



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

December 6, 2022

Bryan C. Bower
Director
West Valley Demonstration Project
U. S. Department of Energy
10282 Rock Springs Road
West Valley, NY 14171

SUBJECT: WEST VALLEY DEMONSTRATION PROJECT - U.S. NUCLEAR
REGULATORY COMMISSION MONITORING VISIT REPORT NO.
05000201/2022003

Dear Mr. Bower:

On October 4 – 5, 2022 the Nuclear Regulatory Commission (NRC) conducted an announced monitoring visit at the U.S. Department of Energy's West Valley Demonstration Project site to review ongoing decommissioning activities. The monitoring visit consisted of observations by the NRC representatives, review of documents, interviews with site personnel and site walkdowns supplemented by in-office reviews and periodic phone calls. The results of the monitoring visit were discussed with Mr. Jamie Prowse of your staff on November 14, 2022, and are provided in the enclosed report. No public health and safety issues of more than minor significance were identified.

No reply to this letter is required. Please contact me at (610) 337-6953 if you have any questions regarding this matter.

Sincerely,

Anthony Dimitriadis, Chief
Decommissioning, ISFSI, and Reactor Health
Physics Branch
Division of Radiological Safety and Security

Docket No. 05000201
License No. CSF-1

Enclosure:
Report No. 05000201/2022003

cc w/encl: Distribution via ListServ

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SUBJECT: WEST VALLEY DEMONSTRATION PROJECT - U. S. NUCLEAR REGULATORY COMMISSION MONITORING VISIT REPORT NO. 05000201/2022003 DATED DECEMBER 6, 2022

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OFFICE	DRSS/RI	DRSS/RI				
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DATE	11/28/2022	12/6/2022				

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

MONITORING REPORT

Monitoring Visit No. POOM-032/2022003

Project No. POOM-032

NRC Docket No. 05000201

NRC License No. CSF-1

Location: West Valley Demonstration Project
10282 Rock Springs Road
West Valley, New York 14171

Monitoring Visit Dates: October 4 – 5, 2022

Monitoring Visit Exit Date: November 14, 2022

NRC Staff: Katherine Warner, Senior Health Physicist
Decommissioning, ISFSI and Reactor
Health Physics Branch
Division of Radiological Safety and Security

Katherine Barnes, Health Physicist (training)
Decommissioning, ISFSI and Reactor
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Approved By: Anthony Dimitriadis, Chief
Decommissioning, ISFSI and Reactor
Health Physics Branch
Division of Radiological Safety and Security

Enclosure

EXECUTIVE SUMMARY

U.S. Department of Energy (DOE)
West Valley Demonstration Project (WVDP)
NRC Monitoring Visit Report No. 2022003

An announced monitoring visit was conducted on October 4 – 5, 2022 by U.S. Nuclear Regulatory Commission (NRC) staff at the DOE WVDP site in West Valley, New York supplemented by in-office reviews and periodic phone calls. NRC staff also participated in DOE quarterly public meetings held on August 24, 2022, and November 16, 2022. The monitoring visit included reviews of programs and activities associated with the West Valley site decommissioning project. The monitoring visit consisted of interviews with site personnel, a review of procedures and records, walkdowns of the facility, observations of prepared work areas and in-progress work activities. The program for conducting NRC monitoring visits at the WVDP is described in Inspection Manual Chapter (IMC) 0111, “Region I Monitoring Activities for the Department of Energy West Valley Demonstration Project.”

Based on the results of these activities, no public health and safety issues of more than minor significance were identified.

REPORT DETAILS

1.0 Introduction

In accordance with the WVDP Act of 1980 and as implemented by a Memorandum of Understanding between the DOE and the NRC, an announced routine monitoring visit was conducted on October 4 – 5, 2022 by NRC staff at the DOE WVDP site in West Valley, New York supplemented by in-office reviews and periodic phone calls. NRC staff also participated in the DOE quarterly public meetings on August 24 and November 16, 2022. The program for conducting NRC monitoring visits at the WVDP is described in IMC 0111. The monitoring visit included reviews of programs and activities associated with the WVDP site decommissioning project.

2.0 Annual Site Environmental Report

a. Inspection Scope

The NRC reviewed WVDP's Annual Site Environmental Report (ASER) for calendar year 2021 and discussed the report with DOE and DOE contractor personnel.

b. Observations and Findings

The radiological environmental monitoring program at the WVDP site focuses on measuring radioactivity from site activities in air, surface water, groundwater, food products, soil, and sediment. Direct radiation is also measured through a network of thermoluminescent dosimeters (TLDs) on the site and around the site perimeter. The monitoring program provides information about the environmental radiological conditions at the site and is intended to verify that public health and safety and the environment are protected and that relevant regulatory requirements have been met. The most recent ASER (issued September 2022) for the WVDP documents the calendar year 2021 environmental monitoring program data. Air and surface water pathways are the primary means by which radioactive material could potentially migrate to areas off site. The WVDP's on- and off-site monitoring program includes measuring the concentration of alpha and beta radioactivity in air and water effluents as well as specific radionuclide measurements in all environmental media.

Relevant radiological dose limits for the WVDP include U.S. Environmental Protection Agency (USEPA) regulations for air emissions and DOE limits regarding all exposure modes from DOE activities. Radiological air emissions (other than radon) from DOE facilities are regulated by the USEPA under the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation (Title 40 *Code of Federal Regulations* (CFR) 61, Subpart H), which establishes a standard of 10 millirem/year effective dose equivalent to any member of the public (via the airborne pathway). In 2015, the USEPA gave final approval for WVDP's use of ambient air monitoring data to demonstrate compliance with the NESHAP regulations and stack effluent measurements were no longer required. DOE established sixteen low-volume ambient air samplers surrounding the site, one in each of the sixteen compass point sectors, and used the radiological analysis of air sampler filters and modeling assumptions to demonstrate compliance with the NESHAP regulations. DOE Order 458.1 sets the DOE primary standard of 100 millirem/year effective dose equivalent for members of the public considering all exposure modes from DOE activities. For 2021, information in the ASER indicates that

the estimated dose to a member of the public was less than 0.55 millirem/year from all WVDP sources. The ASER continued to document elevated Strontium-90 (Sr-90) concentrations in groundwater and groundwater surface seeps from the area north of the Permeable Treatment Wall (PTW). NRC staff noted that the 2021 ASER documented the elevated monitoring well reading at station 4 (PTW-S4C-S) as previously described in NRC Monitoring Report 2022002. The results from direct radiation measurements from perimeter TLD locations were not significantly different as compared to background levels.

c. Conclusions

No offsite public health and safety issues were identified. Calculated doses from radiological air and liquid effluents were well below EPA or DOE limits. At the time of the monitoring visit, the site was in the process of determining next steps for the PTW; the NRC will continue to review PTW performance during future visits.

3.0 Main Plant Process Building (MPPB) Demolition

a. Inspection Scope

The MPPB was the main facility used for commercial nuclear fuel reprocessing; the MPPB was built between 1963 and 1966 and used by Nuclear Fuel Services from 1966 to 1972. The building consists of a series of cells, aisles, and rooms that are mostly above grade with a couple extending below ground surface. Portions of the MPPB were modified over the past four decades by the WVDP to support mission activities such as solidifying high-level waste.

The NRC reviewed DOE's MPPB Demolition Readiness Assessment and MPPB demolition activities. The monitoring visit consisted of interviews with DOE staff and contractor personnel, including discussions with cognizant personnel on the demolition activities. NRC staff performed walk-downs of the site, including around the outside of the MPPB, the rail operations area, the remote-handled waste facility, the water management system, including the series of frac tanks, and waste preparation and load out areas.

b. Observations and Findings

From September 6 – 13, 2022, DOE conducted its readiness assessment for MPPB Demolition. DOE identified six findings, including two prestart findings, two team recommendations for follow up action, and eight comments. A finding is defined in the assessment as a determination of an individual item which is a direct deviation to, is an omission of, or is in noncompliance with an established requirement and which needs correction. DOE requires its contractors to provide a response for findings. A concern is defined in the assessment as a determination of a programmatic breakdown or widespread problem by one or more findings. The NRC noted that no concerns were identified during this readiness assessment. The NRC noted that the two prestart findings had been satisfactorily resolved prior to the start of demolition. The readiness assessment team recommended that CH2M HILL BWXT West Valley, LLC (CHBWV) be given authorization to start MPPB demolition with several caveats, including that CHBWV not be authorized to commence any activities associated with post-start findings until resolutions have been approved by DOE. NRC staff plans to review

remaining finding resolutions during future monitoring visits but noted that none are of immediate concern.

In September 2022, CHBWV began the phase of its contracted work to demolish the MPPB to grade level (100 +/- 3 ft) safely. All below-grade structures were previously grouted with controlled low-strength material in preparation for demolition activities. During the monitoring visit, WVDP was several weeks into demolition activities. NRC staff observed demolition activities of the upper warm aisle. NRC staff noted appropriate use of dust suppression, which is one of the protected assumptions in the work instruction package (WIP). NRC staff reviewed a sampling of required radiological and contamination surveys, air samples, and weekly berm inspection sign offs (September 26, October 3, and October 10, 2022) and verified that they were performed in accordance with the WIP with acceptable results.

As described in Monitoring Report 2022002, a series of both environmental continuous air monitors (ECAMs) and fixed air samplers (FASs) are around the perimeter of the expected demolition area to assess airborne releases and potential inhalation exposure to demolition workers. The continuous air monitor outputs are fed to a central monitoring location (control room) near the project where radiation protection staff provide constant monitoring providing near-real time measurements of airborne radioactivity levels. Additionally, there are several closed-circuit television cameras on the project site which are used to observe ongoing work activities, and which can be used to inform monitoring personnel of potential causes if elevated readings of the ECAMs are indicated. Appendix C of the Work Instruction Package in use at the time of the visit described Radiological Controls for MPPB Demolition. Section 7.2 stated “a minimum of 12 Mirion ECAMs shall be operating during demolition activities and shall be operating during waste load out” and section 7.2.1 stated “ECAM's status shall be continuously monitored by a Radiological Controls Technician (RCT) during demolition activities and waste load-out.” Section 3.4 of DCIP-106, “Document Control Implementing Procedures” classifies any procedure without prior classification as administrative. Section 3.4.2 states “Managers, originators, or other personnel authorized by the manager/originator, may provide field instructions that provide clarification of work steps that are within the scope of the work and hazard controls.”

During the monitoring visit, 3 ECAMs remained functional, but were not communicating with the mesh network and therefore could not be monitored using typical means by the radiation controls personnel in the central monitoring location. The CHBWV Radiation Safety Manager used the flexibility allowed by the “administrative” classification of the work instruction package to provide instructions to clarify the definition of “continuous monitoring” to utilize a combination of camera surveillance and roving RCTs to meet the “continuously monitoring” requirement in section 7.2.1. The NRC noted that the demolition activities conducted during this time were of low-risk significance and the mesh network was reestablished prior to conducting higher risk demolition activities.

The NRC reviewed a DOE approved field change dated October 27, 2022, made to the WIP, in part, to add, change, and clarify ECAM provisions. The contractor requested and received approval from DOE to replace language in Appendix C, “Radiological Controls,” including the following:

1. A definition of Primary ECAMs was added.
2. Clarified that a CAM is considered functional with a local read out.
3. Added language defining two methods by which ECAMS shall be

continuously monitored: (1) by the wireless mesh system (Horizon®) or (2) by physically checking the ECAM reading and reporting the reading at the control at a frequency of 15 minutes, not to exceed 30 minutes.

4. Added language clarifying that the additional Mirion® ECAMs are considered running spares and are not required for demolition activities.
5. Added provisions in the “Abnormal Conditions” section on required actions if a Primary ECAM(s) is not functioning and cannot be restored in 15 minutes or if a Primary ECAM(s) is not communicating with the control room.

The NRC determined that the actions taken by WVDP was acceptable for ensuring public health and safety given the low-risk significance of activities being conducted while the mesh network was down during the monitoring visit and that an appropriate change has since been made. However, the NRC noted that the best management practice for ECAMs is described in WVDP-602, “Main Plant Process Building (MPPB) Demolition Contamination and Radiological Air Monitoring Plan.” WVDP-602 is presented as “a best management practice on the general concept, approach, equipment, locations, and frequencies to manage radioactive contamination and airborne radioactivity during MPPB demolition.” Specifically, section 6.2.1 states “ECAMs provide continuous data to a central monitoring location. The ECAMs are monitored by dedicated individual(s) capable of taking actions to limit exposures to personnel. The monitoring location is considered “at the controls” area to limit distractions.” The NRC noted that central monitoring of ECAMs would likely provide for the most expedient response to any alarms that lose communication with the control room. The NRC noted that the site has not reported any additional issues with the ECAMs since the monitoring visit.

c. Conclusions

No public health and safety issues of more than minor significance were identified.

4.0 Public Meetings

DOE WVDP Quarterly Public Meetings

NRC staff also participated in the DOE quarterly public meetings on August 24 and November 16, 2022. During the public meeting, DOE staff, DOE contractors, and NYSERDA representatives provided updates on the progress of various project milestones. The NRC noted that the August 24th meeting was conducted via an online format due to the ongoing COVID-19 PHE.

5.0 Exit Meeting Summary

The NRC Region I representative discussed the monitoring visit results with Mr. Jamie Prowse of the West Valley Demonstration Project staff on November 14, 2022.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Department of Energy Staff and Contractors

J. Ebert, Waste Operations Supervisor
B. Freaney, Work Group Supervisor
S. Gernatt, Radiological Engineer
D. Gray, Facility Representative
S. McCabe, Facility Representative
J. Prowse, DOE Contractor
J. Nehl, RadCon Supervisor
A. Steiner, Principal Environmental Regulatory Specialist

PARTIAL LIST OF DOCUMENTS REVIEWED

Monthly WVDP Project Performance Reports (various)
Weekly WVDP Project Status Reports (various)
2021 Annual Site Environmental Report, September 2022
A22-015E, Main Plant Process Building (MPPB) Demolition DOE Readiness Assessment,
September 13, 2022
DCIP-106, Document Control Implementing Procedures, Revision 10
WVDP-602, Main Plant Process Building (MPPB) Demolition Contamination and Radiological
Air Monitoring Plan, Revision 2
W1904751, Work Instruction Package Main Plant Process Building Demolition, Field Change 1
Radiation and Contamination Survey Reports, Various
084-DLVR-102622, Contract No. DE-EM0001529, Section J-3, Item 84, "Resubmittal of
W1904751 Field Change 3, Main Plant Process Building Demolition," October 27, 2022

LIST OF ACRONYMS USED

ASER	Annual Site Environmental Report
CHBWV	CH2M HILL BWXT West Valley, LLC
CFR	<i>Code of Federal Regulations</i>
DOE	Department of Energy
ECAM	Environmental Continuous Air Monitor
FAS	Fixed Air Sampler
IMC	Inspection Manual Chapter
MPPB	Main Plant Processing Building
NRC	Nuclear Regulatory Commission
NESHAP	National Emission Standards for Hazardous Air Pollutants
PTW	Permeable Treatment Wall
RCT	Radiological Controls Technician
Sr-90	Strontium-90
TLD	Thermoluminescent Dosimeters
USEPA	U.S. Environmental Protection Agency
WIP	Work Instruction Package
WVDP	West Valley Demonstration Project