



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

October 7, 2005

John Swailes, Director  
Department of Energy  
West Valley Demonstration Project  
10282 Rock Springs Road  
West Valley, NY 14171-9799

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION MONITORING VISIT 2005-002

Dear Mr. Swailes:

This report summarizes the results of the monitoring visit of August 8-11, 2005, at the Department of Energy's (DOE) West Valley Demonstration Project. The purpose of this monitoring visit was to evaluate activities associated with the processing, packaging and transportation of radioactive material, the corrective action program and ongoing decommissioning activities associated with the vitrification facility. This routine monitoring visit was conducted by Robert Prince from the Region I NRC office. The results of this monitoring visit were discussed with you and members of your staff on August 11, 2005. Details of this review are provided in the enclosed report.

Based on this review the NRC monitor determined that additional effort is needed to ensure that contractor work performance meets DOE established management expectations and standards. Recent enhancements relating to established trending and tracking of key performance indicators will assist in monitoring performance activities in the field. The NRC monitor also determined that the handling, processing and shipment of radioactive material is performed in accordance with the requirements of established programs.

Please contact me at (610) 337-5205 if you have any questions about this report.

Thank you for your cooperation.

Sincerely,

*/RA/*

Marie Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure:  
Monitoring Report No. 2005-002

cc:  
State of New York  
Paul Piciulo, Ph.D., Program Director  
Herman Moore, Team Leader  
T. J. Jackson, Deputy Director

J. Swailes  
Department of Energy

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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION I**

MONITORING REPORT

Monitoring Visit Number: POOM-032/2005002

Project Number: POOM-032

Location: West Valley Demonstration Project  
10282 West Spring Road  
West Valley, NY 14171-9799

Visit Dates: August 8-11, 2005

Monitor: Robert Prince  
Health Physicist

Approved by: Marie Miller  
Decommissioning Branch  
Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

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

NRC Monitoring Report No. 05-002

This report summarizes the monitoring visit conducted over the period of August 8-11, 2005, at the West Valley Demonstration Project (WVDP). The purpose of this monitoring visit was to evaluate ongoing decontamination and decommissioning activities associated with the vitrification facility, the corrective action program, and ongoing processing, handling, packaging, and transportation of radioactive waste materials.

Some occurrence reports for 2005 indicate the need to improve contractor performance. In some cases similar contributing causes indicate the need to ensure strict compliance with established work control processes. Corrective actions should be evaluated to ensure that underlining causes have been adequately addressed to improve and maintain acceptable contractor performance. In some cases opportunities for improving performance were not fully evaluated.

Recent changes in the trending and tracking of lower threshold work performance indicators should prove useful in the identification of work-related performance issues at an earlier stage. Conduct of Operations training presented key topics relevant to strengthening overall work performance. Quality Assurance (QA) assessments of project activities were adequately performed.

Radioactive waste streams were properly characterized. Documentation to support the development of radioactive material shipping manifests, including radionuclide content of packages, curie amounts, and the proper designation and classification of radioactive material shipments were adequately performed in accordance with approved procedures. Radioactive material storage areas were properly posted and containers labeled and access to storage areas maintained. Activities associated with the processing, segregation, and packaging of radioactive waste material were performed in accordance with governing procedures and applicable program requirements.

## **REPORT DETAILS**

### **I. Introduction**

This report documents the monitoring visit to the West Valley Demonstration Project (WVDP) on August 8-11, 2005. The purpose of the monitoring visit was to review ongoing decontamination and decommissioning activities associated with the vitrification facility, the corrective action program, and ongoing processing, handling, packaging, and transportation of radioactive waste materials.

### **II. Corrective Action Program**

#### **A. Inspection Scope**

The NRC monitor reviewed selected occurrence reports issued since the last monitoring visit and supporting documentation. These occurrence reports were reviewed to evaluate the identification of issues and the status of corrective actions. The evaluation consisted of interviews with cognizant personnel, field observations and review of documentation.

#### **B. Observations**

Occurrence evaluations identified that contractor performance did not meet established management expectations. The most significant item in this regard was associated with the installation and testing of the breathing air system for the new Lag Storage Area 4 (LSA-4) sorting structure. The monitor reviewed Occurrence Report 2005-0003, "Procedural Noncompliance During Nitrogen Leak Testing of Breathing Air System (LO/TO)". The LSA-4 structure was erected within the existing Container Sorting and Packaging Facility (CSPF) located adjacent to an existing sorting facility. The work scope included the testing of a new breathing air header contained within the new structure, and associated configuration control, and lock-out/tag-out requirements to support the installation and testing of the header.

The NRC monitor noted that the work documents required the breathing air system be tested prior to connecting the system to the existing breathing air system. Isolation valves were to be tagged and maintained locked in accordance with the contractor's lock-out/tag-out (LO/TO) program. During the course of work activities, a verbal field change was made allowing the connection of the LSA-4 breathing air header to the existing CSPF breathing air system prior to leak testing the new header. This decision was verbally communicated within contractor organizations and was not in compliance with existing work documents, that required testing of the system prior to connection to the CSPF breathing air header. An individual involved in the work questioned this decision and was informed that verbal approval had been obtained to deviate from the approved work package. Configuration control specified in work documents, required the system be capped prior to leak testing. During the actual performance of the nitrogen leak test, at one point configuration control consisted of a single, closed and unlocked, valve. This configuration was inconsistent with the requirements of the contractor's LO/TO program. The inspector noted that a contractor Quality Assurance (QA) Issue Report issued on 5-10-05, prior to the event, identified that verbal direction was utilized as a means of maintaining current status of design changes in the field. This was contrary to accepted practices for maintaining configuration control in the field.

During the actual performance of the nitrogen test the CSPF breathing air system in an adjacent sorting area was in use. The contractor supervisor assumed that no entries in the CSPF would be performed, based on published work schedules. When entries in the CSPF were resumed this information was not effectively communicated to the supervisor coordinating the leak test. The situation was only corrected when a QA representative informed responsible work organizations that testing was in progress while the CSPF breathing air system was in use. The contractor's review of the event determined that for a period of time, estimated to be 1 to 1.5 hours in duration, individuals were utilizing the CSPF breathing air system during the nitrogen test when a single, unlocked, closed valve was the only barrier between the systems. The inspector noted that work documents allowed for a nitrogen test pressure of 110 psi. The highest nitrogen test pressure achieved during the test was 25 psi, while the breathing air system in use at the time was maintained at a pressure of 90 psi. Consequently, the portion of the CSPF breathing air system in use, during the time that the nitrogen leak test was in progress, was not impacted during the test.

The contractor, West Valley Nuclear Services Company (WVNSCO), performed an independent review of the event. The independent review concluded that the root cause for the event was failure to follow procedure. This independent evaluation also identified several contributing causes. The NRC monitor noted similarities between this event and issues associated with Vitrification Facility work activities, identified by the contractor, and addressed in a previous monitoring report, 05-001, issued in April 2005. In both cases changes in the scope of work were not effectively evaluated prior to initiating work activities.

The NRC monitor also reviewed the contractor's evaluation regarding the recent discovery of water intrusion into the decommissioned fuel receipt storage pool (FRS). The pool is currently maintained dry since fuel is no longer present. The contractor believes that rain water is seeping through the walls of the decommissioned pool and accumulating in the cask set-down area of the pool. The cask set-down area is the lowest elevation point of the FRS. Water samples had been collected and analyzed for gross activity. Specific radionuclide analysis results were not available nor an accurate estimate of the volume of water that had accumulated in the FRS. Ground water data had not been evaluated to determine if there was an impact on ground water monitoring stations due to the water intrusion. Corrective actions reported to the NRC monitor were narrowly focused with limited follow-up actions identified or planned. (Subsequent to the onsite monitoring visit, DOE representatives met with contractor personnel and developed a near term action plan to further evaluate the water intrusion into the FRS. The action plan addressed pertinent issues and will provide additional data to assist in evaluating the situation.)

The contractor conducted a recent Tri-Annual Exercise (TRIEX) whereby the effectiveness of various on and offsite organizations with emergency response responsibilities were evaluated. The exercise involved a simulated rail accident with spilled radioactive waste shipping containers. Based on presentations made to the NRC monitor it was noted that limited follow-up had been taken or planned to ensure that lessons learned were identified and appropriate corrective actions implemented in order to maximize the benefits to be gained from conducting such an exercise. No formal mechanism had been established to evaluate lessons-learned or to formulate corrective actions to improve response capabilities of the offsite agencies.

### C. Conclusions

Some occurrence reports for 2005 indicate the need to improve contractor performance. In some cases similar contributing causes indicate the need to ensure strict compliance with established work control processes. Corrective actions should be evaluated to ensure that underlining causes have been adequately addressed to improve and maintain acceptable contractor performance. In some cases opportunities for improving performance were not fully evaluated.

## III. **Project Oversight Activities**

### A. Inspection Scope

The inspector reviewed various oversight programs and mechanisms utilized by DOE and contractor organizations to monitor performance of work activities. The evaluation consisted of reviews of performance monitoring reports and interviews with cognizant personnel.

### B. Observations

Since the last monitoring period the contractor has developed and initiated a mechanism to trend, track, communicate and disseminate lower-threshold performance indicators. The NRC monitor noted that the project oversight report was comprehensive, clearly identified adverse trends by means of bar charts and was distributed to responsible managers for evaluation. The contractor developed and scheduled a training course entitled "Conduct of Operations/ISMS Refresher 2005". The inspector noted that this course covered such topics as procedure compliance, human performance attributes of work, safety management, review of recent events and lessons learned. The course addressed key elements associated with work control processes.

The contractor QA organization performed a surveillance of the LO/TO program, in part, as a result of the LSA-4 breathing air header nitrogen leak test event, discussed in Section II of this report. Other QA assessment reports of procedure compliance identified several procedure non-compliance issues and presented appropriate recommendations. The findings of this report in addition to the fact that QA personnel were instrumental in identifying weaknesses in work control processes, associated with the LSA-4 event, indicate the continued benefit of performing these independent assessments of ongoing work activities.

### C. Conclusions

Recent changes in the trending and tracking of lower threshold work performance indicators should prove useful in the identification of work-related performance issues at an earlier stage. Conduct of Operations training presented key topics relevant to strengthening overall work performance. QA assessments of project activities were adequately performed.

#### **IV. Radioactive Waste Handling, Packaging and Transportation**

##### **A. Inspection Scope**

The inspector reviewed waste characterization profile packages, methods used to determine curie content and radionuclide concentrations for selected radioactive material packages and shipments, and manifests for radioactive material shipments. The evaluation consisted of document reviews and interviews with cognizant personnel.

##### **B. Observations**

The NRC monitor reviewed waste profile packages for soil and miscellaneous debris waste streams utilized to characterize waste and to develop proper manifests for radioactive waste shipments. Multiple samples were analyzed for a given waste stream with the highest radionuclide activity used as input for determining curie content for a specific shipment. The inspector noted that the curie content for soil debris was conservatively estimated based on container radiation levels, with specific methods developed to determine radionuclide content covering a given range of radiation levels.

The inspector reviewed several Radioactive Waste Package Data Sheets. These data packages include relevant information supporting the characterization of waste placed within a given container, and information required to properly manifest the associated radioactive waste shipment. The data sheets included such information as container radiation survey levels, the radionuclide and curie content of a container and proper shipping name and classification. The data packages were thorough and properly completed and reviewed by qualified personnel in accordance with applicable procedures.

Sealand containers are utilized for various radioactive waste rail shipments. Several sealand containers that had been procured and available for use were inspected. These containers were receipt inspected by the contractor and noted to be in good physical condition. The receipt inspection had provisions for rejecting containers discovered to be unacceptable for shipment of radioactive waste material.

The NRC monitor observed ongoing waste handling and segregation activities in the CSPF. Appropriate radiological control measures including the use of respiratory protection and monitoring of airborne contamination levels was noted. Observers stationed immediately outside the processing area had the capability to observe operations via a window located adjacent to the work area. Additionally, audio communication with workers inside the facility were also utilized. The ability to directly observe ongoing processing activities facilitated the proper documentation, handling and segregation of waste materials into designated waste streams.

The NRC monitor observed various radioactive waste storage and staging areas. The melter, concentrator feed makeup tank (CFMT), and melter feed hold tank (MFHT) containers, staged for shipment were properly posted and covered in shrink wrap as added protection from the elements. DOE representatives stated that budgeting to ship and dispose of these containers would possibly be included in the fiscal year 2006 budget. The inspector noted that



approximately 16 (150 cubic feet each) containers were in storage waiting a waste incidental to reprocessing (WIR) determination. These wastes included the sodium-bearing material and required a WIR determination prior to disposal. Radioactive material storage locations associated with materials selected for processing in the Remote Handled Waste Facility (RHWF) were inspected. Radioactive material containers were labeled and properly stored in accordance with approved procedures. The inspector noted that the priority for scheduling containers for processing at the RHWF were based on such criteria as the material condition of storage containers and as low as reasonably achievable (ALARA) considerations.

### C. Conclusions

Radioactive waste streams were properly characterized. Documentation to support the development of radioactive material shipping manifests, including radionuclide content of packages, curie amounts, and the proper designation and classification of radioactive material shipments were adequately performed in accordance with approved procedures. Radioactive material storage areas were properly posted and containers labeled and access to storage areas maintained. Activities associated with the processing, segregation, and packaging of radioactive waste material were performed in accordance with governing procedures and applicable program requirements.

### V. **Management Meetings**

#### Exit Meeting Summary

The inspector presented the monitoring visit results during an out-briefing meeting with yourself and members of your staff, New York State Energy Research and Development Authority (NYSERDA) representatives and others on August 11, 2005. DOE and DOE contractor personnel acknowledged the observations presented by the inspector.

#### Other Meetings

The inspector attended a West Valley Demonstration Project Quarterly Public Meeting on the evening of August 9, 2005. Approximately 20 members of the public and West Valley Demonstration Project representatives were in attendance.

### Partial List of Persons Contacted

#### Department of Energy

Chris Eckert, Health Physicist  
 Dave Gray, General Engineer  
 Bill Hunt, Facility Representative  
 \*T.J. Jackson, Deputy Director  
 \*Herman Moore, Facility & Waste Disposition Projects, Team Leader  
 \*John Swailes, WVDP Director

#### NYSERDA

Colleen Gerwitz, Program Manager  
 \*Paul Piciulo, Director  
 \*Ted Sonntag, Program Manager

#### WVNSCO

\*Robert Carter, Manager - Quality Assurance  
 Lettie Chilson, Nuclear Safety & Emergency Management Manager  
 Jeff Choroser, Senior Engineer  
 Peggy Loop, Environmental Engineer III  
 \*Jack Gerber, Manager - Environmental, Safety, Health & Quality  
 Jim Gramling, Fellow Engineer  
 Joe Jablonski, Operations Manager  
 \*Stuart MacVean, WVNSCO Vice President  
 \*Russ Mellor, WVNSCO President  
 Linda Michalczak, Engineer  
 \*Lawrence Myszka, Nuclear Safety & Emergency Management  
 Howard Payne, Senior Engineer  
 Dave Ploetz, Plant Systems Engineering Manager  
 Thomas Schalberg, Environmental Engineer  
 Mike Sheridan, RHWF Operations Manager  
 \*Paul Valenti, Manager - Waste Operations  
 Shiela Westcott, Waste Shipping and Disposal Manager  
 Joe Wolniewicz, URS Senior Physicist

### List of Documents Reviewed

WVDP-301, Sampling and Analysis Plan (SAP), Lag Soil

Waste Profile for Waste Stream 8002-04, WVDP Soils, Gravel and Asphalt, Rev 6, Dated 7-18-2005

Occurrence Report OH-WV-WVNS-LAG-2005-0003, Procedural Noncompliance During Nitrogen Leak Testing of Breathing Air System (LO/TO)

**List of Documents (Continued)**

Occurrence Report OH-WV-WVNS-LAG-2005-0002, FM-200 Fire Suppression System Discharges During Sorting and Packaging Activities

Procedure WM-210, Waste Stream Characterization

Procedure WM-230, Determining Radioactivity in a Waste Package

Procedure SOP 300-26, Offsite Transportation of Waste and Hazardous Material

Procedure SOP 300-07, Waste Generation, Packaging, and On-Site Transportation

Surveillance Report SR 04-143, QA Assessment of Lock Out/Tag Out Program

Surveillance Report SR 05-147, QA Assessment of Procedure Compliance

TR1108B, Conduct of Operations/ISMS Refresher 2005, Training Handouts

Shipment Characterization and Manifests for shipments RWO 5040, 5067, 5068, and 5069

Radioactive Waste Package Data Sheets, SOP 300-7, Appendix D forms for container identification numbers: 12-3327 and 1205-C, 12-1247-B and 1588-B, 12-1091-C and 1139-B, 12-1132-B and 1260-B, 12-1493-B and RO-031.

**List of Acronyms**

ALARA	As Low As Reasonably Achievable
CFMT	Concentrator Feed Makeup Tank
CSPF	Container Sorting and Packaging Facility
DOE	Department of Energy
FRS	Fuel Receipt Storage pool
LAS-4	Lag Storage Area 4
LO/TO	Lock Out/Tag Out
NYSERDA	New York State Energy Research Development Authority
MFHT	Melter Feed Hold Tank
QA	Quality Assurance
RHWF	Remote Handled Waste Facility
TRIEX	Tri-Annual Exercise
WVDP	West Valley Demonstration Project
WVNSCO	West Valley Nuclear Services Company