

241ZRB Retention Basin (207Z) Demolition Report

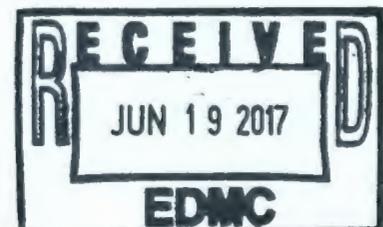
As Left Characterization

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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Terms

ACM	asbestos-containing material
CDF	control density fill
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
FHA	fire hazards analysis
NDA	nondestructive assay
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 (S&M).
- Develop a removal action report for the PFP *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) removal action.
- Provide reference information for follow-on activities associated with the site.

This report provides the as-left condition of the PFP retention basin and valve pit, identified as 241ZRB, and compiles information relating to endpoint compliance consistent with HNF-22401.

241ZRB was designed to control the flow of waste water that might contain radionuclides resulting from failure of designed barriers. Twin basins allowed sampling of the waste water before release to surface discharge sites. 241ZRB was part of the PFP Complex, located in the 200 West Area of the Hanford Site in southeastern Washington State, and it was removed under the CERCLA removal actions. Work on 241ZRB 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*.

Stabilization of 241ZRB occurred in 2006. Actions required to complete deactivation, decontamination, decommissioning, and demolition of 241ZRB to comply with the endpoint criteria defined in HNF-22401 were documented in CWR-PFP-00005-ADD1, *241ZRB Endpoint Documentation*. HNF-22401 also requires pertinent information about the remaining slab to be part of the final turnover package for transition to S&M.

2 Building Description

The basins were located in the southeast corner of the PFP Complex and provided a holding and sampling area of waste water associated with the PFP Complex. The retention basins themselves were two side by side concrete structures, approximately 40 ft long by 22.5 ft wide by 10 ft deep. The operating volume for each basin is roughly 8,550 ft³, for a total of about 17,100 ft³. A valve pit is also located at the west side of the basins, below-grade, in a covered vault.

Stabilization of 241ZRB (basins and valve pit) was initiated in September 2005 and completed in August 2006.

2.1 241ZRB – Retention Basins

The 241ZRB (Figure 1) volume was approximately 17,100 ft³, and it was constructed in 1948 using reinforced concrete. The building was located inside the PFP fenced area at longitude/latitude 119.63183/46.54931.

Historically the facility has been referred to as 207Z since similar basins at other Hanford Site facilities (e.g., U Plant and B Plant) were designated with a 207 number. The official name is 241ZRB.



Figure 1. PFP Retention Basin and Valves Before Demolition

2.2 241ZRB – Valve Pit

The retention basin valve pit has an internal volume of approximately 2,200 ft³ and was constructed at the same time and adjacent to the retention basin (1948). The valve pit housed all of the required pumps and piping to direct the flow of waste water through the retention basins. The valve pit was constructed using reinforced concrete and measures 11 ft deep. Figures 2 through 4 provide different views of the valve pit.



Figure 2. PFP Retention Basin Valve Pit Surface Level Before Demolition



Figure 3. PFP Retention Basin Valve Pit Entrance Hatch



Figure 4. PFP Retention Basin Valve Pit

3 Stabilization Preparation

Stabilization of 241ZRB was performed under two work packages (2Z-05-05336, Characterize the 241ZRB Retention; 2Z-06-00204, 241-ZRB Motor Removal/Grout Fill of Vault). As part of the preparation for stabilization, the building was characterized, electrically, mechanically isolated, and cleaned out of hazardous materials. A prestabilization walkdown was performed to ensure that necessary prestabilization actions were complete.

3.1 Prestabilization Characterization

The facility was characterized to prepare for stabilization. The following aspects were subject to evaluation for the facility (asbestos, waste disposal, and radiological contamination):

- An asbestos work permit issued prior to mechanical isolation was performed in the valve pit noting that no asbestos was present in the pit.
- Both the north and south basins were characterized through a radiological survey.
- The valve pit was characterized by nondestructive assay (NDA) in conjunction with work package 2Z-05-07530, *Perform 241-ZRB Valve Pit NDA* (CWR-PFP-00005-ADD1, Appendix B).

The radiological survey conducted on the retention basins found no significant contamination in the south basin. The radiological survey conducted on the north basin found spot contamination. Areas of removable contamination ($>2,000$ dpm/cm²) were detected in the southeast corner of the basin. The following day, a secondary survey was completed that noted the application of latex fixative to the surveyed contamination. Further documentation is included in CWR-PFP-00005-ADD1.

NDA conducted on the valve pit piping and pumps determined that the remaining material was low-level waste. A copy of the NDA letter is included in Appendix B of CWR-PFP-00005-ADD1.

3.2 Cold and Dark Process

As part of the cold and dark process in preparation for stabilization of the facility, electrical feeds to the facility were isolated, air gaped, and sealed per work package 2Z-05-04443, *241-Z Electrical Vault and Valve Pit Entry*.

Piping in the valve pit was verified/drained and isolated per work package 2Z-05-07533, *Mechanical Isolation of 241-ZRB Valve Pit*. The pump grease/lubrication lines were also drained in preparation for stabilization.

Results for each activity in the cold and dark process were documented in each respective work package for the valve pit and can be referenced from documentation included in CWR-PFP-00005-ADD1.

3.3 Demolition Document Review

The fence and loose debris were removed from the north and south basins. The basins and valve pit were filled with control density fill (CDF) by work packages 2Z-05-05336 (basin) and 2Z-06-00204 (valve pit). Composition of the CDF can be found in Appendix B of CWR-PFP-00005-ADD1. Waste from the valve pit stabilization and above-grade equipment was sent to the Environmental Restoration Disposal Facility. A contamination control cap was installed by work package 2Z-06-00380, *Install 241-ZRB Contamination Control Cap*.

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 (Figure 5), with all penetrations sealed, and the waste site was entered into the Waste Information Data System as 207Z.

4.1.1 Key Documentation and Drawings

There are no drawings associated with 241ZRB that would be deemed “essential” or “support” drawings per current engineering configuration management requirements. The following drawings could be considered historical information:

- H-2-16022, *Retention Basin*, provides the details of the retention basin, valve pit foundation, and structural design.
- H-2-16422, *Waste Disposal Facilities Retention Basin*, provides details regarding the piping layout and valve operations for 241ZRB.

4.1.2 Site Radiological and Hazardous Material Characterization

There is no known unique radiological or chemical hazard associated with the slabs. There is no significant holdup identified in either the valve pit or the basins themselves.



Figure 5. 241ZRB Facility after Stabilization

4.1.3 Industrial Safety Hazards

No industrial safety hazards were identified during a walkdown of the site performed during preparation of this report.

4.1.4 Surveillance and Maintenance Considerations

At the time of this report, there are no special S&M requirements associated with the site.

4.1.5 Regulatory Information

There are no site-specific regulatory requirements associated with the site.

4.2 Endpoint Objectives

Table 1 discusses 10 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 capped with concrete slab.
3. Buried pipes and ducts will be drained and sealed.	Met	All piping breached during deactivation and backfilled with CDF.

Table 1. Clean Slab-on-Grade Objectives

Objective	Status	Comment
4. The portion of concrete slab that is exposed to the weather shall be free of dispersible radiological contamination.	Met (subject to change)	The current slab has been used for waste storage and the slabs is in close proximity to the 236Z demolition zone and will need further evaluation.
5. The exposed surface of the slab shall be free of tripping and puncture hazards.	Met	Slab poured on top of existing basin.
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	Posted as part of the PFP fenced area.
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 comment.

4.3 Administrative Endpoints

241ZRB is located inside the PFP inner fence, near the 236Z demolition boundary, so the slab may not be considered to be in a final condition. The administrative endpoints specified in HNF-22401 applicable to the basin were evaluated in Table 2, and applicable items are documented in the following section.

Table 2. Administrative Endpoint Review

Checklist Number	Item ^a	Description ^a	Status
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 specifically applicable ^a
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.	Not specifically applicable ^a
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	Not specifically applicable ^a

Table 2. Administrative Endpoint Review

Checklist Number	Item ^a	Description ^a	Status
		containing both the essential drawing and those required to support S&M.	
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 specifically applicable ^a
Admin-5	Document compliance with confined space program.	This endpoint compiles the individual endpoints into one report reflecting the remaining confined spaces.	Not specifically applicable ^b
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.	No ACM is known to be associated with site. Pipe gaskets were determined not to be ACM.
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.	See Section 4.1.2.
Admin-8	Complete and provide current FHA.	An FHA will be completed reflecting the endpoint condition of the PFP Complex.	Not specifically 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 specifically applicable ^b
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.	Not specifically applicable ^b
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 specifically applicable ^b
Admin-12	Provide S&M procedures and files.	Procedures utilized by the transition & dismantlement project/contractor to conduct S&M at the end of the project will be copied and placed in the completion package files.	Not specifically applicable ^b

Table 2. Administrative Endpoint Review

Checklist Number	Item ^a	Description ^a	Status
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 specifically 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 specifically 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 that the intended documentation provided in the files has not been removed or checked out and not returned.	Not specifically 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 specifically applicable ^b
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 (e.g., engineers, health physics, operations) and is not available through other sources prior to their leaving the facility. The 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.	See Section 4.1.2

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

b. These administrative criteria are not separately evaluated for 241ZRB. All criteria will be addressed globally in the turnover package to Central Plateau S&M, and this documents supports that evaluation.

ACM = asbestos-containing material

FHA = fire hazards analysis

4.4 Endpoint Documentation

An endpoint checklist was utilized to prepare and implement stabilization in 2006. A copy of a completed checklist could not be located. The endpoints applicable to 241ZRB are addressed in Appendix A, and supporting documentation is provided in Appendix B of CWR-PFP-00005-ADD1.

5 References

- 2Z-05-04443, 2005, *241-Z Electrical Vault and Valve Pit Entry*, Fluor Hanford, Inc., Richland, Washington.
- 2Z-05-05336, 2005, *Characterize the 241ZRB Retention Basin*, Fluor Hanford, Inc., Richland, Washington.
- 2Z-05-07530, 2005, *Perform 241-ZRB Valve Pit NDA*, Fluor Hanford, Inc., Richland, Washington.
- 2Z-05-07533, 2005, *Mechanical Isolation of 241-ZRB Valve Pit*, Fluor Hanford, Inc., Richland, Washington.
- 2Z-06-00204, 2006, *241-ZRB Motor Removal/Grout Fill of Vault*, Fluor Hanford, Inc., Richland, Washington.
- 2Z-06-00380, 2006, *Install 241-ZRB Contamination Control Cap*, Fluor Hanford, Inc., Richland, Washington.
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- DOE/RL-2005-13, 2005, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA00914134>.
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