

2902Z (Water Tower) Demolition Report

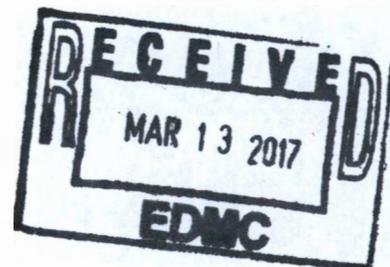
As Left Characterization

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

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788



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Richland, Washington 99352



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Revision	Description of Change – Replace, Add, and Delete Pages	Month/Year
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Terms

ACM	asbestos-containing material
CDF	control density fill
PFP	Plutonium Finishing Plant
S&M	Surveillance and Maintenance

1 Introduction

The purpose of this report and addendum is to provide information that will support the following activities:

- Document that the applicable actions required by HNF-22401, *Plutonium Finishing Plant (PFP) Complex End Point Criteria* (also referred to by the document number NMS-16404), have been met.
- Prepare an overall turnover package documenting the “as left” condition of the Plutonium Finishing Plant (PFP) site that will be transitioned to surveillance and maintenance.
- Develop a removal action report for the PFP *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* removal action.
- Provide reference information for follow-on activities associated with the site.

This report provides the “as left” condition of the PFP Elevated Water Storage Tank - Tower and Valve Pit, identified as 2902Z, and to compile information relating to endpoint compliance consistent with HNF-22401.

The PFP Elevated Water Storage Tank (2902Z) was designed to store and control the pressure of water servicing the sanitary water lines and fire suppression system. The PFP Elevated Water Storage Tank was part of the PFP Complex located in the 200 West Area of the Hanford Site in southeastern Washington State and was removed under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* removal actions. The work on 2902Z was performed in accordance with DOE/RL-2005-13, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action*. Work was implemented in accordance with DOE/RL-2005-15, *Removal Action Work Plan for Plutonium Finishing Plant Above Grade Structures Ancillary Facility Demolition*.

Demolition of the PFP Elevated Water Storage Tank and stabilization of the Valve Pit occurred in 2005. The actions taken to complete deactivation, decontamination, decommissioning, and demolition and comply with the endpoint criteria defined in HNF-22401 were documented in the associated work packages but the sites were never formally transferred to the Surveillance and Maintenance (S&M) organization. Additionally, HNF-22401 requires that pertinent information about the remaining slab be part of the final turn over package for transition to S&M. The purpose of this document is to compile that information in preparation for transfer to S&M. Endpoint compliance with HNF-22401 is documented in CWR-PFP-00003-ADD1, *2902Z Endpoint Documentation*.

2 Building Description

The Water Tower (2902Z) was located at the north end of the PFP Complex and provided water storage for the PFP complex fire suppression and sanitary water supply. A valve pit is also located direct under the water tower, below-grade.

The PFP Elevated Water Tower had been removed from service in the mid-1990s and the tower drain to the storm sewer was isolated as well. Demolition of the water tower and valve pit was initiated in March 2005 and completed in June 2005.

2.1 2902Z Elevated Water Storage Tank – Tower

The PFP Elevated Water Storage Tank - Tower (Figure 1) was approximately 44.2 m (145 ft) high and constructed of steel. The tower was located inside the PFP fenced area.

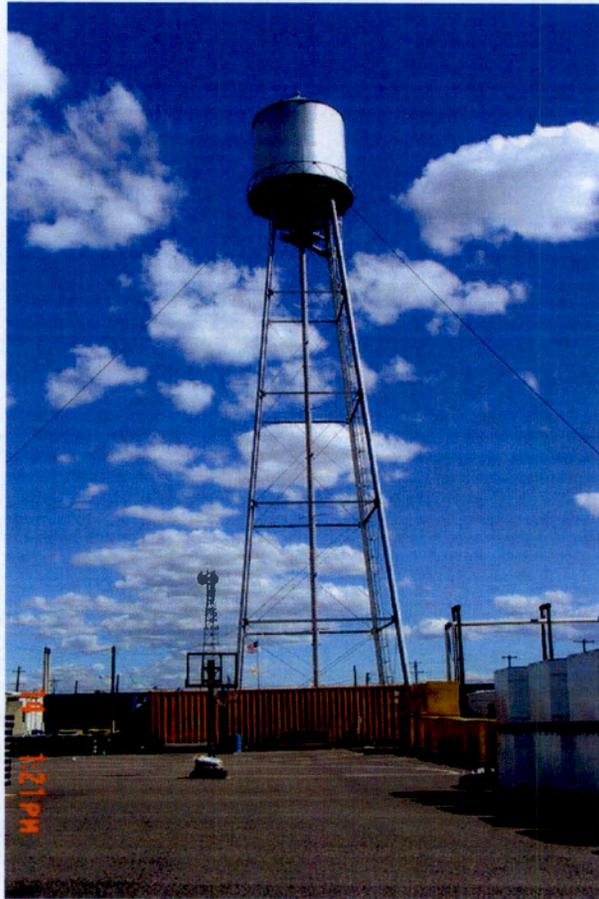


Figure 1. PFP Elevated Water Storage Tank

2.2 2902Z Valve Pit

The 2902Z valve pit is approximately 800 ft³ and was constructed when the tower was erected (1948). The valve pit housed all of the required pumps and piping to direct the flow of water from the water tower to the PFP facilities (Figures 2 through 5). The valve pit was constructed using reinforced concrete and measures 11ft by 14ft by 6 ft. The valve pit was located inside the PFP fenced area at longitude/latitude 119.63334/46.55131.



Figure 2. PFP Water Tower Valve Pit Abated Piping



Figure 3. PFP Water Tower Valve Pit Piping

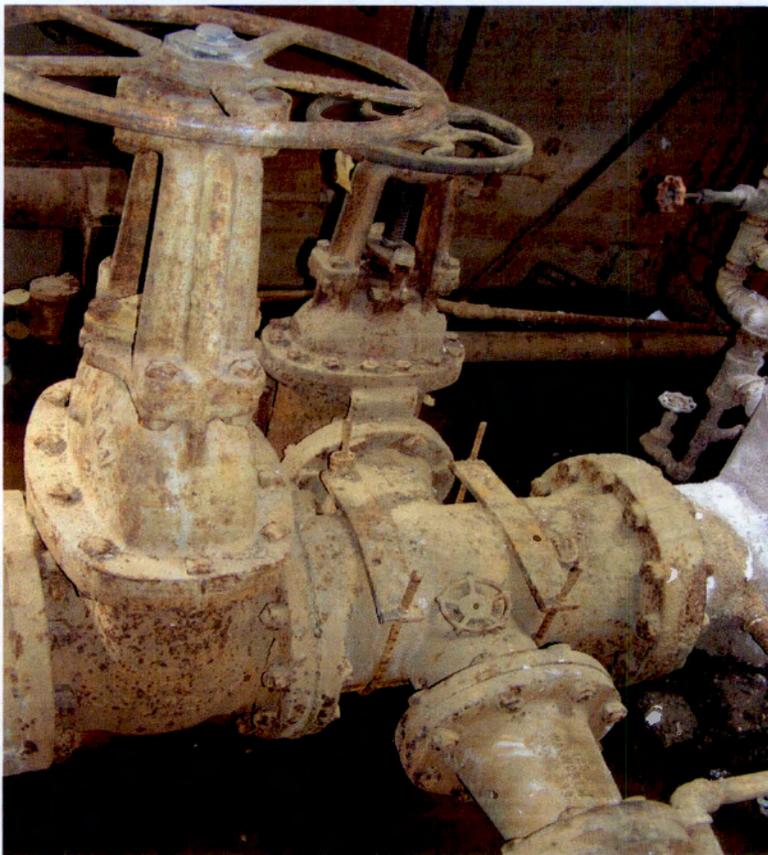


Figure 4. PFP Water Tower Valve Pit Isolations

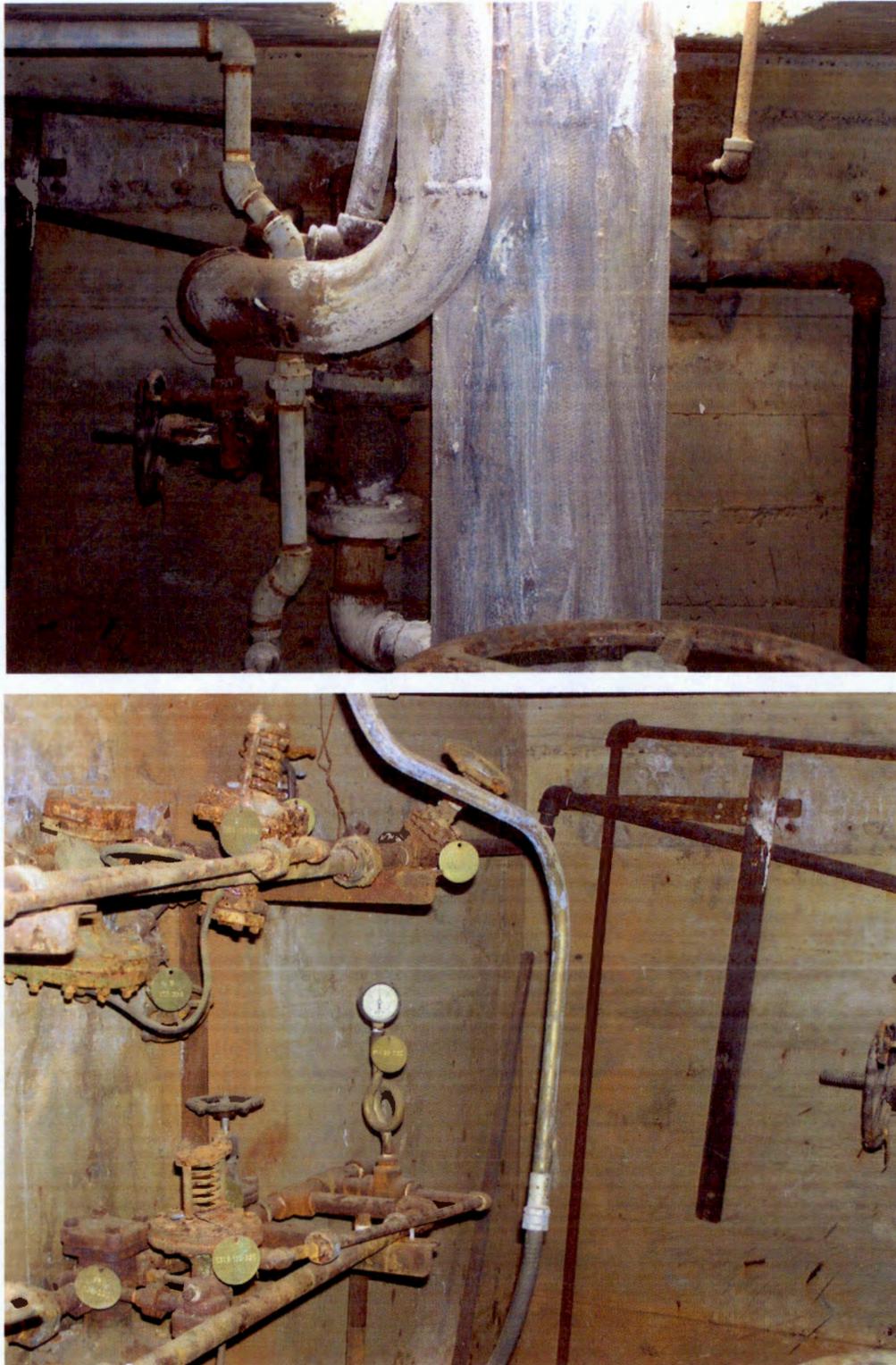


Figure 5. PFP Water Tower Valve Pit

3 Preparation and Demolition

The demolition of the Water Tower was performed under work packages 2Z-05-01640, *D&D 2902 Water Tower* and 2Z-04-07341, *D&D 2902-Z Water Tower Pit*. As part of the preparation for demolition, the building was characterized, verified electrically and mechanically isolated, and cleaned out of hazardous materials.

3.1 Pre-Demolition Characterization

As part of the preparation for demolition, the facility was characterized to prepare for demolition. The following aspects were subject to evaluation for the facility: asbestos, inorganic lead, waste disposal, and radiological contamination.

- Asbestos removal and abatement for both the water tower and the valve pit below was completed prior to final back filling of the valve pit.
- Lead paint was identified when sampling the tower but determined not sufficient to impact waste designation of the structure.
- The Water Tower was surveyed for radiological contamination. No contamination was documented in the valve pit. Spot contamination on the water tower associated with roosting birds was identified on an elevated portion of the tower.

3.2 Cold and Dark Process

The piping in the Valve Pit was verified/drained and isolated per work package 2Z-04-06862, *Remove Steam Valve and Blank Off Steam Leg*. For worker protection lead paint and insulation was removed from the water tower structure prior to demolition at pre-determined pipe cut locations 15.24 cm (6 in.) on either side of the cutting locations. All piping leaving the valve pit was drained and verified isolated prior to stabilization (Figure 6).



Figure 6. Sanitary Water Air Gap within Valve Pit

3.3 Demolition, Post-Demolition Walkdown, and Document Review

The water tower was disassembled (Figure 7) using the critical lift plan contained in work package 2Z-05-01640, and the valve pit was filled with control density fill (CDF) by work package 2Z-04-07341. The demolition and stabilization was uneventful.



Figure 7. PFP Water Tower Disassembly

4 As-Left Condition

This chapter summarizes the overall status of the site and provides pertinent information associated with the site.

4.1 As-Left Description

The facility was left in a clean slab-on-grade condition with all penetrations sealed. The valve pit was filled with CDF and the access points covered with gravel. No below-grade contamination was detected during the stabilization and the slab surveyed as free of radiological contamination.



Figure 8. PFP Water Tower Slab

4.1.1 Key Documentation and Drawings

Do to the inactive status of the 2902Z valve pit, there are no drawings that would be deemed “Essential” or “Support” per current engineering configuration management requirements. The following historical drawing is provided to assist any future site remediation activities.

- H-2-13106, *50,000 Gal. Elevated Water Storage Tank Valve Pit & Tank Foundation Plan & Details*, provides details regarding the foundation of the valve pit.

4.1.2 Industrial Safety Hazards

The water tower valve pit was a confined space. The hazards associated with the confined space were eliminated upon filling with CDF. No unusual hazards are known to exist with the existing site.

4.1.3 Site Characterization

The water tower supported the potable water system associated with PFP until the early 1990s, as such, no radiological contamination within the below-grade was anticipated and no detail survey was documented. The non-radiological condition was confirmed by analysis of water that was be removed from the pit. Three water samples indicated less than detection levels for gross alpha (<3 pCi/L) and gross beta measurement was typically <15 pCi/L well below drinking water screening levels of 50 pCi/L. Based

on the historical use of the area it was not evaluated for beryllium. Asbestos-containing material (ACM) associated with insulation in the valve pit was abated prior to filling with CDF. Category 1 ACM associated with valve packing and piping flange gaskets associated with the remaining piping that is encased in CDF can be assumed to be present. The only hazardous items noted in the pit were lead crimps on instrument tags, which were removed prior to filling the pit.

4.2 Endpoint Objectives

Table 1 discusses the ten measurable objectives outlined in Section VI of HNF-22401 that define the "clean slab-on-grade" objective reviewed as part of the post-demolition document review and walkdown of the site.

Table 1. Clean Slab-on-Grade Objectives

Objective	Status	Comment
1. Above-grade structures are removed.	Met	No comment.
2. Below-grade portions of buildings will be emptied and stabilized.	Met	Filled with CDF and openings filled with gravel
3. Buried pipes and ducts will be drained and sealed.	Met	All piping breached during deactivation and backfilled with CDF.
4. The portion of concrete slab that is exposed to the weather shall be free of dispersible radiological contamination.	Met (subject to change)	The slab is near the 234-5Z demo zone and will need further evaluation.
5. The exposed surface of the slab shall be free of tripping and puncture hazards.	Met	The raised curb around the hatch to the below-grade is not considered a tripping hazard.
6. The exposed surface of the slab shall be suitable for exposure to the weather for at least 20 years.	Met	No comment.
7. Subsurface radiological areas will be posted per regulations.	Met	No below-grade radiological contamination noted.
8. All penetrations through the slab (e.g., piping, conduits) shall be sealed with grout or equivalent suitable for exposure to the weather for 20 years.	Met	All penetrations sealed with CDF.
9. All wastes are removed.	Met	No comment.
10. No exposed surface soil contamination areas are allowed.	Met	No below-grade radiological contamination noted.

CDF = control density fill

4.3 Administrative Endpoints

Since 2902Z is located inside the PFP inner fence and is in what could be considered in a pre-final condition, the applicable 2902Z administrative endpoints specified in HNF-22401 were evaluated in Table 2 and documented in the following sections. This evaluation is intended to support the final overall PFP endpoint administrative requirement evaluation, which will be documented at a later date.

Table 2. Administrative Endpoint Review

Checklist #	Item ^a	Description ^a	Applicability/ Documentation
Admin-1	Complete/close outstanding audit findings and occurrence reports.	A review of facility and site action tracking systems and open occurrence reports will be conducted and items will be addressed and closed.	Not applicable ^b
Admin-2	Document configuration management performed in accordance with site standards.	The final configuration of the PFP Complex will be reviewed against controlled drawings to verify proper incorporation of structure and utility modifications/isolations.	See Section 4.1.1
Admin-3	Provide essential drawings and a list of all facility drawings necessary for S&M.	This endpoint will be done in conjunction with the development of the draft S&M Plan. The essential drawing list will be updated to reflect the condition of the PFP Complex area at the end of the project. A separate list containing both the essential drawing and those required to support S&M.	See Section 4.1.1
Admin-4	Document remaining industrial hazards and compliance with industrial safety requirements.	This endpoint compiles the individual endpoints into one report reflecting the remaining industrial hazards.	Not applicable ^b
Admin-5	Document compliance with confined space program.	This endpoint compiles the individual endpoints into one report reflecting the remaining confined spaces.	None remain, see Section 4.1.2
Admin-6	Document compliance with the asbestos program.	The post demolition condition of the PFP Complex will be assessed for compliance with the site asbestos program.	Not applicable ^b
Admin-7	Document amount and location of remaining hazardous substances and/or dangerous wastes.	This endpoint compiles the individual endpoints into one report reflecting the remaining hazardous substances/dangerous wastes.	None, see Section 4.1.3
Admin-8	Complete and provide current FHA.	An FHA will be completed reflecting the endpoint condition of the PFP Complex.	Not applicable ^b
Admin-9	Transfer facility physical property records.	The property records for the PFP Complex will be updated as the transition & dismantlement effort removes excess and or disposes of property.	Not applicable ^b

Table 2. Administrative Endpoint Review

Checklist #	Item ^a	Description ^a	Applicability/ Documentation
Admin-10	Provide an S&M plan.	The transition & dismantlement project/contractor has the historic and current knowledge of the PFP Complex. Therefore, they will develop an S&M plan for the S&M organization. The oncoming project/contractor has the responsibility to release the S&M plan under their document release procedures.	None required for 2902Z slab
Admin-11	Provide a current/updated building emergency plan.	The PFP Complex building emergency plan will be updated (or cancelled) to reflect the endpoint condition.	Not applicable ^b
Admin-12	Provide S&M procedures and files.	Procedures utilized by the transition & dismantlement project/contractor to conduct surveillance and maintenance at the end of the project will be copied and placed in the completion package files.	Not applicable ^b
Admin-13	Provide identified regulatory commitments and regulatory documentation.	The transition & dismantlement project/contractor has the historic and current knowledge of the PFP Complex existing commitments and documentation. As such, the transition & dismantlement project/contractor will compile outstanding commitments and documentation to support the S&M organization to complete the commitments/documentation. These along with recently (within the last year of the project) completed commitments documentation (closure/completion letters) will be included in the completion package files.	Not applicable ^b
Admin-14	Transfer classified documents to repository.	All classified documents will be removed from the PFP Complex and placed in a site approved repository.	Not applicable ^b
Admin-15	Verify transition and dismantlement completion package contents are complete.	This is a final review of the document log for the completion package files. This will ensure the intended documentation provided in the files have not been removed or checked out and not returned.	Not applicable ^b
Admin-16	Provide existing regulatory permitting documentation.	The remaining regulatory permits and supporting documentation will be compiled and provided to the S&M organization.	Not applicable ^b

Table 2. Administrative Endpoint Review

Checklist #	Item ^a	Description ^a	Applicability/ Documentation
Admin-17	Compile available historical data including chemical and plutonium spills, holdup, releases, and constituents associated with building processing to support final remediation.	This endpoint is designed to capture useful information on the remaining structures/systems that has been kept by facility personnel (i.e., engineers, health physics, operations) and is not available through other sources prior to their leaving the facility. These data will be compiled and placed in the completion package files. Documentation already maintained by the Hanford Site document control system and/or libraries will be referenced only.	Not applicable ^b

a. Description is originated from HNF-22401, *Plutonium Finishing Plant (PFP) Complex End Point Criteria*.

b. These administrative criteria are not separately evaluated for 2902Z. All criteria will be addressed globally in the turnover package to Central Plateau S&M, and this documents supports that evaluation.

FHA = fire hazards analysis

PFP = Plutonium Finishing Plant

S&M = Surveillance and Maintenance

4.4 Endpoint Documentation

Endpoint documents were utilized in preparing and implementing the stabilization in 2006. The endpoints applicable to 2902Z are addressed in Appendix A of CWR-PFP-00005-ADD1; supporting documentation is provided in Appendix B.

5 References

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