

0084501



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Richland Operations Office
P.O. Box 550
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10-AMCP-0061

DEC 29 2009

Mr. D. A. Faulk, Program Manager
Office of Environmental Cleanup
Hanford Project Office
U.S. Environmental Protection Agency
309 Bradley Boulevard, Suite 115
Richland, Washington 99352

Dear Mr. Faulk:

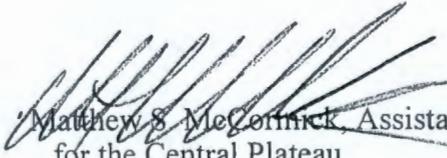
M-16-93 WORK PLAN, DOE/RL-2009-130, REVISION 0

This letter transmits the M-16-93 Work Plan, DOE/RL-2009-130, Revision 0, for the acquisition of capabilities necessary to prepare transuranic waste generated by Comprehensive Environmental Response, Compensation, and Liability Act cleanup actions for processing of remote handled and large container mixed low level and transuranic wastes.

This completes Tri-Party Agreement Milestone M-016-93A, Submit an Implementation Work Plan by December 31, 2009.

If you have any questions, please contact me, or your staff may contact Larry Romine, of my staff, on (509) 376-4747.

Sincerely,


Matthew S. McCormick, Assistant Manager
for the Central Plateau

AMCP:MSC

Attachment

cc: See Page 2

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Mr. D. A. Faulk
10-AMCP-0061

-2-

DEC 29 2009

cc w/attach:

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cc w/o attach:

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DOE/RL-2009-130
Revision 0

M-16-93 Work Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



U.S. DEPARTMENT OF
ENERGY

Richland Operations
Office

P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

M-16-93 Work Plan

Date Published
December 2009

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



U.S. DEPARTMENT OF
ENERGY

Richland Operations
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Terms

CCP	Central Characterization Project
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CH	contact-handled
CHPRC	CH2M HILL Plateau Remediation Company
D&D	Decontamination and decommissioning
DOE	U.S. Department of Energy
Ecology	<i>Washington State Department of Ecology</i>
EPA	U.S. Environmental Protection Agency
FY	fiscal year
NGR	next generation retrieval
PFP	Plutonium Finishing Plant
POG	point of generation
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RH	remote-handled
ROD	record of decision
STP	Sludge Treatment Project
Strategy	Central Plateau Strategy
TPA	Tri-Party Agreement
Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
TRU	transuranic
TRUM	Transuranic Mixed Waste
VPU	Vertical Pipe Unit
WAC	waste acceptance criteria
WIPP	Waste Isolation Pilot Plant

1 Introduction

This Work Plan has been prepared in response to Tri-Party Agreement (TPA) milestone M-016-93:

"Submit an implementation Work Plan to U.S. Environmental Protection Agency (EPA) for the acquisition of capabilities necessary to prepare Transuranic (TRU) and Transuranic Mixed Waste (TRUM) waste generated by Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) cleanup actions at the Hanford Site for disposal at the Waste Isolation Pilot Plant (WIPP). This Work Plan will reflect retrieval decisions, projected waste volumes and schedules from all CERCLA cleanup actions authorized in Records of Decision and Action Memoranda at the Hanford Site and will provide for updates and revisions as new information becomes available. As part of the approval process, EPA will consult with Washington State Department of Ecology to ensure that wastes from CERCLA operable units for which Ecology is the lead regulatory agency are properly planned. This Work Plan will provide a schedule for acquiring the capabilities for TRU and TRUM management necessary to support all CERCLA cleanup actions. In order to avoid duplicative requirements, the M-016-93 Work Plan will integrate plans and schedules developed pursuant to the M-91 milestones to provide capabilities for RCRA mixed and suspect TRUM where such capabilities also can be used for CERCLA TRU/TRUM waste. The Work Plan will be submitted pursuant to Section 11.6 of the TPA."

This Work Plan was originally developed and submitted to the regulators in September 2006. At that time, the current planning basis assumed that all of the previously identified 200 Area Records of Decision (RODs) would be issued, and as a result, new detailed information would be available for inclusion in this report in 2009. However, in response to delays associated with CERCLA decision making, the TPA milestones for CERCLA cleanup are being renegotiated. As part of that negotiation, the U.S. Department of Energy (DOE) has developed a new remediation strategy, the Central Plateau Cleanup Strategy (Strategy), describing a new approach to cleanup of the Central Plateau. Once the negotiations are completed, new dates for CERCLA decisions and corresponding cleanup schedules will be established in TPA change packages that will undergo public review prior to final approval.

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2 Status of Approved CERCLA Cleanup Actions Generating TRU

Several major CERCLA clean up actions have been implemented or planned since 2006, resulting in the need to update the actual and forecasted inventories of TRU waste. The decontamination and decommissioning (D&D) of the Plutonium Finishing Plant (PFP), the removal and repackaging of sludge from the K Basins remediation effort, and the future remediation of the 618-10/11 burial grounds are, or will be, generating TRU waste as a result of authorized CERCLA decisions and are discussed in more detail in following sections of the Work Plan. Tables 2-1, 2-2, and 2-3 include the forecasts for contact-handled (CH), small container (containers with volume less than 1.8 m³), CH large container (containers with volume greater than 1.8 m³) and remote handled (RH) TRU waste forecasted to be generated as a result of CERCLA clean up actions. The forecast volumes were based on information reported from the various projects in the *Solid Waste Integrated Forecast Technical (SWIFT) Report*, published in February 2009, and as a result, represent a forecast subject to change in time.

Table 2-1. CH Small Container TRU Waste Forecast

GENERATOR	YEAR								
	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
K Basins	4.18								4.18
PFP	37.28	588.39	782.01	677.44	72.78				2,157.9
618-10/11 Burial Grounds						83.15	83.15	83.15	249.45
Total TRU Waste									2,411.53

Note: Includes both TRU and TRU mixed waste, volumes in m³.

Table 2-2. CH Large Container TRU Waste Forecast

GENERATOR	YEAR								
	2009	2010	2011	2012	2013	2014	2015	2016	Grand Total
K Basins	17.52								17.52
618-10/11 Burial Grounds						8.36	8.36	8.36	25.08
Total TRU Waste									287.13

Note: Includes both TRU and TRU mixed waste, volumes in m³.

Table 2-3. Remote Handled TRU Waste Forecast

GENERATOR	YEAR									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	Grand Total
K Basins	40.55					28.9*				69.45
618-10/11 Burial Grounds						243.89	243.89	400.15	65.02	952.95
Total TRU Waste										1022.40

Note: Includes both TRU and TRU mixed waste, volumes in m³.

*HNF-41051, Rev. 4, *Preliminary STP Container and Settler Sludge Process System Description and Material Balance*.

2.1 Plutonium Finishing Plant

Significant progress has been made in the D&D of the PFP as part of on-going CERCLA cleanup actions, with a scheduled completion date of September 30, 2013. D&D activities have been focused primarily in the former production and laboratory areas of the 234-5Z building, where workers have been removing various systems and contaminated equipment. Implementation of effective decontamination techniques, particularly the use of aggressive decontamination agents used to clean plutonium glove boxes, has resulted in a reduction of approximately 50 percent of the forecasted volume of TRU waste at PFP.¹

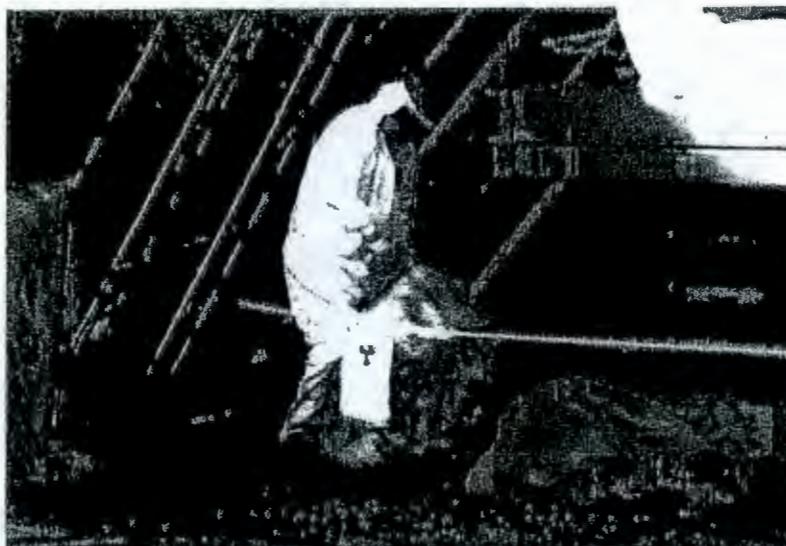
In addition to innovative D&D techniques, PFP has implemented a Point-of-Generation (POG) approach to management of the remaining volume of TRU waste that is generated. Activities that generate equipment and decontamination materials with the potential to be at TRU activity levels are identified early in the work planning process, and as a result, have personnel from the Central Characterization Project (CCP), the organization responsible for certification of Hanford's TRU waste, assigned to work directly with the D&D crews in the field. This integrated team approach ensures that any TRU waste generated during D&D is packaged in compliance with the Waste Isolation Pilot Plant's (WIPP) Waste Acceptance Criteria (WAC), minimizing potential repackaging at Hanford facilities such as T Plant or the Waste Receiving and Packaging Plant.

2.2 U Plant

In accordance with the U Plant ROD, D&D activities are underway to prepare the U Plant canyon for demolition. Equipment designated for placement in cells of the canyon is being relocated from the canyon deck into the identified cells in preparation for grouting. In addition, removal of asbestos and other hazardous materials has commenced to prepare U Plant ancillary facilities 224-U and 224-UA for demolition (Figures 2-1 and 2-2).

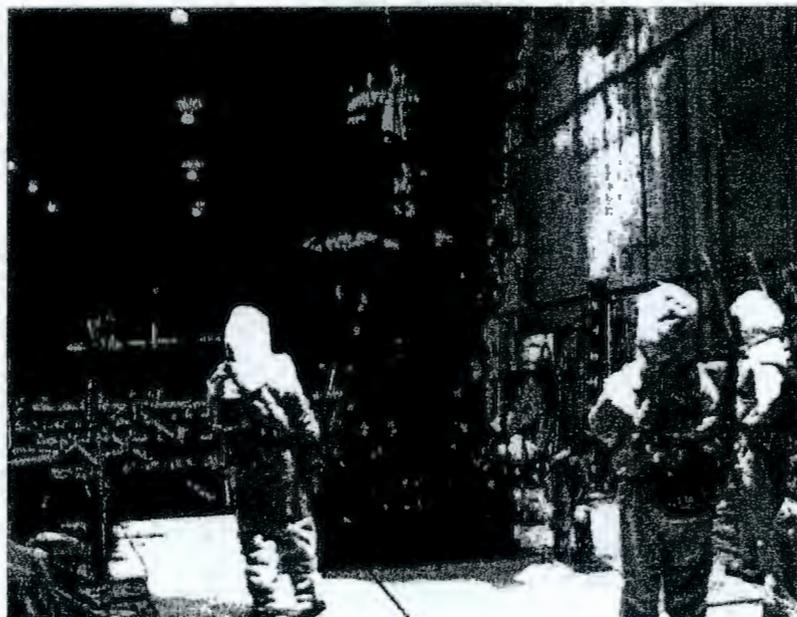
To date, no TRU waste has been generated during the D&D preparation activities at U Plant; however, characterization of the D-10 tank in cell 30 has been completed and indicates that the tank contains materials with TRU constituents that may be removed per requirements in the ROD.

¹ In 2006, PFP originally forecasted approximately 4,000 m³ of CH TRU waste anticipated to be generated during D&D activities as documented in calendar year 2006 SWIFT Report. The 2009 SWIFT Report identifies the generation of approximately 2,100 m³ of CH TRU waste for PFP activities.



Note: A worker bags and seals waste from asbestos abatement at the U Plant ancillary facilities. The abatement is in preparation for the demolition of buildings 224-U and 224-UA.

Figure 2-1. Waste from Abatement at the U Plant Ancillary Facilities



Note: Clearing the deck of equipment is one of the first steps to preparing the canyon for demolition.

Figure 2-2. Workers Prepare a Centrifuge for Relocation from the U Plant Canyon Deck into Cell 4

2.3 K Basin

Significant progress to remediate the K Basins has been accomplished since 2006. K East Basin sludge material transferred to three engineered containers located in the K West Basin was completed in 2007, followed by completion of demolition of the K East Basin in 2009. Remediation of subsurface contamination has begun and is planned for completion by the end of Fiscal Year (FY) 2010.

Critical activities supporting the remediation of the K West Basin are scheduled for FY 2010. This includes a campaign to collect residual floor and pit sludge in K West Basin that will be placed in an engineered container. In addition, sludge currently contained in the 105-K West Basin Settler Tanks will be transferred to second engineered container. Once the sludge materials are removed, the K West Basin will be stabilized, dewatered, and removed. The remaining 100-K Area ancillary facilities, along with associated waste sites, will be deactivated and readied for final disposition and remediation.

Sludge that is containerized and staged in K West Basin requires retrieval, treatment, packaging, and ultimately shipment to a national repository for disposal. The highly radioactive nature of the sludge presents significant challenges to successfully retrieve, treat, package, and dispose of K Basin sludge. To date, no known technology has been developed and demonstrated successfully that addresses all the issues associated with the safe disposition of the K Basins sludge.

In response to these challenges, the Sludge Treatment Project (STP) has been commissioned to execute the work as defined in the K Basin Interim Remedial Action CERCLA ROD and is organized into two phases:

- Phase 1- sludge retrieval and transport to T Plant for interim storage
- Phase 2 - sludge retrieval from interim storage, treatment and packaging, and conducting associated preparations required for placing packaged sludge into interim storage pending shipment to the national repository

The Sludge Treatment Project will provide equipment, systems and facility modifications to the 105 K West Basin to retrieve sludge from engineered containers. It is expected that the sludge generated during K West Basin remediation will be RH and CH polychlorinated biphenyl TRU remediation waste. The retrieval system shall deliver the sludge into approved containers suitable for transportation to interim storage. Consistent with TPA milestone M-16-140, milestones to complete treatment and packaging of the K Basin sludge will be proposed by March 2011.

2.4 618-10/11 Burial Grounds

Final cleanup activities for the 618-10 and 618-11 sites are scheduled for completion in 2018. Before removal activities are initiated, the waste sites and associated waste will be characterized based on the existing WCH-183 Rev. 1, 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation.

Nonintrusive characterization activities will be used as part of the characterization. These include surface radiation survey, ground-penetrating radar, and nonintrusive sampling and analysis using a cone penetrometer to perform geophysical delineation and in situ radionuclide characterization of the Vertical Pipe Units (VPUs) and Caisson in burial ground 618-10. In addition, soil samples will be collected from the trenches adjacent to and below the base elevation of the VPUs and Caissons. No TRU waste will be generated from these nonintrusive characterization activities

Intrusive sampling activities at 618-10 are planned to begin in spring of 2010. Intrusive sampling activities include collection of physical samples by using a variety of sampling processes. A small volume of TRU waste may be generated from these intrusive sampling activities.

Remediation at 618-10 is currently planned to begin in spring of 2011, followed by remediation of 618-11. Any TRU waste that is generated from characterization or subsequent remediation activities will be packaged at the site into WIPP compliant packages ready for certification by CCP.

3 Status of Future CERCLA Cleanup Decisions Generating TRU and TRUM Waste

As briefly discussed in Section 1, DOE has prepared a Strategy that describes an approach to complete the cleanup of the Hanford Site and to shrink the final footprint of the Central Plateau requiring long-term management. The Strategy establishes a master blueprint for cleanup that is based on a time-phased geographic approach for decision making associated with three major components, as follows:

1. Outer Area - defined as all areas of the Central Plateau beyond the boundary of the Inner Area.
2. Inner Area - defined as the central portion of the Hanford Site dedicated to long-term waste management and containment of residual contamination).
3. Groundwater - where the goal is to restore groundwater to permit its beneficial use as a source of domestic drinking water).

DOE is in the process of seeking public, stakeholder, and tribal review and comment on the Strategy. Draft TPA change packages to implement the Strategy have been prepared and are being negotiated. Once the Strategy and TPA change packages are approved, decisions to retrieve, treat, and dispose of any subsequent generation of TRU waste will be addressed in an update to this Plan.

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4 Integrated Approach for Waste Processing Capabilities

4.1 Central Characterization Project

In accordance with DOE direction, the performance of CH TRU waste characterization and certification activities at the Hanford Site will be performed by the CCP, a contractor under the direction of the DOE Carlsbad Field Office. The CCP is a program that works cooperatively with the Hanford cleanup contractors (at this time, CH2M HILL Plateau Remediation Company) to ensure compliant packaging of the TRU waste occurs as it is being generated. CCP provides characterization services, such as non-destructive examination (including visual examination and real-time radiography), headspace gas sampling, and non-destructive assay to complete certification for disposal at WIPP.

At the present time, CCP is deployed at the PFP, working with the D&D team to ensure that TRU waste is compliantly packaged to meet WIPP WAC requirements. The integrated approach represented by partnering of CCP with Hanford cleanup activities is, and will be, key to efficiently managing CH TRU waste generation.

4.2 Next Generation Retrieval Project

The Next Generation Retrieval (NGR) project is developing new technical approaches to retrieve suspect post 1970 TRU waste from designated Low Level Burial Grounds to meet TPA M-91 milestones. A POG management approach is being designed to retrieve, process, and package TRU waste into packages that meet the WIPP WAC. This new approach includes the completion of all required processing steps such as assaying, venting, segregation of TRU waste from low level waste, treatment, and repackaging waste into a WIPP compliant package as near as possible to the dig face. Implementation of this new approach, currently scheduled for May 2010, will minimize the risk associated with multiple drum handling and transfers, improve process efficiency, and reduce secondary waste generation resulting from the historical method of over packing containers prior to shipment.

4.3 Alpha Caisson Retrieval Project

The Alpha Caisson Retrieval project has been commissioned to design, procure, and install mobile equipment to retrieve RH TRU waste from four alpha caissons located in the 218-W-4B Low Level Burial Ground. The project will provide the capability to retrieve, characterize, and package RH TRU waste for certification and subsequent shipment to WIPP, with a target completion date of December 2018. The process is being designed to retrieve waste containers and debris containers, sort the waste, process prohibited items, sample and characterize the waste, and package into WIPP compliant containers. Deployment of this capability represents a significant technological advance in the area of RH TRU retrieval and processing at the Hanford Site.

4.4 RH and Large Container Processing Capability

Several parallel planning activities for retrieval, processing, and packaging of RH and Large Container TRU waste are being developed in response to TPA milestones. Consistent with TPA milestone M-016-140, milestones to complete treatment and packaging of the K Basin sludge will be proposed by March 2011. These recommendations will be integrated into ongoing planning associated with TPA milestone M-91 that requires the acquisition of capabilities/facilities to process RH and CH Large Container Waste. The current planning basis for M-91 identifies several key actions, including completion of definitive design and start of construction in 2018, followed by completion of construction in 2022. Operations are scheduled to commence in 2023, with an annual processing rate of 300 m³ of waste. It is expected that the completion of the activities associated with the M-91 and M-16 milestones

will provide the needed capabilities to support processing of RH and large container TRU waste generated from future potential CERCLA cleanup decisions.

5 Summary

Although many of the ROD governing CERCLA cleanup decisions on the Central Plateau have not yet been issued, significant progress has been achieved in remediation of key facilities such as PFP and K Basins in support of DOE's 2015 cleanup vision. New technical approaches have been, or are planned to be, implemented in the field to eliminate or minimize the generation of TRU waste during remediation activities. Specifically, PFP has used aggressive decontamination agents on TRU waste contaminated gloves boxes and other equipment to reduce the levels of contamination enough to classify the waste as low level waste eligible for onsite disposal.

The POG approach to TRU waste management has been successfully deployed at PFP and is planned for deployment at the NGR and Alpha Caissons Retrieval projects to package TRU waste into WIPP compliant containers at each remediation site. As previously discussed, this new approach minimizes waste handling and transfer, reduces labor intensive rework involved with repackaging waste to meet WIPP WAC, and facilitates the completion of certification activities by CCP to ready the waste for shipment to the WIPP. As a result of the tangible benefits associated with the POG approach, it is anticipated that the retrieval, processing and packaging techniques, technologies, and personnel experience gained from implementation of the this approach could be directly applicable to the remediation of CERCLA liquid and/or solid waste release sites where TRU waste may be generated in the event that retrieve, treat, and dispose decisions are made.

Retrieval, processing, and packaging of RH TRU waste continues to be a technical challenge. Experience gained from the retrieval, processing, and packaging of RH TRU waste from the 200 Area Alpha Caissons could be directly applicable to the retrieval of other RH waste, most notably from the remediation of the 618-10/11 burial grounds. Treatment recommendations developed to process the RH TRU waste from K Basins will be integrated with planning underway to meet TPA M-91 milestones that require acquisition of capabilities to treat RH waste. As part of that planning process, definitive design and start of construction of a new facility/capability to treat both RH and large container CH TRU is scheduled for September 30, 2018, followed by initiation of operations in January 2023. This facility/capability design will incorporate any required functional and operational requirements needed to manage potential/forecasted RH and CH large container TRU waste resulting from CERCLA cleanup decision and subsequent actions.

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