used in the "super tank model" which was developed for accident analysis purposes based upon the maximum concentrations from all tanks.

- The retrieval of CH-TRUM waste is consistent with the continuing operations of the tank farm system as analyzed in the TWRS EIS and selected in the ROD.
- The proposed action is a permissible interim action during the preparation of the Environmental Impact Statement for Retrieval, Treatment, and Disposal of Tank Waste and Closure of Single Shell Tanks at the Hanford Site, Richland, WA (DOE/EIS-0356), because it will not adversely affect the environment nor limit the choice of reasonable alternatives (40 CFR 1506.1(a) and 10 CFR 1021.211).

DECISION

Based on the Supplement Analysis, DOE concludes that the potential impacts for the proposed treatment, packaging, and interim storage of the CH-TRUM waste are bounded by those analyzed in the TWRS EIS for the treatment, packaging, and interim storage of the entire Hanford SST inventory. DOE will proceed with the initial treatment of approximately 1,100 m^3 (approximately 290,000 gal) of CH-TRUM waste from eight SSTs. Further, the proposed action is a permissible interim action under 40 CFR 1506.1(a) and 10 CFR 1021.211. DOE hereby amends the ROD for the Final Tank Waste Remediation System Environmental Impact Statement issued on February 26, 1997, (62 FR 8693).

Issued in Washington, DC, this _______ day of ________________, ________

____

Jessie Hill Roberson,

Assistant Secretary for Environmental Management

Record of Conversation

Conversation took place on: November 24, 2003 — Date; 1300 hours — Time

Type of conversation: ____ Phone ____ In person

___X_ Teleconference ____ Other

Conversation was initiated by: John Kristofzski, CH2MHill

Conversation involved:
Jeanie Loving/ DOE-EH ; Woody Russell, DOE-ORP-ED ______ Name/organization
Rob Yasek/DOE-ORP-AMTF; Paul Dunigan, DOE-RL ______ Name/organization
Delmar Noyes/DOE-ORP-AMTF; Steve Wiegman, DOE-ORP-AMTF ______ Name/organization

Issues discussed: SA-4; HQ expressed concerns about (1) reversibility language in SA-4;(2) adequate justification that tanks contain TRU wastes: (3) interface or consistency with other NEPA documents: (4) the number of tanks that contain TRU wastes – TC-EIS identified 17. SA-4 had identified 8, but now would identify 11. CHG suggested there could be as many as 22-23 TRU tanks. (4) storage of TRU waste containers once removed from tanks must be clearly explained. TRU storage was not covered in TWRS-EIS.

Resolution: (1) Reversibility language would be removed from SA-4. (2) ORP-AMTF and CHG stated there is more than adequate justification that tank waste is TRU , it just had not been put to paper. CHG will develop a white paper of justification that some tanks waste is TRU. (3) SA-4 would be inconsistent with TC-EIS. SA-4 cannot support the 17 tanks identified in the TC-EIS and will identify 11 tanks to be consistent with the TWRS-EIS, with the ROD addressing only 8 tanks. Three CH-TRU tanks and three RH-TRU tanks have been excluded since there does not seem to be adequate coverage/discussion under the TRWS-EIS. (4) Whether new storage was necessary or existing storage capacity at CWC was not resolved. However, CHG stated TRU storage is bounded by the IHLW storage facilities discussed in the TWRS-EIS.

Action item(s): ORP/AMTF and CHG would revise SA-4 and resubmit next week. The white paper justification would follow within a week or so.

Comments: Personal observation – disconnect between what HQ expects to see in the TRU justification and what will be provided in the white paper (one to two page white paper seems inadequate). Discussion followed between Jeanie Loving and Woody Russell to impacts to TC-EIS. No changes to TC-EIS to reflect differing number of TRU tanks. TC-EIS will stick with 17 tanks.

Prepared by: Woody Russell

Burandt, Mary E

Subject: FW: Proposed Approach for Addressing Hanford Tanks Believed to Co ntain TRU Wastes

-----Original Message-----
From: Otis, Lee
Sent: Sunday, November 30, 2003 11:36 AM
To: Fygi, Eric; McRae, Ben; Dennison, William; Schepens, Roy (RL);
Jacobs, Marilyn
Cc: Detwiler, Paul; Borgstrom, Carol; LeDuc, Edward; Loving, Jeanie;
"steve.cuevas@em.doe.gov' '
Subject: RE: Proposed Approach for Addressing Hanford Tanks Believed to
Co ntain TRU Wastes

I am guessing that you included the attachment in the text of the message, and that it starts after the sentence that begins "Attachment A provides further detail regarding the volumes and waste origins for the 22 candidate TRU tanks." I am also copying Eric Fygi, Bill Dennison and Ben McRae on this response, thereby also forwarding the incoming message.

-----Original Message-----
From: Schepens, Roy (RL)
To: Jacobs, Marilyn; Otis, Lee
Cc: Detwiler, Paul; Borgstrom, Carol; LeDuc, Edward; Loving, Jeanie; 'steve.cuevas@em.doe.gov'
Sent: 11/29/2003 3:41 PM
Subject: Re: Proposed Approach for Addressing Hanford Tanks Believed to Co ntain TRU Wastes

Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

The Department of Energy, Office of River Protection (ORP) has conducted a thorough, systematic review of historical records associated with the origin of wastes in the Hanford tank farms. This review of operational records has provided a means of determining the origins of wastes in the tanks based on tank fill histories, transfers, and physical configuration histories for tank farm piping. The historical information is being (or has been) confirmed by sampling and analysis of each tank's contents.

Based on these reviews and analyses, ORP has determined that 22 tanks containing approximately 3 million gallons of wastes could potentially be classified as transuranic waste (TRU). Attachment A provides specific information regarding the candidate tanks, waste volumes, and waste origins. Of that 3 million gallons, approximately 50% is anticipated to yield contact-handled (CH) wastes after packaging (i.e., the waste package surface dose will be < 200 mR/hour), while the other 50% is anticipated to yield remote-handled (RH) wastes (package surface dose >200 mR/hour). ORP perceives the path forward to be reasonably clear for many of the tanks containing CH TRU. That path is set forth in Supplement Analysis 4 (SA-4) to the Tank Waste Remediation System Environmental Impact Statement (TWRS/EIS).

An equally clear path forward does not yet exist, however, for tanks containing wastes that are candidates for designation as RH TRU. This is in large measure because the Final Waste Isolation Pilot Plant (WIPP) waste acceptance criteria (WAC) and certification procedures do not yet exist for RH TRU. Without those criteria and procedures. ORP is unable to reasonably estimate (at a similar level of detail to the estimates made for CH TRU in SA-4) information required for its National Environmental Policy Act of 1969 (NEPA) analyses. Among the areas ORP cannot reasonably estimate without the WIPP RH WAC are the specific technical approaches to be used, scheduling, costs, and environmental impacts associated with the retrieval, treatment, packaging, certification, and storage of the candidate RH TRU tank wastes. Consequently, ORP is not proposing to address the tanks that may contain RH TRU in SA-4. The wastes in those tanks will be addressed at such time as the WIPP RH WAC and certification procedures become available. If ORP is then able to confirm that those wastes will be acceptable for disposal at WIPP, appropriate documentation will be prepared to address any outstanding NEPA and WIPP WAC requirements.

Relative to the CH TRU tanks, two miscellaneous underground storage tanks (MUSTs) that appear to contain CH TRU (T-361 and B-361) were not addressed in the TWRS EIS. As a result these two tanks will not be included in SA-4.

Accordingly, SA-4 addresses eleven single-shell tanks (B-201, B-202, B-203, B-204, T-201, T-202, T-203, T-204, T-104, T-110 and T-111) that contain CH TRU. ORP proposes that the Record of Decision (ROD) only address the eight B and T 200-series tanks: the other three CH TRU tanks will be addressed in a subsequent ROD.

Candidate RH TRU tanks may be evaluated in the Tank Closure EIS or a Supplement Analysis to the Tank Closure EIS as appropriate based on when the WIPP RH TRU criteria are finalized.

Attachment A provides further detail regarding the volumes and waste origins for the 22 candidate TRU tanks.

The Office of River Protection (ORP) has been reviewing and continues to review historical records associated with the origin of the tank waste. Operational records based on tank fill history and the physical configuration of the piping indicate the origins of wastes in the tanks of interest. ORP confirms the waste origin information provided by these records by sampling and analyzing the contents of candidate tanks. Table 1 summarizes the results of ORP's review.

Table 1. Candidate Tank Wastes for a Transuranic Waste (TRU) Designation

Candidate TRU Tanks

Waste Origin

(See Key at Bottom of Table)

Cumulative Volume

Contact-Handled Waste in Single-Shell Tanks

B-201, B-202, B-203, B-204,

T-201, T-202, T-203, T-204

224 / DW (DW only in B-200's)

284,000 gallons

T-110, T-111

224/2C/DW (DW in T-111 only)

817,000 gallons

T-104

1C

317,000 gallons

Contact-Handled Waste in Miscellaneous Underground Storage Tanks

B-361, T-361

224

45,100 gallons

Remote-Handled Wastes in Single-Shell Tanks

B-107

1C/PCW/Saltcake

86,000 gallons (sludge only)

T-107

1C/CW/B Plant IX

173,000 gallons

B-110, B-111

2C/B Plant Sr/RE/B Plant IX

485,000 gallons

T-105

2C/1C/CW/B Plant IX

98,000 gallons

T-112

2C/224/DW/B Plant IX

60,000 gallons

Remote-Handled Sludges in Double-Shell Tanks

SY-102

PFP

71,000 gallons (sludge only)

AW-103, AW-105

PCW

536,000 gallons (sludge only)

Key to Waste Origins

Symbol

Explanation

1C

First Pu Decontamination Cycle Waste from Bismuth Phosphate Plant

2C

Second Pu Decontamination Cycle Waste from Bismuth Phosphate Plant

224

224-B/T Plutonium Concentration Building Waste

CW

Coating Removal Waste from Dissolution of the Coating (i.e. hull) on Irradiated Nuclear Fuel Elements

DW

Equipment/building decontamination wastes from 221 B/T and/or 224 B/T

PCW

Purex Cladding Waste from the Dissolution of Cladding (i.e. hull) on Irradiated Nuclear Fuel Elements

B Plant IX

Process waste from cesium removal campaign conducted 1967 to 1986 at 221-B Plant

B Plant Sr/RE

Process waste from separating rare earth fission products and lead conducted 1965 to 1967 at 221-B Plant

PFP

Plutonium Finishing Plant wastes

Saltcake

Sodium compounds precipitated from waste after evaporation

Table 1 identifies 22 single-shell tanks (SSTs), double-shell tanks (DSTs), and miscellaneous underground storage tanks (MUSTs) that contain TRU wastes along with each tank's waste origin(s) and waste volumes. The 22 tanks listed in Table 1 cumulatively contain approximately 3 million gallons of transuranic sludges of which ~1.5 million gallons is anticipated to yield CH wastes once packaged (i.e., waste package surface dose <200 mR/hour) while the other ~1.5 million gallons is anticipated to yield RH wastes (>200 mR/hour). A more detailed discussion of the Table 1 tanks and wastes along with ORP's proposed path forward for each is set forth below.

CONTACT-HANDLED SST/MUST WASTES

224-B/T Plutonium Concentration Building Wastes - Eight B-200 series SSTs received wastes from the 224-B and 224-T Plutonium Concentration Buildings. Those tanks also received waste from equipment and building decontamination activities conducted in the 221-B Building following the shutdown of the Bismuth Phosphate process. The Plutonium Concentration Building waste was generated by dissolving and re-precipitating the plutonium product to remove low levels of radioactive and chemical contaminants carried over from the B/T-221 plutonium decontamination cycles. The Plutonium Concentration Building waste is not a spent nuclear fuel reprocessing waste as no spent nuclear fuel was present when this process took place. The Plutonium Concentration Building waste stream contained only ~0.001% of the fission product inventory that was in the spent nuclear fuel that the plutonium was extracted from. The low fission product concentrations results in the Plutonium Concentration Building wastes being CH once dewatered and packaged. ORP perceives a clear path forward to certify this waste for shipment to the Waste Isolation Pilot Plant (WIPP) and has estimated the costs and impacts associated with the retrieval, treatment, packaging, and certification of this waste prior to shipment to WIPP. That information is set forth in Supplemental Analysis (SA-4).

221 B/T Second Plutonium Decontamination Cycle Wastes -- The second group of CH SSTs in Table 1 consists of tanks T-110 and T-111. These two tanks also received 224-T, Plutonium Concentration Building, wastes. Both tanks also received wastes from the 221-T building second plutonium decontamination cycle. Tank T-111 also received wastes from equipment

and building decontamination activities. The second cycle of plutonium decontamination is not spent nuclear fuel reprocessing as no spent nuclear fuel was present <outbind://11/#_ftn1> [1] in the second plutonium decontamination cycle. only contaminated <outbind://11/#_ftn2> [2] plutonium product. The equipment and building decontamination wastes were also not produced during the reprocessing of spent nuclear fuel. As a result, all of the wastes in T-110 and T-111 have sufficiently low fission product concentrations to be CH when dewatered and packaged. ORP perceives a clear path forward to certify the T-110 and T-111 wastes for disposal at WIPP. ORP has estimated the costs and impacts associated with the retrieval, treatment, packaging, and certification of this waste prior to shipment to WIPP in SA-4.

221 B/T First Plutonium Decontamination Cycle Wastes -- The third CH waste group in Table 1 consists of one tank. T-104. That tank received waste from the Bismuth Phosphate process first plutonium decontamination cycle. The first cycle of plutonium decontamination is also not a spent nuclear fuel reprocessing in that no spent nuclear fuel was present in the first plutonium decontamination cycle, only contaminated plutonium product. Although just one step removed from spent nuclear fuel reprocessing (uranium separation/plutonium extraction cycle), once dewatered and packaged, the wastes in T-104 are also projected to be CH. The fission product content in the T-104 wastes is only ~1% of the fission product concentrations in the uranium separations/plutonium extraction waste stream. Accordingly, ORP also perceives a clear path forward to certify this waste for shipment to WIPP. ORP is updating the estimated costs and impacts for the retrieval, treatment, packaging, and certification of T-104 waste prior to shipment to WIPP. That information will also be set forth in SA-4.

Contact-Handled MUST Waste - Tanks B-361 and T-361 contain the same wastes as the B/T 200-series SSTs listed above, i.e., wastes from the 224-B/T Plutonium Concentration Buildings. While the wastes in these tanks will be CH TRU once dewatered and packaged, these two MUSTs were not considered in the TWRS/EIS. As a result, their wastes cannot be included in SA-4 [M E1] <outbind://11/#_msocom_1> but may be considered in the Tank Closure EIS currently being developed.

REMOTE-HANDLED SST WASTES

Six SSTs identified in Table 1 (B-107, T-107, B-110, B-111, T-105, and T-112) collected wastes from the first and second Bismuth Phosphate plutonium decontamination cycles along with wastes from various cesium, strontium, and rare earth removal campaigns. Tank B-107 also received cladding removal wastes from the PUREX Plant. Present indications are that these tanks contain sufficient fission product concentrations to result in RH wastes. Since WIPP has not yet finalized its waste acceptance criteria (WAC) for RH TRU, ORP cannot ascertain the treatment, packaging, storage, and certification requirements for RH TRU wastes. Without that information, ORP cannot identify the costs and impacts associated with the retrieval and handling of these wastes in a manner comparable to that set forth in SA-4 for the contact handled wastes. Moreover, ORP cannot ascertain whether these wastes can be disposed of at WIPP, even though a TRU designation may be warranted, due to statutory limits on WIPP's RH disposal volumes. Accordingly, ORP proposes that these wastes not be addressed in SA-4. Once the WIPP RH WAC is established, these wastes will be further evaluated and addressed in appropriate NEPA documentation.

REMOTE-HANDLED DST SLUDGES

Three DSTs (SY-102, AW-103, and AW-105) contain sludges that did not originate during the reprocessing of spent nuclear fuel. AW-103 and AW-105 contain wastes from PUREX head-end decladding operations. SY-102 contains wastes from the Plutonium Finishing Plant. Although all of these sludge wastes may have contained low levels of fission products when produced, the high-level waste supernate has been stored in the DSTs on top of the sludges. The resultant commingling makes it likely that the sludges will produce RH waste once rinsed (to remove cross-contamination from the supernate), dewatered, and packaged. As discussed above for RH sludges in SSTs, ORP has not yet developed a detailed plan, cost estimates, and impact estimates for the RH DST sludge wastes. The commingling also presents a more difficult classification challenge than is presented by CH wastes; a challenge that may be better addressed once the outcome of ongoing DOE efforts related to waste classification are further advanced. Accordingly, ORP proposes that these wastes not be addressed in SA-4. Once the WIPP RH WAC is established and current classification issues are resolved, the RH DST sludge wastes will be further evaluated and, if classified as TRU, addressed in appropriate NEPA documentation.

<outbind://11/#_ftnref1> [1] The Nuclear Waste Policy Act of 1982 (NWPA) defines spent nuclear fuel as "fuel withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing." In the Bismuth Phosphate process, the constituent elements of the spent nuclear fuel are separated by reprocessing during the Uranium Separation/Plutonium Extraction cycle. In the Bismuth Phosphate process, the spent nuclear fuel components were separated during the uranium separations/plutonium extraction cycle, the highly radioactive wastes from which were transferred to single-shell tanks as HLW.

<outbind://11/#_ftnref2> [2] The fission product concentrations in the second plutonium decontamination cycle was 0.1% or less of the fission product concentrations in the uranium separations/plutonium extraction waste stream.

BM__msocom_1 <outbind://11/#_msoanchor_1> [M E1]The Tank Closure EIS currently does not address tanks B-361 and T-361.

Accelerated Tank Retrieval, Disposal, and Closure EIS Meeting Notes

Date: Tuesday, December 10, 2002/ 10:00 AM

Location: 2440 Stevens Center

Participants/Attendees: D. L. Parker, N. L. Kirner, and D. W. Hamilton

Subject(s) Discussed/Summary of Discussions: The purpose of the meeting was to discuss storage and disposal elements to be included in the Disposal Data Package regarding transuranic (TRU) and bulk vitrification waste. Mr. Hamilton is the Project Manager for these two alternative treatment technologies.

Summary of Discussion: Mr. Hamilton noted that the current NEPA strategy being advanced by CH2M HILL is for an Environmental Assessment (EA) rather than an Environmental Impact Statement to be used for NEPA documentation for the TRU waste project. Mr. Hamilton noted that the Accelerated Closure EIS schedule does not support the project schedule and that Mr. Felix Miera is working the issue with ORP. Mr. Parker was aware of that proposal from an earlier conversation with Dr. Rod Powell, but noted that at this time the direction from ORP is that TRU waste treatment be included in the Accelerated Closure EIS.

Mr. Hamilton noted that two areas of waste treatment he is concerned with are TRU and low-level waste. The current strategies for each are very similar. The waste would be removed from a tank through a process such as vacuuming, and placed into 55-gallon drums. The waste in the drums would be dewatered as necessary to meet applicable waste acceptance criteria. For TRU waste, the waste acceptance criteria to be met are those of the Waste Isolation Pilot Plant (WIPP). (The WIPP waste acceptance criteria call for the waste to contain less than 1% free water.) For low-level waste, the acceptance criteria would be for some other facility where the LLW would be disposed. An absorbent would likely be added to the drums to absorb any liquid generated due to waste settling.

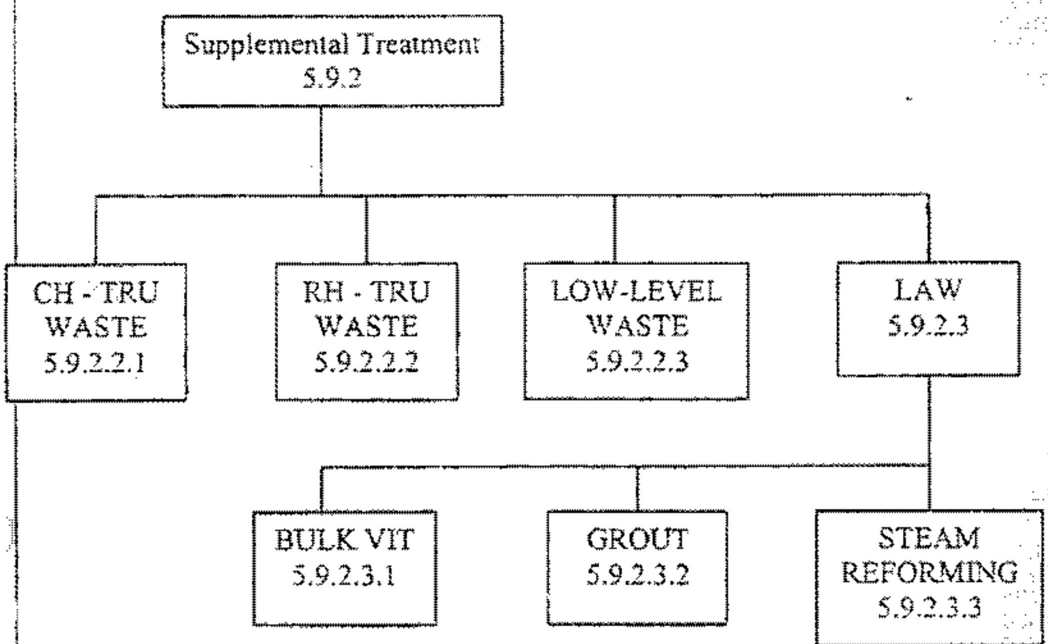
For TRU waste going to WIPP, a headspace sample would be taken at some interval specified in the WIPP waste acceptance criteria. The interval is 200 and something days after the waste is put into the drum. It was noted that a sampling strategy would be developed as the project progresses, which will specify sampling requirements for waste disposal. It is likely that some statistical sampling program would be developed and proposed, perhaps after a full sampling program had established the acceptability of less frequent sampling.

In response to a question regarding the current strategy for disposing of remote-handled (RH) TRU waste, Mr. Hamilton noted that his project is not considering the storage or disposal of any of the RH TRU waste. However, as far as the schedule for processing RH TRU waste is concerned, current planning is that the project to process the RH TRU waste would begin in January 2007, and RH TRU waste would probably be ready for storage and disposal a couple of years later. When asked how much RH TRU waste would be produced, Mr. Hamilton explained that there are about 600,000 gallons of RH TRU stored in three tanks. The three RH TRU containing tanks are AW-103, AW-105, and SY-102.

Possible referencable sources of data to be used in the preparation of the Closure EIS were then discussed. Mr. Hamilton noted that the Cost Estimating Input Sheets (CEISs) and WBS dictionary sheets include the current assumptions for the project. Mr. Hamilton sketched the work breakdown structure (WBS) for the Supplemental Technologies (Figure). The CEISs were prepared a few days ago and are therefore very up-to-date, however, they may be difficult to sift through, so the WBS dictionary sheets are probably a better source. Mr. Parker said that he thinks he has access to those dictionary sheets.

The discussion turned to bulk vitrification. Mr. Hamilton described the bulk vitrification process by saying that supernatant liquid would be pumped from the tanks and mixed with earth in a large metal box. Electrodes would then be inserted and the waste in the box vitrified. The box would contain about 20 cubic yards of vitrified waste and would be drug off for burial at a low-level waste repository. About 300 boxes per year would be produced. The earliest start for bulk vitrification would be January 2006, and glass production would continue through 2028. Waste properties would be very similar to vitrified low-activity waste and the vitrified low-activity waste properties could be used as a basis for calculating bulk vitrification waste properties. A statement of work (SOW) has been prepared and is currently out to select a vendor for bulk vitrification. Mike James would be able to provide a copy of that SOW.

FIGURE
WBS Structure for Supplemental Technologies



Issues/Concerns Identified (Unresolved Questions):

- N/A

Required Actions:

- D. L. Parker to prepare and distribute meeting notes.

Prepared/Recorded By: D. L. Parker | **Date:** 12/17/02

Distribution: D. L. Parker, N. L. Kirner, D. W. Hamilton, Closure EIS Project Files

NEPA Consideration of Removing TRU from Tank Wastes for Separate Disposal

I've reviewed the TWRS-EIS (DOE/EIS-0189F) and its Record of Decision (ROD) and find the following:

- The EIS analyzed and the ROD selected the "Phased Implementation Alternative" which includes removal of selected radionuclides (including transuranics) from the low--activity waste stream, storing the removed radionuclides pending HLW treatment, and return of the removed wastes to DSTs for future retrieval, treatment and disposal in the high-level waste stream.

- No alternatives in the TWRS-EIS included separation of transuranics from the tank wastes for disposal as TRU.

- Closure of the tanks with TRU residuals in them was not covered since closure was not addressed in the TWRS EIS.

- The TWRS-EIS does not include analysis of treatment, packaging or transportation of TRU waste.

Therefore, I conclude that a Supplement Analysis of the TWRS-EIS regarding TRU waste would not be appropriate, since there is no existing analysis to supplement and the impacts are not bounded by the TWRS-EIS.

I recommend that these impacts be included in the Tank Closure EIS, which is now in preparation, or held for a later EIS.

PFXDJr. 6 May 03

Final Management Meeting Minutes

December 10, 2003, at 2440 Stevens

Participants or Attendees and Associated Organization:

Jeff Daniels, ORP
Alan Page, CEES
Bill Herrington, SAIC
Jim Rasmussen, ORP
Scott Stubblebine, ORP
John Swailes, ORP
Mary Beth Burandt, ORP
Everett Orr, SAIC
Woody Russell, ORP
Diane Clark, ORP
Howard Gnann, ORP
Dan Parker, CH2M HILL
Charlotte Johnson, SAIC
Paul Dunigan, DOE
Rob Barr, ORP
Roy Schepens, ORP

Subject(s) Discussed/Summary of Discussions:

- Mary Beth led discussion regarding the status of the project schedule. Mary Beth indicated that since last week's update to Senior Management that there has been no slip in the schedule. However, adjustments were made to a number of project activities. Project activities APSAICE002, -006, -008, and -012 (groundwater modeling activities) were adjusted to a finish-to-finish relationship. A 2-day lag for these activities was included as well. Mary Beth indicated that for groundwater modeling activities that the finish data of 22 December remains and that the EIS is still on schedule as delineated today.
- General discussion regarding the ORP over-the-shoulder-review. The EIS Team has reviewed the following sections: chapters 1, 3, 5, 7, 8, 9, and appendices A, B, D, and K. Appendix I will be reviewed tomorrow. Charlotte confirmed that the Draft EIS version provided to HQ will have gone through technical editing once but not the entire document the second time. HQ will be made aware of this. Roy indicated that he and Howard will be involved in resolving any comment concerns or conflicts from the HQ review if the team needs assistance.
- Mary Beth reported that concerns regarding cribs and trenches (groundwater) have been addressed. Furthermore, the three outstanding groundwater concerns generated from the October 25-29 Draft review have now been closed out.
- General discussion regarding TRU tanks. Howard indicated that currently there are 17 designated TRU tanks. However, that number is in a state of flux. Howard interested in knowing the impacts associated with fewer or greater tanks being designated as TRU. Mary Beth reported that the actual number of TRU tanks is less important than the TRU waste volume. She indicated that the EIS analyzed 1.7 M gallons of waste made up of both contact handled and remote handled TRU. Any volume greater then the 1.7 M gallons would need to be evaluated. Mary Beth stated she had only received information from CHG this morning related to 20 tanks, not 22. Roy asked Dan to identify the current number of TRU tanks and their associated volumes of TRU waste.
- Roy requested that Mary Beth provide a list of significant comments received during scoping and in-house reviews of the draft.
- Mary Beth reported that she has received a narrative from Mike Collins addressing GW modeling used in the solid waste EIS and was waiting to see the total write-up of the GW in the TC EIS.
- General discussion regarding costs. Everett identified areas of uncertainty that may increase costs. Those areas include scope of HQ review of draft EIS and extent of public comment period and subsequent comment disposition. Woody indicated that there are enough funds to maintain current scope of work through the end of January 2004. Woody is also working to develop a PR.
- General discussion regarding travel arrangements and associated costs. Rob indicated that the current travel budget to support HQ review will have to be revamped.
- Howard confirmed that we will be holding a meeting next week on 17 December and then he would be out of the office for two weeks. Mary Beth asked if she would need an additional "OK" from Howard to send the draft to HQ on January 9th. Howard stated that he was comfortable with things and we should send the document to HQ and start the review process.

Issues/Concerns Identified (Unresolved Questions):

- Mary Beth concerned with receiving late comments from ORP line organization for the over-the-shoulder review process. The three-day commitment was not being held.
- Mary Beth indicated that the HQ review of the draft EIS is offers potential impact to the overall cost of the project. Depending on the breadth, scope, and duration of the review, project costs could increase. Also concerned with the public scoping period and the potential volume of comments received impacting costs.

Required Actions:

- Everett will add a column to Over-the-shoulder review plan to track completed reviews by ORP line review (12/16).
- Dan will identify the 22 currently designated TRU tanks and provide basis for their selection. Will review write-up authored by Bill Hewitt that provides a TRU tank list and volume (12/12).
- Mary Beth will set-up meeting with Howard for contract discussion (12/12).
- Mary Beth will send Solid Waste EIS narrative to Scott Stubblebine (12/17).
- Mary Beth will provide list of significant comments received during scoping and in-house reviews of the draft. Should include comments made by stakeholders, public, Ecology, etc. (12/17).

Prepared by: Alan Page | **Date: 10 December 2003**

Distribution:

Mary Beth Burandt, ORP	Project File	Everett Orr, SAIC	Danny Parker, CH2M HILL
Thomas Gardner-Clayson, ORP	Charlotte Johnson, SAIC	Woody Russell, ORP	Greg McLellan, CH2M HILL
Dave Nichols, CEES	Steve Wiegman, ORP	Brian Walker, CEES	Paul Dunigan, DOE
Bill Herrington, SAIC	Jeff Daniels, ORP	Brandi Martin, CEES	Jim Rasmussen, ORP
Diane Clark, ORP	Rob Barr, ORP	Scott Stubblebine, ORP	Howard Gnann, ORP
Roy Schepens, ORP	John Swailes, ORP		

The following documents will be hard copied attached to the minutes for inclusion in the Administrative Record/ Project File:

- TC EIS Management Meeting Agenda for December 10, 2003 (1 page)
- Updated Closure EIS Activities Proposed Activities thru Publish Draft EIS (6 pages)
- Updated Action Items from TC EIS Review October 25-29, 2003 (7 pages)
- Tank Closure EIS Project, Pre-Production Draft EIS, Over-the-Shoulder (O/S) OPR Review Plan (1 page)
- White paper authored by Bill Hewitt and provided to Dan Parker by Rob Yasek. This attachment closes the action requested by Roy Schepens noted above. This document is not a data submittal, but merely closes out the action and was not presented during the meeting. Action was closed 12/11.

TC EIS Management Meeting
December 10, 2003

1. Schedule
    a. Chapter reviews
    b. Over the Shoulder reviews
2. Cost
3. Action items
4. Technical items

Action Items

TC EIS Review October 25 - 29, 2003

1. C.1.4: Work on Woody's suggested language on historical leaks (Dave) Complete 11/3
2. C.1.7 & C.3.3.5: Consistent use of Tc-99 removal (Dave) Complete 11/3
3. Pg C-29: Mary Alice & Ben clarify distinction during alts (Aissata) Complete 11/7
4. Pg C-30 Equations on Pg C-30 (Ben/Amanda) Complete 10/27
5. 6A 10 ft of soil = HLW Description (Ben) Complete 10/28/03
6. Global checks/changes – remove accelerate; various references to melters change to WTP Melters; WTP 2009 Hot Operations Start change to WTP 2009 Start; leakers change to known or suspected leakers; Tc-99 removed during pretreatment change to WTP Tc-99 Pretreatment; miscellaneous waste changed to secondary waste; Complete 11/13
7. Figure C-8 obtain latest figure from BNI (Jeff) Complete 10/27
8. Double check C-57 lines 9-14 against M-45 (Woody) Complete 11/4
9. Closing Paragraph for section C.3.1.1.1 (Kirk) Complete 10/27
10. Get the right reference for Alt. 5 Pg C-58 (Jeff) Complete 10/27
11. Consistency between 2 and C on tank volumes and figures of tanks (Bob) Complete 10/30
12. Get assumptions clear on Alt. 6 IHLW canisters on-site (Dave) C.3.1.3.1 Pg C-60 Complete 11/3
13. Pg C-87 Add WTP to graphic (Bob) Complete [illegible]
14. Theoretical Maximum Capacity vs throughput (Ben) Complete 10/28
15. Ref C.3.3.1.5.2 waste form performance similar to C.3.3.2.6.2 also add reference to Appendix F (Aissata) Complete 11/3
16. C.3.4.11 Delete lines 10-36, replace w/paragraph of the factors which impact the number of canisters in EIS and refer to table C-58 Pg 139 (Ben & Dave) Complete 11/3
17. Add C.3.4.1.5 Assumptions & Uncertainties (include Yucca Mtn) (Dave) Complete 11/3
18. C-143 line 38 check 23,604m^3 against reference 2002g (Kirk) Complete 11/3
19. Double check Pg 144 line 14 "2nd quarter of FY 2005, (MA) Complete 10/28
20. Make nomenclature with retired melters, failed melters, spent melters as replace with WTP melters; change glossary too (Kirk). Complete 11/3
21. C.3.5.2 Ancillary equipment Pg C-154 lines 11-16. Clarify equip (Bob/Ben) Complete 10/28
22. Figure C-35 to lower tank elevation relative to ground level (MA) Complete 11/24
23. Check the borrow material (Gae) Complete 11/5
24. Pg C-162 line 35, bullet 1 add additional uncertainty (Bob) Complete 11/6
25. Add leak detection monitoring discussion to Appendix C (Aissata) Complete 11/4
26. Consistent cap location to correlate with GW (Fig. C-40 & C-41) Complete 11/18
27. Identify IDF facility on facility maps (Chapter 2) (Kevin) Complete 11/14
28. Pg 172, WIDs sites with B&T (3, 4, 6) and what was used (Tom) Complete 10/29

Completed Item

Revision Date: 12/10/2003

Action Items

TC EIS Review October 25 - 29, 2003

29. Pg C-194 – WTP Melter Disposal – why does it reference both WIPP and Yucca Mtn? Thought Yucca was only consideration. (Dave) Complete 11/5
30. Pg G-26, sect G.3.1.2 – Review inputs to models to determine if errors exist causing excessive NO2 concentrations. (Woody, Tom B, Bob W.) Complete 12/10
31. G.3.1.1.5 – Toxicological Benchmarks – Need to reference standards. Complete 10/26
32. (Page 5-14). IS Consent Decree – Check Sept 29, 1999. Comment said it should be Sept 30, 1999. Complete 10/30/01
33. Pg 2-1 (Top of Page Gray Test Box) – Re-write description of section 2.1 (Ben) Complete 11/3
34. Pg 2-1 – Re-write first paragraph (lines 7-11) to use language from NOI introduction. (MA) Complete 10/28/03
35. Pg 2-3 – Check Definition of Ancillary Equipment to Part A (MB) Complete 11/6
36. Add text box to Ch 2 introduction to introduce term 'Proposed Action'. (Bob) Complete 11/6
37. SST System vs. SST Tanks. Scrub document to make distinction where ancillary equipment and soils are being referred to. Also add SST System to glossary and define. (MA) Complete 11/5
38. Add WTP facility to map in figure 2-6, Pg 2-12. (Bob) Complete 10/30
39. Pg 2-15 - Clarify that retrieval as proposed does not limit possibility of using other approaches. (Bob) Complete 11/12
40. Write detail of rationale – pretreatment or no pretreatment of 200W and 200E Preceding sect 2.3.2.2 (MB, Bob) Complete 11/17
41. Pg 2-24, Line 18 - Re-write sentence that describes liquid wash (Bob) Complete 11/6
42. Pg 2-28, line 25 - Expand ILAW discussion to discuss relationship of SW EIS vs TC EIS in the context of land disturbances vs inventory (Kirk, Bob) Complete 11/3
43. Pg 2-31 – For Alt 6A, address HLW storage question (Joe) Complete 10/28
44. Re-visit Ch2, Pg 2-34, line 17-19 after Ch 1 review – re-write this Ch 2 paragraph. Complete 11/13
45. Annabelle has she gotten anything from Fish & Wildlife (MB) Complete 10/28
46. Pull out the Wade Rigsby info from Alan (MB) – Complete 10/27
47. Finalize of cultural notes (MB) Complete - Sent to Mary Alice 10/28.
48. Global check/change – check for hyphens where dashes should be used (and vice-versa)
49. Pg 2-60 – Add text describing basis for most aggressive retrieval approach (ref C-58). (Bob) Complete 11/6
50. Pg 2-66, line 12-13 needs clarification regarding managing contaminated soils. What is the governing reg. (RCRA, CERCLA). (MB) Complete 11/6
51. Global check/change – remove references to contiguous DSTs. Complete 11/6
52. Prepare position on why Tc-99 is included in Alt 6. (ORP) Complete 11/4

53. Table 2-2, Pg 2-75 – Re-work table references to ancillary equipment/ soil. (Kirk, Ben, Bob) Complete 11/6
54. Pg 2-77, sect 2.6.2 – Conduct further discussions regarding how to summarize the impacts of each alternative. (Charlotte, MB) Complete 11/20
55. Pg 2-78, Table 2-3 – Values for Transportation and water are exactly the same. Check, correct values. (Bob) Complete 10/28
56. Pg 2-78, Table 2-3 – Electricity – check units – values seem too low. (Bob) Complete 11/14
57. Pg 2-86, Table 2-3 – Alt 4 dose of 18,300 mrem/year – validate high dose rate. (Kirk) Complete 11/25
58. Pg 2-91, Line 2-4 states alternatives exceed HNF electrical transmission system capacity. Need to provide discussion of how our analysis addresses this limitation. (Bob) Complete 11/14
59. Pg 2-93, line 32 – ref to cans and bottles. Re-word reference to make it a more general reference to trash. Check other document references to cans and bottles and describe consistently. (Bob) Complete 10/30
60. Pg 2-94 – Text box for LCFs is provided but there is no discussion of LCFs in the main text. (Kirk, Bob) Complete 10/28
61. Pg 2-96 – Add discussion of secondary waste. (Kirk) Complete 10/28
62. Pg 2-97 – Disposition S. Wiegman's and B. Hewitt's comments to line 6 regarding purpose of cost numbers and regarding no numbers that match the current baseline. (Charlotte, MB) Complete 11/4
63. Global check/change – Replace references to specific Indian Tribes with American Indians Complete 10/28
64. Figures 4-1 & 4-2, cited on page 3-10, line 10 & on page 3-48, line 24, do not appear in the document. (Jim S) Complete 10/28 – changed to Fig 4-4 & 4-5
65. Pg 3-20, line 12 references sect 3.2.3.1. There is no sect 3.2.3.1 in the document. (Jim S) Complete 10/28 – changed to Fig 3.6.1
66. Re-write first paragraph on page 3-36 to include latest information (i.e. Hanlon Report) (Kevin F) Complete 11/18
67. Global check/change – Maximum Containment Level change to Maximum Contaminant Level. Complete 12/2
68. Table 3-15, Pg 3-81 – Expand Text in paragraph that introduces Table 3-15 (lines 10-14) to define value/use of table. (Kirk) Complete 10/28
69. Pg 2-91 – Discuss noise impacts on sensitive species (Bob) Complete 10/28
70. Pg 2-77 – add sentence (definition/description of resource) at the beginning of each resource area. (Bob) Complete 11/6
71. Pg 2-78, Table 2-3 – global check/change - say 'no change' rather than 'no impact' Complete 11/26
72. Pg 2-78, Table 2-3 – global check/change - when using text descriptions of impacts in table, and impacts are same/ slightly different, refer to earlier column (e.g., same as Alt 1) (Bob) Complete 11/6
73. Pg 2-78, Table 2-3 – Socioeconomics – loss of jobs is considered substantial (Bob) Complete 11/6
74. C.3.5.3.1.3 – Expand uncertainties concerning working in large containment structures (Ben) Duplicate of #24 – Complete 11/6

Action Items

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75. Insert Occupational Hazards Discussion at end of Sect 2.6.10 (Bob) Complete 10/28
76. Add cross site transfer line to relevant maps (Bob) Complete 10/28
77. Sect 1.2 – Re-write section to incorporate S Stubblebine's introductory paragraph and insert MB's input for the remaining section. (Bill) Complete 11/7
78. Incorporate sect 1.8 as sub-section at the end of sect 1.3 (Bill) Complete 11/7
79. Add placeholder in TC EIS for Ecology's foreword as cooperating agency (Bill) Complete 11/5.
80. Work sect 1.2.4 into sect 1.3 (Bill) Complete 11/7
81. Align column headings in table 1.10-1 with columns of information tied to headings – currently mis-aligned. (Bill) Complete 11/5
82. Select key M-45 milestones to be included in timeline graphic being added to sect 1.3 (Woody) Complete 11/5
83. Validate list of bullets in sect 1.5.1 to ensure alignment with scoping summary document. (Bill) Complete 11/17
84. Combine sect 1.5.1 & 1.5.2 and group changes to alternatives with associated issues identified during scoping. (Bill) Complete 11/17
85. General comment on Appendix D – Too general for an appendix. Suggest it be significantly revised to add detail – or – delete the appendix and incorporate relevant information from Appendix D into Chapters 3 & 4 – or – leave as is with minor comments noted in master marked-up copy. (Kevin, Jim) Complete 11/24
86. If Appendix D remains in the document, need to include methodology impacts of transportation. (Kevin) Complete 11/24
87. Sect I-3 – Reorganize section to make two (2) sub-sections: I.3.1 Packaging & I.3.2 Transportation. Map relevant text in existing section into the new sub-sections. (Roy) Complete 11/5
88. Sect I.4.1 – Add map to show transportation routes. (Roy) Complete 11/5
89. Global check/change – verify all tables contain only metric units w/ footnote providing factor for conversion to English units. (Chapter/ Appendix leads) Complete 11/25
90. Table I-9 – Check total distance traveled for 5, 6A, & 6B. Intuitively, it seems that 6A would have the higher number. (Roy) Complete 11/5
91. Page E-1, lines 39-43 – Add language that brings reader from broad range of toxics down to the four toxics that were analyzed. (Bob W) Complete 11/3
92. Page E-8, lines 9-11 – State why toxics other than ammonia were not evaluated. (Bob W) Complete 10/24
93. Sect E.2.1 & E.2.2 – Add sentence or paragraph to each section that explains the hours of operation used in the emissions calculations for that section. (Bob W) Complete 10/24
94. Pg E-11 – Sect E.2.3 – Add consistent story/ rationale for selecting the toxins analyzed omitting other toxics (i.e. ammonia values in Table E-11 not consistent with ammonia values in Table E-15) (Bob W) Complete 11/20
95. Pg E-21 Correct or explain apparent inconsistencies between VOC values in Table E-30 and detail toxics values in Table E-31. (Bob W) Complete 11/12

Action Items

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96. Global check/change on all Appendix E Tables – need consistency in values provided for Benzene, Toluene, and Xylene (sometimes it's 0, sometimes it's the actual value even if less than 0) (Bob W) Complete 11/18
97. General question – Did this EIS include personal vehicle (worker commutes) emissions for all activities analyzed? If not, this may affect several sections of document (?????) Complete 11/18
98. Pg E-83 – Add discussion in sect E.3 to describe the peak year concept that is central to understanding the follow-on tables. Consider modifying the follow-on table formats to place a – or N/A instead of 0, or include all values in tables and **bold** the peak year values. (Bob W) Complete 11/12
99. Global check/change – where 'options' is used in the document to refer to the sub-alternatives, replace options with sub-alternative. Complete 12/10
100. Pg 4-3, sect 4.2.1.1 references upgrades that would take place through 2004. Make reference to the Chapter 2 section that discusses the upgrades to be completed with Alternative 1 (Kevin) Complete 11/10
101. Sect 4.2.1.1, Line 31 references term 'Industrial-Exclusive'. Add detailed explanation what Industrial-Exclusive means. (Steve W). Complete 12/4
102. Global check/change – In all tables, ensure all values that exceed standards are placed in **bold.** Add footnote for explanation. (Kevin)
103. Pg 4-7, Table 4.2.4-2 – Only 4 toxics referenced. Add discussion to describe why other toxics were omitted. (Tom GC) Complete 11/14
104. Global check/change – Replace caps with the term barrier. Check glossary definition of barriers – change as appropriate. (Kevin) Complete 12/3
105. Global check/change – For graphs in Chapter 4, add line that represents the benchmark. (Kevin)
106. Sect 4.2.9 – section seems to minimize the economic impact of halting WTP construction without further explanation. Re-vamp section to address economic impact sensitivity more realistically. (Kevin) Complete 12/2
107. Sect 4.2.9.1 – Text, tables, figures seem to speak only to WTP. Check/ verify that Tank Farm OPS is included in section. (Kevin) Complete 12/2
108. Sect 4.2.11 – Remove reference to accidents 2 & 3, and investigate further to determine if additional changes are needed regarding the potential accidents listed. (Kevin) Complete 11/20
109. Chapter 4 global check/change – crosswalk all alternative titles to those provided in Chapter 2 – correct chapter 4 titles as needed. (Kevin) Complete 11/19
110. Sect 4.3.1.2.1 (global check/change) – check electricity demand values and add discussion to address impacts of exceeding existing Hanford Transmission Lines capacity.
111. Global check/change – replace the word significant with substantial. (Kevin) Complete 12/3
112. Global check/change – replace the phrase maximum foreseeable accident with maximum reasonably foreseeable accident. (Kevin) Complete 11/7
113. Global check/change - replace phrase conceivable accidents with reasonably conceivable accidents. (Kevin) Complete 11/7

Action Items

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114. Sect 4.3.1.14.5 – Add statement at beginning to indicate that the TRU waste discussed is already covered in the HSW EIS; then follow with detailed numbers. (Kirk) Complete 11/19
115. Sect 4.3.1.14.3 – Add discussion referencing the secondary waste stream resulting from treated tank waste. (Kirk) Complete 11/19
116. Sect 4.4, Pg 4-101 – Add discussion that makes distinction between landfill closure and clean closure. (Kevin) Complete 11/19
117. Sect 4.4.1.2, Pg 4-103 – Table 4.4.1.2-1 values do not match text in 4.4.1.2.1 (may be a global to all Infrastructure Tables for all alternatives) (Kevin)
118. Global check/change – required response to destruction of vegetation habitats needs addressed consistently in all sections (Kevin) Complete 12/2
119. Global check/change – Pg 4-301 references local, off site sources. Replace with local, commercial off site sources. (Kevin) Complete 11/9
120. Chapter 2 – where we describe alternatives, make definitive statement regarding D&D (or lack thereof) (Bob H) Complete 12/10
121. Sect 4.8, Table 4.8.2-2) – Add range of values for all alternatives within tables instead of just listing the maximum values. (Kevin) Complete 11/25
122. Get copy of US Ecology SEPA EIS. (Tom GC) Complete 11/4
123. Get copy of City SEPA EIS on ATG. (Alan P) Complete 11/17
124. Page 4-368, Sect 4.9, lines 42-44 – Verify we have the latest HSW EIS mitigation measures and summarize in section. (Kevin) Complete 12/10
125. Sect 4.9 general comment – add specific discussion of areas that may require mitigation: Dust control, habitat destruction, traffic, socioeconomic, dose (Kevin) Complete 12/10
126. Enhance discussions that introduce the following Figures in Chapter 4 (note that some of the changes were sent to production but not included in draft) (Kevin)
    a. Fig 4.3.4.2.6-1 & -2 (Page 4-80)
    b. Fig 4.4.1.6-1 & -2 (Page 4-117)
    c. Fig 4.4.2.6-1 & -2 (Page 4-154-155)
    d. Fig 4.5.6-1 & -2 (Page 4-194)
    e. Fig 4.6.6-1 & -2 (Page 4-232)
    f. Fig 4.7.1.6-1 & -2 (Page 4-270-271)
    g. Fig 4.7.2.6-1 & -2 (Page 4-306)
127. Add reference to chapter 4 figures (noted in item 126) in sections F.4 & F.2. (Kevin)
128. Sect F.4 (vicinity of lines 25-42) – Insert graphics showing map of area inside core zone showing core zone boundary and the points of assessment. (Kevin)
129. General question – should we add PNNL to list of EIS Preparers? (MB) Complete 11/6
130. Sect H.1.1 thru H.1.3 – Re-structure section to call H.1 'Background'. Then organize subsections into H.1.1 Radiation; H.1.2 Chemical. Then expand level of detail in chemicals section to be equivalent to level of detail in radiation section. Also add different levels of accident risk to this section (Bill) Complete 12/9

Action Items

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131. Global check/change – Table H.1.4-8 thru H.1.4-57 – Add 'Normal OPS' to the end of the title on each table (Kirk) Complete 11/19
132. Verify Official Name for Integrated Disposal Facility (IDF). Discussions indicated that the HSW EIS call it the Combined Use Disposal Facility. What is the correct reference? (Gae) Integrated Disposal Facility - Complete 11/6
133. Review NOI to determine appropriate language regarding how the TC EIS addresses closure of DSTs. Gain concurrence from ORP. (MA) Complete 11/6

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Activity Description
CEIS - Contract/ Project Management						
APORP0001B	188*	12JAN03A	02SEP04	-45	ORP - M Duranc	ORP Contract Managemen
APORP0001C	186*	03MAR03A	02SEP04	-45	ORP - M Durand	ORP Administrative Record Managemen
APSAIC1000	186*	12MAY03A	02SEP04	-45	SAIC	SAIC Project Management & Control
APSAIC2000	186*	12MAY03A	02SEP04	-45	SAIC	SAIC Administrative Recor
APSAIC4000	185*	12MAY03A	02SEP04	-45	SAIC	SAIC Technical Support to ORP Document Revie
CEIS - Data Package Preparation and Support						
APCHGE002	0	21NOV03A	25NOV03A		CHG	CHG Provide Final Data Input
CEIS - Guidance Document Preparation						
APORPA606	1	12DEC03*	12DEC03	-46	ORP	Approve Contract and Funding to Print Draft EIS
CEIS Development - Miscellaneous Analyses						
APSAICE116	0	25NOV03A	26NOV03A		SAIC	Scale Final Data
CEIS Development - Air Modeling						
APSAICE120	0	01DEC03A	02DEC03A		SAIC	Re-Run Non-Rad Air Model
APSAICE122	0	01DEC03A	02DEC03A		SAIC	Re-Run Rad Air Model
CEIS Development - Groundwater Modeling						
APSAICE114	0	03NOV03A	07NOV03A		SAIC	Calibrate SAIC GW Model with PNNL GW Model

Timescale: 2003–2004; OCT 27; NOV 3, 10, 17, 24; DEC 1, 8, 15, 22, 29; JAN 5, 12, 19, 26; FEB 2, 9, 16, 23; MAR 1, 8, 15, 22, 29; APR 5, 12, 19, 26; M 3

Data Date 08DEC03
Run Date 08DEC03 08:41

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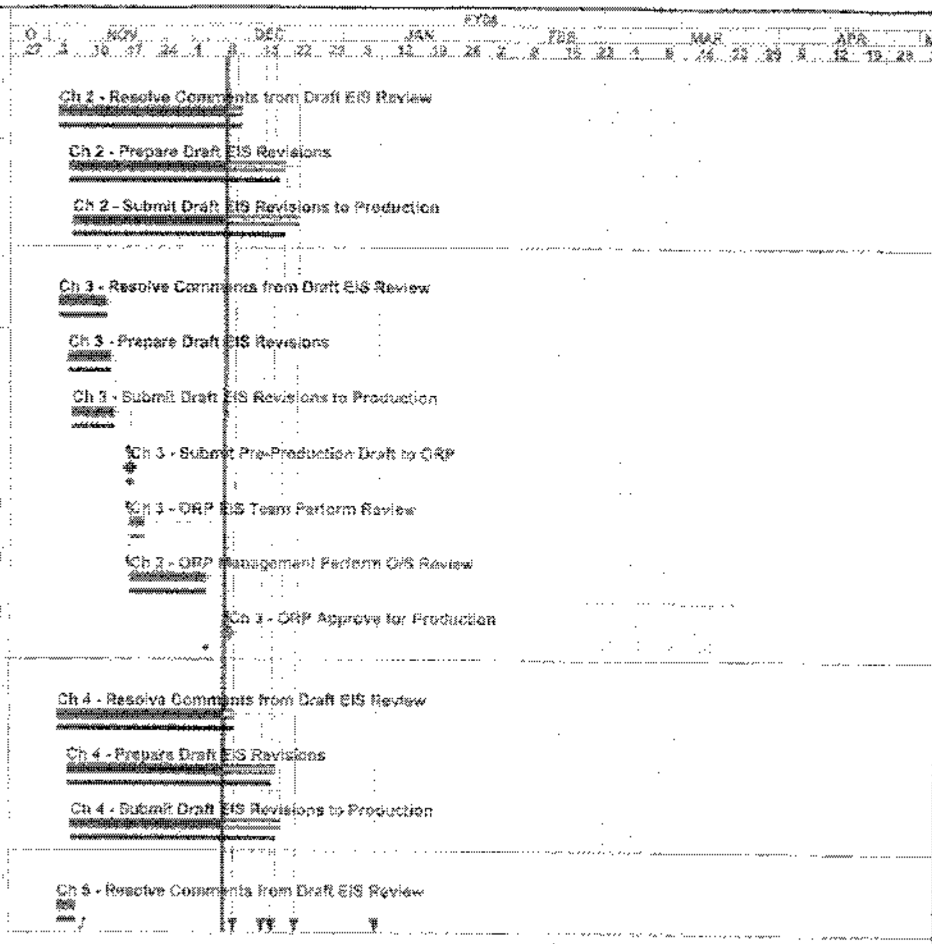
Legend: Proposed Bar; Last Week Bar; Progress Bar; Critical Activity

1103 - AP00

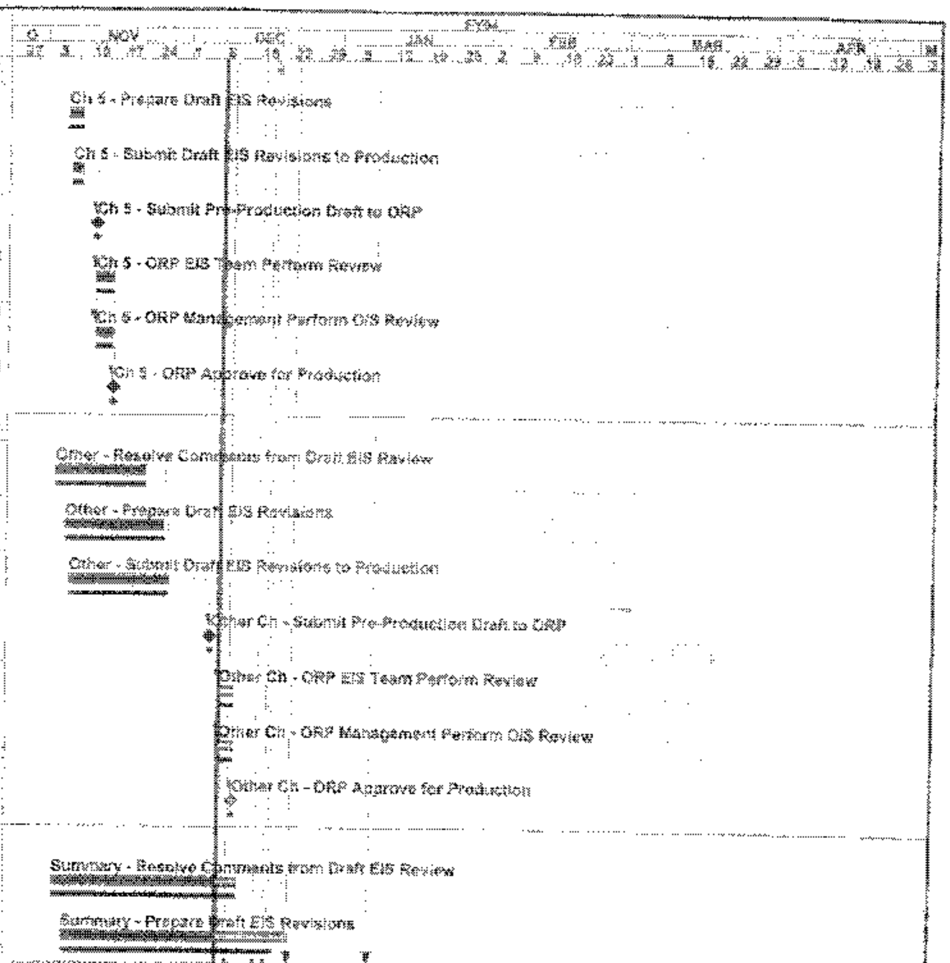
Office of River Protection
Closure EIS Activities
Proposed Activities thru Publish Draft EIS

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Activity
CEIS Development - Groundwater Modeling						
APORPE002	0	14NOV03A	14NOV03A		ORP - M Support	ORP Review Aquifer Model Results
APORPE004	0		14NOV03A		ORP - M Support	Decision - Re-run 'Release to Aquifer' Model?
APSAICE002	0	03NOV03A	04DEC03A		SAIC	Re-run 'Release to Aquifer' Model
APSAICE005	7	24NOV03A	16DEC03	-63	SAIC	Re-run Groundwater Model
APSAICE008	5	11DEC03	17DEC03	-63	SAIC	Prepare Dose and Risk Assessment
APSAICE012	5	16DEC03	22DEC03	-63	SAIC	Incorporate GW Results into Draft EIS Text
CEIS Development - Ecorisk Analysis						
APSAICE010	5	11DEC03	17DEC03	-63	SAIC	Re-run Ecorisk Model
CEIS Development - Chapter 1						
APSAICE016	0	03NOV03A	17NOV03A		SAIC	Ch 1 - Resolve Comments from Draft EIS Review
APSAICE018	0	05NOV03A	18NOV03A		SAIC	Ch 1 - Prepare Draft EIS Revisions
APSAICE020	0	06NOV03A	19NOV03A		SAIC	Ch 1 - Submit Draft EIS Revisions to Production
APSAICE124	0		21NOV03A		SAIC	Ch 1 - Submit Pre-Production Draft to ORP
APSAICE126	0	24NOV03A	25NOV03A		ORP - M Support	Ch 1 - ORP EIS Team Perform Review
APSAICE125	0	21NOV03A	03DEC03A		ORP - M Support	Ch 1 - ORP Management Perform O/S Review
APSAICE128	0		08DEC03	-59	ORP - M Support	Ch 1 - ORP Approve for Production

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Chapter 2					
APSAICE022	3	03NOV03A	10DEC03	-42	SAIC
APSAICE024	10	05NOV03A	19DEC03	-43	SAIC
APSAICE026	11	06NOV03A	22DEC03	-43	SAIC
CEIS Development - Chapter 3					
APSAICE028	0	03NOV03A	12NOV03A		SAIC
APSAICE030	0	05NOV03A	13NOV03A		SAIC
APSAICE032	0	06NOV03A	14NOV03A		SAIC
APSAICE135	0		17NOV03A		SAIC
APSAICE137	0	18NOV03A	20NOV03A		ORP - M Burandt
APSAICE138	0	18NOV03A	03DEC03A		ORP - M Burandt
APSAICE140	0		09DEC03	-53	ORP - M Burandt
CEIS Development - Chapter 4					
APSAICE034	2	03NOV03A	09DEC03	-42	SAIC
APSAICE036	9	05NOV03A	18DEC03	-53	SAIC
APSAICE038	10	06NOV03A	19DEC03	-82	SAIC
CEIS Development - Chapter 5					
APSAICE054	0	03NOV03A	05NOV03A		SAIC



Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP
CEIS Development - Chapter 5					
APSAICE096	0	05NOV03A	07NOV03A		SAIC
APSAICE098	0	06NOV03A	07NOV03A		SAIC
APSAICE146	0		10NOV03A		SAIC
APSAICE149	0	11NOV03A	14NOV03A		ORP - M Burandt
APSAICE150	0	11NOV03A	14NOV03A		ORP - M Burandt
APSAICE152	0		14NOV03A		ORP - M Burandt
CEIS Development - Other Chapters (6,7,8,9)					
APSAICE100	0	03NOV03A	21NOV03A		SAIC
APSAICE102	0	05NOV03A	25NOV03A		SAIC
APSAICE104	0	05NOV03A	26NOV03A		SAIC
APSAICE164	0		05DEC03A		SAIC
APSAICE155	3	08DEC03	10DEC03	-56	ORP - M Burandt
APSAICE156	3	08DEC03	10DEC03	-56	ORP - M Burandt
APSAICE158	0		10DEC03	-56	ORP - M Burandt
CEIS Development - Summary					
APSAICE106	4	03NOV03A	11DEC03	-88	SAIC
APSAICE108	11	03NOV03A	22DEC03	-83	SAIC



Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Activity
CEIS Development - Summary						
APSAICE110	11	05NOV03A	22DEC03	-40	SAIC	Summary-Submit Draft EIS Revisions to Production
CEIS Development - Appendix C						
APSAICE040	0	03NOV03A	21NOV03A		SAIC	App C - Resolve Comments from Draft EIS Review
APSAICE042	0	05NOV03A	25NOV03A		SAIC	App C - Prepare Draft EIS Revisions
APSAICE044	0	04NOV03A	26NOV03A		SAIC	App C - Submit Draft EIS Revisions to Production
CEIS Development - Appendix D						
APSAICE046	0	03NOV03A	21NOV03A		SAIC	App D - Resolve Comments from Draft EIS Review
APSAICE048	0	05NOV03A	25NOV03A		SAIC	App D - Prepare Draft EIS Revisions
APSAICE050	0	05NOV03A	26NOV03A		SAIC	App D - Submit Draft EIS Revisions to Production
APSAICE160	0		05DEC03A		SAIC	App D - Submit Pre-Production Draft to ORP
APSAICE162	3	08DEC03	10DEC03	-40	ORP - [illegible]	App D - ORP EIS Team Perform Review
APSAICE164	3	08DEC03	10DEC03	-35	ORP - [illegible]	App D - ORP Management Perform O/S Review
APSAICE168	0		10DEC03	-35	ORP - [illegible]	App D - ORP Approve for Production
CEIS Development - Appendix E						
APSAICE052	0	03NOV03A	05DEC03A		SAIC	App E - Resolve Comments from Draft EIS Review
APSAICE054	2	05NOV03A	09DEC03	-35	SAIC	App E - Prepare Draft EIS Revisions
APSAICE056	3	06NOV03A	10DEC03	-35	SAIC	App E - Submit Draft EIS Revisions to Production

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	FY04
CEIS Development - Appendix E						
APSAICE168	0		17DEC03*	-63	SAIC	App E - Submit Pre-Production Draft to ORP
APSAICE170	3	18DEC03	22DEC03	-63	ORP - M Burandt	App E - ORP EIS Team Perform Review
APSAICE172	3	18DEC03	22DEC03	-63	ORP - M Burandt	App E - ORP Management Perform O/S Review
APSAICE174	0		22DEC03	-63	ORP - M Burandt	App E - ORP Approve for Production
CEIS Development - Appendix F						
APSAICE058	1	03NOV03A	05DEC03	-42	SAIC	App F - Resolve Comments from Draft EIS Review
APSAICE060	2	05NOV03A	17DEC03	-60	SAIC	App F - Prepare Draft EIS Revisions
APSAICE062	8	06NOV03A	18DEC03	-61	SAIC	App F - Submit Draft EIS Revisions to Production
CEIS Development - Appendix G						
APSAICE064	1	03NOV03A	08DEC03	-38	SAIC	App G - Resolve Comments from Draft EIS Review
APSAICE066	8	05NOV03A	17DEC03	-60	SAIC	App G - Prepare Draft EIS Revisions
APSAICE068	9	06NOV03A	18DEC03	-61	SAIC	App G - Submit Draft EIS Revisions to Production
CEIS Development - Appendix H						
APSAICE070	1	03NOV03A	08DEC03	-38	SAIC	App H - Resolve Comments from Draft EIS Review
APSAICE072	4	05NOV03A	17DEC03	-60	SAIC	App H - Prepare Draft EIS Revisions
APSAICE074	9	06NOV03A	18DEC03	-61	SAIC	App H - Submit Draft EIS Revisions to Production
CEIS Development - Appendix I						
APSAICE076	0	03NOV03A	06NOV03A		SAIC	App I - Resolve Comments from Draft EIS Review

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	Activity
CEIS Development - Appendix I						
APSAICE078	0	05NOV03A	07NOV03A		SAIC	App I - Prepare Draft EIS Revisions
APSAICE080	0	06NOV03A	07NOV03A		SAIC	App I - Submit Draft EIS Revisions to Production
APSAICE178	0		05DEC03A		SAIC	App I - Submit Pre-Production Draft to ORP
APSAICE176	3	08DEC03	10DEC03	-55	ORP - M Burandt	App I - ORP EIS Team Perform Review
APSAICE180	3	08DEC03	10DEC03	-55	ORP - M Burandt	App I - ORP Management Perform O/S Review
APSAICE182	0		10DEC03	-55	ORP - M Burandt	App I - ORP Approve for Production
CEIS Development - Appendix J						
APSAICE082	0	03NOV03A	05DEC03A		SAIC	App J - Resolve Comments from Draft EIS Review
APSAICE084	5	05NOV03A	16DEC03	-61	SAIC	App J - Prepare Draft EIS Revisions
APSAICE086	9	05NOV03A	18DEC03	-61	SAIC	App J - Submit Draft EIS Revisions to Production
CEIS Development - Other Appendices (A,B,K)						
APSAICE088	0	03NOV03A	05NOV03A		SAIC	Other - Resolve Comments from Draft EIS Review
APSAICE090	0	05NOV03A	07NOV03A		SAIC	Other - Prepare Draft EIS Revisions
APSAICE092	0	06NOV03A	07NOV03A		SAIC	Other - Submit Draft EIS Revisions to Production
APSAICE184	0		05DEC03A		SAIC	Other App - Submit Pre-Production Draft to ORP
APSAICE185	3	08DEC03	10DEC03	-55	ORP - M Burandt	Other App - ORP EIS Team Perform Review
APSAICE188	3	08DEC03	10DEC03	-55	ORP - M Burandt	Other App - ORP Management Perform O/S Review

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	
CEIS Development - Other Appendices [A,B,K]						
APSAICE190	0		16DEC03	-55	ORP - M Burandt	Other App - ORP Approve for Production
CEIS Development - Appendix L						
APSAICE116	6	02DEC03A	15DEC03	-61	SAIC	App L - Socioeconomics - Prep/ Submit to Product
APSAICE132	0		17DEC03*	-63	SAIC	App L - Submit Pre-Production Draft to ORP
APSAICE194	3	18DEC03	22DEC03	-63	ORP - M Burandt	App L - ORP EIS Team Perform Review
APSAICE196	3	18DEC03	22DEC03	-63	ORP - M Burandt	App L - ORP Management Perform O/S Review
APSAICE198	0		22DEC03	-63	ORP - M Burandt	App L - ORP Approve for Production
CEIS Development - Bulk Vit Issue Resolution						
APSAICE200	0	03DEC03A	04DEC03A		SAIC	Provide Draft Copy of Draft EIS to ORP for Rvw
APORPE200	2	05DEC03A	08DEC03	-63	ORP - M Burandt	ORP Rvw Draft - Provide Mark up w/ Proposed Chgs
APSAICE202	3	10DEC03	12DEC03	-63	SAIC	SAIC/ORP Rvw Proposed Chgs - Resolve Comments
APSAICE204	5	15DEC03	22DEC03	-63	SAIC	SAIC Incorporate Changes into Draft EIS
CEIS Development - Consistency Check w/ HSW EI						
APORPE010	0	03NOV03A	05NOV03A		ORP - M Burandt	Meet w/ M Collins Re: HSW EIS
APORPE012	0	06NOV03A	07NOV03A		ORP - M Burandt	Identify Areas of Interest w/ HSW EIS
APORPE014	0	10NOV03A	18NOV03A		ORP - M Burandt	Prepare Text (M Collins & M Burandt)
APORPE016	8	19NOV03A	17DEC03	-63	ORP - M Burandt	Review Text (RL, ORP, Ert)

Activity ID	Rem Dur	Early Start	Early Finish	Total Float	RESP	
CEIS Development - Consistency Check w/ HSW EI						
APSAICE014	3	18DEC03	22DEC03	-63	SAIC	SAIC Incorp Consistency Changes into Draft EIS
CEIS Development - Tech Editing and Production						
APSAICE112	11	03NOV03A	22DEC03	-62	SAIC	Incorp Chap/Appendix Revs Into Production Draft
APORPE008	3	23DEC03	31DEC03	-58	ORP - M Burandt	ORP Management Review of Draft EIS
APSAIC0054	10	23DEC03	09JAN04	-63	SAIC	Production of Draft EIS
APORP0048	5	09JAN04	15JAN04	-63	ORP - M Burandt	DOE HQ EH/GC Read Draft EIS
APSAIC0059	1	15JAN04	16JAN04	-26	SAIC	Deliver Final Notice of Availability for Dft EIS
APORPB670	5	16JAN04	22JAN04	-63	ORP - M Burandt	DOE HQ EH/GC Integrate Comments for Draft EIS
APORP0049	5	23JAN04	29JAN04	-13	ORP - M Burandt	DOE HQ EH/GC & ORP Staff/ Team Prep Resolutions
APORPB674	1	30JAN04	30JAN04	-63	ORP - M Burandt	DOE HQ PSO Approvals
APSAIC0051	6	30JAN04	06FEB04	-63	SAIC	Revise Concurrence Draft EIS per DOE Comments
APSAIC0057	5	09FEB04	13FEB04	-63	SAIC	Produce Camera Ready Copy of Draft EIS
APORPB676	2	17FEB04	18FEB04	-63	ORP - M Burandt	DOE HQ GC Review of Camera Ready Copy of DEIS
APORP0056	1	19FEB04	19FEB04	-63	ORP - M Burandt	DOE HQ Memo - EH to EM-1 - Approve Print of DEIS
APORP0061	10	20FEB04	04MAR04	-63	ORP - M Burandt	Print Draft EIS
APORP0062	0		04MAR04	-61	ORP - M Burandt	Publish Draft EIS

Tank Closure EIS Project
Pre-Production Draft EIS
Over-the-Shoulder (O/S) ORP Review Plan

Document Section	Title	Date Available for O/S Review	EIS Team Review Complete
Summary	Summary of Tank Closure EIS	12/22/03	
Chapter 1	Background, Purpose, and Need for Proposed Action	11/21/03	Yes
Chapter 2	Proposed Action and Alternatives	12/22/03	
Chapter 3	Affected Environment	11/17/03	Yes
Chapter 4	Environmental Consequences	12/22/03	
Chapter 5	Applicable Laws, Regulations, and Other Requirements	11/10/03	Yes
Chapter 6	Glossary	12/5/03	Yes
Chapter 7	List of Preparers	12/5/03	Yes
Chapter 8	Distribution List	12/5/03	Yes
Chapter 9	Index	12/5/03	Yes
Appendix A	Federal Register Notices	12/5/03	Yes
Appendix B	Contractor Disclosure Statement	12/5/03	Yes
Appendix C	Facility and Activity Data, Inventory	12/19/03	
Appendix D	Methodology	12/5/03	Yes
Appendix E	Air Quality Analysis	12/17/03	
Appendix F	Groundwater Analysis	12/22/03	
Appendix G	Ecological Resources and Risk Analysis	12/22/03	
Appendix H	Human Health Risk Analysis	12/22/03	
Appendix I	Transportation Analysis	12/5/03	
Appendix J	Environmental Justice Analysis	12/22/03	
Appendix K	Consultation Letters	12/5/03	Yes
Appendix L	Socioeconomics Analysis	12/17/03	

Notes

1. EIS document sections presented for this O/S review will be in a pre-production draft state. Technical editing and word processing have not been performed. It is likely that manual strike throughs and mark-ups will remain in the document at this stage of completion.

2. This review is to make sure comments from the October 22-30 review have been incorporated. This review is not intended to produce comments.

3. Two (2) copies of the complete pre-production Draft EIS document will be delivered to ORP on 12/22/03.

Shading indicates pre-production Draft EIS Document Section has been provided to ORP.

Revision Date: 12/10/03

Alan,
As this was an official action from Roy to the team during yesterdays meeting when we prepare the notes for the AR please print this out as well as the attachment and note this as "the closure to the action" to differentiate it from the handouts
MB

-----Original Message-----
From: Parker, Dan L (Danny)
Sent: Thursday, December 11, 2003 8:16 AM
To: Burandt, Mary E
Cc: Russell, Woody; McLellan, Gregory W
Subject: FW: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

Mary Beth,

Attached to this message is the electronic version of the paper I put on your chair yesterday afternoon. This is the four page white paper Roy and Howard requested the EIS team obtain from Bill Hewitt at the meeting yesterday. While wondering the halls after the meeting looking for Bill Hewitt's office, I ran into Roy again. Roy suggested I just get the white paper from Rob Yasek, as Rob was guiding me to Hewitt's office at the time. The volumes Roy and Howard referred to are listed in Table 1.

(Now for the disclaimer: I do not know the genesis of this paper and have left the chain of emails as Rob forwarded it to me for your information. This email should not be viewed as a data submittal, but simply as the result of me doing the leg work to track down this paper within ORP.)

Dan

-----Original Message-----
From: Yasek, Robert M
Sent: Wednesday, December 10, 2003 3:30 PM
To: Parker, Dan L (Danny)
Subject: FW: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

-----Original Message-----
From: Hewitt, William M
Sent: Monday, December 01, 2003 1:22 PM
To: Noyes, Delmar L; Yasek, Robert M
Subject: FW: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

Bill Hewitt
YAHSGS LLC
Room 2619 2440 Stevens
PO Box 667, Richland, WA 99352
Phone 509 539 7629 Fax 509 946 2487

-----Original Message-----
From: Poynor, C D (Cathy)
Sent: Monday, December 01, 2003 8:34 AM
To: Swailes, John H; Stubblebine, Scott D; Hewitt, William M
Subject: FW: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

As per Request. Cathy

-----Original Message-----
From: Poynor, C D (Cathy)
Sent: Monday, December 01, 2003 7:52 AM
To: Schepens, Roy J; 'Marilyn.jacobs@em.doe.gov'; 'lee.otis@hq.doe.gov'
Cc: 'paul.detwiler@hq.doe.gov'; 'carol.borgstrom@hq.doe.gov'; 'edward.leduc@hq.doe.gov'; 'jeanie.loving@hq.doe.gov'; 'steve.cuevas@em.doe.gov'
Subject: RE: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

File attached.

Cathy

-----Original Message-----
From: Schepens, Roy J
Sent: Saturday, November 29, 2003 12:42 PM
To: 'Marilyn.jacobs@em.doe.gov'; 'lee.otis@hq.doe.gov'
Cc: 'paul.detwiler@hq.doe.gov'; 'carol.borgstrom@hq.doe.gov'; 'edward.leduc@hq.doe.gov'; 'jeanie.loving@hq.doe.gov'; 'steve.cuevas@em.doe.gov'
Subject: Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

The Department of Energy, Office of River Protection (ORP) has conducted a thorough, systematic review of historical records associated with the origin of wastes in the Hanford tank farms. This review of operational records has provided a means of determining the origins of wastes in the tanks based on tank fill histories, transfers, and physical configuration histories for tank farm piping. The historical information is being (or has been) confirmed by sampling and analysis of each tank's contents.

Based on these reviews and analyses, ORP has determined that (b)(5)

(b)(5)

Re: Proposed Approach for Addressing Hanford Tanks Believed to Contain TRU Wastes

The Department of Energy, Office of River Protection (ORP) has conducted a thorough, systematic review of historical records associated with the origin of wastes in the Hanford tank farms. This review of operational records has provided a means of determining the origins of wastes in the tanks based on tank fill histories, transfers, and physical configuration histories for tank farm piping. The historical information is being (or has been) confirmed by sampling and analysis of each tank's contents.

Based on these reviews and analyses, ORP has determined that (b)(5)

(b)(5)

(b)(5)

(b)(5)

Attachment A provides further detail regarding the volumes and waste origins for the (b)(5) (b)(5)

The Office of River Protection (ORP) has been reviewing and continues to review historical records associated with the origin of the tank waste. Operational records based on tank fill history and the physical configuration of the piping indicate the origins of wastes in the tanks of interest. ORP confirms the waste origin information provided by these records by sampling and analyzing the contents of candidate tanks. Table 1 summarizes the results of ORP's review.

Table 1. Candidate Tank Wastes for a Transuranic Waste (TRU) Designation

Candidate TRU Tanks	Waste Origin (See Key at Bottom of Table)	Cumulative Volume
(b)(5)		

(b)(5)

the Table 1 tanks and wastes along with ORP's proposed path forward for each is set forth below.

CONTACT-HANDLED SST/MUST WASTES

(b)(5) – Eight B-200 series SSTs received wastes from the 224-B and 224-T Plutonium Concentration Buildings. (b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5) [redacted]

(b)(5) [redacted]

Three DSTs (SY-102, AW-103, and AW-105) contain sludges that did not originate during the reprocessing of spent nuclear fuel. (b)(5) [redacted]

(b)(5) [redacted]

(b)(5)

River Protection Project Function Descriptions

The functions shown on the River Protection Project Functional Logic Diagram are described as follows:

STORE

S-1 Characterize Tank Waste

Waste characterization serves many functions, including: to receive, transfer, and store waste safely (i.e. ensuring waste transfers are compatible, tank waste chemistry is within specifications, etc.); to measure tank waste residuals to determine the radionuclide content and volume following retrieval and form part of the basis for determining waste retrieval is complete and the residuals can be safely disposed in the tank as required by the HFFACO and DOE M 435.1-1; and to provide data for waste blending and ensure the waste meets the treatment facilities waste feed acceptance criteria. Tank waste is characterized by sampling, historical records, process knowledge and modeling. Waste characterization will continue for as long as the waste is in storage.

S-2 Maintain Tank Farms

Maintain tank farm facilities, equipment and controls so that the tank farms can be operated within their authorization basis. This includes repair and replacement of failed equipment including piping, changing out ventilation filters, and upkeep of the grounds and fences. Most of the infrastructure, as well as the tanks, are several decades old and requires continuous attention. This function will continue until the tank farms are closed.

S-3 Conduct Tank Farms Safe Operations

Safely receive, and store radioactive tank waste in compliance with the authorization basis and DOE O 435.1. This includes routine monitoring of waste storage conditions, transferring waste, inspections, and collecting and packaging contaminated job wastes for disposal. This function will continue until all of the waste has been retrieved and the tank farms closed.

S-4 Upgrade Tank Farms

Upgrade tank farms to comply with federal and state regulations and permits, and to function safely until closed. This includes upgrades to transfer systems, instrumentation and control systems, and electrical distribution and ventilation systems. This function will continue until the waste is retrieved from the tanks.

S-5 Evaluate Impact of WTP Delay on Service Life of Support Facilities and Infrastructure

As a result of the delay in WTP startup and extension of RPP mission completion by several years, evaluate the service life of tank farm support facilities and infrastructure, including the 222-S Analytical Laboratory. Determine what upgrades or replacements may be needed or if other facilities can provide the service.

S-6 Decision: Upgrade or Replace?

Decide if the support facilities and infrastructure service life is adequate to support the RPP through mission life. If not, decide which ones need to be upgraded or replaced, or determine if service can be provided by a different facility. The 222-S Analytical Laboratory is more than 50 years old, and though it has received a number of upgrades and additions, it may need to provide services for another 30 years. Much of the tank farm infrastructure is also several decades old.

S-6a-1 Upgrade or Replace Support Facilities

Determine when the support facilities need to be upgraded or replaced and then; budget, design, construct, and startup those facilities.

S-7 Assess DST Tank Integrity/Life

Inspect and analyze the DSTs to determine if they still meet their design requirements and to forecast their remaining service life. Periodic ultrasonic inspection of the steel tank walls is a primary activity of this function. The 28 DSTs are 20-30 years old and many will be in service at least three more decades.

S-8 Project SST Structural Life

Estimate how long waste can remain in the single-shell tanks with acceptable risks for storage and retrieval.

S-9 Decision: Provide Additional Storage Capacity?

Given delays in WTP startup and the increased time to retrieve and treat all of the SST and DST waste, the concern about adequate DST capacity increases. While additional DST capacity is often discussed, acquiring it raises significant issues, including; 1) each new DSTs is likely to cost ~$75 million—money that could be used to accelerate completion of the WTP, 2)new tanks will not provide near-term capacity as it will take ~8 years to budget, design, construct, and startup a new four-tank tank farm, 3) these additional tanks will require cleanout and closure when no longer needed that will add $10s to $100s millions to the total RPP cost, and 4) the 4.4 million gallons of capacity that would be added with 4 new DSTs would only support retrieval of approximately 1.5 million gallons of salt cake waste due to the dilution needed for retrieval. However, there may be acceptable lower cost storage methods for the limited operating period needed prior to waste treatment availability. This might include use of some upgraded or modified sound single-shell tanks or the empty grout vaults.

S-9a-1 Budget, Design, and Construct Additional Storage Capacity.

If it is decided to acquire additional storage capacity; budget, design, procure, construct, and startup the storage facilities.

S-10 Manage DST Waste Inventory

Maximize DST space available for receipt of SST wastes by consolidating compatible waste types, concentrating dilute wastes in the 242-A evaporator, and managing tank farms to achieve optimal space usage within the DST system. SST waste retrieval is dependent on having space available in the DSTs (or some other acceptable storage facilities). Waste in the DSTS has no place to go until waste treatment systems comes on line (See TREAT).

S-11 Extend Service Life of 242-A Evaporator

Extend the evaporator life so that it can operate until all SST waste is retrieved. Upgrades and/or replacements are anticipated starting in 2008. These include HVAC supply and exhaust, leak detection system, condenser, re-boiler condensate system, valves, and instrumentation.

S-12 Investigate Vadose Zone Contaminant Migration

Investigate and analyze vadose zone contaminant migration that resulted from tank and pipeline leaks and spills. Core samples, down-hole logging, computer modeling, and other techniques are used to determine the contamination source, areas of contamination, the amount and types of contamination, and how it has migrated. This information is used to determine potential impacts to groundwater, identify potential interim mitigation measures; and investigate and analyze vadose zone contamination to aid in determining how the SSTs should be closed.

S-13 Implement Interim Measures

Select, design, and implement interim measures. These could include localized soil removal and/or interim barriers over tank farms to limit infiltration of precipitation. Precipitation infiltration into the vadose zone enhances the migration of contaminants to the groundwater. It is envisioned that interim barriers will consist of impervious materials (natural of synthetic) along with grading to direct runoff away from the areas of contamination.

RETRIEVE

R-1 Develop SST Retrieval & Leak Detection Systems

Develop improved retrieval methods and develop and test leak detection/mitigation systems for the SSTs. Development must consider the types of waste to be retrieved as well as the condition of the SST in the timeframe that the waste will be retrieved. A number of different waste retrieval technologies are needed to remove the SST waste that has different physical and chemical properties in the various tanks. The waste includes liquids that can be pumped, salt cake that can be dissolved, insoluble double salts, easily mobilized sludge, and sludge heels that can be very hard and must be broken up before they can be pumped from the tank as slurry. It must be demonstrated that the waste has been removed to the maximum extent technically and economically practical. Leak detection and leak mitigation systems are needed to detect and mitigate (if possible) any leaks resulting from the retrieval action.

R-2 Provide SST Retrieval and Leak Detection Systems

Design, procure, and construct SST retrieval and leak detection systems and the associated infrastructure. A number of different retrieval systems, as developed in R-1 above, will be required, as well as a leak detection system.

R-3 Provide SST Waste Transfer Systems

Design, procure, and construct small tanks, pumps, pipelines, and controls required to deliver waste sluicing liquids to SSTs and transfer retrieved waste from the SSTs to DSTs or to supplemental waste treatment systems (if any). As SST tank farm pipelines become no longer usable, new above ground and below ground pipelines will be installed.

R-4 Retrieve/Transfer SST & MUST Waste

Retrieve waste from the SSTs and MUSTS to the extent needed for closure and transfer to DSTs (or another acceptable storage system if provided) or a waste treatment system. SSTs should be retrieved as expediently as practical and as storage space or waste treatment capability is available.

R-5 Provide DST Retrieval Systems

Design, procure, construct and install systems to retrieve DST wastes that will meet the WTP or other treatment systems waste feed requirements. The currently planned retrieval system consists of two large mixing pumps that will mix the waste and suspend the solids; and, a waste transfer pump.

R-6 Provide DST Transfer Systems

Design, procure, and construct systems for transferring waste between DSTs and to and from the WTP (or other treatment system). Most of these systems are currently in place.

R-7 Retrieve/Transfer DST Waste

Retrieve, stage, and transfer DST waste that meets waste treatment feed requirements. Receive waste that may be returned to DSTs from a waste treatment system.

TREAT

T-1 Provide Waste Treatment & Immobilization Plant (WTP)

Design, construct, and commission the WTP so that it:

- Separates the waste into HLW and LAW fractions such that when processed and immobilized the bulk of the chemicals can be disposed as LAW in lower cost, onsite, near-surface facilities and the bulk of the radionuclides can be disposed as HLW in an off-site geologic repository.
- Vitrifies the LAW fraction and packages it for disposal as LLW.
- Vitrifies and packages the HLW fraction in compliance with the geologic repository waste acceptance criteria.
- Demonstrates it can meet product quality and production rate requirements.

Design, construct, and commission an analytical laboratory and infrastructure to support the WTP.

The WTP will be the primary RPP waste treatment and immobilization facility.

T-2 Increase WTP Capacity

Increase WTP waste treatment and immobilization capacity so that the waste can be processed more rapidly and efficiently. It is anticipated that the WTP capacity can be increased in a number of ways. These include; removing system bottlenecks, installing higher capacity second generation melters when the first melters need to be replaced, and increasing waste loadings in the vitrified waste.

T-3 Pre-treat Waste (WTP)

Separates the waste into HLW and LAW fractions such that when processed and immobilized the bulk of the chemicals can be disposed as LAW in lower cost, onsite, near-surface facilities and the bulk of the radionuclides can be disposed as HLW in an off-site geologic repository. The waste feed stream from the underground storage tanks is received, sampled, and processed through ultra-filtration units to remove solids. The solids become feed for HLW vitrification and will undergo washing/leaching to remove additional chemicals that can be routed to the LAW stream. The liquid fraction of the filtered waste will be processed through an ion exchange system to remove Cs-137 and then stored as feed to LAW vitrification.

T-4 Finalize ILAW Waste Determination (WD)

In 1997, the Nuclear Regulatory provisionally agreed that the LAW from Hanford tanks would be non-HLW and could be disposed on site as low-level waste if it was treated as planned. This LAW classification shall be finalized in accordance with DOE M 435.1-1 Chapter II, Waste Incidental to Reprocessing method in consultation with NRC. It will be issued for public comment, and receive EM-1 approval. If ILAW from supplemental treatment is included in the WD, the WD cannot be approved until the TC&WM EIS record of decision is issued.

T-5 Vitrify HLW (WTP)

Vitrify and package the HLW fraction in compliance with the geologic repository waste acceptance criteria. The waste is vitrified in two joule-heated melters and the molten glass poured into stainless steel canisters 2 ft. in diameter by 15 ft. tall.

T-6 Vitrifiy LAW (WTP)

Vitrify the LAW fraction and package it for disposal as LLW. The LAW is vitrified in two joule-heated ceramic melters and the molten glass poured into steel canisters 4 ft. in diameter and 7.5 ft. high.

T-7 Decision: Start LAW Vitrification First?

Construction of the WTP LAW Vitrification facility can be completed before the WTP Pretreatment and HLW Vitrification facilities. Starting up LAW Vitrification first, before the others are completed would provide earlier LAW vitrification and reduce the additional LAW immobilization capacity that is needed. Waste feed for early startup could only be from tanks waste that requires simple field-based pretreatment to meet the LAW Vitrification facility waste acceptance criteria. This pretreatment could be accomplished in new tank farm facilities. Other changes would be required on the WTP site to accommodate early startup; such as liquid effluent storage and transfer to the Effluent Treatment Facility, emergency control room, analytical laboratory availability, and separation of the radiological operations from the ongoing construction activities. The decision would to proceed to make the changes needed for starting LAW Vitrification facility before the WTP Pretreatment facility is ready, or to wait.

T-7a-1 Provide Supplemental Pretreatment

If the decision is made to start the WTP LAW Vitrification facility first, waste pretreatment facilities will be needed to remove entrained solids, insoluble radionuclides, and Cs-137 (as necessary) from the liquid waste stream. Solid/liquid separation and ion exchange processes, pipelines, and ancillary equipment will be provided in new structures in a tank farm.

T-8 Decision: Proceed with DBVS?

Bulk Vitrification is being developed as an alternative technology for immobilizing LAW. Development has progressed to the point that a full-scale test on actual tank waste has been proposed and design of the facilities and equipment is nearly complete. The design has been reviewed by external experts and cost estimates and schedules are being prepared. The decision to be made is whether to proceed with construction of the facilities and conduct full-scale hot tests or not. Alternatively, the decision could be based on cold prototype or engineering-scale tests of integrated systems similar to portions of the WTP.

T-8a-1 Construct & Operate DBVS

If the decision is to proceed with the DBVS, it will be constructed adjacent to the S tank farm in 200-W Area. The construction consists of waste and glass former materials receipt and feed systems, waste dryer, waste container preparation station, waste vitrification station, electrical power supply, off-gas system, waste container sampling and closure station, ILAW container interim storage pad, and ancillary equipment. The DBVS is operated in a batch mode. The plan is to retrieve ~200,000 gallons of dissolved salt cake from tank S-109, process it through simple solid/liquid separation at the tank, and vitrify it in up to 50 waste containers.

T-9 Evaluate LAW Treatment Alternatives

Four alternatives are under consideration for providing additional LAW immobilization capacity; a 2nd WTP LAW Vitrification facility, bulk vitrification, steam reforming, and cast stone. The evaluation will include whether the technology is ready to implement at production scale, waste form qualification, operability, life-cycle cost and schedule. The results of this evaluation will be considered in the decision on whether to implement supplemental treatment (T-9) and to fulfill the HFFACO M-62-08 milestone on Supplemental Treatment.

T-10 Decision: Supplemental Treatment?

Because the WTP LAW Vitrification facility does not have the capacity to vitrify the LAW fraction at the same rate the HLW Vitrification facility can vitrify the HLW fraction, additional LAW immobilization capacity is needed to immobilize 40%-60% of the LAW. This additional capacity could be provided by adding another WTP LAW Vitrification facility, or adding another waste immobilization technology (supplemental treatment) in new facilities. The supplemental treatment technologies being considered are bulk vitrification, steam reforming, and a cementatious waste form called cast stone. The decision will be to proceed with one of the supplemental technologies or to construct a 2nd WTP LAW Vitrification facility. Supplemental treatment may also include some simpler waste pretreatment facilities in the tank farms so that LAW immobilization could begin before the WTP Pretreatment facility comes on line.

T-10a-1 Provide Supplemental LAW Treatment and Immobilization Facilities

If the decision in T-11 is to acquire supplemental treatment; design, construct, and startup the supplemental technology process chosen and any supplemental pretreatment required to feed it. The WTP Pretreatment facility LAW processing capacity is approximately twice that needed to feed the WTP LAW vitrification facility. Therefore, most of the waste pretreatment needed to supply feed to supplemental treatment can be provided by WTP.

Assuming it is decided to use bulk vitrification as the supplemental technology, the facilities needed to immobilize 40%-60% of the LAW are envisioned to include:

- Approximately 8 parallel lines, some in 200-East Area and some in 200-W Area, consisting of waste container preparation, waste receipt and feed tanks, glass forming materials storage and blending, waste dryer, electrical power supply and vitrification station with feed system, off gas system, waste container sampling and closure station, and other ancillary equipment.
- Supplemental pretreatment as described in T-4 if bulk vitrification starts up prior to WTP startup, and/or some bulk vitrification capacity is located in 200-West Area.

T-10a-2 Pre-treat Waste in Tank Farms

Treat tank waste in facilities described in T-11a-1 above and transfer it to the supplemental LAW treatment facilities for immobilization. Transfer the HLW fraction to the WTP or return it to the DSTs.

T-10a-3 Immobilize LAW (Supplemental)

Receive waste feed from the tank farms and/or WTP Pretreatment and process it through the supplemental treatment systems to produce an ILAW that can be disposed on site as LLW.

T-10b-1 Construct and Operate 2nd LAW Vitrification Facility

Adding a 2nd LAW Vitrification facility is one of the alternatives being considered to increase the LAW immobilization capacity to better match the HLW Vitrification capacity (see T-6). If this alternative is selected, a 2nd LAW Vitrification facility similar in design and capacity to the current one under construction would be constructed. The WTP infrastructure would also be expanded to support this addition. This is a long-lead time, high capital cost project that, if selected, would likely lag current WTP startup.

T-11 Decision: Dispose some Waste as LLW?

Because of the source and low radionuclide content, some tank waste may be classified as LLW. If so, it could be treated, packaged and disposed on site (or possibly in the tanks without retrieval). The advantages of this approach are; treatment and disposal of this waste would not have to await startup of the WTP, the load on the WTP would be reduced, and RPP life-cycle cost would be reduced. However, it is not known if this waste can be classified as LLW rather than HLW and this disposal pathway is not currently included in the TC & WM EIS.

T-11a-1 Acquire LLW Treatment Facilities

Design, procure, and construct facilities to treat and package waste for disposal as LLW. The process is envisioned to include waste drying, packaging in 55 gallon drums or larger containers, collection of liquid effluents for treatment and disposal at the Effluent Treatment Facility, and an off-gas system.

T-11a-2 Treat and Package LLW

Waste is received from the tanks, staged and sampled, and treated and packaged in accordance with Hanford LLW acceptance criteria. It will then be disposed on-site in a near-surface disposal facility (i.e. IDF).

T-12 Decision: Dispose some Waste as TRU?

As many as 20 tanks (17 SSTs and 3 DSTs) may contain waste that can be classified as TRU rather than HLW and might qualify for disposal at the WIIP. The advantages of this disposal route are; the time to process HLW in the WTP reduced by 3 years, the SST waste would not enter the limited space DST system as it would be treated as it is retrieved in a facility at the tank farm, retrieval and treatment could begin before WTP comes on line, and the RPP life-cycle cost would be reduced. However, questions remain as to how much of the waste will be classified as TRU, whether it will meet all of the conditions for disposal at WIPP[1] and the outcome of the TC&WM EIS record of decision.. If the decision is to not process the waste as TRU, it will be processed in the WTP as HLW.

T-12a-1 Acquire Approvals to Dispose some Tank Waste as TRU

If the decision in T-13 is to dispose of some tank waste as TRU, a number of approvals will be needed. These include:

- A DOE waste designation that the waste is TRU and not HLW,
- NMED must approve WIPP Hazardous Waste Class 3 Permit Modification to accept waste that previously had been managed as HLW (Hanford will provide the information to CBFO to be included in a Class 3 Permit Modification Request),
- The TC&WM EIS and ROD will need to be issued before the treatment facilities can be constructed, and
- The Hanford facilities to solidify (dry) and package the TRU waste cannot be constructed prior to Washington State Department of Ecology issuing a RCRA Part B hazardous waste permit.

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[1] A decision for disposal at the Waste Isolation Pilot Plant (WIPP) will not be made until (1) the waste meets the WIPP Waste Acceptance Criteria, with special emphasis on the waste designation as delineated in the WIPP recertification decision by the Environmental Protection Agency in March 2006; and (2) it meets the regulatory eligibility requirements for disposal as described in the WIPP Hazardous Waste Facility Permit.

T-12a-2 Acquire TRU Treatment Facilities

Design, procure, and construct the facilities to treat and package the TRU in accordance with the WIPP waste acceptance criteria. It is envisioned that the treatment process will consist of drying the waste, mixing it with some solidifying material, and placing it in Standard Waste Boxes or 55 gallon drums. The liquid effluent would be routed to the Effluent Treatment Facility for final treatment and disposal. The treatment system would be installed in mobile units that could be moved to other tank farms where the TRU waste is located. Processing the remote-handled TRU (R-H TRU) will require adding radiation shielding to the facilities used for the contact-handled TRU (C-H TRU) and may require sludge washing to remove Cs-137.

T-12a-3 Treat and Package TRU

Waste is received from the tanks, staged and sampled, and treated and packaged. It will then be certified that it meets the WIPP waste acceptance criteria and interim stored until it can be shipped to the WIPP.

T-13 Decision: Vitrify Cs/Sr Capsules in WTP? (Not Part of RPP)

Approximately 1,900 highly radioactive Cs-137 and Sr-90 capsules are stored in the Waste Encapsulation and Storage Facility (WESF). While managed by a different Hanford Program, the cesium and strontium was separated from the HLW and are considered HLW. It has not yet been decided whether this waste will be treated prior to its disposal in the off-site geologic repository for spent fuel and HLW. Two alternatives are currently being considered; 1) placing the capsules in a larger canister with or without embedding the capsules in some other material, and 2) removing the cesium and strontium from the capsules and vitrifying it in the WTP HLW Vitrification facility. The capsules do not meet the repository waste acceptance criteria in their present form and DOE has not yet evaluated obtaining approval of an alternate waste form. Vitrifying the waste would meet the waste acceptance criteria, however opening the capsules and treating this waste has more risk. The decision is to choose between these alternatives.

T-13a-1 Provide Capsule Disassembly/Treatment Facility (Not part of RPP)

Design and construct facility to disassemble the capsules and treat the cesium chloride and strontium fluoride so that it can be accepted by the HLW Vitrification facility for blending with other HLW prior to vitrification. It may be necessary to process the cesium chloride through ion exchange to remove the chloride. Modifying the WESF or, constructing a new facility adjacent to WESF or the WTP HLW Vitrification facility will be considered. The facility will include shielded hot cells to handle the highly radioactive material (the capsules contain ~ 125 million curies). A method to transport the material to the HLW Vitrification facility will also be needed.

T-13a-2 Prepare Cs/Sr Capsules for Vitrification (Not part of RPP)

Operate the capsule disassembly/treatment facility and covert the solid cesium and strontium to a condition acceptable for vitrification in the HLW Vitrification facility. It is anticipated that the HLW Vitrification facility will require the waste to be in a liquid or slurry form and that it will only accept small quantities at one time so that it can be blended with other lower radioactive waste.

T-13b-1 Prepare Capsules for Shipment to Repository (Not Part of RPP)

Provide facilities and prepare capsules for shipment to the off-site geologic repository. It is envisioned that the capsules would be placed in a larger, typical HLW canister two feet in diameter and 10-15 feet long. The number of capsules that can be put in any one canister will likely be limited by the radioactive decay heat-load limit in the repository waste acceptance criteria. The capsule waste form does not meet the waste acceptance criteria and may require acceptance as a non-standard waste form.

T-13C-1 Extended Storage

Place capsules in dry storage on site for a yet-to-be-determined period. Extended storage would allow the cesium and strontium to decay and thereby reduce their radioactive intensity and the amount of heat they generate, thereby lessening their impact on the geologic repository.

T-14 Decision: Precipitate Sr/TRU in DSTs?

Two tanks, AN-102 and AN-107, have high concentrations of Sr-90 and actinides in the liquid waste phase resulting from their high organic content that complexed these radionuclides and made them soluble. The plan is to remove these radionuclides by precipitation using strontium nitrate and sodium permanganate. The WTP is equipped to conduct this precipitation process but because the ultrafiltration process that would be used to remove the precipitated solids has marginal capacity, treatment in a DST is being considered. If it is decided to conduct this precipitation process in a DST, some minor equipment additions would be required.

T-15 Treat Liquid Effluents in ETF (not part of RPP)

Treat liquid effluents received from tank waste treatment operations so that the liquid stream can be discharged to the State Approved Liquid Disposal Site (SALDS). Treatment may include removal of some trace radionuclides, organic destruction, and ph adjustment. The solid secondary waste generated is disposed as LLW or mixed LLW. Treatment and disposal options for secondary liquid waste from WTF and Secondary Treatment that may contain significant quantities of Tc-99 and/or I-129 include: 1) grout and dispose in IDF, 2) use enhanced waste form and dispose in IDF, or 3) solidify and dispose off-site. The ETF is operated by another Hanford program.

T-16 Decision: Upgrade ETF?

Because of the delay in WTP startup and the extended treatment mission, effluent treatment in the ETF or similar facility will be needed for decades. The decision will be to determine if the ETF needs to be upgraded to process all of the secondary waste streams that it might receive and for the long time period it will be needed. If so, the upgrades will be provided.

T-17 Collect and Package Tank Farms Secondary Waste

Collect and package job wastes, failed equipment, ventilation filters, and other radioactive solid waste generated in management of the tank farms that meet the waste acceptance criteria for on-site disposal as LLW (or mixed LLW) or off-site disposal at WIPP as TRU.

T-18 Collect and Package Solid Secondary Waste

Collect and package job wastes, failed equipment, ventilation filters, and other radioactive solid waste generated in the pretreatment and immobilization of tank waste that meet the waste acceptance criteria for on-site disposal as LLW (or mixed LLW) or off-site disposal at WIPP as TRU.

T-19 Provide & Operate HLW Melter Treatment Facility (if needed)

The WTP HLW melters are large equipment items. The WTP is not equipped to disassemble these melters after they have been in service. A number of melter failures and replacements are anticipated over the WTP operational period. Residual radioactive waste may have to be removed and/or the melters may have to be reduced in size before they can be disposed. This function would provide the facility and conduct the operations to accomplish this task, if needed.

DISPOSE

D-1 Receive and Dispose ILAW/LLW in IDF

Receive ILAW containers and secondary waste generated during the storage, retrieval, treatment, disposal and closure of the tank wastes; and transport and dispose of them in the IDF (or other Hanford waste disposal sites until IDF is operational).

D-2 Provide Initial ILAW/LLW Disposal Facilities (IDF Complete)

Design, construct, and permit Phase I of the on-site near-surface disposal facility for the ILAW/LLW. This facility, known as the Integrated Disposal Facility is complete and ready to receive waste. Phase I provides164,000 cubic meters of waste disposal space in two cells, one for mixed ILAW/LLW and the second for LLW.

D-3 Provide Additional ILAW/LLW Disposal Facilities

Expand the IDF as needed. The two cells are expandable to 450,000 cubic meters each.

D-4 Acquire Disposal Authorization and Permit

Provide IDF performance assessment and other information to EM so they can issue a Disposal Authorization statement for the IDF. Also provide the necessary documentation to Ecology so they can issue a permit for receiving and disposing mixed low-level waste in the IDF.

D-5 Provide IHLW Storage in CSB

Provide capability for storing IHLW canisters in the Canister Storage Building (CSB) and procure the equipment to transport the IHLW canisters from the WTP to the CSB. Two unused cells in the CSB can be outfitted with storage tubes and other ancillary equipment with capacity to store 880 IHLW canisters.

D-6 Receive & Store IHLW

Receive IHLW canisters from the WTP at the rate they are produced, and transport and store IHLW in the storage facilities.

D-7 Decision: Repository Available?

The plan is to ship the HLW canisters to the spent fuel and HLW geologic repository being developed at YUCCA Mountain in Nevada. However, the repository has not yet gone through the NRC licensing process and the State of Nevada is opposed to it. When and if it is ready to receive Hanford HLW is in question. If may be necessary for Hanford to store its HLW for an extended period of time. The decision will be to ensure that on-site storage is adequate for the time period needed.

D-7a-1 Provide Additional IHLW Storage Modules

Provide additional IHLW canister storage modules for use after storage space in the CSB is filled. The plan is to ship the canisters to the off-site geologic repository as soon as possible to minimize the amount of on-site storage needed. However, that depends on Yucca Mountain availability and overall national priorities for DOE and civilian spent fuel and wastes.

D-8 Provide Shipping Facility & Prepare IHLW for Shipment

Provide a shipping facility, transport IHLW canisters from interim storage, and prepare and load canisters into repository supplied casks for shipment to the off-site geologic repository at the rate the repository will accept them. A firm schedule and shipping rate has not been established.

D-9 Ship to Geologic Repository (OCRWM)

Transport of the IHLW to the repository is the responsibility of the Office of Civilian Radioactive Waste Management.

D-10 Store TRU

Store packaged TRU on site until it can be shipped to WIPP and then load in WIPP supplied transport system.

D-11 Ship to WIPP

Transport of the TRU to the WIPP is the responsibility of WIPP.

CLOSE

C-1 Prepare Closure Basis

Develop information and documentation that provides the basis for closing the SST farms and MUSTS in conformance with DOE M 435.1-1 and Milestone Number M-45-00 of the *Hanford Federal Facility Agreement and Consent Order*.

C-2 Decision: SST Closure Demo?

A closure demo on one or more the smaller 200 Series tanks in C-farm is under consideration. The demo would provide DOE and Ecology information and experience in both the physical and procedural aspects of interim closing a tank. Regulatory support is needed as well as a determination of the cost/benefit analyses in deciding whether to proceed with a demonstration.

C-3 Conduct SST Closure Demo(s)

Conduct one or more SST interim closure demonstrations to test and confirm methods for characterizing and stabilizing residual waste, adding structural fill material to void spaces, and monitoring performance. The demonstration will include tanks, pipelines, and other ancillary equipment. The demonstration would also provide an opportunity to work through the DOE and regulatory procedural closure processes.

C-4 Prepare and Issue TC&WM EIS

Prepare Tank Closure and Waste Management (TC&WM) Environmental Impact Statement (EIS) Draft, issue for public comment, incorporate comments, and issue Final EIS. This EIS will analyze the environmental impacts from SST landfill and clean closure alternatives and for supplemental treatment alternatives that include bulk vitrification, steam reforming, cast stone and a 2nd WTP LAW Vitrification facility.

C-5 Decision: Issue ROD

The Record of Decision (ROD), based on the Final TC&WM EIS, will be issued. It is anticipated that a decision will be made on the type of closure that will be implemented on the SST farms and the technology that will be used for supplemental treatment.

C-6 Acquire Residual Waste Determinations & Permits

Prepare Waste Determination (WD) documentation in accordance with DOE M 435.1-1 Chapter II, Waste Incidental to Reprocessing method, consult with NRC, issue for public comment, and receive EM-1 WD approval. The WD cannot be approved until the TC&WM EIS record of decision is issued. Also prepare documentation, submit to Ecology, and acquire permits for closure.

C-7 Close SST Farms and MUSTS

Conduct the activities necessary to close the SST farms and the miscellaneous underground storage tanks (MUSTS) after the waste has been retrieved. While the closure method has not yet been determined, landfill closure is anticipated. This is envisioned to include removing any surface structures to near ground level, solidifying the residual waste, adding structural fill material to void spaces, constructing surface barriers over the tank farms, emplacing warning signs and markers, and adding monitoring instrumentation.

C-8 Close DSTs

Cl;ose DSTs when they are no longer required to conduct the RPP mission. Closure of the DSTs will be the subject of a future EIS. It is envisioned that they will be clean closed and disposed in place, using closure methods similar to those envisioned for SSTs.

C-9 Close Support Facilities

Close RPP support facilities when they are no required to conduct the RPP mission. A number of support facilities (i.e. 242-A evaporator) will be closed. These will either be closed by the RPP or transferred to another Hanford program for closure.

C-10 Close IDF

The Integrated Disposal Facility (IDF) will be closed when it is no longer needed for Hanford missions.

C-11 Close Treatment & Immobilization Facilities

Close the WTP and other waste treatment facilities when no longer needed. The facilities are being designed for clean closure; however, the final configuration of the closed facilities will not be decided for decades.

C-12 Initiate RPP Post Closure Monitoring

Initiate and perform monitoring of closed RPP facilities to: 1) determine if waste or waste constituents are migrating from the closed facilities, 2) ensure that closed facilities are not posing unanticipated risks to human health or the environment, and 3) identify unexpected failures or deficiencies of the closed facilities.

C-13 Closeout the River Protection Project

The RPP will be closed out by transferring the post-closure monitoring responsibility to the Hanford Site program responsible for long-term stewardship, and completing and archiving all records.

C-14 Long-Term Stewardship Program

The DOE long-term stewardship program will be responsible for the closed tank farms and associated facilities.

C-15 Barrier Design from ER Program

A decades-long program has been conducted at Hanford to develop and test surface barriers. This effort has been the responsibility of the Environmental Restoration (ER) program. The ER program is likely to install the first surface barrier at Hanford. The RPP will utilize or adapt the ER surface barrier design for closing SSTs.

C-16 200 Area Cleanup Strategy

The tank farms are located on the 200 Area plateau and must be integrated into the plans for closing the entire area. Many of the waste sites and tanks are in close proximity such that multiple waste sites and tanks have/or may contaminate the same groundwater beneath the 200 areas. Cleanup levels, protective measures, land use plans and long-term stewardship are all topics that need a consistent strategy.

National TRU Waste Corporate Board
RH TRU Waste Questions for RH Interactive Session

Hanford-ORP Responses in Blue below the Bullets

- **Characteristics of RH TRU waste**
  - RCRA constituents not currently allowed at WIPP?

Tank wastes currently are designated with the following waste codes that are excluded by the waste acceptance criteria (WAC) in current WIPP permits: D001-ignitability, D002-corrosivity, D003-reactivity, D041-toxicity (2,4,5 trichlorophenol). These waste codes were applied to all SST and DSTs, during the interim status permitting of the Hanford waste tanks. As provided for under RCRA and Washington State dangerous waste regulations, process knowledge information will be used to remove these waste codes from TRUwastes, both CH and RH, prior to treatment and packaging of the waste for final disposal at WIPP.

The current resolution strategy is two-fold: 1.) removal of the D001, D002, and D003 from the CH and RH Treatment approved RCRA Part B permit through evaluation of process knowledge (prior waste management and chemical analyses of actual tank waste), and thus the treated product will not have these waste codes; and 2.) modify the WIPP permit to include the D041 code (issued by letter RL to CBFO, McCormick to Gadbury, 5-2-03). The current draft Washington State RCRA Part B permit for CH reflects this strategy for the D codes -001,-002 &-003 and has been informally reviewed by the Washington State Dept. of Ecology. Revision of the WIPP permit to accept D041 waste is still pending – we are not aware of any draft permit revision or submittal on this request by CBFO.

<u>Sources:</u>

WIPP Permit (<u>http://www.wipp.energy.gov/library/rcrapermit/Module02.pdf</u>) section II.C.3.g and Table II.C.4

RPP-20268, *Regulatory Analysis: Strategy for Addressing Single-Shell Tank CH-TRUM Characteristic Waste Codes*, March 2004, RMIS #LS00004692

Letter, May 2, 2003, M.S. McCormick to D.C. Gadbury, Request for New Waste Codes for Transuranic (TRU) Waste Disposal at the Waste Isolation Pilot Plant

PNNL-14832, *Dangerous Waste Characteristics of Contact-Handled Transuranic Mixed Wastes from Hanford Tanks*, August 2004

RPP-14132, *Environmental Plan to Support Proposed Hanford Tank Waste Supplemental Processing*, March 2003, RMIS #D1383565

(b)(5)

The general response to the question is "No." Data on these materials was reported under the "Other Constituents" tab of the CID 2006/2007 update spreadsheet, and included only beryllium and magnesium. Beryllium data is repeated below.

RH Waste Stream ID	Other Chemical Constituent	Weight Percent
RP-W013	No reported inventory	
RP-W016	Beryllium - not as solid metal	0.01%
RP-TFC002	Beryllium - not as solid metal	0.0012%
RP-TFC003	Beryllium - not as solid metal	0.0010%

<u>Sources:</u>

CID 2006-2007 Update Submittal to LANL 10/2006; reference file: CIDImport_RP_Hanford_input_mej_rev_1_10-24-2006.xls [on IDMS page in directory 1.14.6]

Email, M Jennings to B. Crawford, 12/21/06, "RE: FW: Waste Stream IDs for unassigned waste streams in the TRU Waste Inventory Database" [assigned waste stream IDs RP-TFC002 and RP-TFC003 to previously unassigned streams "Not Assigned RP-2" and "Not Assigned RP-3", respectively]

- Criticality issues?

None identified at this time, nor expected. A formal criticality analysis will be approved for the RH-TRU waste streams, as part of the nuclear safety analysis process (DOE G 421.1-2, "Implementation Guide for Use in Developing Documented Safety Analyses to Meet Subpart B of 10 CFR 830"), prior to retrieval and treatment of the material. CH-TRU has conducted a preliminary criticality analysis as part of its Preliminary Documented Safety Analysis and noted that there were no criticality issues through the typical drying/treatment process.

<u>Sources:</u>

RPP-23479, *Preliminary Documented Safety Analysis* – Draft Submittal to ORP, 9/25/05, Section 3 of 3, Document # CH2M-0502671, RMIS #DA00963846

RPP-20806, CSER 04-009, *Criticality Safety Evaluation Report for the CH-TRUM Facility*, 10/5/04, RMIS #6253075 (subsequently cancelled for project delay)

- Waste within the LWA limits of 23 Ci/l (averaged over the volume of the canister)?

Radioactive isotope (including key daughter products Ba-137m & Y-90) concentrations for CH and RH waste streams were submitted to LANL as part of the CID 2006/2007 update. Based upon this data all RH waste is within the LWA limit.

The following table documents the data from the spreadsheet submittal. The average concentration (Ci/m3) for all isotopes in the specific waste stream were summed and converted to Ci/l.

Average Radioisotopic Concentration (Ci/l)

RH Waste Stream ID	RH-Tanks	Avg. Ci/l
RP-W013	SY-102	1.37
RP-W016	AW-103, 105	0.19
RP-TFC002	B-107, 110, 111; T-107, 112	0.75
RP-TFC003	T-105	0.29
	Total	2.59

Sources:

CID 2006-2007 Update Submittal to LANL 10/2006; reference file:
CIDImport_RP_Hanford_input_mej_rev_1_10-24-2006.xls [on IDMS page in directory 1.14.6]

Email, M Jennings to B. Crawford, 12/21/06, "RE: FW: Waste Stream IDs for unassigned waste streams in the TRU Waste Inventory Database" [assigned waste stream IDs RP-TFC002 and RP-TFC003 to previously unassigned streams "Not Assigned RP-2" and "Not Assigned RP-3", respectively]

- Special packaging considerations for waste between 100 R/hr and 1,000 R/hr?

There are no projected wastes in this radiation range. Zero notation was provided in tab "Percent Volume Dose Rate Between 100 and 1000 rem/hr" in the CID 2006/2007 update submittal.

Source:

CID 2006-2007 Update Submittal to LANL 10/2006; reference file:
CIDImport_RP_Hanford_input_mej_rev_1_10-24-2006.xls [on IDMS page in directory 1.14.6]

- **Current Status of RH TRU waste**
  - Current packaging and storage? Timeline for packaging?
  - Any buried RH TRU/or RH TRU in culverts being considered for WIPP?

All Hanford tank RH-TRU material is currently stored in SSTs and DSTs, awaiting treatment; no material is buried or contained in culverts. Material has been coded in CID with the Matrix Waste Code Group "Solidified Inorganics," and the Waste Matrix Code S3119 "Other Inorganic Sludges."

RH Retrieval/treatment/Packaging is scheduled to begin 1/8/2021 and be completed within twelve years - 1/8/2033.

Sources:

CID 2006-2007 Update Submittal to LANL 10/2006; reference file:
CIDImport_RP_Hanford_input_mej_rev_1_10-24-2006.xls [on IDMS page in directory 1.14.6]

Email, M Jennings to B. Crawford, 12/11/06, "FW: Waste Stream IDs for unassigned waste streams in the TRU Waste Inventory Database" [described waste matrix code numbers]

Current Tank Farm Contractor BCR-RPP-06-003 Rev 1

(b)(5)

Source:
CID 2006-2007 Update Submittal to LANL 10/2006; reference file: CIDImport_RP_Hanford_input_mej_rev_1_10-24-2006.xls [on IDMS page in directory 1.14.6]

- **Disposition**
    - Regulatory drivers for removal of RH from the site? Which agencies?

Treatment and disposal of RH-TRU tank wastes at WIPP will require the following permit revisions/approvals:

1.) NEPA (Tank Closure and Waste Management EIS)– U.S. Department of Energy
2.) RCRA Part B Permit – Washington State Department of Ecology
3.) RCRA Part B Class III Permit Modification – New Mexico Environment Department
4.) New Source Review Notice of Construction (NOC) application – Washington State Dept. of Ecology
5.) Radioactive Air Emissions NOC application – Washington State Dept. of Health
6.) National Emission Standard for Hazardous Air Pollutants application – US EPA

Source:
RPP-14132, *Environmental Plan to Support Proposed Hanford Tank Waste Supplemental Processing*, March 2003, RMIS #D1383565

- Schedule for disposition?

Effort on the permits above is scheduled to begin 10/1/2017 with permitting approved to allow on-site construction starting 4/1/2020.

Source:
Current Tank Farm Contractor BCR-RPP-06-003 Rev 1

- Direct loading the canister? 55-gallon drums in canister? 30-gallon drums in canister? 45-gallon drums in canister?

Treated RH-TRU product will be direct loaded into RH-72b canisters.

- Waste streams needing a formal defense determination? Waste streams potentially requiring a TRU waste determination?

At this time, the Department of Energy-RL has applied the TRU designation to select RH-TRU streams in documentation to WIPP, EPA, and DOE-HQ. Formal approval of this designation is expected by DOE-HQ through the NEPA process and by WIPP through its Part B permit process.

Hanford TRU Tank Wastes

Ron Koll, ORP

Bill Hewitt, YAHSGS LLC

February 4, 2009

Twenty Hanford SSTs & DSTs Contain TRU

Table 1. Hanford Tanks Containing Transuranic Sludge Wastes

(b)(5)

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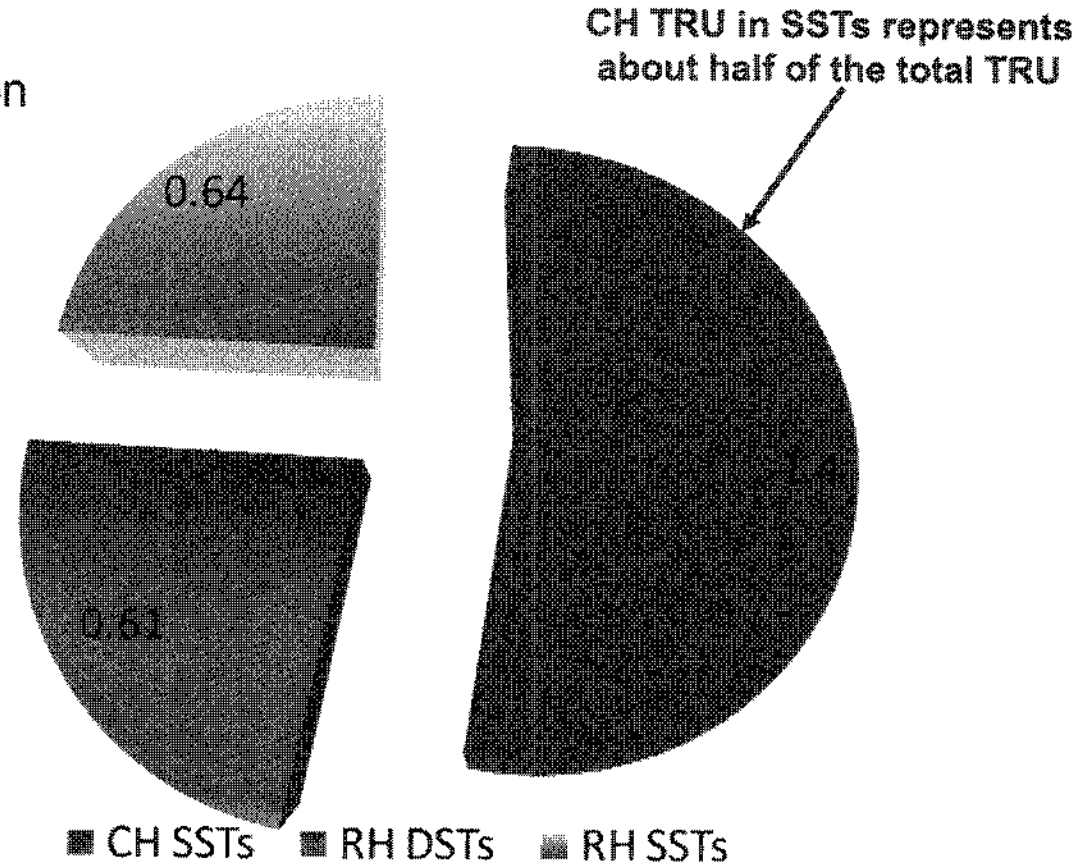
Approximate TRU Waste Breakdown

- Processing all TRU in the WTP would:
  - Increase WTP HLW mission by ~ 3 years
  - Increase HLW Canister count by ~1500
- RH TRU presents substantially greater degree of difficulty than CH TRU.
- Processing CH TRU provides approximately half of the time and canister reduction.

Gallons (millions)



Recommend proceeding with CH TRU in 11 SSTs and then addressing RH TRU options in light of CH TRU experience.

Moving forward with TRU also provides means to bridge SST retrieval gap between C-Farm completion and WTP Startup

(b)(5)

Even for CH TRU there are multiple regulatory and project steps required to execute the TRU project

(b)(5)

Assumptions

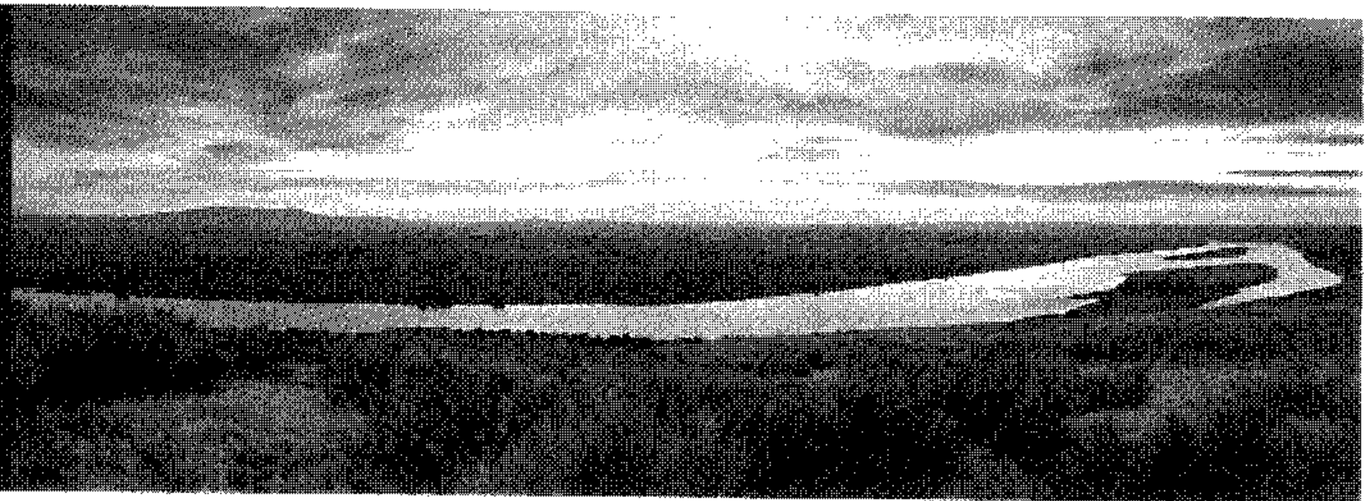
(b)(5)

Major CH TRU Regulatory/Project Management Steps

(b)(5)

Next Steps

(b)(5)



U.S. Department Of Energy
Office of River Protection

Hanford CH-TRU Relative to Statutory and Regulatory HLW Definitions

April 30, 2013

CH-TRU or HLW?

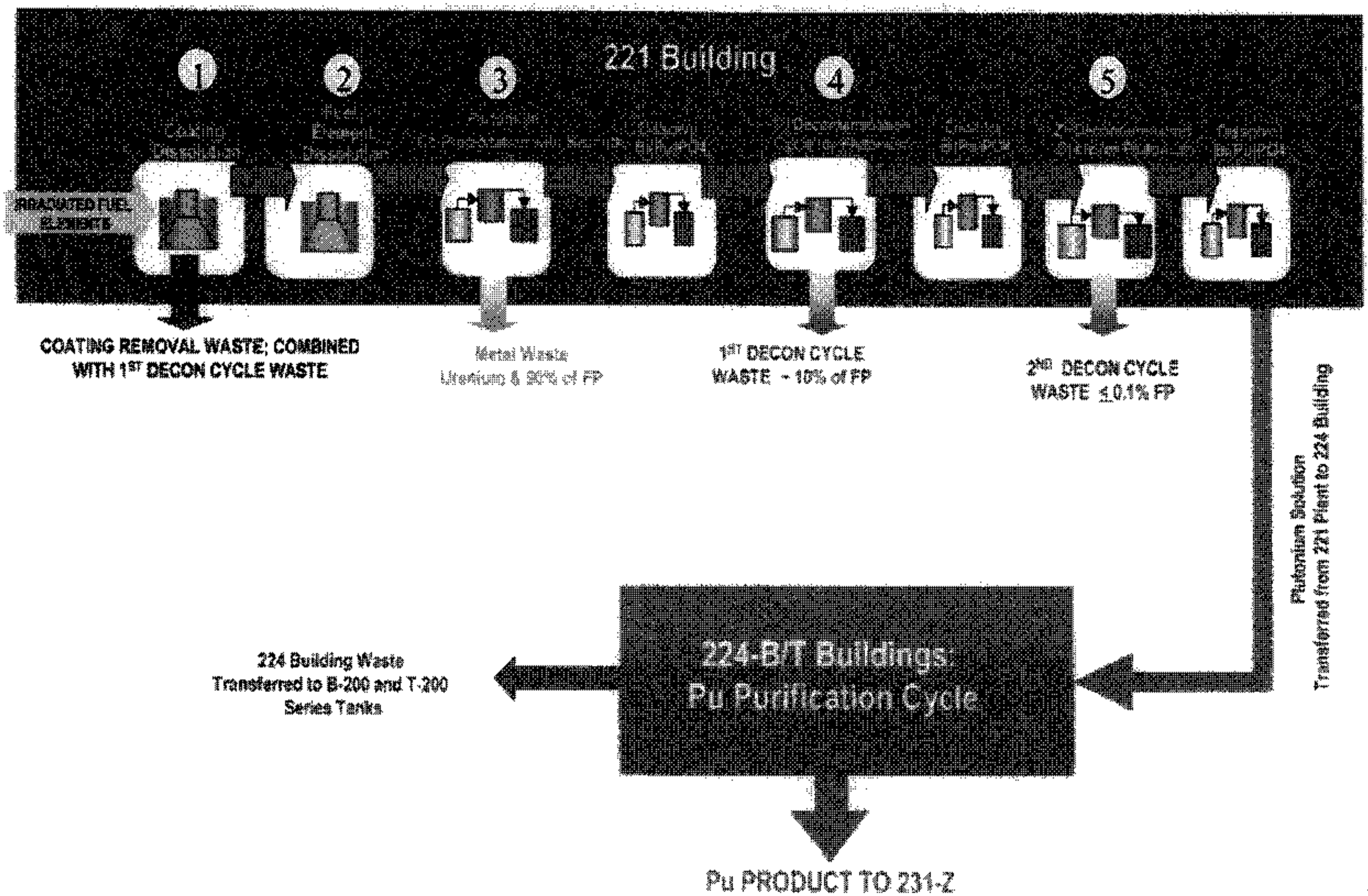
- **Information developed by ORP indicates that the wastes in T-104, T-110, T-111, T-201, T-202, T-203, T-204, B-201, B-202, B-203, and B-204:**
  - Was generated in the Pu purification and concentration portions of the Bismuth-Phosphate Process
  - Does not appear to fall within either the old origin-based (AEC) HLW definition or the origin plus hazard (NWPA) HLW definition

- **Issue –** (b)(5) [redacted]
  (b)(5) [redacted]

- **Tools:**
  - HLW definitions
  - Waste characteristics
  - Nature of Bismuth-Phosphate Process

Bismuth Phosphate Process

Figure 1 <u>Waste Streams from Bismuth Phosphate Process</u>



Pertinent HLW Definitions

- Several definitions of HLW have been enacted by Congress or promulgated by Federal Agencies by rule.
- Those tabulated below are pertinent to Hanford tank waste.

History of HLW Definitions Potentially Pertinent to Hanford Tank Waste		
Date	**HLW Definition Source**	**Citation**
1970	Appendix F, 10 CFR Part 50	35 FR 17530, November 14, 1970
1981	10 CFR Part 60	46 FR 13980, February 25, 1981
1982	Nuclear Waste Policy Act	42 USC 10101
2001	10 CFR Part 63	66 FR 55733, November 2, 2001

AEC 1970. Appendix F to 10 CFR Part 50

- **First regulatory definition of HLW established by rule**
- **HLW defined as:**

  "*...those aqueous wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels*".

- **In 1987 in an advance notice of a proposed rulemaking the Commission provided its interpretation of the Appendix F (and 10 CFR Part 60) HLW definitions:**

  "*As used in Appendix F, "high-level waste" thus refers to the highly concentrated (and hazardous) waste <u>containing virtually all of the fission product and transuranic elements (except plutonium) present in irradiated reactor fuel</u>.*" [emphasis added] (52 FR 5993, February 27, 1987)

- **Issue –** (b)(5)

  (b)(5)

NRC 1981. 10 CFR Part 60

- Update to Appendix F definition reflecting US policy not to reprocess and recycle materials from spent nuclear fuel
- HLW defined as:

  "*(1) Irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted*".
- Same as Appendix F definition relative to which wastes from reprocessing is HLW.

NWPA 1982

- **At DOE's request Congress updated the traditional HLW definition to include both the origin hazard to enable regulators to determine which reprocessing wastes are HLW**
- **HLW defined as:**

  (A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

  (B) other highly radioactive material that the Commission, consistent with existing law, *determines by rule requires permanent isolation".*
- **The important terms in this definition are:**
  - (b)(5) [redacted]
- **Issue:** (b)(5) [redacted]

DOE G 435.1-1 discussion "fission products in sufficient concentrations"

- **Does not agree with NWPA HLW definition's use of "highly radioactive" and "fission products"**

  "…the concentration of fission products is not the primary consideration when making determinations using clause (a) of the *Nuclear Waste Policy Act of 1982*, as amended. The source of the waste is the primary parameter for making high-level waste determinations, not the activity or concentration of fission products." (II-5)

  "DOE M 435.1-1 supports the implementation of part (2) of the 10 CFR Part 60 definition to mean that high-level wastes are wastes that are generated as a product of reprocessing of spent nuclear fuel downstream of, and including, the first step in a separations process, and the consistent waste streams from subsequent extraction cycles or steps." (II-6)

Alternate interpretation of the Advance Notice of Rulemaking Discussion by the Commission

- **The Commission merely rejected the notion that just being highly radioactive could make a waste HLW relative to Part (B) of the NWPA HLW definition:**

  "The Commission would not find tenable the argument that a material requires permanent isolation because it is highly radioactive. The need for permanent isolation correlates with the length of time a material will remain hazardous. Long half-lives, in turn, correlate with low rather than high levels of radioactivity." (footnote 11 to 52 FR 5995)

- **But the Commission stated several times that in order to be HLW a waste must exhibit <u>two</u> characteristics:**

  "The Commission considers that these two characteristics, intense radioactivity for a few centuries followed by a long-term hazard requiring permanent isolation, are key features which can be used to distinguish high-level wastes from other waste categories" (52 FR 5994).

Commission Discussions (cont.)

"*One type of waste, generated by reprocessing spent nuclear fuel, contains both long-lived radionuclides which pose a long-term hazard to human health and other, shorter-lived nuclides which produce intense levels of radiation. <u>This combination of highly-concentrated, short-lived nuclides together with other very long-lived nuclides has historically been described by the term "high-level radioactive waste" (HLW)</u>.* [emphasis added] (52 FR 5993, February 27, 1987)

"*The Commission proposes to classify wastes as HLW under Clause (b) of the NWPA definition <u>only if they are both</u> highly radioactive and in need of permanent isolation*" [emphasis added] (52 FR 5996)

(b)(5)

[redacted]

NRC 2001. 10 CFR Part 63

- **NRC ultimately adopted the NWPA HLW definition with the addition spent fuel in the rule it established for the disposal of HLW at Yucca Mountain**
- **HLW defined as:**

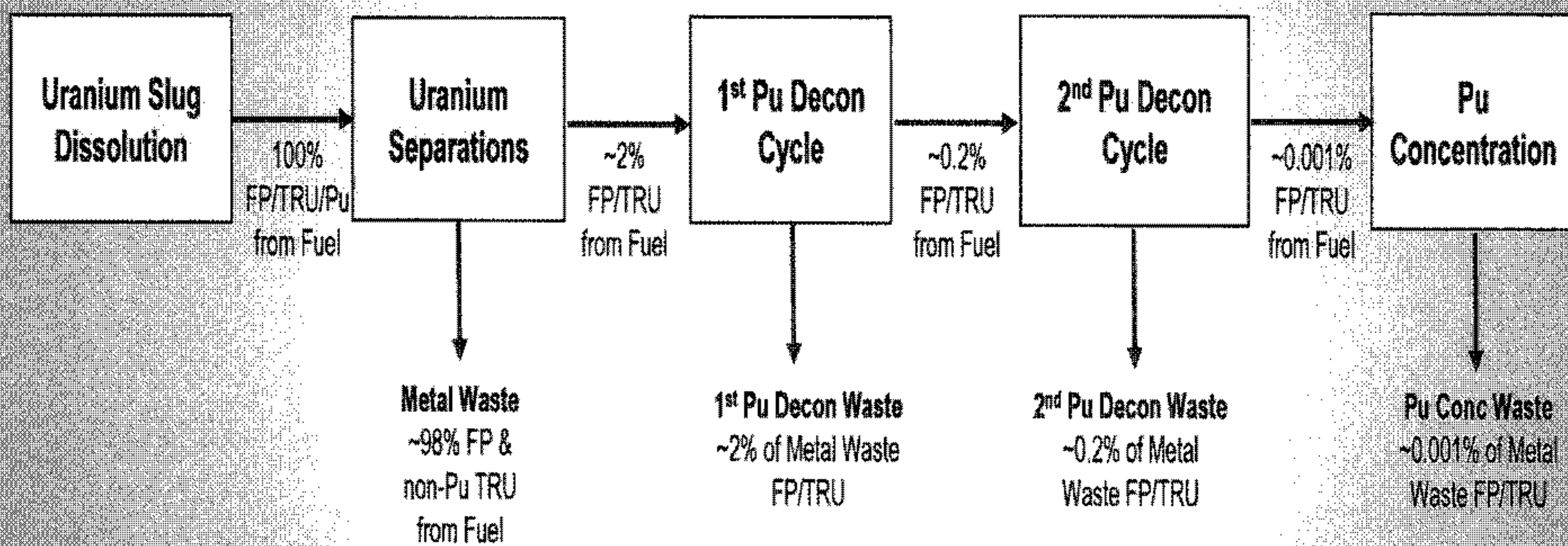
  "(1) The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations;

  (2) Irradiated reactor fuel; and

  (3) Other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation."

- (b)(5)

The fission product content of the wastes downstream of Uranium Separations was small relative to the metal wastes



The fission product concentrations are orders of magnitude below Class C concentration limits

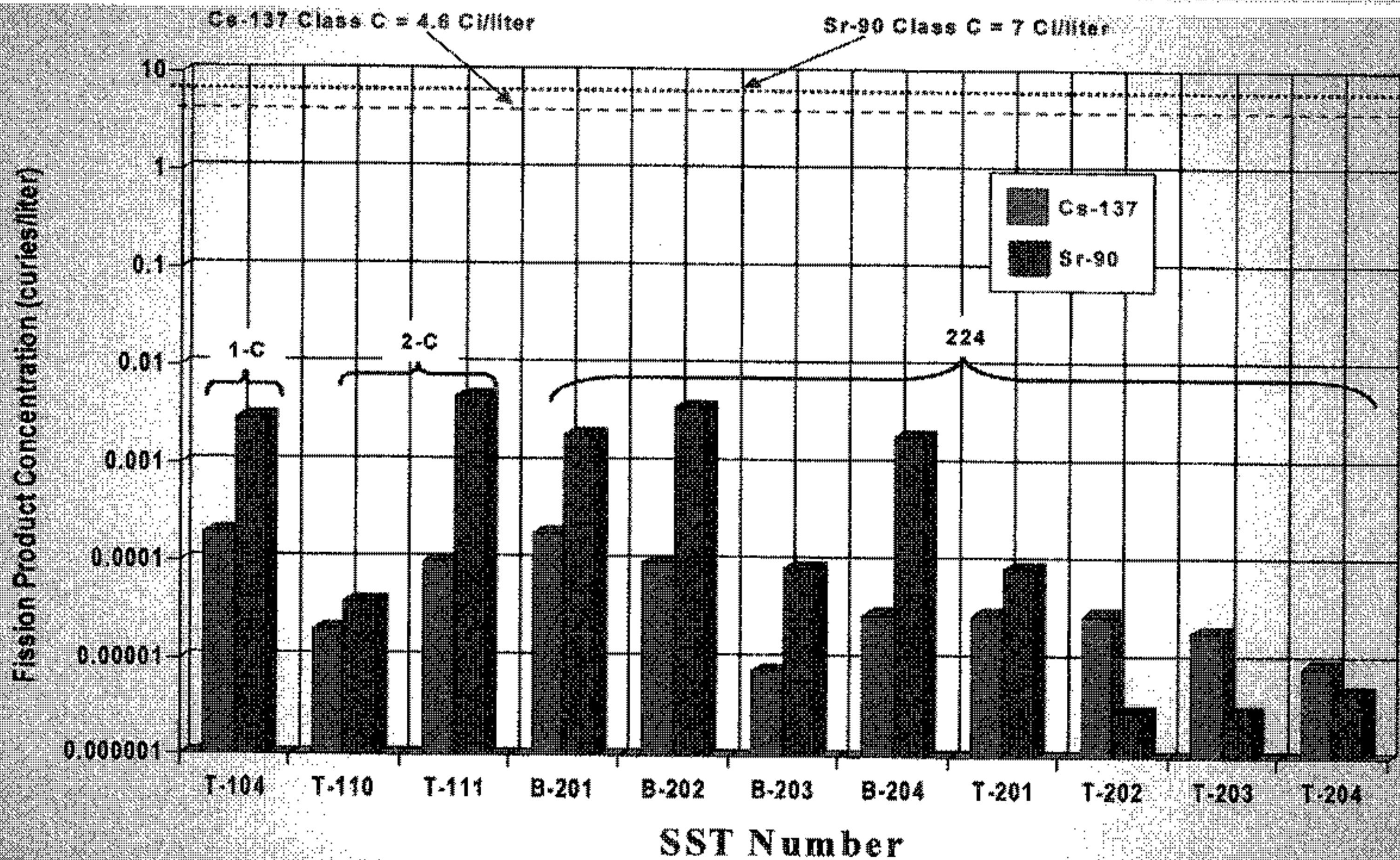
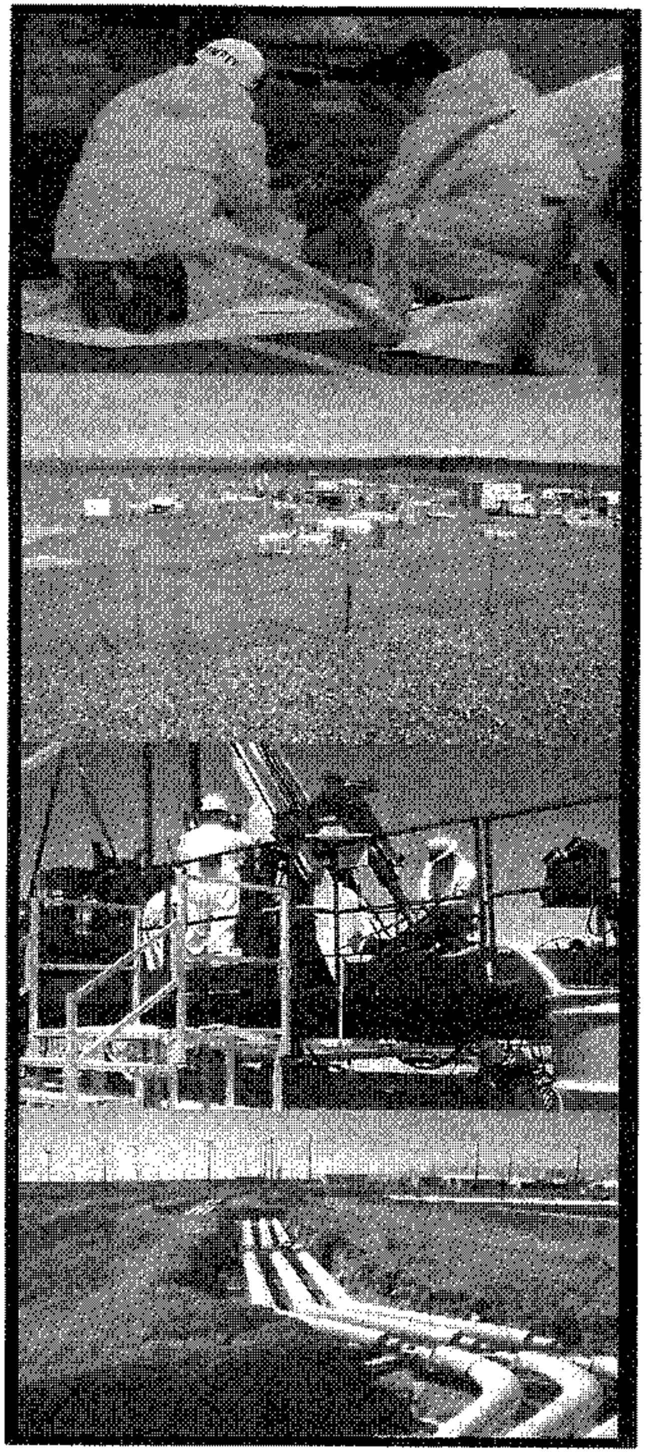


Figure 7. Cs-137 and Sr-90 Concentrations in Candidate TRU Tanks

Figure 7 from DOE/ORP-2004-01, Rev 0, *Basis for Designating Certain Hanford Single-Shell Tank Waste Resulting from the Bismuth-Phosphate Process as Transuranic Waste*, February 2004



Origin of Transuranic (TRU) Waste in Hanford Single-Shell Tanks

Roy J. Schepens, Manager
Office of River Protection

Office of River Protection

Purpose

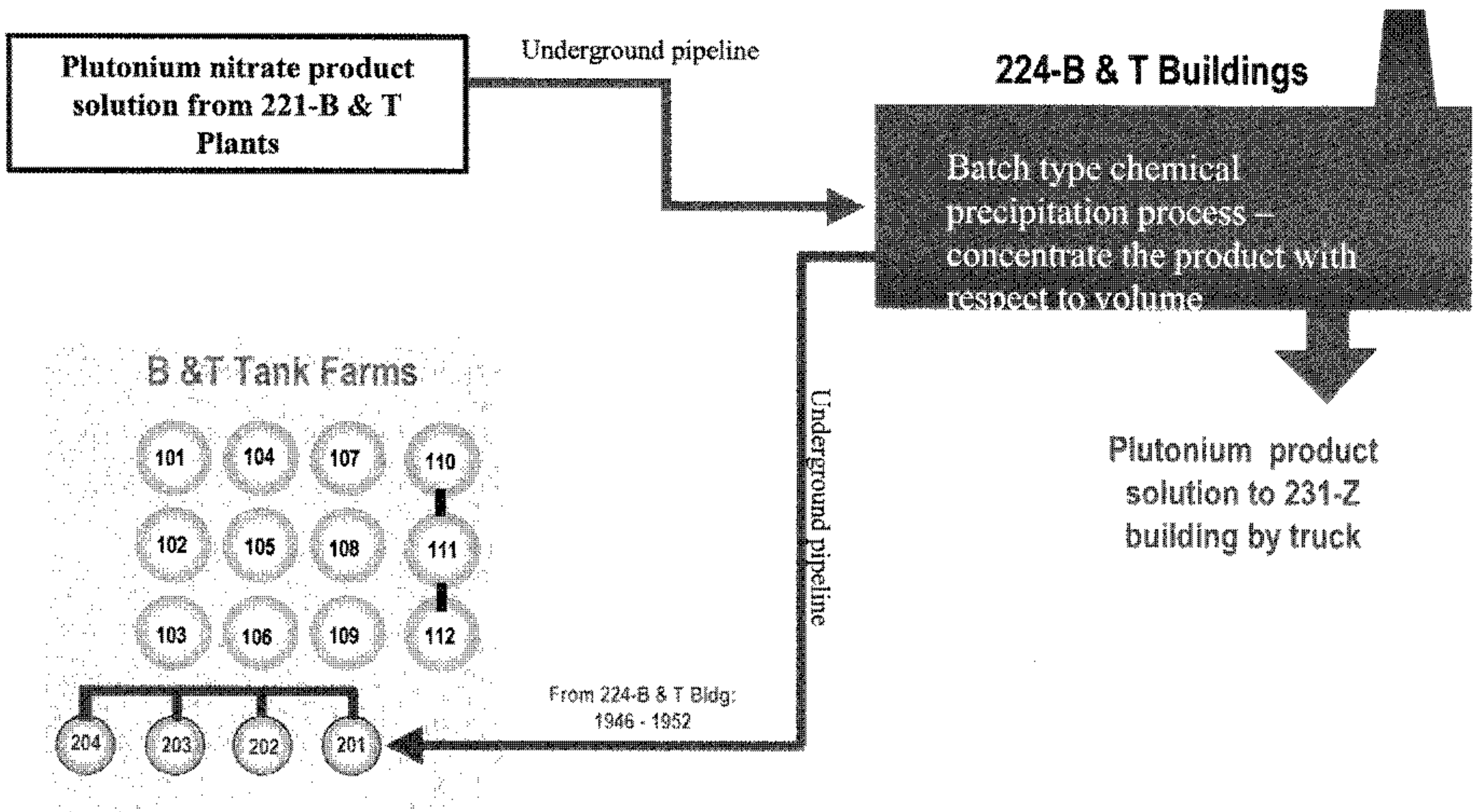
- Brief EM and GC on the origin of the waste
- Tanks being considered TRU include
  - Four B series 55,000 gallon single-shell tanks (B-201, B-202, B-203, and B-204)
  - Four T series 55,000 gallon single-shell tanks (T-201, T-202, T-203, T-204)

Waste Origin

- Operational records demonstrate the origin of the waste based on
  - Physical configuration piping
  - Tank fill history
- Information provided by these records is confirmed by sampling and analysis of tank contents
- Information was developed during work on TPA Milestone M-44 and in response to DNFSB Recommendation 93-5 over the last 10 years
- Based on the above information, the waste is consistent with TRU criteria

224-B & T Plutonium Purification Cycle

Basis: HW-23043, Flowsheets and Flow Diagrams of Precipitation Separation Process



Waste Characteristics

Tank	Waste Type	Sludge Volume (kgal)	TRU ηCi/gm	Total Cs^{137} Curies	Cs^{137} Ci/Liter	Total Sr^{90} Curies	Sr^{90} Ci/Liter
B-201	224	30	824	21.1	0.0002	267	0.002
B-202	224	29	214	11.1	0.0001	437	0.004
B-203	224	51	297	1.63	0.000008	17.1	0.00009
B-204	224	50	263	< 6.3	0.00003	314	0.0017
T-201	224	29	754	3.4	0.00003	10.4	0.00009
T-202	224	21	221	< 2.6	0.00003	0.23	0.000003
T-203	224	37	295	< 2.5	0.00002	0.41	0.000003
T-204	224	37	243	1.2	0.000009	0.73	0.000005

Note: A typical HLW tank Cs/Sr curie content expected to be 3-5 orders of magnitude higher than observed for these tanks

Path Forward

- (b)(5)

  - Establish NEPA coverage
    - (b)(5)

  - Pursue retrieval, treatment, packaging, and certification as TRU waste (b)(5)

    (b)(5)

Hanford CH-TRU Tank Wastes

Stacy Charboneau

ORP

May 18, 2009

Hanford CH-TRU

- ~ 1.4 million gallons of tank waste CH-TRU in 11 SSTs.
- Managing/disposing of waste as TRU could reduce:
  - (b)(5) [redacted]
- (b)(5) [redacted]

Issues/Risks

(b)(5)

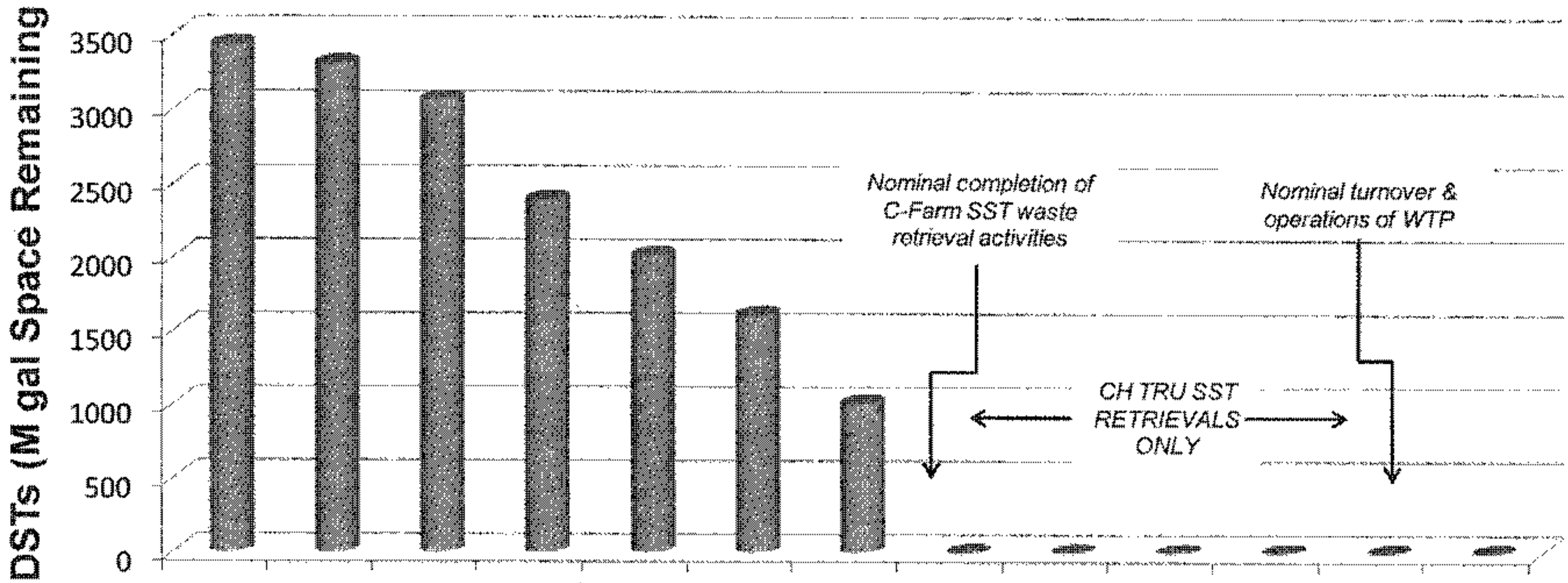
Twenty Hanford SSTs & DSTs Contain TRU

Table 1. Hanford Tanks Containing Transuranic Sludge Wastes				
Tank	Handling	Volume (kgal)	Waste Types[a]	Series Totals (kgal)
(b)(5)				

(b)(5)

(b)(5)

Moving forward with CH-TRU also provides potential means to bridge SST retrieval gap between C-Farm completion and WTP Startup



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SSTs Retrieved [a]	None	S-102 C-108	C-109 C-101	C-102 C-104	C-105 C-110	C-112 C-107	C-111 B-201	S-106 B-202 B-203	B-204 T-201 T-202	T-203 T-204	T-111	T-110	T-104
Net DST Space Used [b] **(M gal)**		0.13	0.24	0.67	0.38	0.41	0.60	1.0	Negl.	Negl.	Negl.	Negl.	Negl.

Note: No DST space credit is assumed due to WTP startup & operations

[a]Retrieval sequence and duration estimated using information from RPP-21216, Rev. 3.
[b]Estimated assuming post-retrieval 242-A Evaporator space recovery operations using RPP-21216, Rev 3 information and assuming that CH TRU wastes require negligible (Negl.) DST space, i.e., net zero water balance achieved by evaporating/recycling water used to retrieve wastes.

Even for CH TRU there are multiple regulatory and project steps required to execute the TRU project

(b)(5)

Designation Process Critical to Success

(b)(5)

Recommendations

(b)(5)

[redacted]

(b)(5)

[redacted]

Presentation Notes

Advantages

- (b)(5)

Regulatory

- (b)(5)

Objective

- (b)(5)

Conclusions

- (b)(5)

Basis for Confidence

- (b)(5)

Discussion

- (b)(5)

Hildman, Cynthia M

From:	Koll, Ronald J
Sent:	Wednesday, November 04, 2009 5:20 AM
To:	Tedeschi, Allan R (Rick)
Cc:	Koll, Ronald J
Subject:	Non-Disclosure Agreement
Attachments:	NONDISCLOSURE AGREEMENT_21OCT09.doc
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Teal

Good Morning Rick,
I've been out of the office most of all last week and i'm not here all this week as well.
I could not find the name of the company that Dave French works for and it's too early in the morning to call him.
Would you e:mail me with the name of Dave's company and his exact title. Please !
Thanks, and I will take care of this later this evening.
Ron.

From: Stubblebine, Scott D
Sent: Tuesday, November 03, 2009 8:28 AM
To: Koll, Ronald J
Subject: RE: Non-Disclosure Agreement | 21OCT09

Sorry Ron, this slipped through the cracks. (b)(5)

Attorney-Client Privileged; Attorney Work Product; Prepared in Anticipation of Litigation; Not Subject to Discovery or Release Under FOIA.

Do Not Forward Without Permission.

Scott D. Stubblebine
Assistant Chief Counsel for the
Office of River Protection
U.S. Dept. of Energy
P.O. Box 450, MSIN H6-60
Richland, WA 99352
509.372.0479
509.372.2784 (fax)

From: Koll, Ronald J
Sent: Tuesday, November 03, 2009 5:19 AM
To: Stubblebine, Scott D
Cc: Koll, Ronald J
Subject: Re: Non-Disclosure Agreement | 21OCT09

Good Morning Scott,
Just a Question ! (b)(5)
(b)(5)
I will facsimile it to Dave for signature once I hear from you.

Hildman, Cynthia M

From:	Koll, Ronald J
Sent:	Wednesday, October 21, 2009 3:33 PM
To:	Stubblebine, Scott D
Cc:	Koll, Ronald J; Trenchard, Glyn D
Subject:	Non-Disclosure Agreement | 21OCT09
Attachments:	NONDISCLOSURE AGREEMENT_21OCT09.doc
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Teal

Tracking:

Recipient	**Read**
Stubblebine, Scott D	Read: 10/22/2009 8:30 AM
Koll, Ronald J	Read: 10/22/2009 5:32 AM
Trenchard, Glyn D	Read: 10/21/2009 3:42 PM

Good Afternoon Scott,
(b)(5)
(b)(5)
Once I have your concurrence, I will facsimile it to Dave for signature.
If you have any questions, call me [376-4434] and I'll come right over !
Thanks much.
Ron.

NONDISCLOSURE AGREEMENT

The U. S. Department of Energy ("DOE") has entered into an Agreement with David M. French, TEAM PARTICIPANT, the Technical Consultant to the WIPP Corporate Board, located in Carlsbad, New Mexico who will participate in a Team that is reviewing Hanford Tank Transuranic Waste Project Documents (protected documents) and other protected information and materials prepared for consideration by DOE, some of which are predecisional and/or protected under attorney-client privilege and have not been reviewed for release, approved, or adopted by DOE and do not represent a position taken or under active consideration by the DOE. The TEAM PARTICIPANT agrees that such protected documents, materials, and information will be handled and protected in accordance with the terms of this Agreement, that he will not release such protected documents, materials, or information to anyone not participating on this TEAM including but not limited to his employer and that he will refrain from any unauthorized use or disclosure of such protected document, materials, or information as long as it remains protected. One such protected document that the DOE Office of River Protection (ORP) plans to share with the TEAM PARTICPANT is an attorney-client privileged, predecisional document titled "*Technical and Regulatory Basis Supporting the Designation of Waste in 11 Hanford Single-Shell Tanks as Contact-Handled Mixed Transuranic Waste*". Access to other protected documents, materials, and information is anticipated to occur during the course of participation. TEAM PARTICIPANT agrees with the above and with the following conditions:

A. Protected documents, materials, and information will be used solely in connection with the conduct of the TEAM.

B. Protected documents, materials, and information will not be copied in any manner by TEAM PARTICIPANT.

C. TEAM PARTICIPANT will ensure that he has no conflict of interest relative to his participation and other activities he is or becomes involved in; agrees to abide by the terms of this agreement; and agrees that he will not use or disclose any of the protected documents, materials, or information inconsistent with this agreement.

D. TEAM PARTICIPANT shall not be liable for use or disclosure of protected documents, materials, or information if the same:

   a) Is in the public domain at the time it is used or disclosed; or
   b) Was known, as demonstrated by written documentation, to TEAM PARTICIPANT prior to the time of disclosure; or
   c) Is used or disclosed with the prior written approval of the DOE; or
   d) Becomes known to TEAM PARTICIPANT from a source other than DOE, WRPS, or YAHSGS LLC under conditions not requiring obligations of confidentiality; or
   e) Is disclosed under legal compulsion (in which event it is agreed that TEAM PARTICIPANT will provide DOE with prompt notice of any such request and afford DOE the opportunity to seek appropriate protective orders).

E. Upon completion of participation in the team, TEAM PARTICIPANT shall ensure that no copies are made or retained by TEAM PARTICIPANT and that the documents are returned to the DOE.

F. TEAM PARTICIPANT is responsible for any breach of this Nondisclosure Agreement.

G. TEAM PARTICIPANT acknowledges that breach of this agreement would cause harm to DOE which harm is difficult to estimate and that, in addition to other rights and remedies, DOE shall be entitled to seek injunctive relief, damages, and specific performance.

H. This Nondisclosure Agreement shall be governed by applicable Federal law and the laws of the State of Washington, and venue for any action brought hereunder shall be within a court of competent jurisdiction in the State of Washington.

I. By signing below, TEAM PARTICIPANT acknowledges that he is bound by the terms and conditions of the NDA and that he is, therefore, legally bound thereby.

DOE____ Date:____________

TEAM PARTICIPANT____________________________ Date:____________

Enclosure II

Action Items from 04/18/07 TRU Tank Criteria Conference Call

1. (b)(5)
2.
3. Next Draft
4.
5. App B
6.
7. Next Call
8.
9.

May 30 2007

Open Action Items from Prior TRU Tank Criteria Conference Calls

1. (b)(5)

(b)(5)

2.
3.

4. (b)(5)

Hildman, Cynthia M

From:	Hewitt, William M
Sent:	Thursday, May 14, 2009 10:05 AM
To:	Charboneau, Stacy L
Cc:	Koll, Ronald J
Subject:	TRU Presentation
Attachments:	SC TRU Predecisional Draft.ppt; Dr Ines Triay Presentation_04MAY09_RJK.doc
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Teal

Stacy,

Attached please find TRU presentation materials that Ron and I developed last week for your discussions in DC next week. Ron also developed a one page set of notes that I have attached.

These materials focus on (b)(5) If you would like they could be updated to include (b)(5) (b)(5) Chris Burrows will be forwarding to you today.

Bill Hewitt
President, YAHSGS LLC (Subcontractor)
Cell: (b)(6)

Hanford CH-TRU Tank Wastes

Stacy Charboneau

ORP

May 18, 2009

Hanford CH-TRU

- ~ 1.4 million gallons of tank waste CH-TRU in 11 SSTs.
- Managing/disposing of waste as TRU could reduce:
  - (b)(5) [redacted]

(b)(5) [redacted]

Issues/Risks

(b)(5)

- [redacted] and
- [redacted]
- [redacted]
- [redacted]

Twenty Hanford SSTs & DSTs Contain TRU

(b)(5)

(b)(5)

Table 1. Hanford Tanks Containing Transuranic Sludge Wastes				
Tank	Handling	Volume (kgal)	Waste Types [a]	Series Totals (kgal)
(b)(5)				

Moving forward with CH-TRU also provides potential means to bridge SST retrieval gap between C-Farm completion and WTP Startup

(b)(5)

Even for CH TRU there are multiple regulatory and project steps required to execute the TRU project

(b)(5)

Designation Process Critical to Success

(b)(5)

Recommendations

(b)(5)

[redacted]

Presentation Notes

Advantages

- (b)(5)

Regulatory

- (b)(5)

Objective

- (b)(5)

Conclusions

- (b)(5)

Basis for Confidence

- (b)(5)

Discussion

- (b)(5)

Introduction

The Hanford tanks contain a variety of waste materials. Some of the waste materials resulted from various spent nuclear fuel reprocessing technologies that were used starting in the days of the Manhattan Project 60 years ago up through the final Purex campaigns just over a decade ago. The relatively low fuel burn-up levels associated with plutonium production and the highly inefficient nature of the early processes (e.g., Bismuth Phosphate Process) resulted in relatively dilute waste streams by commercial standards. Some tank wastes are from non-reprocessing activities such as chemical additions for neutralization/corrosion control, chemical wastes from the cesium and strontium extraction campaigns that removed approximately 150 million curies of those isotopes from the tanks, and miscellaneous laboratory and other operations at Hanford. This resulted in the Hanford tank wastes being a highly heterogeneous collection consisting of some HLW materials that have become highly diluted by various chemical wastes and make-up water. The bulk of those waste materials entered the tanks well before the first Atomic Energy Commission (AEC) definition of high-level waste (HLW) was promulgated as Appendix F to 10 CFR Part 50 in 1970. Accordingly, the AEC made no attempt to segregate HLW materials from the substantial mass of mixed low-level wastes (MLLW) materials in the tanks. This has led to some groups claiming that all tank wastes are HLW simply due to some of those wastes having direct reprocessing origins. Such claims are inconsistent with the existing definition of HLW as set forth in the Nuclear Waste Policy Act of 1983[1]. The HLW definition clearly requires that both the origin and the radioactivity levels associated with the wastes be taken into account when classifying wastes as HLW, i.e., "*High-level waste is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, ...*" [emphasis added].

Wastes retrieved from the tanks will be classified after radionuclide separations (pretreatment) and immobilization. In accordance with an agreement reached between the Department of Energy (DOE) and the U.S. Nuclear Regulatory Commission (NRC) in 1997, the waste fraction containing the bulk of the radioactive materials after pretreatment will be vitrified and disposed of as HLW in the national HLW repository. The remaining wastes, will be suitably immobilized and disposed of as MLLW on site at Hanford in approved RCRA[2] disposal cells. The criteria[3,4] used to classify the predominantly chemical fraction as "*low-activity waste (LAW) incidental to reprocessing*" are essentially the same as the waste incidental to reprocessing (WIR) evaluation criteria now set forth in DOE M 435.1-1, II.B(2).

---

[1] DOE M 435.1-1 sets forth a definition of high-level radioactive waste that slightly varies from the NWPA HLW definition in the final clause, i.e., the NWPA definition indicates that "the Commission" would make the determination of additional materials that could be construed as HLW. The DOE M 435.1-1 definition reads: "*High-level waste is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation.*"

[2] Resource Conservation and Recovery Act

[3] Letter from Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C., to Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office, Richland, WA, Re: Classification of Hanford Low-Activity Waste Fraction, June 9, 1997.

[4] Technical Basis for Classification of Low-Activity Waste from Hanford Site Tanks, WHC-SD-WM-TI-699, Rev. 2, September 1996.

The classification of any residual wastes remaining after retrieval operations are completed is the subject of this paper. DOE M 435.1-1 sets forth the following requirements for making waste WIR determinations via the evaluation process:

> "B(2) **Evaluation**. Determinations that any waste is incidental to reprocessing by the evaluation process shall be developed under good record-keeping practices, with an adequate quality assurance process, and shall be documented to support the determinations. Such wastes may include, but are not limited to, spent nuclear fuel reprocessing plant wastes that:
> (a) Will be managed as low-level waste and meet the following criteria:
> 1. Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and
> 2. Will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, *Performance Objectives*; and
> 3. Are to be managed, pursuant to DOE's authority under the *Atomic Energy Act of 1954*, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, *Waste Classification*; or will meet alternative requirements for waste classification and characterization as DOE may authorize."

ORP's proposed approach to complying with DOE M 435.1-1 for residual materials remaining in tanks at the completion of waste retrieval activities that comply with the Tri-Party Agreement is set forth below.

ORP's Proposed Tank Residual Classification Approach

ORP proposes the following (b)(5) [redacted]

1. (b)(5) [redacted]

2. (b)(5) [redacted]

(b)(5) [redacted]

(b)(5)

(b)(5)

3. (b)(5)

(b)(5)

[5] For alpha-emitting isotopes with half-lives in excess of 20 years, ORP will petition the U.S. EPA using the provisions within 40 CFR Part 191 and DOE M 435.1-1 to establish a concentration of X nano-curies per gram as the Hanford-specific levels for transuranic wastes based upon the Attachment D analyses.

ATTACHMENT A

Current Best Basis Inventory (BBI) Data Normalized to 2033

CHG to provide

ATTACHMENT B

Projected Cumulative Tank Waste Inventories at 2033 for 1% and X% Residuals

CHG to provide

ATTACHMENT C

Composite Model Results

CHG to provide

ATTACHMENT D

Tank Farm Intrusion Analysis Approach and Results

CHG to provide

ATTACHMENT E

THIS DATA CURRENT AS OF THE FEDERAL REGISTER DATED APRIL 30, 2003

40 CFR - CHAPTER I - PART 191

View Part

Appendix C to Part 191 -- Guidance for Implementation of Subpart B

[Note: The supplemental information in this appendix is not an integral part of 40 CFR part 191. Therefore, the implementing agencies are not bound to follow this guidance. However, it is included because it describes the Agency's assumptions regarding the implementation of subpart B. This appendix will appear in the Code of Federal Regulations.]

The Agency believes that the implementing agencies must determine compliance with §§ 191.13, 191.15, and 191.16 of subpart B by evaluating long-term predictions of disposal system performance. Determining compliance with § 191.13 will also involve predicting the likelihood of events and processes that may disturb the disposal system. In making these various predictions, it will be appropriate for the implementing agencies to make use of rather complex computational models, analytical theories, and prevalent expert judgment relevant to the numerical predictions. Substantial uncertainties are likely to be encountered in making these predictions. In fact, sole reliance on these numerical predictions to determine compliance may not be appropriate; the implementing agencies may choose to supplement such predictions with qualitative judgments as well. Because the procedures for determining compliance with subpart B have not been formulated and tested yet, this appendix to the rule indicates the Agency's assumptions regarding certain issues that may arise when implementing §§ 191.13, 191.15, and 191.16. Most of this guidance applies to any type of disposal system for the wastes covered by this rule. However, several sections apply only to disposal in mined geologic repositories and would be inappropriate for other types of disposal systems.

Consideration of Total Disposal System. When predicting disposal system performance, the Agency assumes that reasonable projections of the protection expected from all of the engineered and natural barriers of a disposal system will be considered. Portions of the disposal system should not be disregarded, even if projected performance is uncertain, except for portions of the system that make negligible contributions to the overall isolation provided by the disposal system.

Scope of Performance Assessments. Section 191.13 requires the implementing agencies to evaluate compliance through performance assessments as defined in § 191.12(q). The Agency assumes that such performance assessments need not consider categories of events or processes that are estimated to have less than one chance in 10,000 of occurring over 10,000 years. Furthermore, the performance assessments need not evaluate in detail the releases from all events and processes estimated to have a greater likelihood of occurrence. Some of these events and processes may be omitted from the performance assessments if there is a reasonable expectation that the remaining probability distribution of cumulative releases would not be significantly changed by such omissions.

Compliance with § 191.13. The Agency assumes that, whenever practicable, the implementing agency will assemble all of the results of the performance assessments to determine compliance with § 191.13 into a "complementary cumulative distribution function" that indicates the probability of exceeding various levels of cumulative release. When the uncertainties in parameters are considered in a performance assessment, the effects of the uncertainties considered can be incorporated into a single such distribution function for each disposal system considered. The Agency assumes that a disposal system can be considered to be in compliance with § 191.13 if this single distribution function meets the requirements of § 191.13(a).

Compliance with §§ 191.15 and 191.16. When the uncertainties in undisturbed performance of a disposal system are considered, the implementing agencies need not require that a very large percentage of the range of estimated radiation exposures or radionuclide concentrations fall below limits established in §§ 191.15 and 191.16, respectively. The Agency assumes that compliance can be determined based upon "best estimate" predictions (e.g., the mean or the median of the appropriate distribution, whichever is higher).

Institutional Controls. To comply with § 191.14(a), the implementing agency will assume that none of the active institutional controls prevent or reduce radionuclide releases for more than 100 years after disposal. However, the Federal Government is committed to retaining ownership of all disposal sites for spent nuclear fuel and high-level and transuranic radioactive wastes and will establish appropriate markers and records, consistent with § 191.14(c). The Agency assumes that, as long as such passive institutional controls endure and are understood, they: (1) Can be effective in deterring systematic or persistent exploitation of these disposal sites; and (2) can reduce the likelihood of inadvertent, intermittent human intrusion to a degree to be determined by the implementing agency. However, the Agency believes that passive institutional controls can never be assumed to eliminate the chance of inadvertent and intermittent human intrusion into these disposal sites.

Consideration of Inadvertent Human Intrusion into Geologic Repositories. The most speculative potential disruptions of a mined geologic repository are those associated with inadvertent human intrusion. Some types of intrusion would have virtually no effect on a repository's containment of waste. On the other hand, it is possible to conceive of intrusions (involving widespread societal loss of knowledge regarding radioactive wastes) that could result in major disruptions that no reasonable repository selection or design precautions could alleviate. The Agency believes that the most productive consideration of inadvertent intrusion concerns those realistic possibilities that may be usefully mitigated by repository design, site selection, or use of passive controls (although passive institutional controls should not be assumed to completely rule out the possibility of intrusion). Therefore, inadvertent and intermittent intrusion by exploratory drilling for resources (other than any provided by the disposal system itself) can be the most severe intrusion scenario assumed by the implementing agencies. Furthermore, the implementing agencies can assume that passive institutional controls or the intruders' own exploratory procedures are adequate for the intruders to soon detect, or be warned of, the incompatibility of the area with their activities.

Frequency and Severity of Inadvertent Human Intrusion into Geologic Repositories. The implementing agencies should consider the effects of each particular disposal system's site, design, and passive institutional controls in judging the likelihood and consequences of such inadvertent exploratory drilling. However, the Agency assumes that the likelihood of such inadvertent and intermittent drilling need not be taken to be greater than 30 boreholes per square kilometer of repository area per 10,000 years for geologic repositories in proximity to sedimentary rock formations, or more than 3 boreholes per square kilometer per 10,000 years for repositories in other geologic formations. Furthermore, the Agency assumes that the consequences of such inadvertent drilling need not be assumed to be more severe than: (1) Direct release to the land surface of all the ground water in the repository horizon that would promptly flow through the newly created borehole to the surface due to natural lithostatic pressure -- or (if pumping would be required to raise water to the surface) release of 200 cubic meters of ground water pumped to the surface if that much water is readily available to be pumped; and (2) creation of a ground water flow path with a permeability typical of a borehole filled by the soil or gravel that would normally settle into an open hole over time -- not the permeability of a carefully sealed borehole.

[50 FR 38084, Sept. 19, 1985. Redesignated and amended at 58 FR 66415, Dec. 20, 1993]

Hildman, Cynthia M

From:	Koll, Ronald J
Sent:	Tuesday, May 05, 2009 4:32 PM
To:	Hewitt, William M
Cc:	Koll, Ronald J
Subject:	Re: TRU Topics of Consideration.
Attachments:	Dr Ines Triay Presentation_04MAY09_RJK.doc; SC TRU Predecisional Draft.ppt
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Teal

Good Afternoon Bill,

Today, I had hoped to get together with you to no avail ! We're just too busy !
(b)(5)

If you need to reach me tonight for any reason, I can be reached at 509/845-2657, or at my residence (b)(6) (b)(6)
In closing, I just want to say thanks for everything and that's it's always a pleasure working together !

Ron.

Presentation Statements to be presented to Dr. Ines Triay.

Advantages

- (b)(5)

Regulatory

- (b)(5)

Objective

- (b)(5)

Conclusions

- (b)(5)

Basis for Confidence

- (b)(5)

Discussion

- (b)(5)

Hanford CH-TRU Tank Wastes

Stacy Charboneau

ORP

May 18, 2009

Hanford CH-TRU

- ~ 1.4 million gallons of tank waste CH-TRU in 11 SSTs.
- Managing/disposing of waste as TRU could reduce:
  - (b)(5) [redacted]
  - [redacted]
- (b)(5) [redacted]
- [redacted]
- [redacted]

Issues/Risks

(b)(5)

Twenty Hanford SSTs & DSTs Contain TRU

(b)(5)

(b)(5)

Table 1. Hanford Tanks Containing Transuranic Sludge Wastes				
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(b)(5)				

Moving forward with TRU also provides potential means to bridge SST retrieval gap between C-Farm completion and WTP Startup

(b)(5)

Even for CH TRU there are multiple regulatory and project steps required to execute the TRU project

(b)(5)

Designation Process Critical to Success

(b)(5)

Recommendations

(b)(5)

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Hildman, Cynthia M

From:	Miera, Felix R Jr
Sent:	Wednesday, February 29, 2012 7:19 AM
To:	Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject:	FW: WIPP Queries

WIPP has the additional info they requested..

From: DAmico, Eric - RES [mailto:eric.damico@wipp.ws]
Sent: Wednesday, February 29, 2012 5:43 AM
To: Miera, Felix R Jr
Subject: RE: WIPP Queries

Thanks Felix.

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6) (cell)

From: Miera, Felix R Jr [mailto:Felix_R_Jr_Miera@rl.gov]
Sent: Tuesday, February 28, 2012 5:47 PM
To: DAmico, Eric - RES
Cc: Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject: WIPP Queries

Eric – Rick has pulled together some information in response to your request below. Let us know if you have any questions.

Felix R. Miera
Manager, Environmental Permitting
Washington River Protection Solutions, One System Org.
Contractor to the United States Department of Energy
(509) 376-7034
(509) 438-9703 -- Cell

From: Tedeschi, Allan R (Rick)
Sent: Tuesday, February 28, 2012 2:47 PM
To: Miera, Felix R Jr
Subject: WIPP Queries

Felix,

This addresses the two email queries below.

1.) (b)(5)
(b)(5) I have attached a truncated version which includes summary data and conclusions; the complete document being 200+mb in size. This should be an adequate reference. This document was prepared in 2003 by our A/E subcontractor and issued in 2005 as Rev 0 (to allow referencing for subsequent (b)(5)

(b)(5)

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

-----Original Message-----
From: DAmico, Eric - RES [eric.damico@wipp.ws]
Sent: Wednesday, February 01, 2012 08:58 AM Pacific Standard Time
To: Miera, Felix R Jr
Subject: FW: Tank Question

Hi Felix,

One other question as well: do you have a source document that I can reference that provides the basis that the waste from the tanks will be contact-handled and not remote-handled?

Thanks again,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

From: DAmico, Eric - RES
Sent: Tuesday, January 31, 2012 12:47 PM

To: 'Miera, Felix R Jr'
Subject: Tank Question

Felix,

I have a question on Table 2 of the Class 3 PMR. Table 2 shows a radionuclide characterization relative to HLW tanks. Are the values shown for Tanks B-103 and T-102 averages? Is it possible to also provide ranges for Tanks B-103 and T-102 as was done for the TRU Tank Waste column?

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

Hildman, Cynthia M

From:	DAmico, Eric - RES <eric.damico@wipp.ws>
Sent:	Tuesday, February 14, 2012 10:12 AM
To:	Miera, Felix R Jr
Cc:	Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject:	RE: Tank Question

No hard and fast need date. I am just trying to get it into final form before submitting it to Technical Editing. I was going (b)(5) [redacted]

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6) [redacted]

From: Miera, Felix R Jr [mailto:Felix_R_Jr_Miera@rl.gov]
Sent: Tuesday, February 14, 2012 11:01 AM
To: DAmico, Eric - RES
Cc: Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject: RE: Tank Question

Eric – I just spoke w/ Rick and he is working of getting the requested information for (b)(5) [redacted]

Felix R. Miera
Manager, Environmental Permitting
Washington River Protection Solutions, One System Org.
Contractor to the United States Department of Energy
(509) 376-7034
(509) 438-9703 -- Cell

From: DAmico, Eric - RES [mailto:eric.damico@wipp.ws]
Sent: Tuesday, February 14, 2012 9:37 AM
To: Miera, Felix R Jr
Subject: RE: Tank Question

Felix,

Do you have any estimate on when you think you can get back to me on the two items contained in the email string below?

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

From: Miera, Felix R Jr [mailto:Felix_R_Jr_Miera@RL.gov]
Sent: Wednesday, February 01, 2012 10:08 AM
To: DAmico, Eric - RES
Cc: Tedeschi, Allan R (Rick)
Subject: RE: Tank Question

Yes - Rick and I will get you the info you are requesting.

-----Original Message-----
From: DAmico, Eric - RES [eric.damico@wipp.ws]
Sent: Wednesday, February 01, 2012 08:58 AM Pacific Standard Time
To: Miera, Felix R Jr
Subject: FW: Tank Question

Hi Felix,

One other question as well: do you have a source document that I can reference that provides the basis that the waste from the tanks will be contact-handled and not remote-handled?

Thanks again,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

From: DAmico, Eric - RES
Sent: Tuesday, January 31, 2012 12:47 PM
To: 'Miera, Felix R Jr'
Subject: Tank Question

Felix,

I have a question on Table 2 of the Class 3 PMR. Table 2 shows a radionuclide characterization relative to HLW tanks. Are the values shown for Tanks B-103 and T-102 averages? Is it possible to also provide ranges for Tanks B-103 and T-102 as was done for the TRU Tank Waste column?

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

Hildman, Cynthia M

From:	Tedeschi, Allan R (Rick)
Sent:	Wednesday, December 14, 2011 3:39 PM
To:	Pfaff, Stephen H
Cc:	Koll, Ronald J; Bryan, Catherine B; Thompson, Leo E; Wheeler, Martin; Miera, Felix R Jr; VanMason, Eric; Heath, Melodie M; Burrows, Christopher; Gridley, Tina M; Yanochko, Ronald M (Ron)
Subject:	Documentation of Completion of CH-TRU WIPP Class 3 draft Permit Modification Request

Steve,

Per our prior discussions, this email documents completion of the FY12 scope to prepare an updated draft WIPP Class 3 Permit Modification Request (PMR) for the TOC CH-TRU tank streams. (b)(5) (b)(5) [redacted]

The IDMS Site links are:

1.) Final PMR Main Document (Directory 8.08.01) here
2.) All Final PMR file directories including Appendices, Reference copies, and RCRs (Directory 8.08) here

The directories and files are date stamped to validate configuration; should any changes be uploaded or revised to these files, they would be noted with another date/time. (b)(5) (b)(5) [redacted]

Additional Effort: Felix Miera and myself are working together to prepare a PowerPoint presentation on this scope for our mutual future usage. (b)(5) (b)(5) [redacted]

Thank you for the opportunity to work on this effort!

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

Hildman, Cynthia M

From: Tedeschi, Allan R (Rick)
Sent: Tuesday, March 20, 2012 11:34 AM
To: Saunders, Scott A
Cc: Miera, Felix R Jr; Nielsen, Judith A; Reynolds, Jacob G; Pfaff, Stephen H; Koll, Ronald J; Wheeler, Martin
Subject: Tank Farm TRU Waste Inventory Queries Related to WIPP Class 3 PMR

Scott, FYI

Ron Koll phoned me that Sheila Lott from LANL (who manages the WIPP database) had queried you on the possibility of sending remote-handled (RH) transuranic waste (TRU) to WIPP. (b)(5)
(b)(5)

1. (b)(5)
2.
3.
4.
5.

Let me know if would like to view the WIPP revised version of the draft PMR, any of the ensuing WIPP email traffic, or would like further clarification.

Thanks,

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

From: Tedeschi, Allan R (Rick)
Sent: Tuesday, August 16, 2011 11:50 AM
To: Saunders, Scott A
Cc: Cloud, Jack D; Nielsen, Judith A; Reynolds, Jacob G
Subject: RE: TRU Waste Inventory Validation

Scott,

(b)(5)

(b)(5)

How do you want to manage the communication to LANL and DOE interface here?

Rick Tedeschi
WFE Project Manager
WTP Support
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

Hildman, Cynthia M

From: DAmico, Eric - RES <eric.damico@wipp.ws>
Sent: Thursday, March 08, 2012 5:46 AM
To: Miera, Felix R Jr
Cc: Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject: RE: (b)(5) for Hanford Tank Waste

Felix,

I did not eliminate (b)(5) (b)(5) You can see what I am referring to from the file I sent to you yesterday.

Thanks and have a nice day,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

From: Miera, Felix R Jr [mailto:Felix_R_Jr_Miera@rl.gov]
Sent: Wednesday, March 07, 2012 5:19 PM
To: DAmico, Eric - RES
Cc: Pfaff, Stephen H; Tedeschi, Allan R (Rick)
Subject: RE: (b)(5) for Hanford Tank Waste

Thanks for sending the (b)(5) We will review and let you know if we have any comments.

I have discussed w/ Steve your concept to (b)(5) (b)(5)

Please let us know if we can be of further assistance.

Felix R. Miera
Manager, Environmental Permitting
Washington River Protection Solutions, One System Org.
Contractor to the United States Department of Energy
(509) 376-7034
(509) 438-9703 -- Cell

From: DAmico, Eric - RES [mailto:eric.damico@wipp.ws]
Sent: Wednesday, March 07, 2012 8:28 AM
To: Tedeschi, Allan R (Rick); Miera, Felix R Jr
Subject: RE: (b)(5) for Hanford Tank Waste

Sounds good. I have attached at copy of (b)(5)

(b)(5)

(b)(5) Please look this over and let me know if anything gives you heartburn.

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)
(b)(6)

From: Tedeschi, Allan R (Rick) [mailto:Allan_R_Rick_Tedeschi@rl.gov]
Sent: Wednesday, March 07, 2012 9:03 AM
To: DAmico, Eric - RES
Cc: Miera, Felix R Jr
Subject: RE: (b)(5) for Hanford Tank Waste

Eric,

Felix and I are definitely on board with this concept, but we have not yet closed with Steve Pfaff (ORP). Should finalize this week.

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

From: DAmico, Eric - RES [mailto:eric.damico@wipp.ws]
Sent: Wednesday, March 07, 2012 7:56 AM
To: Tedeschi, Allan R (Rick)
Subject: (b)(5) for Hanford Tank Waste

Rick,

Did you have a chance to talk to your team about (b)(5)
(b)(5)

Thanks,

Eric L. D'Amico

Washington TRU Solutions LLC - Regulatory Compliance Department
Contractor to the Department of Energy
303-843-2450 (office)

(b)(6)

Hildman, Cynthia M

From:	Tedeschi, Allan R (Rick)
Sent:	Friday, June 01, 2012 9:29 AM
To:	Fletcher, Thomas W
Cc:	Pfaff, Stephen H; Koll, Ronald J; Bryan, Catherine B; Miera, Felix R Jr; Wheeler, Martin; Simpson, Charles A; Kummer, David A; Burrows, Christopher
Subject:	Final CH-TRU Presentation
Attachments:	2012-06-05 TRU Status to ORP - Final.pptx

Tom,

Attached is the final presentation reviewed by Steve and staff with some minor editing revisions. Let me know if there are any corrections you would like and I will bring copies to the 6-5-12 meeting when set up. Thanks.

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

From: Pfaff, Stephen H
Sent: Thursday, May 31, 2012 6:47 PM
To: Tedeschi, Allan R (Rick); Koll, Ronald J
Cc: Miera, Felix R Jr; Bryan, Catherine B; Simpson, Charles A; Kummer, David A; Fletcher, Thomas W
Subject: RE: Draft CH-TRU Presentation

Rick,

I believe the slides are excellent and are ready for presentation to Tom and Stacy next week. Thank you.

Steve

From: Tedeschi, Allan R (Rick)
Sent: Wednesday, May 23, 2012 10:46 AM
To: Pfaff, Stephen H; Koll, Ronald J
Cc: Miera, Felix R Jr; Bryan, Catherine B; Simpson, Charles A; Kummer, David A
Subject: Draft CH-TRU Presentation

Steve/Ron,

Here is the electronic copy of the presentation I laid on your chairs yesterday.

Ron and Kitty – The background of this presentation is that Tom Fletcher requested a status/update presentation on the current state of the CH-TRU project in a meeting with Steve, I, and Charles Simpson last week. It is intended to be presented by Tom/Steve/myself to Stacy June 5th.

Thank you.

Rick Tedeschi
Project Manager
Strategic Planning & Technology Development
Washington River Protection Solutions LLC,

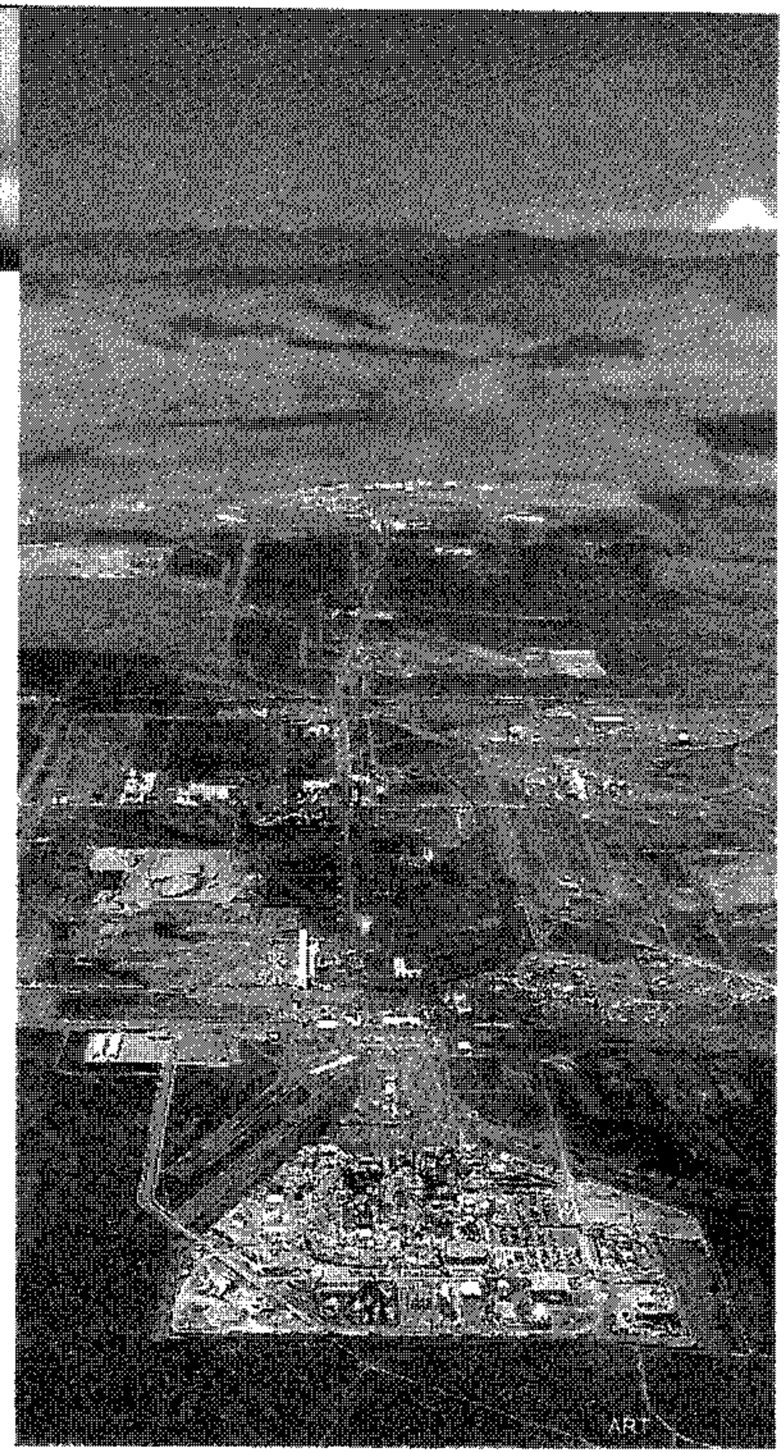
contractor to the United States Department of Energy

washington river protection solutions

Tank Transuranic Waste Project Update

June 5, 2012

Tom Fletcher, DOE-ORP
Steve Pfaff, DOE-ORP
Rick Tedeschi, WRPS



Summary

- **TOC Transuranic Waste Project placed in "Standby" 2005**
  - Only interim scope performed was redraft in FY12 of WIPP permit
  - Draft WIPP Class 3 Permit modification request on hold at WIPP

- **ORP Lifecycle Baseline/System Plan 6 plans FY14 project restart**
  - $266M over 8 years (Retrieve, Treat, Package, & Ship from 11 tanks)
  - Cost/schedule rebaselined for 2009 PMB – not reconciled nor updated

- **Sub-CLIN 4.5 (apart from WIPP permit scope) not activated/reconciled**
  - ORP has requested WRPS proposal for REA
  - TOC awaiting ORP technical direction for project restart schedule

- (b)(5)

- (b)(5)

Contents

Key Events Timeline

FY03

Project initiated from Integrated Mission Acceleration Plan (IMAP)

FY04

- Sub-projects initiated: Retrieval, Packaging, & Characterization
- Design/build (fast-track) Packaging project awarded
  - -NEPA Supplement Analysis completed
  - -RCRA Part B certified by TOC
  - -Long-lead equipment procured

FY05

Project slowed to mitigate environmental permitting issues (NEPA)

FY06

- Project placed in "Standby": equip. & records dispositioned
- TC&WM EIS is finalized for NEPA strategy rather than Supplement Analysis

FY07

New TOC RFP distributes Characterization scope to PRC

FY08

- Project rebaselined for FY09 PMB
- Planned for FY14 restart
- ORP issues Federal Register notice in FY10 stating preferred EIS alternative for CH-TRU is WTP

FY11

RH-TRU removed from EPA inventory, and baseline scope, to match new System Plan strategy

FY12

Re-drafted WIPP Class 3 Permit Modification and distributed to WIPP

Current Lifecycle Details

Retrieval

- Vacuum and modified sluicing retrieval
- 1/1/14 – 11/29/21
- Deployment thru Operations = $150M
- Design completed

Packaging

- Deployment is project startup critical path
- 10/1/13 – 3/31/18 (4.5 yrs)
- Deployment = $50M; Operation = $33M
- 7500 to 8400 55-gal drums
- Highest technology maturation risk (dryer, solids packaging, mobility)

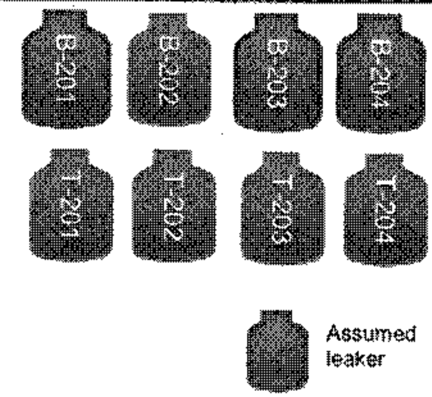
Characterization, Storage, & Shipping (CSS)

- Characterize via PRC and CCP (WIPP)
- 10/1/13 – 6/1/21
- Development thru Operations = $30M
- Some characterization needed at Packaging

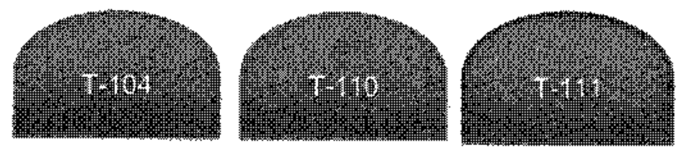
Total Lifecycle = $266M ~ 8 years

CH-TRU Waste

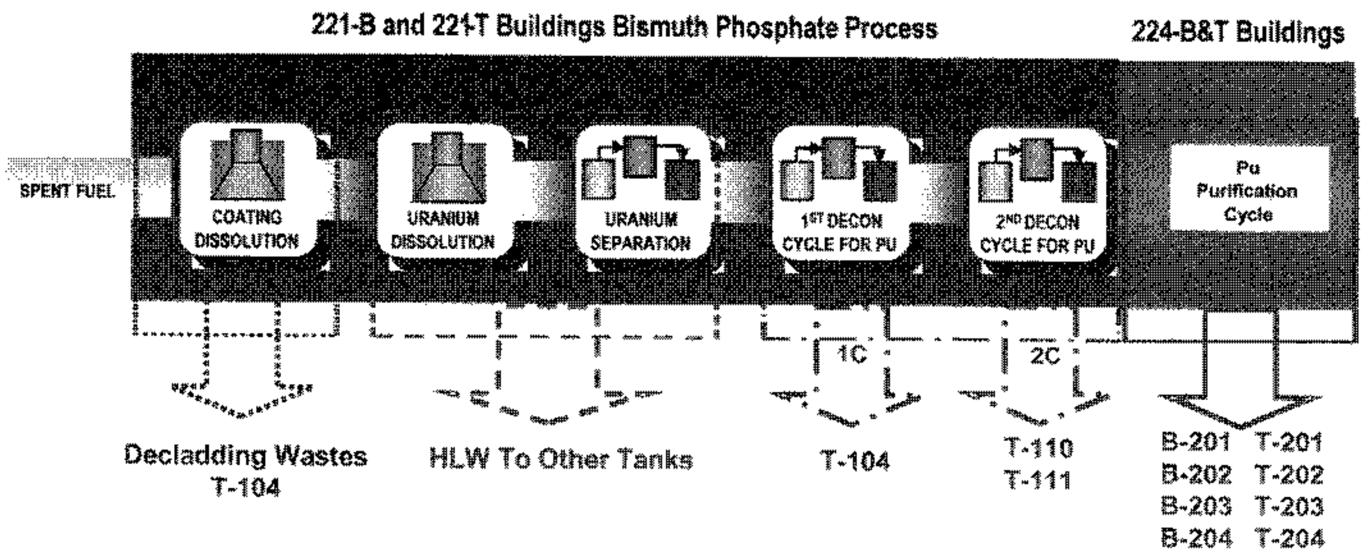
- Eight 200-Series Tanks totaling 279k gallons of sludge

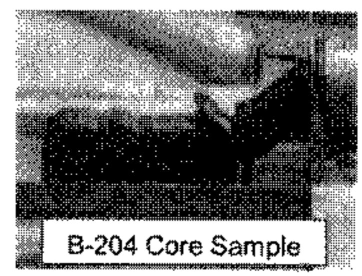


- Three 100-Series Tanks totaling 1,134k gallons of sludge



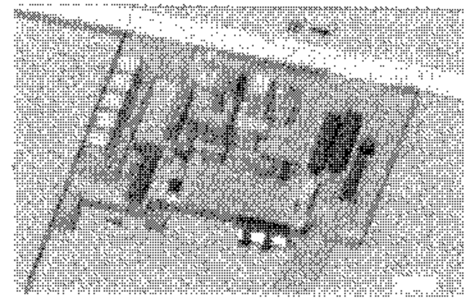
- Candidate TRU sludge originated in the Bismuth Phosphate Process





Project Strategies

- (b)(5)



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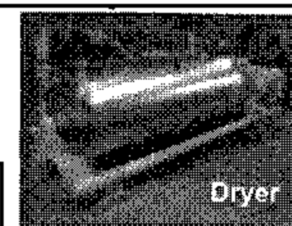

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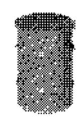
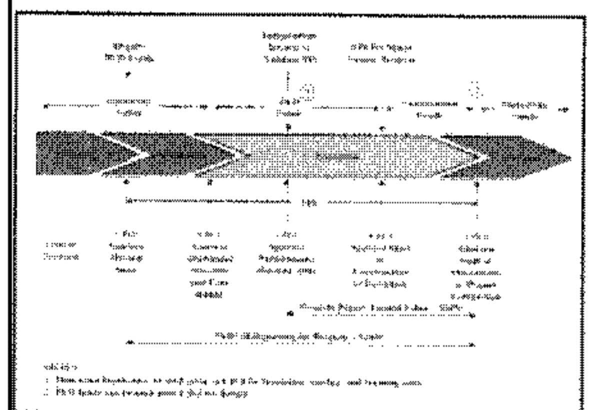


Packaging Design Status

- (b)(5)
- (b)(5)
- (b)(5)
-



Typical CD Process per DOE O 413.3

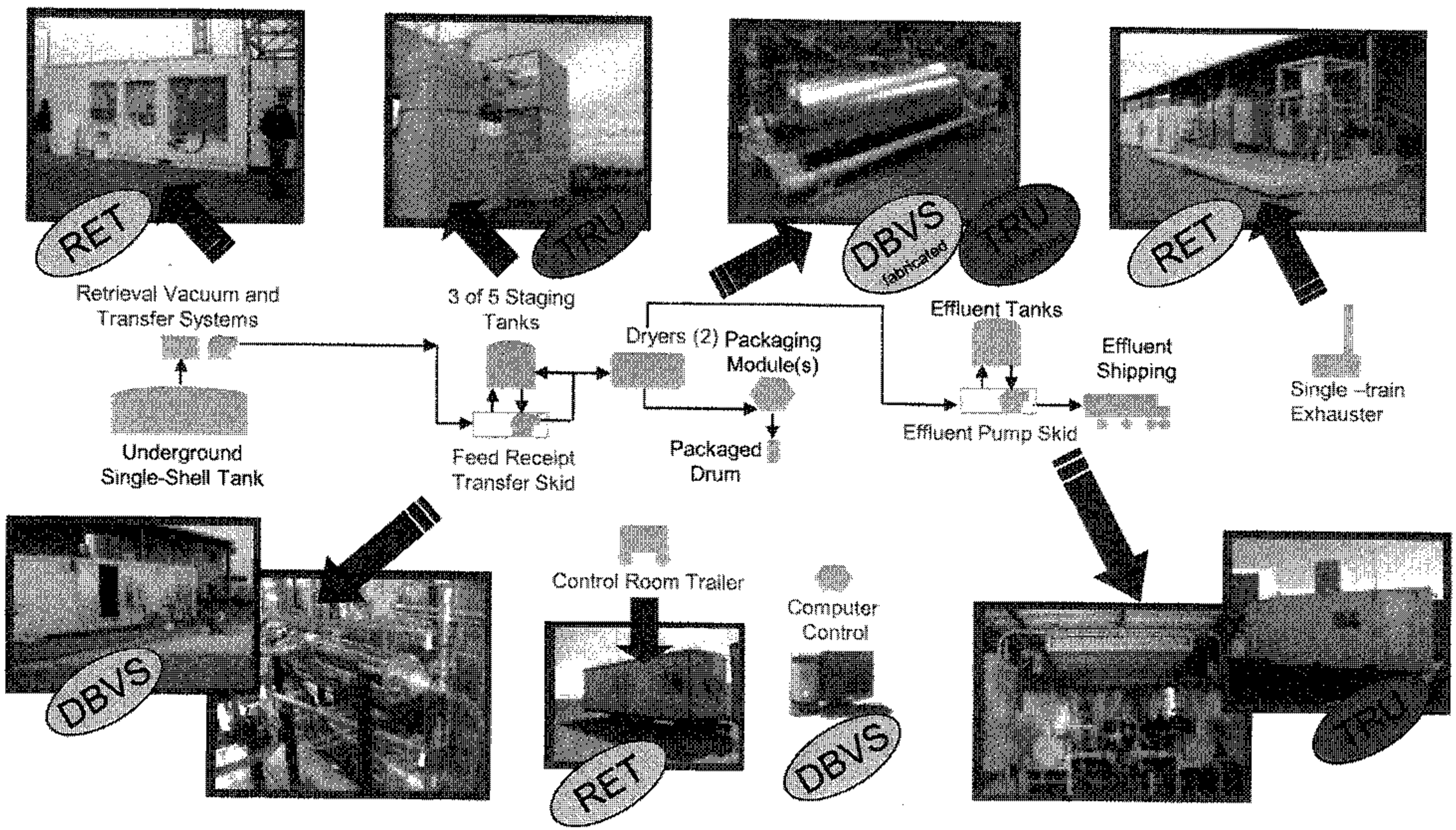
Standby Status

- Records (native and pdf) staged in Project Files and IDMS
  - IDMS site informally maintained with updated data
- Majority of all long-lead procured equipment dispersed to other projects; remaining equipment may be too costly to qualify under new procurement and safety protocols, and/or may not fit revised strategies
  - All equipment located at 200E Area Project Marshaling Yard
- Only scope worked since 2005 was redrafting of WIPP Class 3 Permit Modification Request in FY12
  - WIPP contacts maintained but DOE/ORP and TOC not represented at routine WIPP Corporate Board meetings

Project Equipment Disposition

Minimal remaining hardware & Minimal value

Key (Items in red words were procured and dispositioned)
RET: Turned over to Retrieval project
DBVS: Turned over to Demonstration Bulk Vitrification System project
TRU: Staged at 200 Area project marshalling yard for future TRU usage



Permitting Status

(b)(5)

Risks and Opportunities

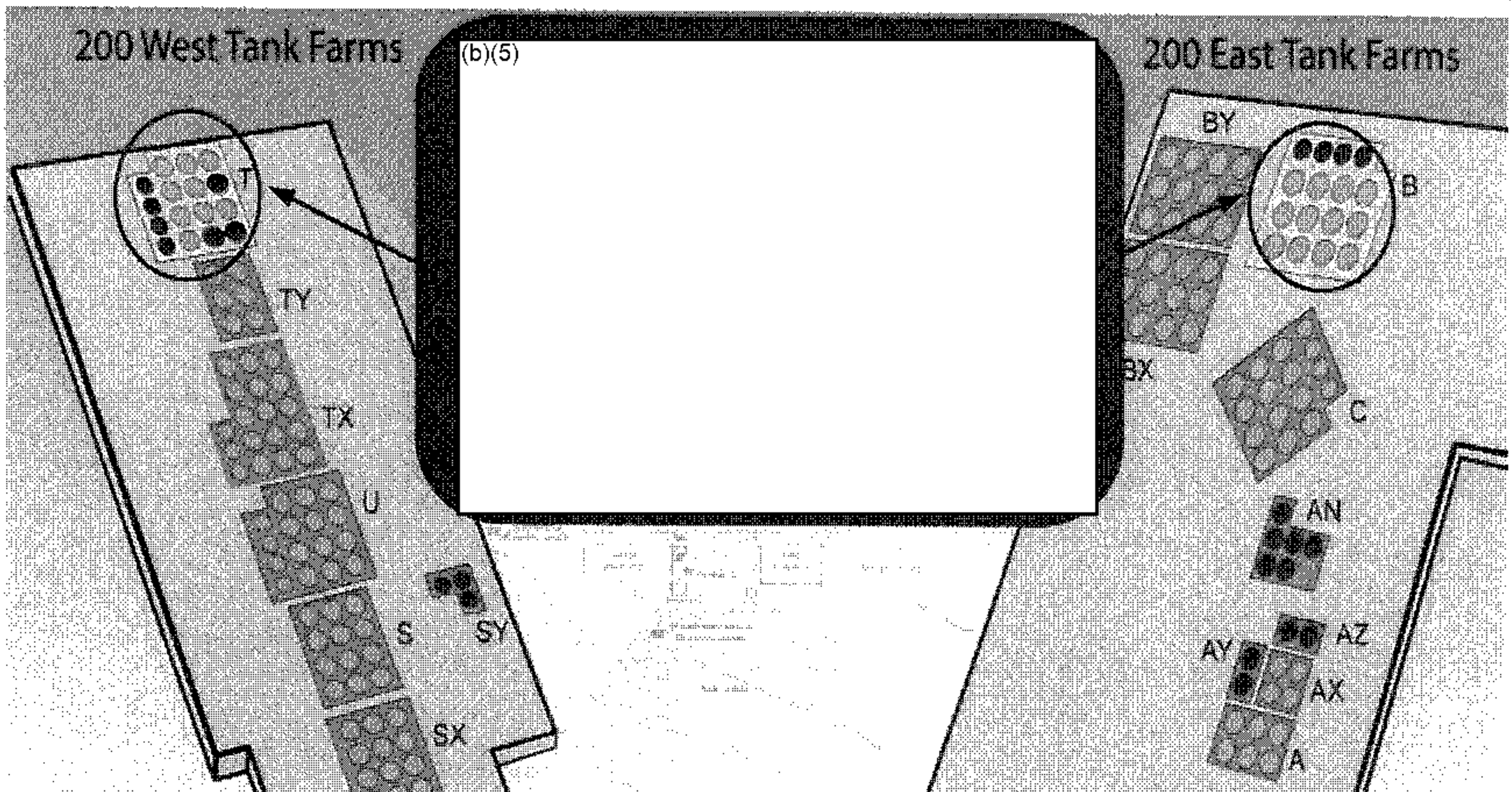
RISKS

(b)(5)

OPPORTUNITIES

- Revision of design to lower Hazard Category class
- Implement major lessons learned from MARS/C-farm sludge retrievals
- Integration of Wiped Film Evaporator: use of laboratory-scale system in 222-S, and pilot/full-scale system at Columbia Energy
- Availability of TOC Retrieval resources as retrievals wind down from filled DSTs

Value and Next Steps



Next Steps

(b)(5)

-
-
-
-

Hildman, Cynthia M

From: Tedeschi, Allan R (Rick)
Sent: Wednesday, June 01, 2011 9:38 AM
To: Pfaff, Stephen H
Subject: CH-TRU and WFE
Attachments: 2011-06-01 TRU Status to ORP.pptx; 2011-05-05 WFE Hanford Technical Exchange Presentation.pptx

Steve,

Call with any questions. Thanks.

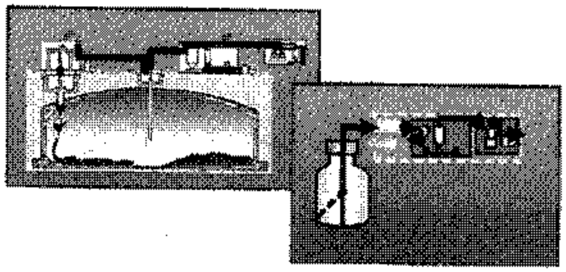
Rick Tedeschi
WFE Project Manager
WTP Support
Washington River Protection Solutions LLC,
contractor to the United States Department of Energy

Transuranic Waste Project Overview, March 2011
Status and Baseline

Status: Project/work on hold since FY05, but still in baseline for restart in FY14

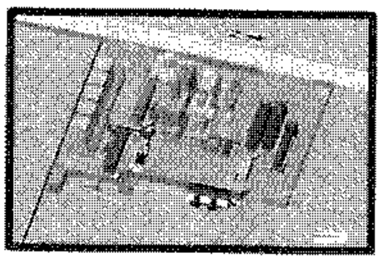
Baseline Strategy

Program Managed Thru 3 Subprojects



RETRIEVAL

- No unique program (11 tanks)
- 1/1/14 – 11/29/21
- $150 M - Deployment thru Operations
- Design completed



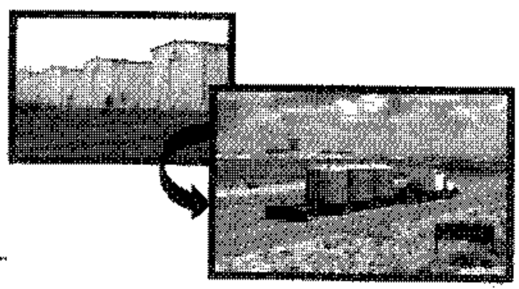
PACKAGING

Deployment

- Program critical path
- 10/1/13 – 3/31/18 (4.5 yrs)
- $50M
- In early final design stage

Operation

- "Retrieval" is critical path
- 4/1/18 – 11/29/21
- $33M



CHARACTERIZATION, STORAGE, & SHIPPING (CSS)

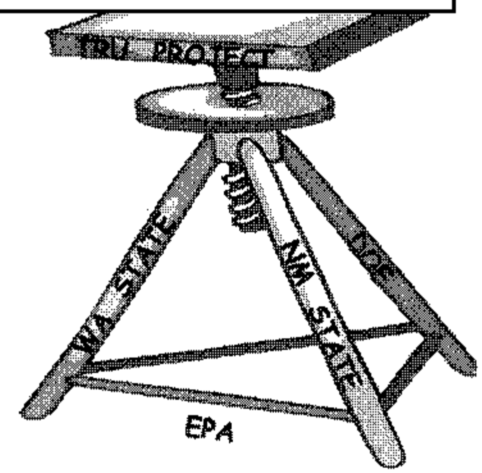
- Characterize at PRC; Dispose to WIPP
- 10/1/13 – 6/1/21
- $30M Development thru Operations
- Assumes DOE directly covers shipping and disposal at WIPP at bulk of work handled by CCP/CWC
- In final planning stage

CH-TRU Project Standby Basis

Project has been delayed because of environmental permitting issues

- All environmental/safety permits were drafted during original project 2003 – 2005: Part B (RCRA), EA, and ROD (NEPA), and PDSA: DOE has all documents but has not approved or submitted any; will need to revise and resubmit
- During litigation at Idaho over tank waste disposition at WIPP DOE and New Mexico settled by requiring an approved WIPP Class 3 RCRA change request prior to disposal; (b)(5) (b)(5)
- (b)(5)

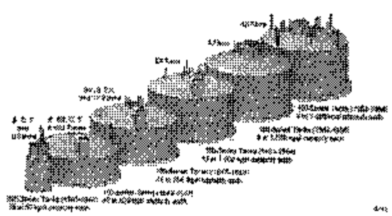
Basic challenge with environmental permits is the delay in designating the waste as either TRU or HLW

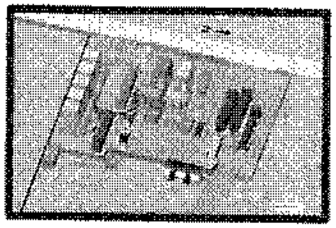


Transuranic Waste Project Overview, March 2011
Baseline Tank & Package Vision

Waste Volume (gallons)	B-201	B-202	B-203	B-204	T-201	T-202	T-203	T-204
	29,000	28,000	50,000	50,000	30,000	20,000	36,000	36,000

279,000 gallons





Treatment = mobile/modular drying

~1,600 contact-handled (CH) 55-gallon drums

Other Potential TRU Tank Waste

	3 Tanks	9 Tanks
Waste Volume (gallons)	1,134,000	1,500,000
	~5,900 Contact-handled 55-gallon drums	~4,300 Remote-handled canisters

RH-TRU Removed from System Plan and Baseline per ORP in 2008

Total of 7500 55-gallon drums for all potential CH-TRU tanks

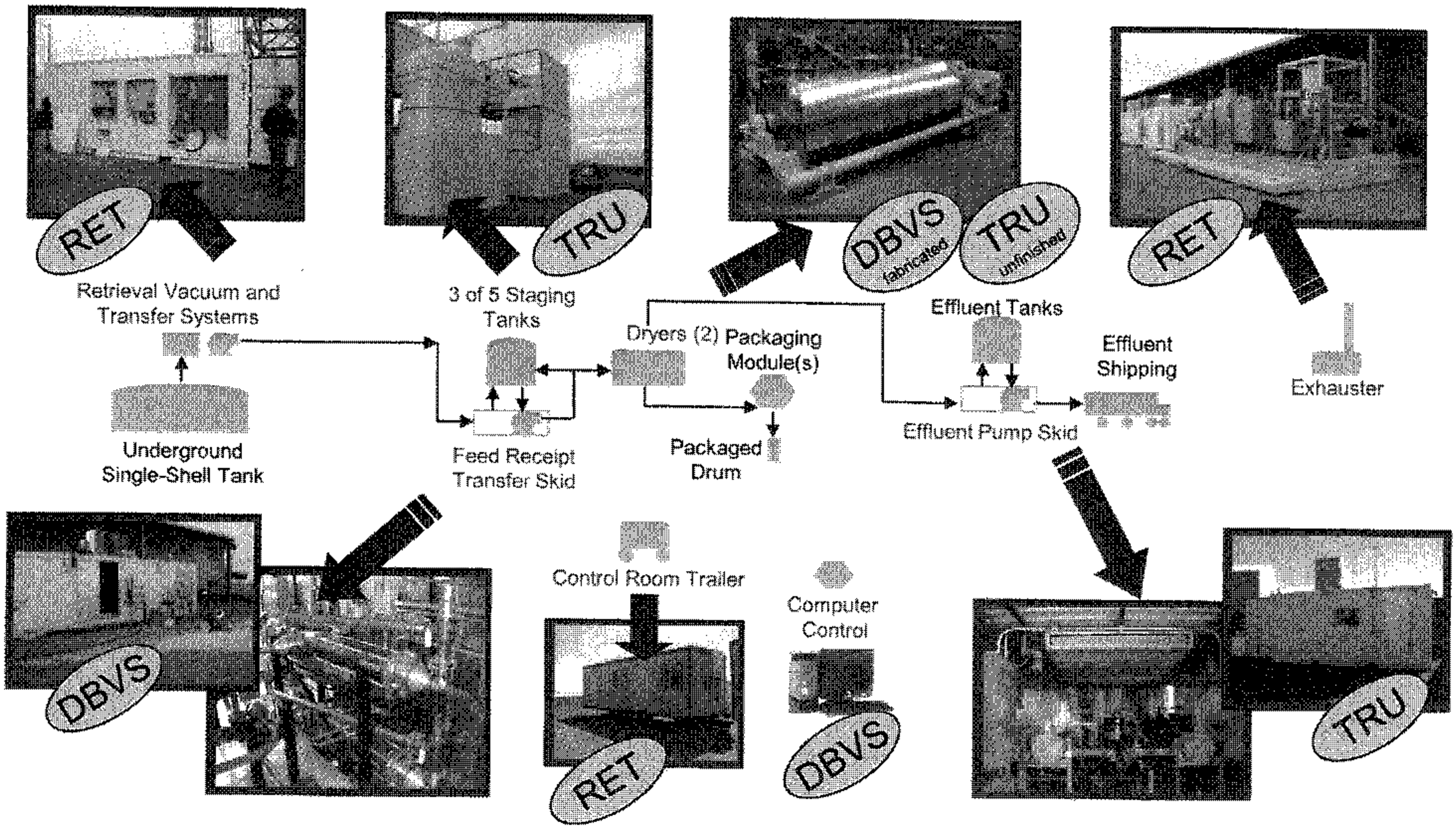
(b)(5)

B-204 Core Sample

CH-TRU Long-Lead Equipment Status

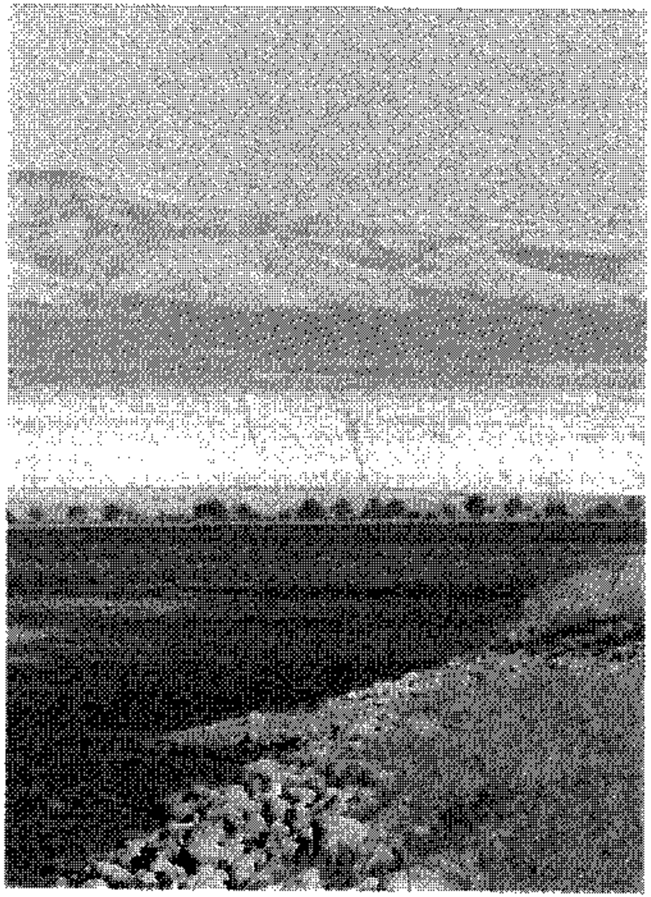
Minimal remaining hardware & Minimal value

Key (Items in red words were procured and dispositioned)
RET: Turned over to Retrieval project
DBVS: Turned over to Demonstration Bulk Vitrification System project
TRU: Staged at 200 Area project marshalling yard for future TRU usage



Optional Strategy from FY10 Proposal to EM-1

(b)(5)



Wiped Film Evaporator Project

Presentation to
Hanford Technical Exchange
May 5, 2011

Rick Tedeschi – Project Manager
Washington River Protection Solutions

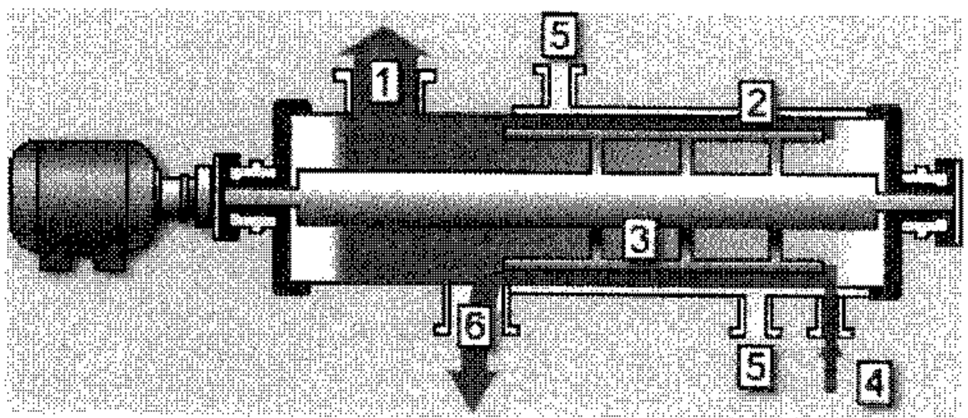
U.S. DEPARTMENT OF ENERGY

washington river protection solutions

Wiped Film Evaporator (WFE) Technology

Thin Film Evaporation

- High vacuum (100 torr), low temperature film evaporation (~ 140 °F)
- Continuous feed and concentrate production
- Sized per available heat transfer surface area (HTA); defined around flow rate of condensate (50 ft^2 HTA = 2 gpm condensate)
- Jacketed heating (30 psig steam)
- Blade forms thin film for heat transfer (does not contact wall)



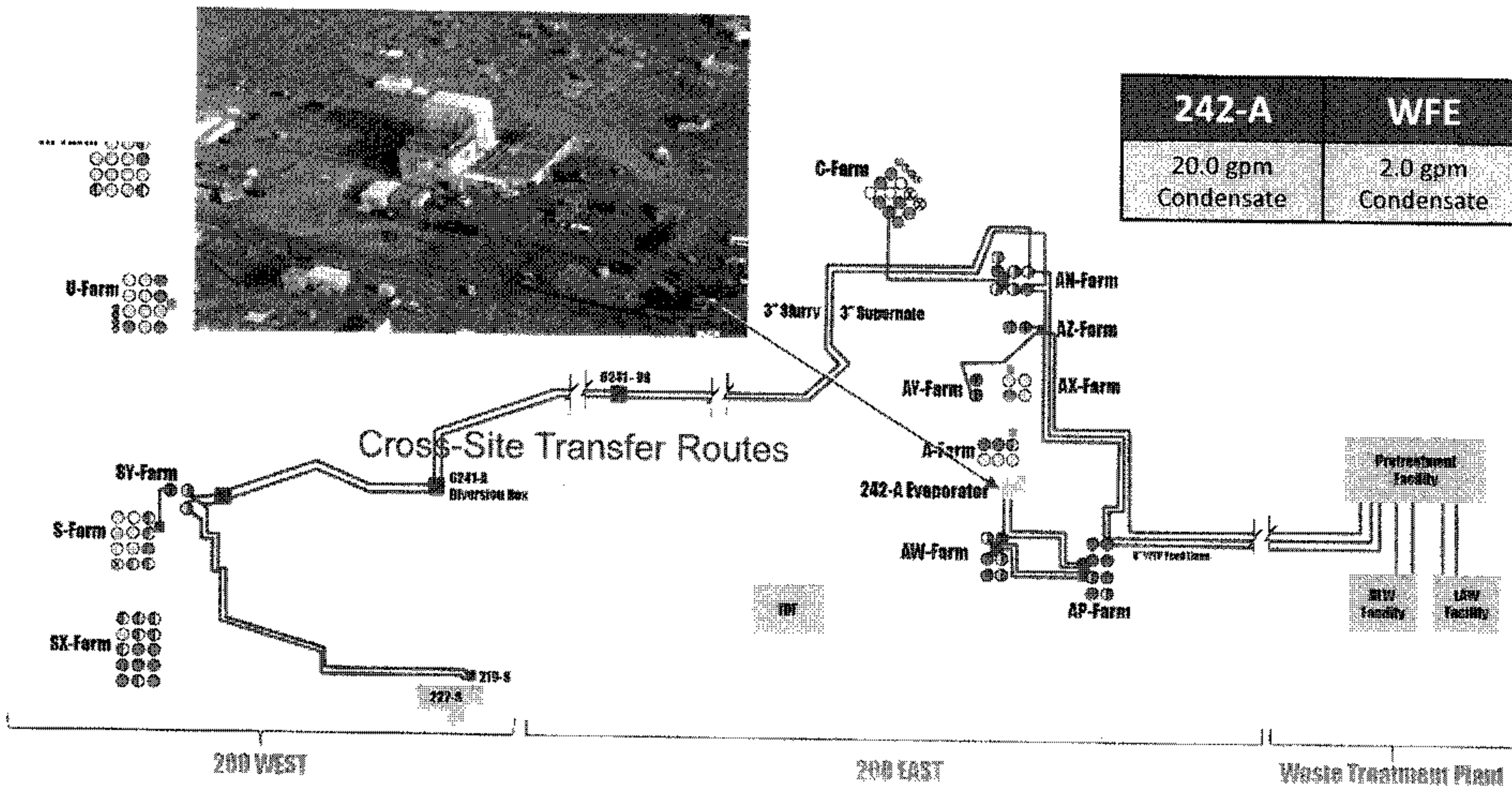
1 Vapor out.
2 Process wall.
3 Rotor blades.
4 Feed in.
5 Heating medium in/out.
6 Bottoms discharge.

Source: Artisan Industries

242-A Risk Mitigation

At-tank evaporation minimizes issues from current transfer routes, decoupling critical DST space management from retrieval operations to support retrieval acceleration

242-A	WFE
20.0 gpm Condensate	2.0 gpm Condensate



Cut-away from draft ORP-11242, *RPP System Plan – SP5*

WFE Project Summary

Why

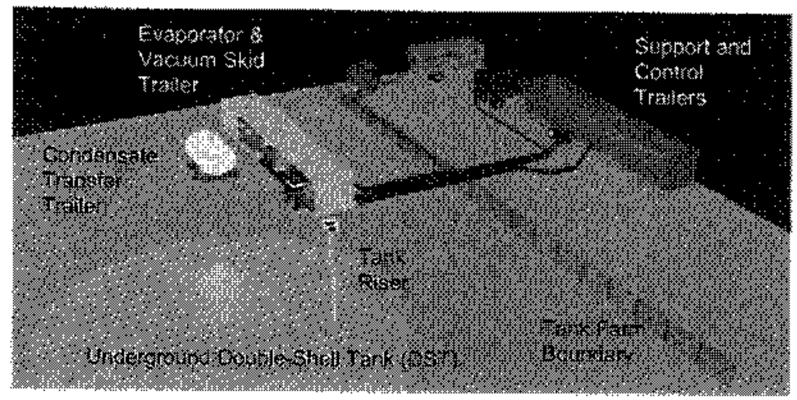
- Proof of principle testing by Energy Solutions and Columbia Energy and Environmental Services validated technology to concentrate supernate solutions to ~ 1.5 SpG
- Addresses Risk # TOC-01-10 "Evaporator Single Point Failure" (TFC-PLN-39)
- Development work (to ~ TRL 6) ideal candidate to implement Recovery Act funding

Vision

- Mobile, modular system for at-tank evaporation/concentration of supernate [1]

Project Strategy

- Development (RA & TDD)
  - ➢ Pilot and full-scale simulant testing
  - ➢ Install Lab-scale system in 222-S hot cell for actual waste testing
- Deployment (TDD & Base)
  - ➢ Complete overall system design, final fabrication, and construction, including documentation/permitting, and hot startup to TRL 9 (current baseline start 2013)



Modular WFE At-tank Application

Note 1: Columbia Energy and Environmental Services has applied for a patent on the mobile, modular application of this technology.

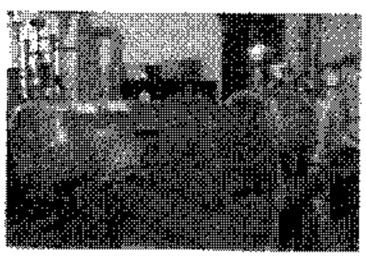
WFE Project Status

Additional Proposed Applications

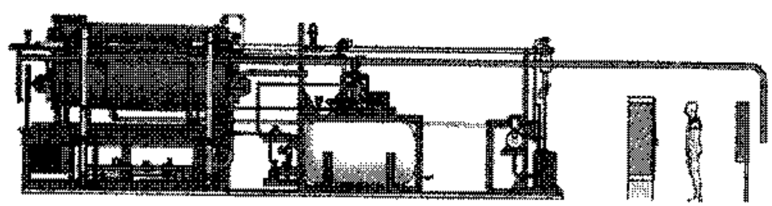
- Secondary waste concentration
- SST retrieval acceleration

Current Status

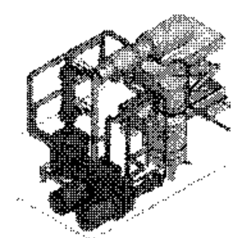
- Recovery Act project on schedule and under budget
  - ➢ Technology Maturation Plan produced
  - ➢ Completed pilot-scale testing on Columbia Energy system
  - ➢ Fabrication of full-scale test system nearly complete
  - ➢ Will conduct full-scale simulant testing June 2011
  - ➢ Drafted conceptual design of tank interface system
- TDD Laboratory scale project procurement in progress to assemble system this FY



Pilot-Scale Test System
1 ft^2 heating surface

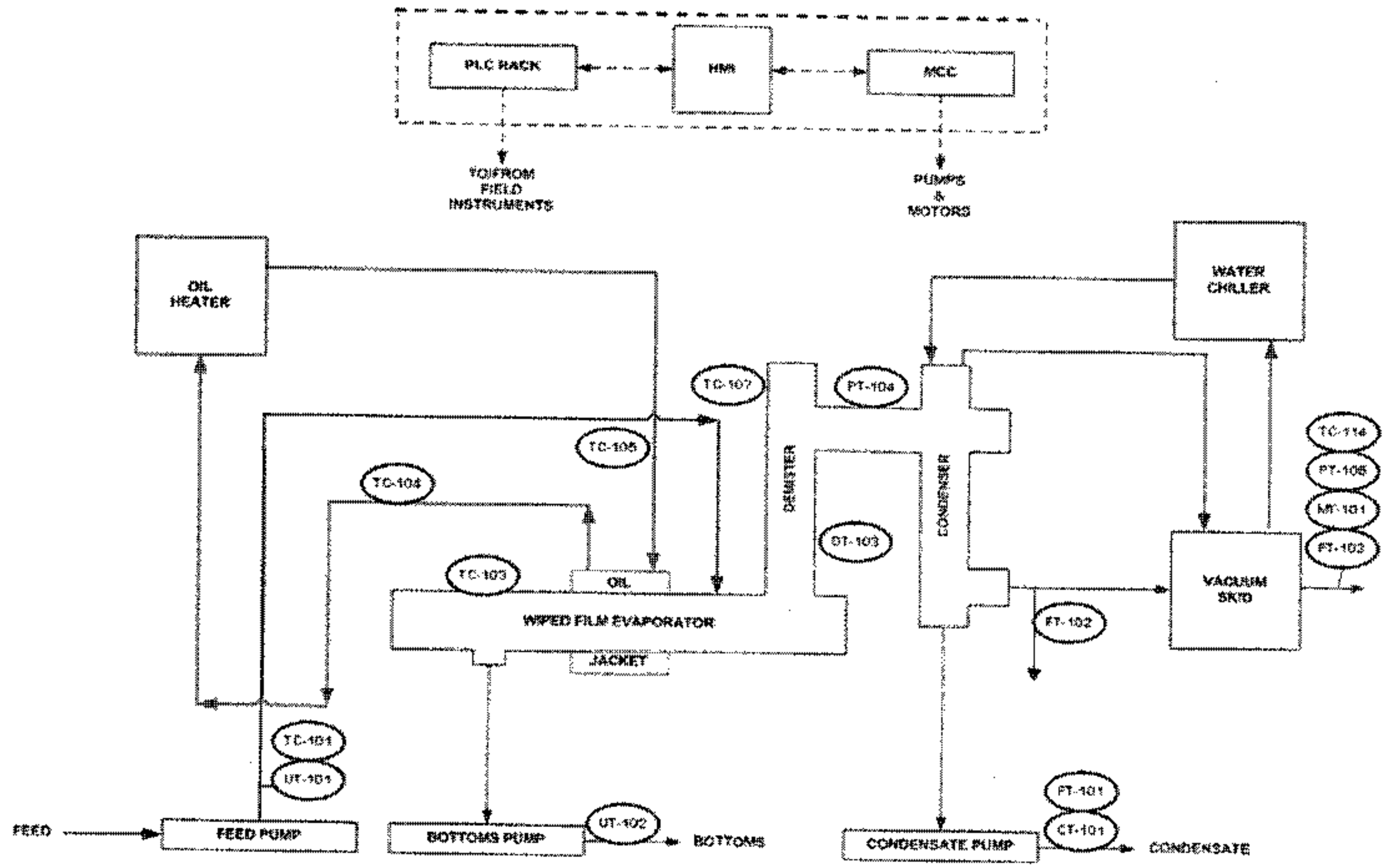


Full-Scale Test System
50 ft^2 heating surface



Laboratory-Scale
¼ ft^2 heating surface

Pilot-Scale Flow Diagram

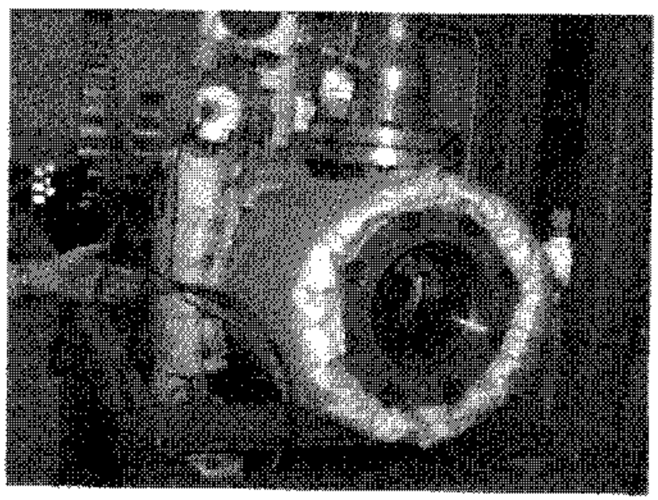


FY10 Pilot-Scale Test Results

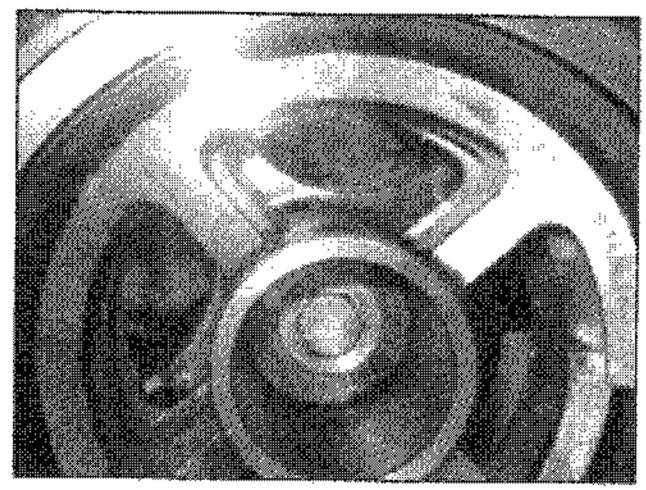
Simulant	AN-107 (1st Test)	SST	Parameter Optimization Testing	AN-107 (2nd Test)	AN-105
Test Date	2/8 - 2/9/10	2/25/2010		6/8/2010	6/14/2010
Feed Rate (gpm)	0.48	0.48		0.17	0.17
Condensate Rate (lb/hr)	16.8	21.18		22.5	20.52
Condensate Cesium Decon.	55,150	37,190		69,540	553,539
Waste Volume Reduction	0.795	0.731		0.729	0.482
Starting Feed SP GR	1.13	1.12		1.12	1.27
Ending Feed SP GR	1.52	1.43		1.46	1.47
Issues with Disposal Criteria	None	None		None	None

Pilot-Scale Testing Lessons Learned

- Issued RPP-RPT-47442 September 2010
- Documented successful evaporation capability from 1.1 SpG to ~ 1.5 SpG
- Major Lessons Learned:
  - More efficient at lower feed rate: from 0.48 gpm to 0.17 gpm
  - Need to evaluate atmospheric pressure impact on full-scale system
  - Confirmation that feed need not be chilled
  - Confirmation that WFE seal water will require cooling

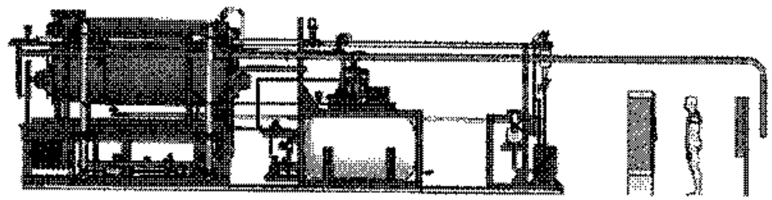


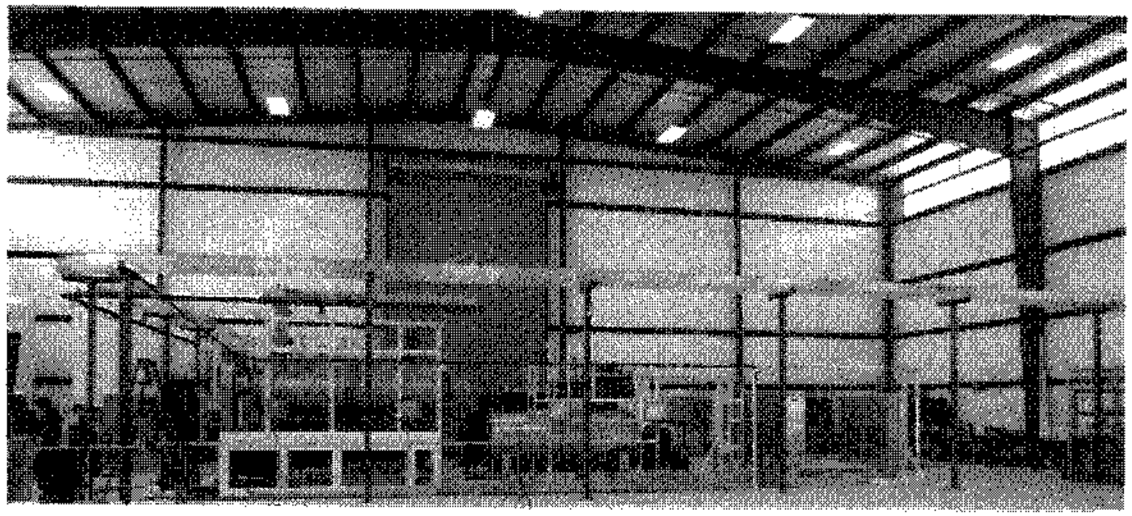
Pilot-scale Wiped Film Evaporator, Vapor Discharge End



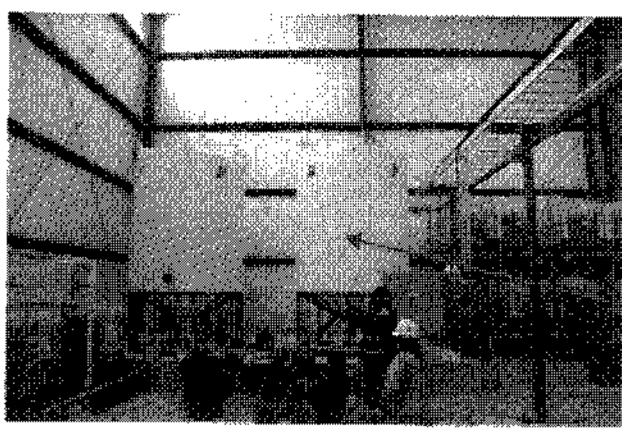
Pilot-scale Blade Close-up

Full-Scale Test System



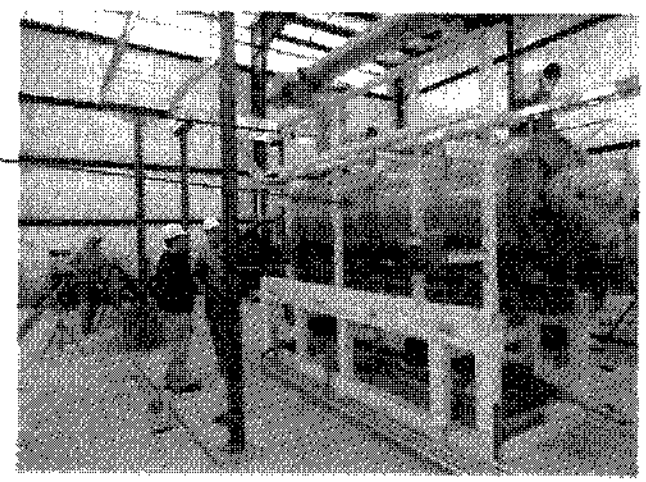


Full-Scale Test System
at Columbia Energy & Environmental Services Salk Ave. Test Site



Simulant & Concentrate Tank

Evaporator Unit



Deployment Concept

Play Deployment Concept Video
(Cleared version: WRPS-46287)

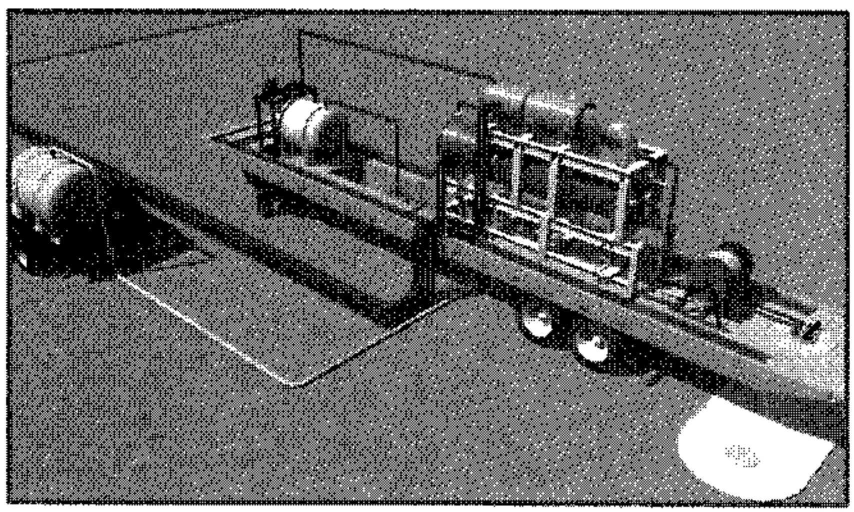
Technical Challenges and Solutions

Challenges

1. Performance of actual waste
2. Scale-up issues

Solutions

1. Laboratory Scale testing
2. 3 different scale test systems from same manufacturer; large scale test platform same size as proposed deployed unit (50 ft2)



Development Areas

Recovery Act development testing focused upon single Critical Technology Element: evaporative sub-system

Most significant challenge for final deployment is integration with tank farm systems

Development Areas

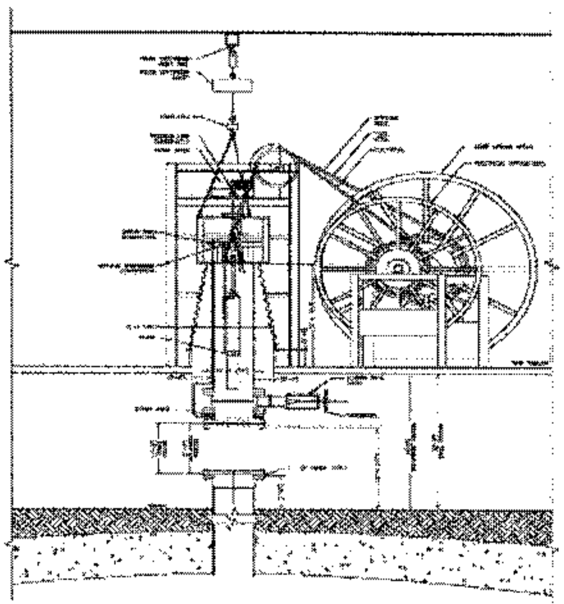
1. Integration with Tank Farms
   a. Riser connection
   b. Hose Reel operation
   c. Impacts of concentrate reintroduction
   d. ALARA/Shielding
   e. Confinement

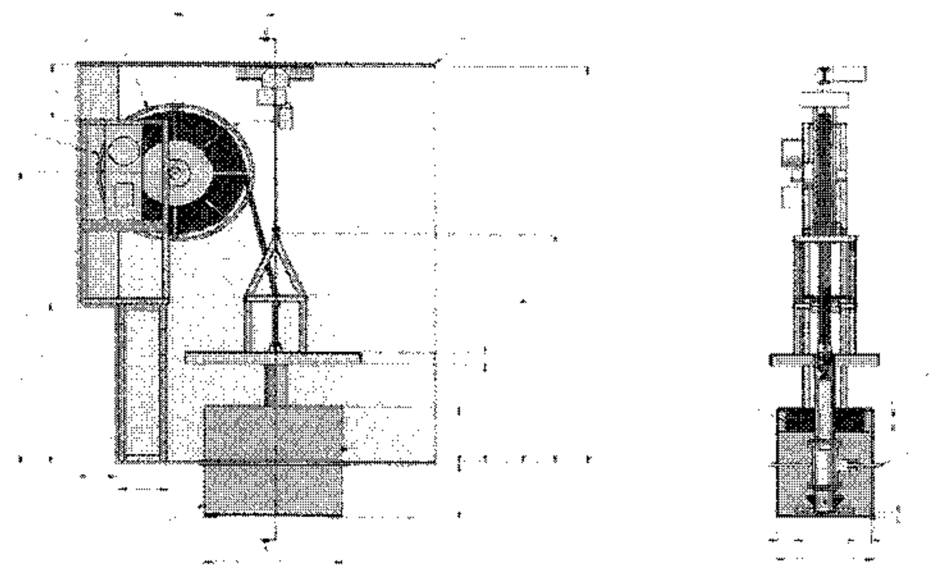
Mitigation

1. Perform conceptual evaluations during RA phase (dose, ventilation, hose reel design)
2. Test full-scale hose-reel assembly
3. Additional Full-scale simulant testing during final design
4. Formal Technology Readiness Assessment

Development Area Mitigation Example

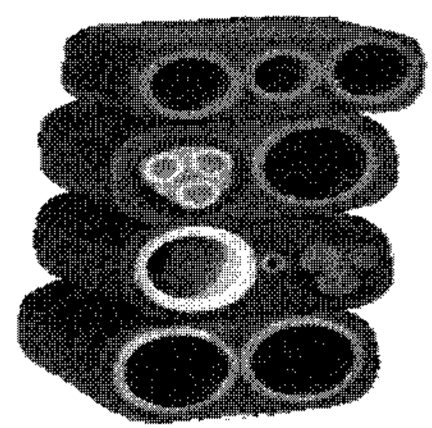
Hose Reel Development

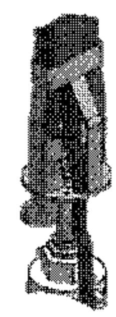




Multiple hose reels, large valves, complicated bellows, arrangement, difficult decon

to single reel, smaller ball valve, better confinement, modular for removal from trailer



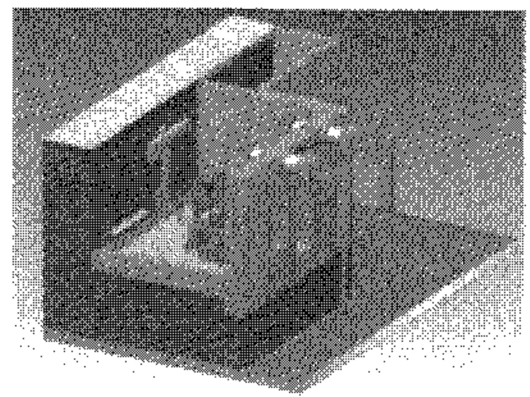


Example: http://www.titanoilgas.com/cjs-flatpack.htm

Top Technical Hurdles

1. Integrated System Design Key Decision Points
   a. At-tank versus near-tank
   b. Separate air confinement connection/system
   c. Safety designation and commercial grade dedication
   d. ABB mandated application

2. Applicable laboratory scale data
   a. Foaming
   b. Air fractions



3. Evaporator Mechanical Seal Performance

ORP / H6-60

OFFICE OF RIVER PROTECTION

DOCUMENT/LETTER #:	ACTION:	ACTION DUE DATE
NA	NO [✓] YES [ ]	

OFFICE OF RIVER PROTECTION	I	A	~ OTHERS ~	I	A
			AMTF JH SWAILES - DJ Struthers	✓	
			TED DC Bryson - M. Hughes		
SCHEPENS, Roy MANAGER	✓		TOD CJ Bosted - A. Perez		
Poynor, Cathy J Secretary	✓		TPD DL Noyes - A. Perez		
ERICKSON, Leif DEP. MANAGER	✓		AMWTP WJ TAYLOR - AJ Hanson	✓	
Deutsch, V [Genie] Prog. Asst	✓		WEC WF Hamel - D. Weisenberger		
Brazil, Kelly Secretary/Mgr Rdg File	✓		WIC KK Fick - D. Weisenberger		
Executive Officer & Stakeholder Interface:					
Jones, Greg A	✓		ESQ RC BARR - MD Hopkins	✓	
			ED JE Rasmussen - B. Gano		
Chief Counsel:			QIS NK Hunemuller - D. Mosby		
Stubblebine, Scott D Attorney					
Bennett, Tery Secretary			OPA KR ENSIGN - L. Derryberry	✓	
Communications:			BEVELACQUA, JJ		
Olds, TE [Erik] Media Specialist	✓	✓	BARRETT, MK		
Bennett, Te Secretary	✓		O'CONNOR, JS		
			REID, CB		
			HAWKINS, AR		
			SHORT, JJ		
			WIEGMAN, SA		
			Coleman, Sue		

I = Information Copy
A = Action Party

Scan: Yes [✓]
Yes w/o att [ ]
No [ ]

ORPCC Contacts:
Patricia Deaton - 376-2145
Joy Hervey - 376-2143

Notes:

Date Rec'd

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Hanford Communities

* Richland * Kennewick * Pasco * West Richland * Benton County * Port of Benton

P.O. Box 190 Richland, WA 99352
Telephone (509) 942-7348 Fax (509) 942-7379

April 29, 2003

Roy Schepens, Manager
U.S. Department of Energy, Office of River Protection
P.O. Box 450
Richland, WA 99352

Tom Fitzsimmons, Director
Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

John Iani, Regional Administrator
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101

Subject: Tansuranic Waste Eligible for Shipment to WIPP

Dear Mssrs. Schepens, Fitzsimmons, and Iani:

Hanford's Tri-Party Agreement (TPA) stipulates that all of Hanford's tank waste should be vitrified. The TPA approach was determined after examining the various options that have been considered over the years. Of primary importance is the fact that vitrification solidifies tank waste into a product that is stable for long periods of time and can be safely stored without risk of the radioactive material leaching into the surrounding environment. Construction and successful operation of the Waste Treatment Plant is the top priority of the Hanford Communities.

Several alternatives to vitrifying low level waste are presently under consideration by the Department of Energy (DOE) Office of River Protection (ORP). The Hanford Communities reserve judgment on the viability of these alternatives until scientific information is available to document that the waste product can safely be buried at Hanford without further risk to the environment.

Another strategy is currently being considered. The Office of River Protection has identified eight single shell tanks that appear to meet the transuranic waste (TRU) definition. We support the efforts to evaluate the contents of these tanks to validate that the material is indeed TRU waste as defined by *the Waste Isolation Pilot Plant Land*

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Withdrawal Act of 1992, as amended, Public Law 102-579. The material will also have to meet WIPP acceptance criteria.

If the waste in these eight tanks is verified as genuinely TRU, and can be removed from the tanks, packaged and shipped to WIPP, this disposition could provide some very favorable advantages. First of all, it would reduce the amount of tank waste that must be processed through the Waste Treatment Plant. It would reduce the volume of material required to be stored in the Double Shell Tank system thus making this capacity available for other single shell tank waste (SST) retrievals. It also has a risk reduction advantage because disposal of the wastes to WIPP would accelerate the removal of tank wastes from the Hanford site and would accelerate the closure of some SSTs.

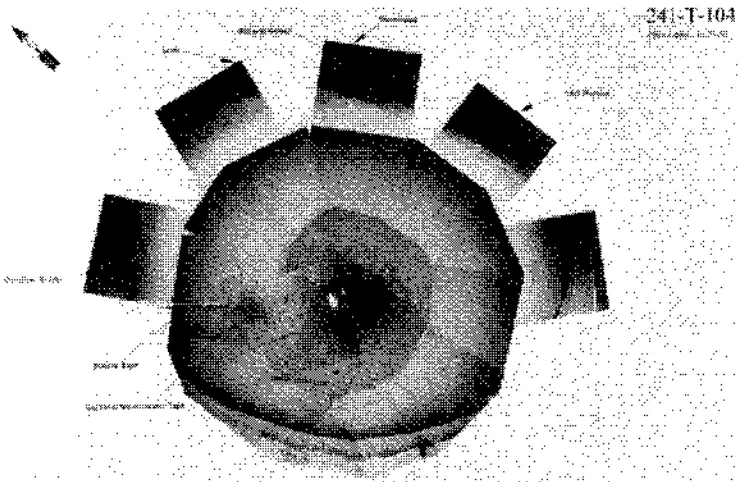
Due to the potential environmental, cost and schedule advantages this effort may produce, the Hanford Communities encourage the Tri-Parties to proceed expeditiously with this investigation.

Sincerely,

Larry Haler, Chairman
Hanford Communities Governing Board

c: Mike Wilson
Ed Aromi

Tank 241-T-104



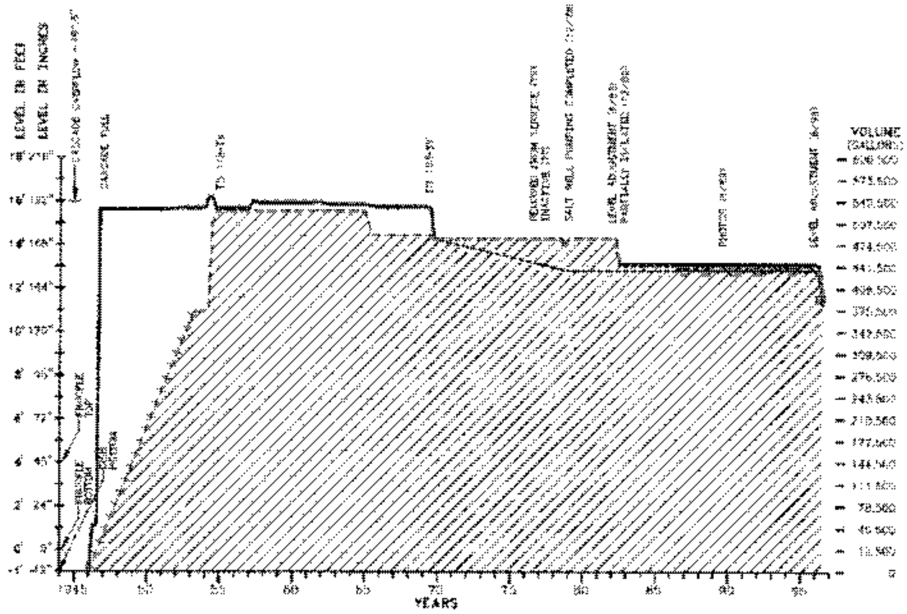


Table 6. Transuranic Elements and Fission Products in Tank 241-T-104.

Tank	TRU		Cs-137		Sr-90	
	ηCi/g	Ci	µCi/g	Ci	µCi/g	Ci
241-T-104	159.8	246.8	0.155	240	2.03	3,140
All 177 Tanks	Not applicable	214,067	Not applicable	43,000,000	Not applicable	51,900,000
241-T-104 waste as a percentage of all 177 tanks		0.12%		5.6E-04%		6.1E-03%

Note: TRU = transuranic

November 1946

- T-201 began receiving 224-T Pu Concentration building waste

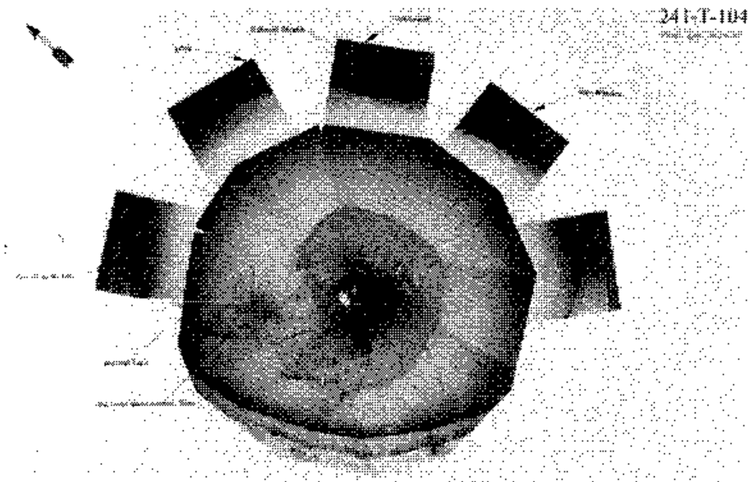
May 1949

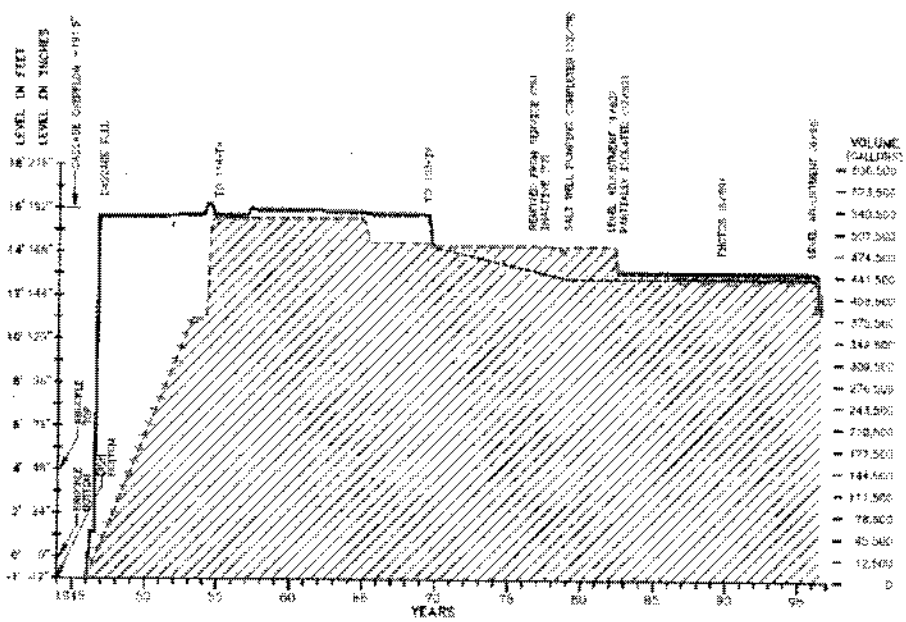
- T-201 filled in May 1952
- Began sending waste to T-204 in cascade with T-203, and 202 with liquids discharging to T-1 and T-2 cribs

May 1952

- T-204, 203 and 202 were filled
- Waste was then sent to the cascade of T-110, 111 and 112

Tank 241-T-104





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All 177 Tanks	Not applicable	214,067	Not applicable	43,000,000	Not applicable	51,900,000
241-T-104 waste as a percentage of all 177 tanks		0.12%		5.6E-04%		6.1E-03%

Note: TRU = transuranic

October 1946

- B-201 began receiving 224-B Pu Concentration building waste

October 1948

- B-201 filled
- Began sending waste to B-204 in cascade with B-203, and B-202 with liquids discharging to B-1 and B-2 cribs

July 1952

- B-Plant and 224-B Pu Concentration building shut down and replaced with REDOX facility
- Cleanout of these plants began with nitric acid flushout of equipment and further processing of the rinsate to recover all the plutonium possible in 224-B
- waste sent to B-204, B-203 and B-202 tanks in cascade

November 1952

- B-204, B-203 and B-202 recieved flushes from 224-B building and 221-B building metal waste tanks

March 1953

- B-204, B-203 and B-202 received flushes of 224-B building equipment and B-221 building extraction equipment

October 1954

- 50,000 gallons of water transferred through all 4 tanks in cascade

December 1954

- B-204, B-203 and B-202 received cell drainage from LLW tank 5-6 in 221-B building but no volume of waste was discharged

July 1955

- 224-B building flush water routed to the cascade of tanks B-204, B-203, B-202

1957-1963

- 221-B converted for removing Cs/Sr from PUREX waste, none going to the B-200s

January 1962

- Flush of 7,500 gallons of ___was sent from 221-B to the cascade of tanks B-204, B-203, B-202
- Final receipt of waste to B-200 tanks

4/24/06 (revision 4)

ATTORNEY/CLIENT PRIVILEGE (NOT FOR DISTRIBUTION)

(b)(5)

The ORP tank waste strategy is as follows. A timeline that illustrates this schedule is attached.

BACKGROUND

- There are two key regulators involved in the disposal of TRU at WIPP, the Environmental Protection Agency (EPA) for the radioactive components of the waste and the New Mexico Environment Department (NMED) for the hazardous chemical components.
- The WIPP Land Withdrawal Act requires the Department to submit a Compliance Recertification Application (CRA) to the EPA every five years measured from the date of receipt of the first waste emplacement in WIPP (March 26, 1999). Those CRAs will be reviewed and approved by the EPA.
- The first CRA was submitted by the Secretary of Energy to the EPA Administrator on March 26, 2004. That 2004 CRA included twelve ORP tanks, nine of which are contact-handled (CH) and three of which are remote-handled (RH) TRU tanks.
- (b)(5)
- The 3 RH tanks contain TRU sludge (e.g., cladding wastes) but have been commingled with liquid wastes from reprocessing. In addition, ORP has identified an additional 8 tanks that are believed to contain TRU for a total of 20 tanks. ORP does not have sufficient information at this time to definitively state whether the wastes in the additional eight tanks is CH or RH. The additional eight tanks were identified after the performance assessment (PA) supporting the 2004 CA was too close to completion for those tanks to be included in the 2004 CRA.

- (b)(5) [redacted]
- The EPA issued a completeness determination for the 2004 CRA on September 29, 2005. The EPA is required to reach a decision on whether or not to approve the CRA by March 29, 2006.
- During discussions with the EPA regarding the CRA, EPA has indicated that it wants to approve any waste previously managed as HLW currently stored in Department tanks that that the Department intends to dispose of as TRU in WIPP.
- (b)(5) [redacted]

DISCUSSION

- (b)(5) [redacted]

(b)(5)

Transuranic Tank Waste Projections

Based on current information as of April of 2006
Prepared by M. Jennings

Contact Handled Transuranic Waste (CH-TRU)

- **Data Provided in FY05 – 8,600 total drums to be generated**
  - ~~FY07 – reactivation of TRU Project with Limited Funding Available~~
  - ~~FY08 – Fabricate, Test & Assemble; continue with permitting~~
  - ~~FY09 – Deployment, Training & WIPP Certification~~
  - ~~FY10 – Packaging and Characterization~~
  - ~~FY11 – Packaging and Characterization Continued Through FY12 & D&D in FY13~~
  - ~~FY12 – Commence Shipping – Assume to ship 50% of total containers~~
  - ~~FY13 – Complete Shipping – Assume to ship 50% of total containers~~

- **Current Planning Data – *8,600 total drums* to be generated**
  - CH-TRU Project Start Delayed Eight Years, From FY07 to FY14, therefore:
    - FY15 – reactivation of TRU Project with Limited Funding Available
    - FY16 – Fabricate, Test & Assemble; continue with permitting
    - FY17 – Deployment, Training & WIPP Certification
    - FY18 – Packaging and Characterization
    - FY19 – Packaging and Characterization Continued
    - ***FY20 – Commence Shipping – Assume to ship 50% of total containers***
    - ***FY21 – Complete Shipping – Assume to ship 50% of total containers***

Remote Handled Transuranic Waste (RH-TRU)

- **Data Provided in FY05 – *4,236 RH72B Canisters* to be Generated (Direct Loaded)**
  - ~~FY13 – RH TRU Project with Limited Funding Available~~
  - ~~FY14 to FY15 – Permitting, Engineering/Design~~
  - ~~FY16 – Deployment, Training & WIPP Certification; continue with permitting~~
  - ~~FY17 to FY28 Packaging and Characterization~~
  - ~~FY17 to FY29 – Shipping Assume level shipping profile~~

- **Current Planning Data – 4,236 RH72B Canisters to be Generated (Direct Loaded)**
  - RH-TRU Project Start Delayed Eight Years, From FY13 to FY20, therefore:
  - FY21 – RH TRU Project with Limited Funding Available
  - FY22 to FY23 Permitting, Engineering/Design
  - FY24 – Deployment, Training & WIPP Certification; continue with permitting
  - FY25 to FY36 Packaging and Characterization
  - ***FY25 to FY36 –Shipping Assume level shipping profile***
    - ***FY25 through FY36 – Plan for 8 shipments/wk @ 50wk/yr for 10.6 years***
      - ***One Canister per shipment***

Key:

- ~~Strikeout~~ is dated information that was provided in FY05 but is no longer current
- ***Bold/Italic*** text indicated waste forecast information of interest to FH Forecast Updates

Candidate Tank Waste TRU Determination Criteria Update

1.0 Background

The mission of the Waste Isolation Pilot Plant (WIPP) is to dispose of defense transuranic (TRU) wastes that meet the WIPP waste acceptance criteria (WAC) and other applicable requirements for receipt, storage, and disposal of TRU. WIPP is the nation's first deep geological disposal facility. In October 1992, Public Law 102-579, also called the Waste Isolation Pilot Plant Land Withdrawal Act of 1996, as amended (WIPP LWA), withdrew 10,240 acres from public use for WIPP. The land is about 26 miles east of Carlsbad, NM. WIPP is operated by the U.S. Department of Energy (DOE). The U.S. Environmental Protection Agency (EPA) has regulatory oversight under the WIPP LWA that includes issuing final radioactive waste disposal standards for WIPP and determining whether WIPP can be re-certified for TRU disposal every 5 years until it closes. The New Mexico Environment Department (NMED) regulates the storage and disposal of the hazardous constituents in TRU waste to be disposed at WIPP under New Mexico's hazardous waste laws as authorized by the EPA under the Resource Conservation and Recovery Act (RCRA).

2.0 Candidate TRU Tank Wastes Acceptance Process

The WIPP LWA defines TRU as waste, "...containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for – (A) high-level radioactive waste [emphasis added]; (B) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with part 61 of title 10, Code of Federal Regulations."

(b)(5)

(b)(5)

[redacted]

(b)(5)

3.0 Logic for Candidate Tank Waste TRU Determinations

(b)(5)

(b)(5)

3.0 Proposed Non-HLW Determination Criteria for TRU

The following criteria and associated definitions are proposed for use in (b)(5)

(b)(5)

The following definitions shall be used in applying the preceding criteria:

> *"Spent nuclear fuel"* means *fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing*[3].
>
> *"Reprocessing"* means *the chemical separation of spent reactor fuel to separate uranium and plutonium from waste materials, such as fission products and non-plutonium transuranic elements. Reprocessing does not include head-end processes, such as cladding removal, that occur prior to separation of spent nuclear fuel constituent elements nor does reprocessing include post-reprocessing processes that increase the purity of recovered uranium and plutonium to levels consistent with their intended end use*[4].
>
> *"Fission products in sufficient concentrations" means*[5] *the 10 CFR Part 61.58 Class C concentrations listed in Tables 1 and 2 for fission products which are as follows:*
>
> **Table 1 Fission Products:** *Tc-99 – 3 Ci/m^3; I-129 – 0.08 Ci/m^3*
>
> **Table 2 Fission Products:** *Sr-90 – 7000 Ci/m^3; Cs-137 – 4600 Ci/m^3*
>
> *"Waste"* means *the mass/volume of at least 90% of the material that constitutes the candidate TRU tank waste stream to be considered in a waste determination.*

4.0 Criteria Rationale

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

APPENDIX A

Candidate TRU Tank Waste Determination and WIPP Qualification Process Logic

Decision Logic Diagram for Proposed Tank Transuranic Waste Determination Criteria (DRAFT)

(b)(5)

2/6/07

Attorney-Client Privileged; Attorney Work Product;
Prepared In Anticipation Of Litigation Or Trial;
Not Subject To Discovery Or Release Under FOIA

Description of Decision Logic Diagram for Proposed Tank Transuranic Waste Determination Criteria

(b)(5)

Appendix B -- Site Products Used to Demonstrate Proposed Tank Transuranic Waste Determination Criteria

(b)(5)

(b)(5)

Hildman, Cynthia M

From: Hewitt, William M
Sent: Friday, February 20, 2009 10:48 AM
To: Colosi, Kristin A; Tedeschi, Allan R (Rick); Trenchard, Glyn D; Harp, Benton J (Ben); Koll, Ronald J
Cc: Charboneau, Stacy L; Rueter, Kenneth J; Burrows, Christopher; 'Martin.Letourneau@em.doe.gov'; thomas.crandall@em.doe.gov; Stubblebine, Scott D
Subject: Rev 2 of Tank Waste TRU (b)(5)
Attachments: Tank Waste TRU (b)(5) Rev 2 2-20-09.doc

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Teal

I met with Kris Colosi and Rick Tedeschi yesterday to discuss their comments on the initial Tank Waste TRU (b)(5) document. Rev 2 addresses issues raised (b)(5)

(b)(5)

Please let me know if you have any questions.

Bill Hewitt
President, YAHSGS LLC (Subcontractor to PAC supporting ORP)
Cell: (b)(6)

DRAFT INTERNAL WHITE PAPER

Conceptual Path Forward for (b)(5) [redacted]

(b)(5) [redacted]

(b)(5) [redacted]

W. Hewitt

February 2009

Introduction

The U.S. Department of Energy (DOE) currently stores 53 million gallons of radioactive and chemically hazardous waste in underground tank farms at Hanford. DOE manages the wastes in storage as high-level waste (HLW as a matter of policy to ensure the highest standards of care are applied to storage, surveillance, and tank farm operations. Nonetheless, DOE also maintains that a portion of those wastes were not produced during the reprocessing of spent nuclear fuel and do not, therefore, meet the Nuclear Waste Policy Act (NWPA) definition of HLW.

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(b)(5)

This white paper has two primary objectives:

1. (b)(5)
2.

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ORP initiated activities in 2003 to dispose of contact-handled wastes in the eight B and T 200-series tanks at the Waste Isolation Pilot Plant (WIPP) in New Mexico; however, those efforts were subsequently set aside when DOE's Office of Environmental Management (EM) undertook a more extensive complex-wide look at other sources of TRU. Those other sources included Sodium Bearing Waste (SBW) at the Idaho National Environmental Laboratory as well as

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[2] Waste that has alpha-emitting transuranic radionuclide concentrations in excess of 100 nanocuries per gram with half lives exceeding 20 years that is not HLW.

potential waste streams from Oak Ridge and the Hanford K Basin. EM established a working group charged with developing criteria that could be used by sites it manages to designate qualifying wastes as TRU. Because of basic differences in the origins and compositions of the wastes, however, EM subsequently reverted[3] to having each site develop a customized waste-specific basis for qualification as TRU provided those bases were consistent with the Waste Isolation Pilot Plant Land Withdrawal Act (WIPP LWA) including its definition of transuranic waste and the Nuclear Waste Policy Act (NWPA) definition of HLW (i.e., the WIPP LWA TRU definition excludes HLW).

(b)(5)

Timing

(b)(5)

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(b)(5)

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(b)(5)

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(b)(5)				

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

Regulatory Path A: (b)(5)

(b)(5)

(b)(5)

(b)(5)

Figure 3 – (b)(5)

(b)(5)

(b)(5)

(b)(5)

Regulatory Path B: (b)(5)

(b)(5)

(b)(5)

Regulatory Path C: (b)(5)

(b)(5)

(b)(5)

Regulatory Path D: (b)(5)

(b)(5)

Path E: (b)(5)

(b)(5)

(b)(5)

(b)(5)

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- Origin Of Waste In Tank 241-AW-103, RPP-22404, revision 0, M. E. Johnson, CH2M HILL Hanford Group, Inc., September 2004.
- Origin Of Waste In Tank 241-AW-105, RPP-RPT-23177, revision 0, M. E. Johnson, CH2M HILL Hanford Group, Inc., December 2004.

Hildman, Cynthia M

From:	Hewitt, William M
Sent:	Thursday, January 29, 2009 1:52 PM
To:	Koli, Ronald J
Cc:	Trenchard, Glyn D
Subject:	TRU
Attachments:	Tank Waste TRU (b)(5) 1-29-08.doc
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Teal

Ron,

Attached please find the draft white paper and (b)(5)
(b)(5)

Please call me if you have any questions.

Bill Hewitt
President, YAHSGS LLC (Subcontractor to PAC supporting ORP)
Cell: (b)(6)

DRAFT INTERNAL WHITE PAPER

Conceptual Path Forward for (b)(5)

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(b)(5)				

(b)(5)

(b)(5) Then an additional two CH SSTs and six RH SSTs were identified bringing the total to twenty total tanks. (b)(5)

(b)(5)

(b)(5)

Conceptual Path Forward for (b)(5)

(b)(5)

Regulatory Path A: (b)(5)

(b)(5)

(b)(5)

Figure 3 – (b)(5)

(b)(5)

(b)(5)

(b)(5)

Regulatory Path B: (b)(5)

(b)(5)

(b)(5)

Regulatory Path C: (b)(5)

(b)(5)

(b)(5)

Regulatory Path D: (b)(5)

(b)(5)

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Path E: (b)(5)

(b)(5)

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