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

July 2, 2001

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 2001-001

Dear Ms. Williams:

On April 24, 2001, Todd Jackson 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. The purpose of the monitoring visit was to review the status of the contractor's program for the operation of 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 you and your staff on April 26, 2001, and with WVNS management on April 26, 2001. Site tours were also conducted on May 14 and 15, 2001, including an accompaniment with the Chairman of the NRC, Richard A. Meserve, on May 15, 2001. Details of this review are provided in the enclosed report.

As a result of this review, the monitor determined that the contractor has 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. 00-01

cc:
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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

MONITORING REPORT

Monitoring Visit No.	P00M-032/2001001
Project No.	P00M-032
Location:	West Valley Demonstration Project 10282 Rock Spring Road P.O. Box 191 West Valley, NY 14171-0191
Visit Dates:	April 24-26 and May 14-15, 2001

Monitor:

/RA/ _____ ***6/29/01*** _____

Todd J. Jackson, CHP — date
Health Physicist

Approved By:

/RA/ _____ ***6/29/01*** _____

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

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EXECUTIVE SUMMARY

US Department of Energy
West Valley Demonstration Project

NRC Monitoring Report No. 01-01

A routine monitoring visit was conducted April 24-26, 2001, to observe site operations and current project status at the West Valley Demonstration Project. Additionally, the monitor accompanied tours of the WVDP by senior NRC management on May 14, 2001, and the Chairman of the NRC on May 15, 2001. Areas reviewed included site organizational changes, recent operational events, vitrification operations, high level radioactive waste projects, head end cell work, site closure projects, radioactive waste management, and the spent fuel shipping project. As a result of this review, the monitor determined that the Department of Energy's contractor has established and maintained controls, processes, and programs which are adequate to protect public health and safety.

REPORT DETAILS

I. Introduction

This report documents the monitoring visits to the West Valley Demonstration Project (WVDP) on April 24-26 and May 14-15, 2001, The April visit was a routine periodic monitoring visit, and the May visit was to accompany the Chairman of the NRC and senior NRC management representatives on tours of the WVDP. The 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 December 2000, with emphasis on the following:

Organization Changes
Recent Site Events (Reportable and Non-Reportable)
High Level Radioactive Waste Projects
Site Operations and Facility Closure Projects
Radioactive Waste Management
Spent Fuel Project

II. Organization Changes

Recent changes in the organization were discussed by WVNS management. Several managers and staff had recently left the WVNS organization, and some changes had been made to reflect the evolving character of activities at the site as vitrification approaches its completion and emphasis begins to shift to future decommissioning activities. Site operations (non-vitrification) were consolidated into a separate organization under a newly added manager. Site closure projects were also consolidated under a single manager in a new group. Environmental and regulatory affairs were combined with quality assurance under a single manager. Finally, industrial responsibilities were combined with radiation protection under the Radiation Protection Manager.

III. Recent Site Events

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

Critique CM-2999-038, Entry into the Equipment Decontamination Room (EDR) with an Unidentified Radiological Source Present. On December 26, 2000, a worker entered the EDR and was unaware of a container in the room with a contact radiation dose rate of 34.5 R/h. Radiation surveys available prior to the entry had not yet been updated to include the container, which was placed in the EDR on December 20, 2000. The individual did not work close to the container and was in the room for only two minutes, so no exceptional radiation exposures occurred before he exited. WVNS staff examined how to assure surveys are current and changes in conditions are identified prior to performing work. Corrective actions included a review of the radiation work

permit process to assure current surveys are used, and to revise the procedure for making entries into the EDR.

Critique CM-2001-004, Exceedance of Mask Protection Factor During D&D Work. This critique addressed two events in February 2001 involving personnel entries into areas of known elevated contamination levels. In both cases personnel were wearing supplied air respirators, and protective measures had been taken to reduce airborne contamination potential (such as application of a strippable fixative coating). The events occurred when work activities dispersed dust into the air, resulting in unanticipated contamination levels. In one case a mat placed over contamination was snagged by a piece of equipment and stirred up surface contamination when it moved. In the second case, personnel were vacuuming dust in the Acid Recovery Pump Room (ARPR) from the concrete floor which had deteriorated during plant operations. WVNS informed the monitor that alpha contamination levels were higher in the affected room than many other areas of the plant, and that the arrangement of the room was determined to make it impractical to have a continuous air monitor running during the work. A radiation protection technician was monitoring the radiation level of dust collecting in the vacuum drum during work, and the actual derived air concentration of radioactive material in the air of the room was determined from post-job analysis of the workers' breathing zone air samplers. Following these events, WVNS determined that improvements were needed in work organization and planning, that additional engineered precautions should be used to prevent generating airborne contamination, and that additional personnel protective equipment, such as bubble hoods, should be used for such work. Additionally, the deteriorated concrete floor was covered with a new layer of grout to stabilize and seal the surface.

Occurrence Report HLLW-2001-0001, Required Prerequisites Discovered Not Established During Ventilation System Modifications (including Lockout/Tagout). A mechanic failed to follow work planning procedures which required the worker to read and follow the work documents before starting work. The worker had begun work on the job without initiating the specified lock-out/tag-out request document which would have required a signature by operations personnel, or obtaining an industrial work permit. Work was immediately stopped by the cognizant engineer when he arrived at the job site to observe work activities and discovered the condition.

These occurrences all had potential for consequences more serious than were encountered, and WVNS had thoroughly evaluated the circumstances to understand the causes. Evaluations focused on how to prevent similar causal events from recurring.

IV. High Level Waste Projects

The melter continued in idle status during this monitoring visit, with the 256th canister in position under the melter feed pour spout. In January 2001 vitrification operations were halted by a mechanical failure of the melter feed hold up tank agitator. WVNS determined that replacement of the agitator was necessary, and melter feed operations were suspended until the replacement could be accomplished. The work was completed in early May 2001, enabling melter operations to resume.

WVNS estimated radioactivity remaining in the tanks to be as follows:

Remaining Curies x 1000* (change since December 2000)	Tank 8D-1	Tank 8D-2	Combined Total
	Mobile/Fixed/Total (change)	Mobile/Fixed/Total (change)	Mobile/Fixed/Total (change)
^{137}Cs	130/2/132 (-8)	140/10/150 (+15)	270/12/282 (+7)
^{90}Sr	4/2/6 (0)	5/70/75 (+53)	9/72/81 (+53)
Total	134/4/138 (-8)	145/80/225 (+68)	279/84/363 (+60)

*As of March 2001 (derived from 1/1/96 activity estimate baseline).

"Mobile" refers to radioactive material in the liquid contained within the tanks, and "fixed" refers to the radioactive contamination on the interior surfaces of the tank. The radioactivity in either of the tanks may increase month-to-month because there are also process inputs into the tanks.

WVNS described increased efforts to characterize the location (e.g. mobile in solution vs. fixed upon tank surfaces) of alpha particle emitting transuranic (α-TRU) radionuclides within the tanks. Additional samples had been collected from tank walls for fixed contamination characterization. These samples were obtained using a specially developed burnishing tool to precisely collect material from controlled depths of surface corrosion films. A thorough characterization of α-TRU is expected to be completed during summer 2001 using data from 23 tank 8D-2 burnisher samples, neutron track detectors in both 8D-1 and 8D-2, vitrification feed material analyses, beta/gamma measurements, gamma camera imaging to identify hot spots in 8D-2, and video mapping of tank interiors.

Preliminary estimates of transuranic inventories are presented in the following table.

α-TRU Curies Remaining *	Tank 8D-1	Tank 8D-2	Combined Total
	Mobile/Fixed/Total)	Mobile/Fixed/Total	Mobile/Fixed/Total
Transuranics	10/30/40	40/400/440	50/430/480

*Estimate as of March 2001

Work was beginning for additional sluicing with pressurized water sprays in tank 8D2 to remove more of the transuranics, with a DOE goal established to achieve a reduction to about 90 Ci. The goal for residual radioactivity left in the tank also depends on the criteria defined for reclassifying

the tank from high level waste to waste incidental to reprocessing (WIR). Criteria to define WIR are being developed.

WVNS efforts in high level waste (HLW) processing focused on continuing to remove residual α-TRU activity from 8D-2 internal surfaces, the vitrification of waste containing mobilized α-TRU, and concentrating the associated excess liquid waste using the supernatant treatment system and the liquid waste treatment system.

DOE had convened a Vitrification Completion Team including representatives from WVNS, New York State Energy Research and Development Authority, and NRC to develop a strategy for the optimum approach to completing removal of HLW from the tank farm. The Team focused on developing strategies for vitrifying as much waste as possible before the melter possibly fails and determining what would be the best condition for the melter before doing a controlled final shutdown. The Team's recommendations included hardware to improve the mechanical decontamination of HLW tanks, that possible chemical decontamination methods be developed and evaluated, that melter life be maximized by limiting the time in idle mode, and that the impact of potential melter failure be minimized by processing lower activity waste (effectively flushing the melter). Implementation of these recommendations will require additional information, such as whether it is acceptable to produce more HLW canisters if more lower activity waste is processed. The additional information is being developed by WVNS.

V. Site Closure Projects

Readiness reviews have been conducted previously for major project activities, such as for the spent fuel shipping. DOE staff described the change in the approach for readiness reviews, so that some future reviews will be more programmatic rather than project oriented. For example, reviews will focus on readiness to perform decontamination and decommissioning (D&D) project work rather than on readiness for work in each head end cell.

Environmental Impact Statement (EIS): DOE personnel described the rescoping of the draft WVDP EIS process. The broad scope EIS addressed the entire site, and progress has been slow due to the complexity of the entire site and the difficulty in achieving agreement between stakeholders. DOE altered the scope of the EIS, splitting it into two parts. One part will address shorter term decontamination and waste management issues facing the site, and the second part will address the longer term site closure alternatives. A schedule of public meetings was described to support anticipated issuance of the final rescoped EIS in spring 2002.

Spent Fuel Shipping Project: The monitor observed activities related to loading spent fuel into the Big Rock Point (BRP) cask for shipment to the Idaho National Engineering and Environmental Laboratory. Since the previous monitoring visit the cask internals had been inspected in support of preparing an addendum to the cask safety analysis, the 100 ton cask unloading crane had been repaired and returned to service, DOE had completed an operational readiness review of all aspects of the shipping program, required neutron absorber rods had been installed into the R.E. Ginna (REG) cask, NRC had issued certificates of compliance for the casks to carry the planned

loads, and the REG cask had been fully loaded with spent fuel. Final arrangements with rail carriers were being negotiated, with shipment anticipated in mid-2001.

Head End Cell Work and Other Main Plant D&D Work: Since the previous monitoring visit WVNS had removed the old bridge mounted manipulator and two bridge cranes from the process mechanical cell crane room (PMCR). This heavy equipment had been cut up in the PMCR, and a new bridge mounted manipulator had been installed.

The Acid Recovery Pump Room had been surveyed and vacuumed in preparation for dismantling the equipment in the room. Vacuuming of debris had resulted in a severely pitted floor surface. Grout was spread over the vacuumed floor in the room to provide shielding and a level, smooth surface for future work. Planning had begun for removal of the product preparation and handling glove boxes. The glove boxes are internally contaminated with Pu, and are expected to be dismantled and removed for disposal rather than decontaminated.

VI. Waste, Fuel & Environmental Projects

WVNS personnel described construction status for the new Remote Waste Handling Facility (RHWF), and the monitor toured the construction site. The RWHF, when completed, will handle waste materials that are too large or too radioactive to be handled in existing site facilities. Examples of materials expected to be processed in the RWHF include stored components previously removed from the main plant chemical process cell (now the storage location for vitrified HLW canisters), equipment from the vitrification cell after melter operations are complete, and waste materials removed during D&D of the head end cells.

WVNS continued to refine waste shipping methods to reduce costs. Increased use of rail transportation was planned for boxed soil, with cars loaded and shipped directly from WVNS. WVNS also expected that access to DOE facilities at the Nevada Test Site (NTS) would be available to WVDP beginning in June 2001, pending final approvals. Access to NTS is significant because it enables WVDP to economically dispose of class B and class C wastes.

VII. Exit Meeting

The monitor discussed the results of this visit with DOE site management, and also with WVNS management, on April 26, 2001. Additional discussions were held on May 15, 2001.

PARTIAL LIST OF PERSONS CONTACTED

Department of Energy, Ohio Field Office-West Valley Demonstration Project
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Robert Keel, Operations Planning Manager
Bill Zuppinger, D&D Operations
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