



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

April 18, 2003

Project No. P00M-032

Alice C. Williams  
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 MONITORING VISIT 2003-001

Dear Ms. Williams:

On April 1-3, 2003, James Kottan of this office conducted a routine monitoring visit at the Department of Energy's (DOE) West Valley Demonstration Project to review the activities of West Valley Nuclear Services Company, Inc., the DOE contractor at the site. During this monitoring visit, Mr. Kottan was accompanied by Mr. T. Rice of the New York State Department of Environmental Conservation. The purpose of the monitoring visit was to review the status of the contractor's program for the vitrification facility, high level radioactive waste projects, and the site relative to its radiological impact on public health and safety. The results of this monitoring visit were discussed with Mr. T. J. Jackson of your staff and with WVNS management on April 3, 2003. Details of this review are provided in the enclosed report.

As a result of this review, the monitor determined that the contractor had established and maintained controls, processes, and programs adequate to protect public health and safety.

Please contact me at (610)337-5200 with any questions about this report.

Sincerely,

***Original signed by Mark Roberts***

Ronald R. Bellamy, Chief  
Decommissioning and Laboratory Branch  
Division of Nuclear Materials Safety

Enclosure:  
Monitoring Report No. 03-01

A. Williams  
Department of Energy

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cc:  
Paul Piciulo, Ph.D., Program Director, NYSERDA  
J. Spath, NYSERDA  
State of New York

A. Williams  
Department of Energy

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DATE	4/18/03		4/18/03				

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

MONITORING REPORT

Monitoring Visit No. P00M-032/2003001  
Project No. P00M-032  
Location: West Valley Demonstration Project  
10282 Rock Spring Road  
West Valley, NY 14171-0191  
Visit Dates: April 1-3, 2003

Monitor: **Original signed by: JJK** **4/18/03**  
\_\_\_\_\_  
James J. Kottan  
Senior Health Physicist  
date

Approved By: **Original signed by: MCR** **4/18/03**  
\_\_\_\_\_  
Ronald R. Bellamy, Chief  
Decommissioning and Laboratory Branch  
Division of Nuclear Materials Safety  
date

## **EXECUTIVE SUMMARY**

US Department of Energy  
West Valley Demonstration Project

NRC Monitoring Report No. 03-01

A routine monitoring visit was conducted April 1-3, 2003, to observe site operations and current project status at the West Valley Demonstration Project. Areas reviewed included site organization, recent operational events, head end cell work, spent fuel shipment, and radioactive waste management. As a result of this review, the monitor determined that the Department of Energy's contractor had established and maintained controls, processes, and programs, which were adequate to protect public health and safety.

## **REPORT DETAILS**

### **I. Introduction**

This report documents the monitoring visit to the West Valley Demonstration Project (WVDP) on April 1-3, 2003. The NRC monitor observed activities in progress, held discussions with Department of Energy (DOE) and West Valley Nuclear Services (WVNS) personnel, and reviewed related documentation. DOE and WVNS personnel presented status briefings on site activities since the last monitoring visit in November 2002, including the following:

- Organization
- Recent Site Events (Reportable and Non-Reportable)
- High Level Radioactive Waste Projects
- Site Operations
- Radioactive Waste Management

### **II. Organization Changes**

DOE and WVNS management briefly outlined and discussed their current organizations. It appeared that no significant changes in the WVNS organization had taken place since the previous NRC monitoring visit in November. Site staffing had previously been reduced in conjunction with the end of vitrification and refocusing on project completion activities.

### **III. Recent Site Events**

The monitor reviewed and discussed with WVNS personnel selected event fact sheets, critiques, and occurrence reports describing recent operational events at the WVDP. The following were discussed in detail:

#### WVNS-CF-2003-001 Electrical Pull Box Struck During Snow Removal Activities.

On January 23, 2003, after several days of significant snowfall, a Plant Systems operator was assigned to push back snow banks along roadways and walks. During this activity, a 208-volt electrical box was struck by the front end loader being used for the snow clearing activities. The damage to the electrical box resulted in the loss of power to a near-by office trailer. Immediate actions by WVNS personnel included isolation of the electrical supply, replacement of the damaged box to restore power, and suspension of further snow clearing activities. The investigation of the incident revealed that the Plant Systems operator was aware of the electrical box but misjudged its location, and administrative controls were not in place to ensure utilities were clearly identified during adverse weather conditions. Corrective actions included: performing a site walkdown to identify utilities and other materials that may be subject to getting struck or damaged during snow removal, marking/flagging all utilities and materials previously identified, revising WVNS-183 "West Valley Freeze Protection Plan" to require departmental walkdowns in the fall to ensure utilities are identified and marked, and issuing a Lesson's Learned Bulletin regarding this event. Discussions with WVNS individuals indicated the importance of the lessons learned from this event in that, although this event resulted in the

loss of power to an office trailer, damage to another utility may have had more significant site consequences.

#### WVNS-CF-2003-0003, Damaged Programmable and Remote Manipulator.

On February 4, 2003, a Decontamination and Decommissioning operator was using a remotely-operated robotic manipulator to remove debris from the General Purpose Cell (GPC) floor. As the hooked arm of the manipulator was lifted, the shoulder separated from the vertical telescopic tubes and the arm fell to the floor of the GPC. No personnel injuries occurred as a result of this event. WVNS personnel immediately secured power to the system, suspended debris collection operations, and performed engineering calculations to determine the extent of the damage. A vendor field representative assisted in the investigation, which concluded that the damage, which was limited to the attachment screws and shoulder, was a result of operator error in a difficult work environment. Corrective actions included repair to the robotic arm, an evaluation of the need for additional lighting and cameras in the GPC, and operator briefings on the importance of operator attention while using remotely-operated equipment.

#### WVNS-HMT-2003-0001, Suspect Counterfeit Bolt

On January 30, 2003, a suspect bolt was identified on a ratchet lever tie-down strap that was being used to secure a low-level radioactive waste container to a shipping pallet. WVNS personnel immediately removed and replaced the ratchet tie-down strap from the shipment. Also, a site-wide search was conducted in order to identify any additional suspect counterfeit bolts. Seven additional tie-down straps with suspect counterfeit bolts were found, none of which were being used. Corrective actions included alerting all managers and supervisors of this situation, ensuring all appropriate personnel have suspect/counterfeit bolt identification information available for use, and issuing a Technical Advisory regarding WVNS's requirements regarding suspect counterfeit bolts.

#### WVNS-CF-2003-0004, Shoe Contamination from Product Purification Cell

On February 26, 2003, low-level alpha contamination was found on the sole of a Decontamination and Decommissioning worker's shoe upon exiting the Product Purification Cell (PPC) south cell. The worker wore several layers of anti-contamination clothing on both his body and feet. The work in the PPC south cell involved video taping and draining product process lines. WVNS personnel immediately surveyed all workers upon exit from the PPC south cell work area, and also performed radiological surveys of the protective clothing removal area. No additional radioactive contamination was found. The shoe cover of the worker was recovered and surveyed, with radioactive contamination found both on the inside and outside of the shoe cover. Corrective actions included: increased general house keeping within the PPC south cell in order to minimize and relocate debris that could puncture shoe covers, alerting personnel to the potential for sharp objects on the cell floor, and an evaluation of alternative foot protection.

### **IV. Site Closure Projects**

Spent Fuel Shipping Project: The NRC monitor observed the two casks loaded with commercial spent fuel assemblies for rail shipment to the Idaho National Environmental and Engineering Laboratory (INEEL). Each cask was loaded onto a separate rail car for shipment. WVNS continued to maintain the integrity of the casks in a shipping-ready mode. Smears or wipes of the casks were taken on April 2, 2003 to check for loose, removable radioactive contamination, and on April 3, 2003 an individual of the Federal Railroad Administration conducted an inspection of the rail cars. Items inspected included trucks and bolsters, undercarriage supports, and springs. Additionally, WVNS plans to perform a fastener inspection in May 2003 and a leak test of the casks in June 2003. A date for shipment to INEEL has not yet been determined by DOE.

Cell Decontamination and Decommissioning Work: Since the previous monitoring visit, WVNS had continued decontamination and decommissioning work on the head end cells. The head end cells consist of the process mechanical cell (PMC), the general purpose cell (GPC), the scrap removal room (SRR), and the miniature cell (MC). To date, approximately 68 drums of initial debris have been removed from the PMC. This represents approximately 75 percent of the loose floor debris. Approximately 30 drums of debris have been packaged in the GPC. In addition, WVNS had established a flow path from the GPC to the chemical process cell (CPC) for the transfer of high dose rate drums into the CPC for storage. WVNS plans to continue cleanup of the PMC and GPC.

The NRC monitor also observed the ongoing work taking place on the product purification cell-south (PPC-S) and extraction cell two (XC-2). The PPC-S was a cell used to purify the plutonium product stream prior to off site shipment. The cell contained approximately 2,700 feet of piping and 28 vessels. WVNS established access to the cell on January 30, 2003, and has completed the removal of the floor debris and the first vessel, a tank. Plans were to continue vessel and piping removal at lower levels of the cell, and to deploy a mast climber to gain access to the upper levels of the cell. XC-2 was used for the first stage of the uranium and plutonium product separation cycle. The cell contained 42 vessels and approximately 9,000 feet of piping. WVNS was establishing access to the cell through the roof hatch and had installed additional ventilation into the cell. The additional ventilation system discharged directly into the environment. The NRC monitor reviewed the dose assessments and the effluent monitoring of the ventilation system. The ventilation system will be sampled continuously during operation with the filters analyzed weekly for gross alpha and gross beta activity, the filters will be composited quarterly and analyzed for gamma isotopic, uranium, transuranic radionuclides, and strontium-90 (Sr-90).

## **V. Waste, Fuel & Environmental Projects**

Since the previous NRC monitoring visit, WVDP continued to focus on disposal of radioactive waste and shipping and disposal of newly generated waste. For fiscal year (FY) 2003 to date, approximately 13,500 cubic feet of low level radioactive waste had been shipped off site to the Nevada Test Site. WVDP also planned to make low level radioactive waste and mixed low level radioactive waste shipments to Envirocare during the remainder of FY 2003.

The NRC monitor toured the Remote Handled Waste Facility (RHWF) to observe construction progress. The facility, when completed, will allow WVNS personnel to remotely size, reduce, characterize, and package highly radioactive equipment and components from the WVDP for shipment. Construction completion is scheduled for 2004. During the tour, the NRC monitor observed the planned location of the RHWF ventilation system stack and associated effluent radiation monitor. Additionally, the NRC monitor reviewed the specifications for the effluent radiation monitor and sampling system. The effluent radiation monitoring and sampling system will continuously monitor and sample the stack effluent.

Data from the North Plateau Groundwater Plume was reviewed by the NRC monitor. This included Sr-90 concentration groundwater contours, groundwater elevation contours, and historical trended gross beta results from specific wells. Leaks from a line used for acid recovery during past fuel reprocessing were the source of the contamination. WVDP personnel estimated the total amount of radioactivity released into the groundwater in 1968 at approximately 100 Curies. The radionuclide contaminant in the groundwater is Sr-90. The contaminated groundwater rises to the surface, and leaves the WVDP site as a surface discharge. For calendar year 2001, the maximally exposed off-site individual received a calculated radiation dose of 0.021 mRem from this effluent release. A pump-and-treat system and a permeable treatment wall have been installed to reduce the concentration of Sr-90 in the ground water. WVDP was evaluating a path forward based on the results of the assessments of the current treatment systems.

## **VI. High Level Waste Projects**

High level waste project activities were reviewed by the NRC monitor. The high level waste project activities consisted of deactivation of the vitrification facility and the high level waste tanks. Deactivation of the vitrification system consisted of continued deactivation of support systems: ammonia tank isolation, melter utility isolation, and cold chemistry tank isolations. Also included were revisions to operating procedures and systems descriptions. High level waste tank activities consisted of plans to lay-up tanks 8D-1 and 8D-2 and process the sodium bearing waste generated during vitrification activities. Plans for lay-up called for tanks 8D-1 and 8D-2 to be isolated by October 2003 with the ventilation systems continuing to operate. Tank monitoring activities will include tank water level monitoring and radiation surveys. Plans called for the sodium bearing waste to be solidified/stabilized and disposed of as low-level radioactive waste at the Nevada Test Site.

## **VII. Exit Meeting**

The monitor discussed the results of this visit with DOE site management, and also with WVNS management, on April 3, 2003.

## PARTIAL LIST OF PERSONS CONTACTED

### Department of Energy, Ohio Field Office-West Valley Demonstration Project

Alice C. Williams, Director  
T.J. Jackson, Associate Director  
Herman Moore, Team Leader, D&D Projects  
Tom Vero, General Engineer  
Catherine Bohan, Physical Scientist

### West Valley Nuclear Services

Doug Steffen, Executive Vice President  
Stuart MacVean, Site Closure Projects Manager  
Karl Sanders, Site Operations Manager  
Lee McGetrick, Site Services Manager  
Thomas Kocialski, Vitrification Deactivation Manager  
Dan Meess, Tank Farm Deactivation Engineering Manager  
Jack Gerber, Regulatory & Compliance Programs  
Mike Sheridan, Readiness Manager  
Larry Myszka, Site Operations  
Robert Steiner, Senior Environmental Engineer

### New York State Energy Research and Development Authority

Colleen Gerwitz, Program Manager  
Ted Sonntag, Program Manager