



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

September 10, 2003

Project No. P00M-032

Elizabeth Lowes
Acting 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 2003-002

Dear Ms. Lowes:

On August 12-14, 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 (WVNS), Inc., the DOE contractor at the site. 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 Ms. Alice Williams and other members of your staff and with WVNS management on August 14, 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 Ronald R. Bellamy

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

Enclosure:
Monitoring Report No. 03-02

A. Williams
Department of Energy

2

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

A. Williams
Department of Energy

3

Distribution:

DOCDESK

D. Screnci, RI/PAO

C. Glenn, NMSS/DWM

A. Bradford, NMSS/DWM

D. White, RI

R. Bores, RI

J. Kottan, RI

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML032540975.wpd

To receive a copy of this document, indicate in the box: "C" = Copy w/o attach/encl "E" = Copy w/ attach/encl "N" = No copy

OFFICE	DNMS/RI	N	DNMS/RI				
NAME	Jkottan JJK		Rbellamy RRB1				
DATE	9/10/03		9/10/03				

OFFICIAL RECORD COPY

EXECUTIVE SUMMARY

US Department of Energy
West Valley Demonstration Project

NRC Monitoring Report No. 03-02

A routine monitoring visit was conducted August 12-14, 2003, to observe site operations and current project status at the West Valley Demonstration Project. Areas reviewed included site organization, recent operational events, high level waste projects, decontamination and decommissioning activities, waste management, and characterization activities. 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 August 12-14, 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 April 2003, including the following:

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

II. Organization Changes

DOE and WVNS management outlined and discussed their current organizations. Significant changes had taken place in both the WVNS organization and the DOE organization since the previous monitoring visit in April 2003. Russell Mellor has been appointed the president of WVNS, and the DOE position of Director is vacant due to the promotion of Alice Williams to DOE headquarters. Elizabeth Lowes, Deputy Director, is currently the Acting Director of the DOE WVDP organization. Additionally, there were some changes in the WVNS project organizations. 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-FRS-2003-001 Personnel Skin Contamination.

On April 6, 2003, radioactive contamination was discovered on the face of an individual working in the Fuel Receiving and Storage Area (FRS). The contamination was discovered when the individual attempted to exit the FRS area through a personnel contamination monitor (PCM). The individual indicated that nothing came into contact with his face while working in the FRS. Two other individuals working with the contaminated individual were not contaminated. Immediate actions consisted of performing a whole body count of all three individuals. The whole body counting results were negative. Additionally, the contaminated individual submitted a bioassay sample in which no radioactivity was detected. The contaminated area was about 30 cm² in size, with approximately 6000 dpm of beta contamination. No alpha contamination was detected. Decontamination was accomplished with mild soap and water. Because the exact source of the contamination could not be identified, WVNS personnel suspected that the

contaminated individual may have unknowingly touched his face while working in a radiologically controlled area. Corrective action consisted of placing an article on general radiological work practices in the Conduct of Operations/Integrated Safety Management System (ConOps/ISMS) Bulletin.

WVNS-CF-2003-0002, Falling Ice Damages Plant Roof.

On February 3, 2003, engineering personnel discovered that a large ice mass which hung from a roof scupper had fallen approximately 30 feet damaging a roof below. A rise in outdoor temperature caused the ice mass to break free. Upon identifying the ice mass several days before the event took place, all work near the area had been suspended, and work was under way in other areas to remove large amounts of accumulated ice and snow. There was no personnel injury or equipment damage as a result of this event. Corrective actions included work on the scupper to divert water to other drains in order to prevent ice buildup, and revision of the WVDP Freeze Protection Plan to incorporate information regarding areas which could be affected by ice/snow buildup.

WVNS-CF-2003-0005, CAM Alarm While Performing Tell-Taling of Isolated Steam Line.

On May 5, 2003, WVNS personnel, with continuous radiation protection field support, were in the process of tell-taling isolated steam lines in the upper extraction aisle (UXA). Upon completion of tell-taling the seventh steam line, an alpha Continuous Air Monitor (CAM) alarmed. The tell-taling personnel, who were in anti-contamination clothing and full face respirators, immediately left the area and took shelter in a nearby control room. Tell-tales contain a small pipe manifold, a sealed insertion point for a drill bit, and two ball valves which provide a controlled method for sampling and draining lines. During the tell-taling of the seventh steam line, the drill bit was changed partway through the process because the drill bit had become dull. The dull drill bit was surveyed by the radiation protection technician providing field support. Although unusually high radioactivity levels were detected on the drill bit, the technician believed these levels to be erroneous since it was assumed that the drill bit had not penetrated the steam pipe wall, and tell-taling continued. Immediate actions included a controlled exit of all personnel in the main plant process building, nasal smears were taken from all personnel who were in the main plant process building during the incident, the plant was posted as a "restricted access area", and other plant CAM and air samplers were checked; some of which indicated elevated radioactivity levels, but none above any alarm points. Of the 17 individuals that were in the main plant process building at the time of the incident, 14 had negative bioassay results. Radiobioassay results for two of the three remaining individuals indicated committed effective dose equivalents (CEDE) of less than 100 mrem. The radiobioassay results for the third individual are still outstanding, but are expected to also be less than 100 mrem. Corrective actions included briefing all radiation protection personnel on the importance of "believing your indications" from a radiological survey meter, revising the tell-taling procedure to clarify and categorize by hazard level the contamination controls needed to perform tell-taling, and issuing a lessons learned event report.

WVNS-CF-2003-0006, Uptake resulting in Personnel Exposure Exceeding 100 mrem CEDE.

On May 21, 2003, the WVNS Dosimetry Department reported that an individual's routine monthly bioassay for February 2003 and March 2003 were confirmed to be positive. The individual had been in the monthly bioassay program since November 2002, and results prior to February 2003 were negative. Additionally, the result for the individual's April 2003 routine bioassay was negative. Immediate corrective actions included placing the individual on a radiological work restriction pending a preliminary dose estimate, evaluation of air samples from areas where this individual had worked, co-workers' bioassay results were evaluated (and verified to be negative), and completing a preliminary dose evaluation. Based on the available data, and in the absence of a specific identified event for the uptake, the individual was assigned a calculated dose of 240 mrem CEDE. WVNS continued to evaluate areas where the individual worked and air sample data from these areas.

IV. Site Closure Projects

Spent Fuel Shipping Project: During the previous monitoring visit, the NRC monitor observed two casks loaded with commercial spent fuel assemblies for rail shipment to the Idaho National Environmental and Engineering Laboratory (INEEL). The two casks contained a total of 125 spent commercial nuclear fuel assemblies. Each cask was loaded onto a separate rail car for shipment. WVNS maintained the casks in a shipping-ready mode by performing periodic leak tests, radiological surveys, cask frame inspections, and rail car inspections. On July 13, 2003 the casks were shipped and arrived without incident on July 17, 2003 at INEEL.

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 80 to 90 percent of the initial debris in the PMC and GPC have been packaged and removed from the cells.

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. XC-2 was used for the first stage of the uranium and plutonium product separation cycle. WVNS continued vessel and piping removal in PPC-S and continued decontamination and tell-taling work in XC-2.

Fuel Receiving and Storage Area (FRS): The NRC monitor toured the FRS and observed the condition of the facility. The pool water of both the FRS pool and the cask unloading pool (CUP) has been drained, the pool bottoms have been covered with grout to provide a smooth level surface and fix any remaining radioactive contamination in the bottom of the pools, and the remaining radioactive contamination on the pool walls was sealed using a fixative. The FRS decontamination project has been completed.

North Plateau Groundwater Plume: Recent north plateau concentration contours of Sr-90 in groundwater were reviewed by the NRC monitor. Also reviewed were historical trends of gross beta, gross alpha and tritium results from specific wells. Leaks from a line used for acid recovery during past fuel reprocessing were the source of the contamination. The contaminated groundwater rises to the surface, and leaves the WVDP site as a surface

discharge. For calendar year 2002, the maximally exposed off-site individual received a calculated radiation dose of 0.031 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 continuing to evaluate a path forward based on the results of the assessments of the current treatment systems.

Facility Characterization

Since the last NRC monitoring visit in April 2003, the NRC monitor reviewed the *High Level Waste Tanks 8D-1 and 8D-2 Radionuclide Inventory Report as of September 1, 2002* and the *Characterization Management Plan for the Facility Characterization Project*. The *Characterization Management Plan for the Facility Characterization Project* describes the methodology used to generate the estimated source term for the Waste Tank Farm (excluding Tanks 8D-1 and 8D-2), the Vitrification Facility, and the Process Building. The NRC monitor discussed the FRS facility characterization in detail with WVNS personnel in order to review the general methodology, using dose-to-curie modeling, for generating a radionuclide inventory for a particular area or cell. The methodology consisted of gathering gamma radiation exposure readings from shielded and unshielded detectors; using computer models, assuming all the gamma exposure was due to Cs-137, to determine the Cs-137 content of the area being monitored; and generating a radionuclide inventory using the computer generated Cs-137 content and scaling factors relating the content of other radionuclides to Cs-137. The scaling factors were determined from sample data or other available data.

Additionally, the NRC monitor toured the Analytical and Process Chemistry Laboratory (A&PC) and discussed analytical capabilities, analytical methods, laboratory QA/QC, and data reporting with WVNS laboratory personnel. The A&PC provides analytical data used to support facility characterization, such as data that can be used to generate scaling factors. The laboratory possessed state-of-the-art equipment, and was staffed with knowledgeable scientists and technicians.

V. Radioactive Waste Management

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 17,200 cubic feet of low level radioactive waste had been shipped off site for disposal. WVDP also planned to make an additional low level radioactive waste disposal shipment of about 1000 cubic feet during the remainder of FY 2003. WVDP has established waste management goals or milestones for the year 2004 that include shipping legacy class B and C waste for disposal, characterizing and packaging of legacy class A low level waste, and developing a transuranic (TRU) waste program for the disposal of TRU and mixed/TRU waste. WVDP continued to implement waste minimization activities.

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 forecast for December 2003 with operation forecast for

May 2004. During the tour, the NRC monitor noted an increase in construction activity compared to the tour of the RHWF conducted during the last NRC monitoring visit in April 2003.

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 and associated systems, melter cooling water, and cold chemistry tank isolations, in preparation for permanent closure. Also included were revisions to operating procedures and systems descriptions. Another activity associated with the vitrification facility deactivation was the completion of the calculations to support the high level waste product consistency test (PCT) results and calculations to support radionuclide inventory records. The NRC monitor reviewed the production records for high level waste canisters WV-303 and WV-314 and noted the method used to generate the radionuclide inventories for the high level waste canisters.

High level waste tank activities consisted of plans to lay-up tanks 8D-1 and 8D-2 and process the sodium bearing waste water (SBW) generated during vitrification activities. Since the previous NRC monitoring visit in April 2003, the supernatant treatment system (STS) has been deactivated. Deactivation was completed on July 30, 2003. The STS was placed into a safe mode for long term surveillance with minimal maintenance requirements. Additionally, tanks 8D-1 and 8D-2 have been isolated from further waste additions, and actions have been taken to minimize the infiltration of groundwater into the tanks and tank vaults. The groundwater infiltration remedial actions will continue to be monitored by WVNS. WVNS continued to work on procuring a vendor to treat and solidify the SBW with plans calling for treatment and solidification during the summer of 2004.

VII. Exit Meeting

The monitor discussed the results of this visit with DOE site management, and also with WVNS management, on August 14, 2003.

PARTIAL LIST OF PERSONS CONTACTED

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

Alice C. Williams, Director
Elizabeth Lowes, Deputy Director
T.J. Jackson, Associate Director
Herman Moore, Team Leader, D&D Projects
Tom Vero, General Engineer
Catherine Bohan, Physical Scientist
John Drake, General Engineer
Anthony Misercola, Physical Scientist

West Valley Nuclear Services

Russell Mellor, President
Stuart MacVean, Site Closure Projects Manager
Karl Sanders, Site Operations Manager
Bill Zuppinger, RHWF Operations Supervisor
Thomas Kocialski, Vitrification Deactivation Manager
Dan Meess, Tank Farm Deactivation Engineering Manager
Jack Gerber, Regulatory & Compliance Programs
Janice Hoffman, A&PC Laboratory Manager
Larry Myszka, Site Operations
Robert Steiner, Senior Environmental Engineer

New York State Energy Research and Development Authority

Paul Piciulo, Director
Ted Sonntag, Program Manager