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NUCLEAR REGULATORY COMMISSION
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August 20, 2002

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 2002-001

Dear Ms. Williams:

On June 4-6, 2002, 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 with WVNS management on June 6, 2002. 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,

/RA/

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

Enclosure:
Monitoring Report No. 02-01

A. Williams
Department of Energy

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EXECUTIVE SUMMARY

US Department of Energy
West Valley Demonstration Project

NRC Monitoring Report No. 02-01

A routine monitoring visit was conducted June 4-6, 2002, to observe site operations and current project status at the West Valley Demonstration Project. Areas reviewed included site organizational changes, recent operational events, vitrification operations, high level radioactive waste projects, head end cell work, site closure projects, and radioactive waste management. 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 visit to the West Valley Demonstration Project (WVDP) on June 4-6, 2002. 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 November 2001, 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

II. Organization Changes

Recent changes in the organization were discussed by DOE and WVNS management. Significant changes in the WVNS organization were put into effect in December 2001. Applied engineering and technical activities became the responsibility of a new Executive Vice President and Project Manager, with subordinate managers for Process Plant Decontamination, High-Level Waste (HLW), Remote Handled Waste Facility, Facility Characterization, Site Services, and Technical Services. Total staffing was being significantly reduced to correlate with the approaching end of vitrification and refocusing on decommissioning activities. The training organization was centralized to better enable planning for increased cross training of personnel, to enable greater flexibility by the reduced number of staff.

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:

Occurrence Report WVNSGEN-2001-0005, Contamination Discovered Outside of Vitrification Facility, Waste Tank Farm Facility and Fuel Shipping and Receiving Facility. Contamination was discovered on November 13, 2001 during a radiological survey, and fixed contamination was subsequently identified in several outside areas north and east of the vitrification facility, around the Waste Tank Farm (WTF), and around the Fuel Receiving and Storage area, all on the property of the WVDP. WVNS performed a comprehensive survey to identify the extent and type of contamination, and initiated an investigation to determine the cause. No contamination was detected offsite. WVNS concluded that inadequate heating of offgas in the WTF ventilation system had produced condensation in the system when outside air temperatures dropped in September 2001. The resulting condensate carried contamination through the system HEPA filters and out of the main stack. The amount of radioactivity in the discharge was insufficient to trip the main stack high alarm setpoint, and the weather conditions during the period of discharge caused the

material to fall to the ground. Work activities on the WTF ventilation system that likely produced the discharge were identified as occurring on or about September 10, 2001, and October 7, 2001. WVNS determined a temperature inversion occurred during both of the periods, causing the discharge plume to immediately settle to the ground, depositing the contamination.

Airborne radioactive effluents from WVDP are typically small. WVNS calculated that total airborne releases for 2001 were lower than each of the last five years, with the releases from this event included. For 2001, WVNS calculated that the maximally exposed offsite individual received a whole body dose of 0.00458 mrem/y, or 0.05% of the annual 10 mrem/y limit. Based on sample analysis, approximately 75% of the 2001 total alpha and beta radioactivity released was discharged during the last quarter of the year (October - December). The WVNS investigation identified root causes related to control of a WTF temporary modification and related procedure changes, and additional causal factors. A number of corrective actions were identified and entered into the corrective action program tracking system. Additionally, a group of ventilation experts from outside of WVDP were convened to review the WTF ventilation system and the event investigation, as well as the recommended corrective actions. WVNS also described process improvements to the engineering practices used at WVDP to further reduce the possibility of similar occurrences. The monitor discussed with WVNS personnel typical commercial practices for control and limiting duration of temporary modifications/circuit alterations. Temporary modifications at WVDP have been administratively controlled, although there has not been a limit on how long they are permitted to remain in place before removal or conversion to permanent modifications.

WVNS-CF-2001-003, Flame Observed During HEPA Filter Aerosol (PAO) Challenge Testing Utilizing a Thermal Generator. This event is similar to a previous event that occurred in April 1999 at WVDP, which was also the subject of NRC Information Notice 99-34. On December 3, 2001, a thermal aerosol generator using polyalphaolefin (PAO) was being used for testing the main plant stack HEPA filters in place. The worker operating the aerosol generator noticed liquid PAO dripping from the generator, which then ignited in the generator discharge. The worker immediately redirected the flame away from the ventilation system, burning three fingers in the process. The flame was extinguished with a CO2 extinguisher, an area fire watch was posted and the filter bank monitored to assure it was not ignited, and the individual with the injured hand was treated. An immediate hold was placed on all WVDP PAO testing equipment until the problem could be investigated. No impact or damage to plant equipment occurred due to the flame.

The WVNS investigation determined that the WVDP procedure for PAO testing was not consistent with the manufacturer's latest equipment operating and maintenance manual, that the PAO test equipment was not included in a periodic maintenance program as recommended by the manufacturer, and inadequate controls were in place to control performance of PAO testing. The resulting corrective actions included inspection of all WVDP PAO aerosol generators by the equipment manufacturer and updating of the operating procedure to incorporate all manufacturer recommendations. The PAO test equipment was added to WVNS's preventative maintenance program, and added to the list of equipment controlled as "Measurement and Test Equipment". Additionally, the number of individuals authorized and qualified to operate the equipment was reduced from over 100 to 4 personnel, whose qualifications will be maintained current.

Occurrence Report HLWS-2002-001, Cracked Shield Window - General Purpose Cell: Following replacement of the "A" shield window in the General Purpose Cell, the window assembly was being refilled with oil which became over pressurized and caused the in-cell cover glass to crack. It was determined that the lower port to the oil reservoir, which allows for expansion in the space, was blocked by one of the shims used to hold the window assembly in place. The window assembly was removed again, the shield glass replaced, and the assembly filled with oil prior to reinstallation.

IV. High Level Waste Projects

The melter continued in idle status during this monitoring visit. The project focus was on optimizing the condition of waste tanks and vitrification equipment, through flushes with non-HLW feed materials to reduce the quantity of internal radioactive materials, in preparation for shutting down the melter. Since the previous monitoring visit in November 2001, no additional waste transfers had been performed from either tank 8D-1 or 8D-2. The last interior cleaning activities to wash the walls of tank 8D-2 were performed in December 2001. No further waste removal activities are planned for the waste tanks until the completion of the waste management environmental impact statement (EIS) process. The waste management EIS will consider high level waste tank lay-up, and is anticipated to be issued and the record of decision completed by the end of 2002.

V. Site Closure Projects

Environmental Impact Statement (EIS): The EIS process is in two parts, with the above-mentioned waste management EIS addressing shipment of low-level radioactive and transuranic waste offsite for disposal, management and eventual disposal of the high-level waste (HLW) canisters, and lay-up of the HLW tanks. The second EIS part will address decommissioning and/or long-term stewardship of the WVDP. Based on recent public comments received concerning the proposed re-scoped, two part EIS process, the second EIS will proceed as the continuation of the 1996 draft EIS and will be coordinated among the various involved stakeholders, including NRC. Also in response to the comments received, additional decontamination of the WVDP facilities will be addressed in the decommissioning/long-term stewardship EIS, a draft of which DOE has targeted for completion in 2004.

Spent Fuel Shipping Project: The monitor observed the shipping casks stored at WVDP. There were no current activities in progress related to shipping the casks, pending a decision by DOE to proceed.

Fuel Receipt and Storage (FRS) Facility Work: With all spent fuel having been removed from the spent fuel storage pool, work began in February 2002 on removal of the storage racks and hardware from the pool. Divers working in the pool made 51 dives and removed more than 2200 cubic feet of materials for packaging and disposal. WVNS anticipates beginning the draining of pool water, as well as decontamination of the pool walls and floor, by the end of fiscal year 2002.

Main Plant Decontamination and Decommissioning Work: Since the previous monitoring visit, WVNS had continued work in the process mechanical cell (PMC) and began activities in the general purpose cell (GPC). Waste in the PMC had been processed and packed into drums as low-level waste, transuranic waste, or mixed waste. As of June 4, 2002, about 30% of the loose

debris in the PMC had been packaged. Remote tools were employed to reduce component size for packaging, and strippable coatings were used to control and remove surface contamination. A gamma spectroscopy camera was used to scan the room and identify the radionuclide producing gamma radiation fields within the cell. Discrete areas were identified with mostly ^{137}Cs , and other areas with mostly ^{60}Co as the radiation sources. A sampling program in the PMC was also conducted to characterize the items and radioactive material contained within the cell. Samples confirmed the amount of fissile material in the PMC was within the analyzed limits of what was expected. Additional sampling was planned, as was additional use of the gamma camera deployed in the cell.

WVNS and DOE had completed readiness reviews for entry into the GPC. Methods and material flowpaths had been established for removal of material from the GPC. A shield window had been refurbished, enabling direct viewing into the GPC. Procedures were in-place for implementing criticality safety controls for work in the GPC, and the findings from the readiness review had been addressed. WVNS had requested authorization on April 24, 2002, from DOE to proceed with GPC decontamination work and was awaiting approval to begin work.

Characterization of Other Main Plant Areas: The HLW characterization project, which focused on HLW tanks 8D-1 and 8D-2, had been expanded to include the balance of the waste tank farm (tanks 8D-3, 8D-4 and the supernatant treatment system), the vitrification cell, and the Main Plant process building (58 cells). Work to complete the measurements and sample analyses for characterizing HLW tanks 8D-1 and 8D-2 is continuing as part of this expanded facility characterization effort. For each area of the plant within the project scope, process knowledge or newly collected samples will be used to characterize radioactive materials present. Historical radiation surveys and new measurements will enable determination of dose rates in the facilities, and will be used with modeling software to estimate radionuclide inventories present. Historical data is of variable quality, and personnel entries for sampling and measurements are expected to be required in many areas. WVNS presented some of the preliminary experience of personnel entries into extraction cell 2 and the product purification cell, as well as some of the challenges to accurately characterizing the rooms.

VI. Waste, Fuel & Environmental Projects

The monitor toured the Remote Handled Waste Facility to observe the status of construction. When completed, this facility will handle waste materials that are too large or too radioactive to be handled in existing site facilities.

Waste shipments from WVDP were resumed in December 2001, following completion of the corrective actions resulting from the July 2001 leaking package shipped to the Nevada Test Site (discussed in the previous monitoring report). Shipments of mixed waste for processing were also begun, with viable alternatives identified for dealing with the identified mixed waste streams at WVDP. Progress was also made in developing the program for packaging and disposing of transuranic wastes, with significant work to be completed during fiscal year 2003.

VII. Exit Meeting

The monitor discussed the results of this visit with DOE site management, and also with WVNS management, on June 6, 2002.

PARTIAL LIST OF PERSONS CONTACTED

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