

APR 1 1994

Mr. Thomas J. Rowland, Director
West Valley Project Office
U. S. Department of Energy
P.O. Box 191
West Valley, NY 14171

Dear Mr. Rowland:

SUBJECT: DOE WEST VALLEY PROJECT MONITORING REPORT

On March 7-11, 1994, a monitoring visit was made to the Department of Energy (DOE) West Valley Demonstration Project site to review activities of your contractor, West Valley Nuclear Services Company, Inc. (WVNS), with regard to the project status and welding issues. To assist in our review, the contractor provided updated status reports on a variety of topics, including vitrification, THOREX transfer, the Draft Environmental Impact Statement (DEIS), and spent fuel storage. Details of the reviews are provided in Enclosure 1. Individuals present at the Exit Interview with the contractor and DOE are indicated in Enclosure 2.

As a result of this review, the Monitors determined that, in general, the contractor has established viable programs in the areas reviewed. These programs appear adequate to protect the public health and safety. However, as indicated in enclosure 1, the Monitors identified two areas requiring improvement. These areas are: (1) the code standards used to read radiographs are not indicated on the Radiographic Testing sheets and (2) the safety impact of a chemical spill in the cold chemistry building in regard to the habitability of the Vitrification Facility Control Room needs to be determined.

The monitoring team consisted of Joseph Furia, Project Engineer - West Valley, and Joseph Carrasco, Reactor Engineer.

If you have any questions, please call me at (301) 504-2667.

Sincerely,
Original Signed By:
Gary Comfort
Licensing Section 2
Licensing Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Enclosures: As stated

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ENCLOSURE 1

Review of the Project Status and Welding Issues

The Monitors reviewed documentation, held discussions with cognizant DOE and contractor personnel and observed activities in progress as discussed below.

1.0 PROJECT STATUS OVERVIEW

The contractor presented updated project status briefings on the following:

Vitrification Facility - including construction, operational readiness review (ORR), THOREX readiness assessment (TRA), safety assessment report (SAR), control room design and control room heating, ventilation and air conditioning (HVAC)

Spent Fuel On-Site Storage

Draft Environmental Impact Statement (DEIS)

Environmental Monitoring Program

The information provided indicates that the contractor appears to have an appropriate safety perspective and that the public health and safety are adequately protected.

Documentation and drawings indicate that the air intake for the Vitrification Facility, from which the control room air will also be taken, is located on the west side of the Vitrification Facility. Also on the west side of the Vitrification Facility, south of the air intake, is the Cold Chemistry Facility. On the roof of the Cold Chemistry Facility are two atmospheric vents, above the chemical holding tanks. The Monitors are concerned that in the event of a leak in one of the Chemical Holding Tanks, the released vapors might enter the air intake for the Vitrification Facility and negatively impact on the habitability of the control room.

After review of the information on the layout of the Vitrification Facility, especially the location of the air intake in relation to the location of the Cold Chemistry Facility, the Monitors recommend that a safety review be conducted to ensure that an unresolved safety issue does not exist regarding control room habitability in the event of a spill in the Cold Chemistry Facility.

2.0 PREVIOUSLY IDENTIFIED AREAS FOR IMPROVEMENT

During a previous monitoring visit on September 20-24, 1993, five areas for improvement were identified. Listed below are these areas and the actions taken by the contractor.

- (1) Inadequate reporting and independence of the Quality Assurance function as a result of recent contractor management reorganization. By letter dated November 18, 1993, the contractor reported changes made to the organizational charts and responsibilities lists contained in Procedures QM-1, "Quality Management," and WVDP-111, "Policy and Procedure." Review of these procedural changes indicate that the appropriate independence of the quality assurance function has been re-established.
- (2) Lack of capability to analyze particulate and charcoal cartridges during an emergency. The contractor purchased the necessary standards and has established appropriate counting geometries.
- (3) Inadequate quality assurance program for gamma spectroscopy systems utilized in the Analytical Laboratory. The contractor has instituted the use of mixed quality control standards and daily tracking of background counts, expanded its blind sample analysis program, and added method quality control to its self-assessment schedule.
- (4) Inadequate calibration of instrumentation for the analysis of some non-radiological substances. The contractor performed a methods review conducted by other DOE sites, instituted a blind samples program, and changed its procedures to include three-point calibration of instrumentation.
- (5) Disparities between the annual Radiological Environmental Monitoring Report and the source term utilized to characterize the wastes in tanks 8D-2, 8D-1, and 8D-4. This program area was not addressed in this monitoring visit.

The Monitors determined that the above actions appropriately addressed our concerns, and these items are now considered closed (with the exception of number 5).

3.0 WELDING PROGRAM

The Monitors reviewed documentation, held discussions with the cognizant DOE contractor and subcontractor, and observed activities in progress. This site visit was conducted to verify that the contractor and subcontractor were addressing NRC comments made during the previous engineering monitoring visit. Key programmatic requirements with regard to the analysis, design, and installation of the high-level waste transport piping system were also examined.

3.1 REVIEW OF THE WVNS AND SUBCONTRACTOR WELDING PROGRAM

The monitors reviewed and verified the corrective actions and their implementation to address comments made in the previous NRC monitoring visits:

(1) Mechanical Cleaning

Mechanical cleaning of the weld prep was being used, whereas the specification called out only solvent cleaning.

The Monitors verified that the contractor (WVNS) initiated an Engineering Change Notice (ECN 6355) to revise the construction specification, WVNS-CS-139, Rev. 4. This revision allowed mechanical cleaning in addition to, or in-place of, degreasing solvent. The Monitors also verified that this revision was implemented under Revision No. 6 of Construction Specification WVNS-CS-139. The Monitors had no further questions.

(2) Welding Amperage and Voltage Verification

No checks of welding amperage and voltage were performed during in-process welding.

The Monitors found that a corrective action was initiated through Surveillance Report No. SR-94-061, in which the contractor notified the subcontractor of the request that the frequency of monitoring for the weld heat input (voltage and amperage) be increased when the welding machine is not located in close proximity of the welders. The Monitors verified that a surveillance report (SR) was issued on February 17, 1994. Specifically, Item 2 of the SR's compliance criteria instructs the subcontractor to verify that the amperage and voltage during in-process welding activities are in accordance with the applicable weld procedure. The Monitors found this corrective action acceptable.

(3) Labeling for the Welds in Repair Status

The welds under repair should be marked and labeled to identify the repair status. Also, the weld records were not annotated to indicate why identified defects were acceptable.

The Monitors verified that Procedure Change Notice (PCN) AR7-9400-1, Revision 3, was issued to add Section 12.3.1 (a) which required unacceptable welds be logged and tagged. The Monitors had no further questions.

(4) Seismic Analysis to Evaluate Incomplete Weld Penetration

Questions arose as to whether flaws due to incomplete weld penetration, (allowed by ANSI/ASME B31.3) on pipe stresses were factored into the seismic analysis and if whether the identified flaws met the requirements of the standard.

The Monitors reviewed and verified the Architect/Engineer (A/E) analysis and summary report describing the particulars that support the acceptance of the ANSI/ASME B31.3 criteria for the waste transfer pipe. The A/E analysis demonstrated that the pipe was not overstressed, and the resultant maximum stresses resulting from the design basis earthquake were within ASME B31.1 code acceptance criteria, a more stringent code than ANSI/ASME B31.3. The Monitors also noted that the contractor had not taken the actions required to indicate on the Radiographic Testing Sheet the size of the flaws identified in the standard. Contractor personnel committed to correcting this oversight subsequent to this monitoring trip.

(5) Rejection Rate

The NRC expressed a concern that the 12 percent Radiographic Testing (RT) rejection rate on the outer welds was based on examination of only 5 percent of the welds. For this reason, an increase in the in-process inspections was recommended. To address this concern, the contractor initiated ECN 6608 to increase the in-process inspection from 5 percent to 20 percent for the outer pipe welds.

In addition to increasing the in-process inspection rate, a task team was established to evaluate the implications of the 12 percent weld rejection rate during the examination of only 5 percent of the welds.

The Monitors verified that in September 17, 1993, the contractor had written CAR-006. The Monitors reviewed CAR-006 and noted a complete and thoroughly reviewed corrective action consisting of seven action items. These action items are as follows: (1) Implement a restricted access test to all site welders involved with butt welding. (2) Production welds that are of a degree of difficulty greater than the restrictive access test parameters shall be considered non-weldable and evaluated for redesign. (3) Radiography shall be provided following the welding process and shall not exceed a one-week interval without the review and approval of the investigating team. (4) Maintain a system for tracking and retrieval of all radiographed welds developed as a result of the investigation of CAR-WV-006. (5) Provide a rate change for those

welders performing in restricted access areas. (6) All remaining butt welds will be accomplished with the TIG (GTAW) process to optimize the welding process. (7) The corrective action steps noted above will be conveyed to all the welders through training sessions.

The Monitors verified that each step of the corrective action presented in CAR-006 was properly implemented by reviewing the surveillance results that show zero-field radiography rejections since November 1993. Therefore, the Monitors concluded that WVNS has overcome past difficulties of weld acceptability, and the corrective action was effective. The Monitors had no further questions.

3.2 REVIEW OF RESPONSES TO QUESTIONS RAISED BY UA PLUMBERS AND PIPE FITTERS

The Monitors verified that in response to the questions raised by Local 36, the contractor and the subcontractor performed independent walkdowns and evaluations of the allegations to ensure that workers were not subject to undue safety hazards or risks. As a result of this evaluation, it was concluded that worker safety was not compromised.

The Monitors verified that the contractor also reviewed welding-related questions for potential significance on the design requirements and determined that piping code requirements have been met or exceeded. An independent evaluation was also conducted, and the results of this evaluation were documented in a report that concluded that none of the questions were judged to be of significance to the safe operation or to have affected the margin of safety for the worker, the public, or the environment.

The Monitors reviewed the WVDP construction welding program in April 1993. As part of this review, the Monitors evaluated the Local 36 questions and determined that the procedures conformed to ASME Section IX requirements; each of the procedures was adequately qualified prior to use, and welders were qualified to use both the TIG and SMA procedures in the positions required. During this monitoring visit, these conclusions were confirmed, and the Monitors had no further questions.

3.3 REVIEW OF THE STRESS ANALYSIS FOR THE HIGH LEVEL WASTE TRANSFER PIPING

The Monitors reviewed calculation WV4-1. This calculation presents stress analysis of the HLW transfer piping which is outlined in isometric drawing No. WV-5, Sheets 1 and 2. This calculation was performed by the A/E to support reactions corresponding to each of the loading conditions experienced by the

pipng during plant operation. This calculation also ensures that the piping layout as shown on isometric No. WV-5 complies with the requirements of the ASME/ANSI B31.3, Chemical Plant and Petroleum Refinery Piping Code.

The Monitors found the pipe routing, support location, and support functions of the computer model used in the stress analysis in agreement with the applicable drawings. The analytical approach and calculational process were found to conform to the A/E Design Criteria, "Sludge Mobilization Transfer System," Rev. 2, dated May 6, 1992.

The loads and load combinations input in the analysis were found adequate and in accordance with the design bases. The output showed that the maximum stress was due to thermal expansion, followed by a combination of seismic, relative displacements, and live/dead weight stresses plus pressure. These maximum resultant stresses, were found to be within code allowances. The Monitors had no further questions.

3.4 CONCLUSIONS

Based on the review, the Monitors determined that the contractor and subcontractor have established an improved and acceptable welding program. In general, the welding program has been enhanced to a point in which zero rejections of Radiographic Testing (RT) of piping welds were detected since November 1993. All open items from previous inspections were properly and timely addressed by the contractor. The contractor's stress analysis for the sludge mobilization-transfer piping was also reviewed and found acceptable.

However, the Monitors identified two areas requiring improvement: (1) the code standards used to read radiographs are not indicated on the Radiographic Testing sheets and (2) the safety impact of a chemical spill in the cold chemistry building in regard to the habitability of the Vitrification Facility Control Room needs to be determined.

ENCLOSURE 2

EXIT INTERVIEW PARTICIPANTS

1. Department of Energy

- A. Al-Daouk, Site Engineering Manager
- D. Cook, Site Projects Manager
- J. Desormeau, Industrial Safety & Laboratory Operations Manager
- B. Hamel, Facility Representative
- W. Hunt, Vitrification, Maintenance and Construction Manager
- T. Jackson, Quality and Process Improvement Manager
- E. Matthews, Environmental Programs Manager
- B. Mazurowski, Deputy Director
- T. Rowland, Director
- A. Yeazel, Operations, Maintenance and Construction Program Manager

2. New York State Energy Research and Development Administration

- D. Westcott

3. West Valley Nuclear Services, Inc.

- S. Barnard, Construction Project Manager
- B. Connors, Site and Fuel Project Manager
- V. DesCamp, Vitrification Design Engineering Manager
- J. Hummel, Quality Assurance Manager
- R. Humphrey, Construction and Project Administration Manager
- R. Lawrence, Vitrification Project Manager
- J. Mahoney, Analytical Chemistry Manager
- P. Mussel, Quality Services Engineer
- W. Poulson, President and General Manager
- D. Shugars, Engineering Manager
- J. Volpe, Vice President, Environmental, Safety, Health and Quality Assurance
- C. Winkler, Design Engineering Manager