

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION I 475 ALLENDALE ROAD KING OF PRUSSIA, PENNSYLVANIA 19406-1415

May 10, 2007

Bryan Bower, Director Department of Energy West Valley Demonstration Project 10282 Rock Springs Road P.O. Box 191 West Valley, NY 14171-0191

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION WEST VALLEY DEMONSTRATION PROJECT MONITORING VISIT 2007-001

Dear Mr. Bower:

On March 26-28, 2007, Robert Prince and Mark Roberts of this office conducted a routine monitoring visit at the Department of Energy's (DOE's) West Valley Demonstration Project (WVDP) to review the activities of West Valley Nuclear Services Company, Inc., the DOE contractor at the site. The purpose of the monitoring visit was to review historical quarterly groundwater trend analysis report data; implementation of corrective actions associated with the occurrence report program; building demolition status; and, radioactive material disposal activities. The results of this visit were discussed with you and other members of your staff on March 28, 2007. Details of this review are provided in the enclosed report.

Based on this activity, the monitors questioned whether the recommendations described in the quarterly groundwater trend analysis reports reviewed were consistent with the objectives of the WVDP Groundwater Monitoring Plan. DOE's plans to review this issue appeared appropriate. The monitors concluded that significant quantities of radioactive material over the recent period have been properly prepared for transport and safely transported offsite for disposal. Additionally, corrective actions in response to selected occurrence reports were effectively implemented.

Please contact me at (610) 337-5282 if you have any questions about this report.

Thank you for your cooperation.

Sincerely,

/**RA**/

Raymond K. Lorson, Chief Decommissioning Branch Division of Nuclear Materials Safety

Enclosure: Monitoring Report No. 2007-001 Bryan Bower, Director Department of Energy West Valley Demonstration Project 10282 Rock Springs Road P.O. Box 191 West Valley, NY 14171-0191

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B. Bower

cc: Paul Piciulo, Ph.D., Program Director, NYSERDA State of New York Herman Moore, Team Leader, DOE, WVDP

U.S. NUCLEAR REGULATORY COMMISSION REGION I

MONITORING REPORT

Monitoring Visit Number:	POOM-032/2007001
Project Number:	POOM-032
Location:	West Valley Demonstration Project 10282 West Spring Road West Valley, NY 14171-9799
Visit Dates:	March 26-28, 2007
Monitors:	Robert Prince Health Physicist Decommissioning Branch
	Mark Roberts Senior Health Physicist Decommissioning Branch
Approved by:	Raymond K. Lorson, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

U. S. Department of Energy (DOE) West Valley Demonstration Project

NRC Monitoring Report No. 07-001

This report summarizes the monitoring visit conducted over the period of March 26-28, 2007, at the West Valley Demonstration Project (WVDP). The purpose of the visit was to review historical quarterly groundwater trend analysis report data; implementation of corrective actions associated with selected occurrence reports; building demolition status; and, radioactive material disposal activities.

The NRC monitors interviewed cognizant personnel, performed field observations, and examined documentation during the visit. Based on this review, the monitors noted the following:

- The monitors questioned whether the recommendations described in the quarterly groundwater trend analysis reports reviewed were consistent with the objectives of the WVDP Groundwater Monitoring Plan. DOE's plans to review this issue appeared appropriate. Quarterly Groundwater Monitoring Reports are comprehensive and adequately track and trend analysis data. (Section II).
- Corrective actions developed in response to occurrence reports were comprehensive and implemented in a timely manner. A supplemental internal review of incidents, associated with the handling of radioactive material containers, was effectively utilized in response to similar events to ensure that generic issues were addressed, and appropriate corrective actions were identified and implemented to prevent recurrence. Lessons learned were also shared with other DOE and contractor sites where intermodal containers are commonly used. (Section III).
- Significant quantities of radioactive waste were properly prepared and safely shipped to approved disposal facilities in 2006. Utilization of rail shipments to support the disposal of drum cell waste containers should accelerate disposal of this waste stream. A schedule to support the disposal of three large components is planned for development in 2008. DOE was developing a plan to install a impermeable geomembrane over the NRC Licensed Disposal Area (NDA). (Section IV).

REPORT DETAILS

I. Introduction

This report documents the monitoring visit to the West Valley Demonstration Project (WVDP) on March 26-28, 2007. The purpose of the monitoring visit was to review historical quarterly groundwater trend analysis report data; implementation of corrective actions associated with selected occurrence reports; building demolition status; and, radioactive material disposal activities.

II. WVDP Groundwater Monitoring Program

A. Inspection Scope

The NRC monitors reviewed groundwater trend analysis report data for selected monitoring locations for the north plateau. The NRC monitors toured the north plateau area with a U.S. Department of Energy (DOE) representative. The tour included observations of key monitoring well locations, seepage sampling points, and hydro-geology characteristics influencing groundwater flow and infiltration.

The NRC monitors reviewed a summary of the north plateau groundwater monitoring program. DOE contractors routinely issue a quarterly groundwater trend analysis report. These quarterly reports summarize the results of groundwater monitoring data, provide a discussion of results obtained for a given monitoring location, and when necessary, offer recommended actions for specific monitoring locations. The monitors examined copies of applicable documentation from previous quarterly groundwater trend analysis reports for selected monitoring locations. The review included interviews with cognizant personnel, field observations, and examination of documentation.

B. <u>Observations</u>

The WVDP groundwater monitoring and analysis program is described in WVDP procedure WVDP-239, "Groundwater Monitoring Plan." As stated in the objective section of this procedure, the groundwater monitoring program establishes the overall framework for characterizing groundwater contamination and serves to monitor conditions and to support potential mitigative and long-term monitoring requirements. The groundwater monitoring plan (GMP) also serves to support DOE Order 450.1, "Environmental Protection Program."

Documentation for monitoring well location 105 was reviewed for the period covering the first quarter of 2001 through the fourth quarter of 2006. Over this period of time, strontium-90 (Sr-90) groundwater concentrations increased by almost a factor of twenty. The monitor noted that recommended actions over this period of time included continued routine monitoring and periodic increases of trigger levels for this monitoring location. The monitor questioned if these recommendations were consistent with the intent and objectives of the WVDP's groundwater monitoring plan. DOE representatives stated that they were currently conducting a review of

technologies and management approaches to address the north plateau groundwater plume and would review this issue.

DOE recently established a "Core Team" to address technical issues associated with the development of the WVDP Environmental Impact Statement (EIS). The Core Team includes representatives from various State and Federal regulatory agencies, DOE, and other stakeholders. One of the issues under consideration by the Core Team concerns the preferred strategy for remediation of the north plateau groundwater plume. Based on discussions with cognizant personnel, the Core Team plans to consider potential mitigative actions for the groundwater plume. Due to the complexity of the issue and involvement of responsible parties, the Core Team appears to be the appropriate avenue in which to address this matter.

C. <u>Conclusions</u>

DOE's plans to review groundwater monitoring report recommendations to ensure that they remain consistent with the intent and objectives of the GMP appeared appropriate. Quarterly Groundwater Monitoring Reports were comprehensive to adequately track and trend analysis data.

III. Corrective Action and Occurrence Reporting Program

A. Inspection Scope

The NRC monitors reviewed the implementation status and effectiveness of corrective actions for selected occurrence reports (ORs) that were reviewed during a previous monitoring visit. Cognizant personnel presented overviews of selected ORs including the status of corrective actions. The monitors reviewed various documents to verify that corrective actions were completed as specified. Monitoring activities consisted of interviews with cognizant personnel and reviews of documentation.

During the previous monitoring visit (POOM-032/2006003), DOE and contractor personnel discussed selected ORs and described the corrective actions taken to prevent recurrence. The emphasis during that visit was to review the circumstances surrounding a particular event, gain an understanding of how corrective actions were developed, and review the basis for determining the effectiveness of specific corrective actions. During this monitoring visit, an evaluation of corrective actions associated with three previously identified ORs was conducted.

B. Observations

The monitors reviewed the status of corrective actions associated with an October 2006 event that involved a lid cover falling off an intermodal container during loading operations. Corrective actions included: development and presentation of an "All Hands" safety package covering intermodal safety, development of an intermodal Job Safety Analysis (JSA) package, and various procedure revisions to incorporate lessons learned. The monitor noted that the DOE contractor also requested a field inspection by the manufacturer of the intermodal container. During the investigation of this event and the development of corrective actions, DOE

determined that the vendor information did not include detailed operating instructions or procedures related to opening and handling of the lids. Additional corrective actions included development of a JSA and an intermodal opening and closing proficiency demonstration guide.

A review of the corrective actions associated with an individual that had come into contact with an unknown liquid during demolition activities in November 2006 was also performed. The primary corrective action associated with this event was to revise the "Demolition Readiness Checklist" to include a requirement to verify that abandoned chemical lines have been flushed or purged. The revision also incorporated a check-off confirming the absence of chemical residues. Discussions with cognizant personnel indicated that lessons learned were communicated effectively. This appeared to be an isolated event associated with the demolition of the vitrification cold chemical building.

A few incidents were previously encountered involving the identification of damaged containers used to store radioactive material. These issues were addressed via the corrective action program. Due to multiple incidents and to ensure that appropriate corrective actions were identified and implemented, WVDP Surveillance S06-016E, "Container Handling Investigation Report" was conducted. Several findings with associated recommendations and suggested corrective actions for each finding resulted from this surveillance. Cognizant personnel developed a corrective action matrix based on the surveillance findings. The monitors reviewed and discussed the implementation status of corrective actions with cognizant personnel. The monitors noted that the corrective actions were comprehensive and that the vast majority of actions had been completed. Open corrective actions were tracked by approved mechanisms to ensure closure.

C. <u>Conclusions</u>

Corrective actions developed in response to occurrence reports were comprehensive and implemented in a timely manner. A supplemental internal review of incidents, associated with the handling of radioactive material containers, was effectively utilized in response to similar events to ensure that generic issues were addressed, and appropriate corrective actions were identified and implemented to prevent recurrence. Lessons learned were also shared with other DOE and contractor sites where intermodal containers are commonly used.

IV. Radioactive Material Disposal

A. <u>Inspection Scope</u>

Radioactive material preparation, shipping, and disposal activities were reviewed. A review of radioactive material volumes recently shipped for disposal was conducted. DOE is evaluating the possibility of placing an engineered cap over the NRC-Licensed Disposal Area (NDA). The monitor was provided various engineering and design documents for review associated with the construction and design of a geomembrane cover. Monitoring activities consisted of discussions with cognizant personnel, review of documentation, and field observations.

B. Observations

Contractor and DOE personnel provided a summary of radioactive waste disposal activities for the period January 2006 to the present. An overview of radioactive material shipping data indicated that approximately 384,000 cubic feet of radioactive material was shipped for disposal from the WVDP site in 2006. The majority of the radioactive waste material shipped for disposal over this period consisted of miscellaneous legacy waste and material generated in conjunction with the demolition of the main plant. The shipment of this material has significantly reduced the source term at the site and allowed for the demolition of two buildings previously utilized for storage of radioactive material.

Drum cell waste is currently stored at the WVDP in a storage facility that was specifically designed for this purpose. This facility is referred to as the drum cell waste storage building. The waste was processed and packaged over several years, commencing in 1988 and ending in 1995. The waste from the PUREX supernatant, PUREX sludge, and THOREX wash waste streams is collectively referred to as the "drum cell" waste stream. This waste is packaged in approximately 20,000, 71-gallon drums.

Removal of drum cell waste containers from their storage location for preparation for shipment is performed remotely. Operators at the drum cell storage facility control area demonstrated the use of the remote monitoring surveillance equipment to select, identify, and move waste drums to the preparation area. Operators had the capability to select several camera locations to observe specific areas and operations within the drum cell storage building. Operators demonstrated the process they followed to ensure the proper verification of drum cell containers selected for preparation and shipment.

The monitors observed drum cell preparation and handling operations at the gondola car loading facility. Cognizant personnel presented an overview of the loading and preparation of drum cell pallets for shipment. Methods used to ensure the proper placement and bracing of the waste containers within a gondola car were described. Personnel were aware of the importance of ensuring that containers were properly loaded and secured to ensure safe transport of the containers while in transit. As of March 2007, a total of 1,008 drum cell waste containers had been shipped for disposal. In order to accelerate the disposal of this waste material, gondola rail cars were selected to ship drum cell waste instead of overland trucks.

The monitors toured the storage area containing the melter, concentrator feed makeup tank, and the melter feed hold tank. It was noted that the protective shrink wrap placed over the three containers has been routinely inspected. Openings in the protective shrink wrap were repaired as necessary. The monitors observed that extensive taping on some areas of the shrink wrap has occurred while the containers were staged for disposal. Discussions with cognizant personnel indicated that no shipping date has been set for the disposal of these containers. The earliest disposal of the containers was projected to be 2008. The monitors questioned the need to replace the shrink wrap with new material due to the extended exposure of the current wrappings while the containers remain in interim storage. DOE personnel stated that this situation would be evaluated.

Cognizant personnel provided a summary of a proposed engineered impermeable geomembrane cover for the NDA. The presentation included an overview of the project as detailed in design document WVNS-SDC-127, "NDA Impermeable Geomembrane Cover." The proposed cover would serve to minimize surface water infiltration into the NDA.

C. <u>Conclusions</u>

Significant quantities of radioactive waste material were properly prepared and safely shipped to approved disposal facilities in 2006. Utilization of rail shipments to support the disposal of drum cell waste containers should accelerate disposal of this waste stream. A schedule to support the disposal of three large components is planned for development in 2008. DOE was developing a plan to install a impermeable geomembrane over the NDA are in progress.

V. Management Meetings

Exit Meeting Summary

The monitor presented the monitoring visit results during an out-briefing meeting with members of your staff, New York State Energy Research and Development Authority (NYSERDA) representatives, and others upon conclusion of the onsite visit on March 28, 2007. DOE and DOE-contractor personnel acknowledged the observations presented by the monitor.

A-1

Partial List of Persons Contacted

Department of Energy

Bryan Bower, Deputy Director Dave Cook, Facility Representative Jennifer Dundas David Gray William Hunt *Herman Moore, Facility & Waste Disposition Projects, Team Leader

NYSERDA

Paul Bembia, Program Manager *Colleen Gerwitz, Program Manager *Paul Piciulo, Director

WVNSCO

*John Gerber, Manager - Safety, Health & Quality *Richard Hazard, *Ida Klahn, Public Relations Coordinator *AI Konetzni, President/Project Director David Klenk, Environmental Affairs Howard Payne, Senior Engineer Laurene Rowell, Manager - Strategic Panning Development *Paula Usza, Quality Assurance *Paul Valenti, Manager - Integrated Work Coordination *Steve Warren, Presidert Shiela Westcott

*Denotes attendance at the onsite out-briefing held on March 28, 2007.

List of Documents Reviewed

WVDP-239, Rev. 9, Groundwater Monitoring Plan

U. S. Department of Energy Order DOE O 450.1

WVNSCO 3rd Quarter 2006 Groundwater Trend Analysis Report

Intermodal Safety Presentation - DD716B

Occurrence Report EM-OH-WVNS-WVNSGEN-2006-002, Intermodal Lid Falls During Opening

Occurrence Report EM-OH-WVDP-VFS-2006-001, Operator Sprayed With Unknown Liquid While Cutting Line for Demolition

Demolition Readiness Checklist - Rev. 1

Proficiency Demonstration/OJT Guide DD716T - Intermodal Opening and Closing Operations

Job Safety Analysis JSA-SOP-300-26-2, Working Around, and Opening the Top Lid of Hard Top Intermodal Containers

List of Acronyms

DOE	Department of Energy
EIS	Environmental Impact Statement
GMP	Groundwater Monitoring Plan
JSA	Job Safety Analysis
NDA	NRC-Licensed Disposal Area
NYSERDA	New York State Energy Research and Development Authority
ORs	Occurrence Reports
Sr-90	Strontium 90
WVDP	West Valley Demonstration Project