

U.S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-146

License No: DPR-4

Report No: 1998203

Licensee(s): GPU Nuclear Corporation and
Saxton Nuclear Experimental Corporation

Facility: Saxton Nuclear Experimental Facility

Location: Saxton, Pennsylvania

Dates: September 14-17, 1998

Inspector: Thomas F. Dragoun, Senior Reactor Inspector

Approved by: Seymour H. Weiss, Director
Non-Power Reactors and Decommissioning
Project Directorate

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EXECUTIVE SUMMARY

The monthly meeting with the Citizens Task Force continued to be an effective forum for public participation and information exchange. Preparations for removal and shipment of large components were well coordinated. Cold weather protection for equipment and workers was appropriate. Increased emphasis on the fitness for duty program for contractor personnel was appropriate. Conduct of work in the controlled area was found to be in compliance with NRC requirements. No safety concerns or violations of regulatory requirements were identified.

Report Details

Summary of Plant Status

A large fabric and metal frame tent had been erected on site for temporary storage of large components removed from the containment building. Scaffolding around the exterior of containment was being erected to support cutting of access openings. Plugging and welding of penetrations in the steam generator and pressurizer vessels was underway. Approximately 100,000 pounds of contaminated metal scrap was packaged for shipment and stored on site.

1.0 Transportation of Radioactive Material

a. Inspection Scope (Inspection Procedure 86750)

The inspector reviewed:

- Procedures,
- Route to be used to transport large components,
- Railroad siding arrangements, and
- Documentation for a shipment of used respirators.

b. Observations and Findings

TS 1.0.11 states, in part, that the process control program (PCP) shall contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid waste is accomplished in accordance with applicable regulations. The document titled "SNEC Facility Process Control Program" (#6575-PLN-4542.09) was submitted to the NRC on September 16, 1997, but did not contain this information. During this inspection, the licensee stated that shipments were controlled in accordance with Standing Order SOM-6575-97-C1. In addition, waste characterization and shipping papers were prepared in accordance with TMI procedure OS-22. The inspector was able to locate the required information in these documents.

The inspector accompanied a tour of the roadway and rail siding that will be used for shipment of large components. The licensee indicated that the heavy load contractor (Hake) was experienced and was using lessons learned from similar projects. Planning appeared to be thorough. Coordination with the local municipalities along the route, Penn DOT, State Police, railroad companies, insurance providers, and the waste burial site was discussed. Arrangements to use private property adjacent to the rail siding for staging and transferring loads to the rail cars will allow for enhanced safety and security precautions.

The characterization and classification of a shipment of used respirators being sent to TMI was completed using the "RAMSHIP" computer program. Shipping documents were completed in accordance with licensee procedures and regulatory requirements.

c. Conclusions

Shipment of radioactive material was conducted in accordance with regulatory requirements.

2.0 Cold Weather Preparations

a. Inspection Scope (Inspection Procedure 71714)

The inspector reviewed:

- completion of the cold weather checklist,
- protection of the exhaust monitoring system, and
- protection of personnel and susceptible systems.

b. Observations and Findings

A cold weather checklist was available. Some of the checks were complete but not all. Capacity and placement of heaters for freeze protection of buildings, safety equipment, water, and electrical utilities appeared adequate.

The airborne radioactivity monitor for the exhaust stack was located in a insulated, heated enclosure equipped with a low temperature alarm that sounds in the Decommissioning Support Facility. However, the small bore air sampling and return lines for the monitor were not heat traced. Moisture in the heated air being exhausted from the CV could condense, freeze, and plug the sample line. The RSO stated that the lines would be heat traced and insulated before cold weather and steps added to the daily check procedure to verify proper operation of the heat tracing. This matter will be reviewed in a future inspection.

c. Conclusions

The licensee has effectively implemented a program to protect safety-related systems against extreme cold weather.

3.0 Fitness for Duty

a. Inspection Scope (Inspection Procedure 71801)

The inspector reviewed:

- implementation of a fitness for duty program,
- staff adjustments, and
- termination briefing information.

b. Observations and Findings

The fitness for duty program is described in the GPU Nuclear Corporate Policy and Procedure Manual Number 1000-ADM-2002.06 revision 12. This program is applicable at the Saxton site with some of the nuclear power plant requirements described as "optional." The Saxton Program Director stated that, of ten randomly selected personnel who provided samples at various times since July, three tested positive for alcohol or drugs. Disciplinary action taken for all three was immediate termination. The Director also stated that representatives from GPU Human Resources and the GPU medical staff held special discussions with site contractor personnel during the week of September 28, 1998. All long-term contractor personnel with unescorted access were also tested as part of pre-job screening. GPU personnel continue to be randomly tested.

The inspector reviewed the staff realignments taken to replace terminated personnel. Replacement personnel were qualified and no safety concerns were identified.

The inspector observed the termination briefing of one individual. Information provided regarding rights and responsibilities appeared to be in conformance with the GPU policy.

c. Conclusions

The GPU fitness for duty program was satisfactorily implemented.

4.0 Radiation Protection

a. Inspection Scope (Inspection Procedure 83750)

The inspector reviewed the radiological controls for plugging and welding penetrations in the pressurizer including:

- access training,
- a radiation work permit,
- radiation surveys,
- respiratory protection program, and
- control of exposure to alpha emitters.

b. Observations and Findings

The inspector reviewed the training provided to workers prior to being granted access to the controlled area. Information required by 10 CFR 19.12 was provided. The radiological conditions and protective measures for the pressurizer plugging work were described in Radiation Work Permit #41, "Preparation and Support for Steam Generator and Pressurizer Removal." The inspector noted that the area dose rates indicated on the RWP were different from dose rates recorded during the

referenced surveys. The HP technician who issued the RWP explained that a section of steam generator cold leg piping was removed after the surveys were completed. This pipe section was a major contributor to the radiation field and he adjusted conditions on the RWP to account for its removal. This demonstrated good attention to changing conditions as the facility is dismantled.

Observation of work in the primary compartment indicated that workers were complying with RWP requirements, continuous HP coverage was provided, and a fire watch was stationed.

The licensee used local blowers with HEPA filters to provide engineered control of airborne radioactivity created during welding and heat treatment on the contaminated metal. Since respirators were required, the inspector verified that the workers on the job were qualified for respirator use. This included completion of a physical evaluation, fit testing for the type of respirator issued, and training. Issuance of respirators was properly controlled by HP technicians at the personnel access point. No deficiencies were noted. A low oxygen concentration alarm (set at 19.5%) in the primary compartment caused a work stoppage and evacuation. The problem was attributed to air stratification during welding and was resolved by changing the orientation of blower supply outlet locations.

Breathing zone air samples were used to assess worker uptakes of radioactive material. The inspector reviewed the maintenance and calibration of alpha and beta-gamma laboratory counting equipment used to analyze air samples. Equipment is calibrated and maintained by personnel from TMI. An adequate supply of instruments was on hand to allow timely analysis of samples. Daily quality control checks of the counting equipment were performed and recorded by on-site HP technicians using generally accepted techniques. The predominant nuclides present on most air samples were naturally occurring radon daughters. Samples were allowed to decay to reduce the presence of radon daughters and were re-analyzed. Selected samples are also sent to the GPU environmental laboratory for alpha spectroscopy analysis to verify that the assumed isotopic mix has not changed. These are acceptable techniques.

The derived air concentration (DAC) limit for airborne alpha emitting nuclides was reviewed. GPU Calculation Sheet 6575-97-011 calculated the DAC limit for the isotopic mix found in each of the six zones identified during the site characterization study. A gross DAC value of $4.0 \text{ E-}12 \text{ } \mu\text{Ci/ml}$ for alpha emitters was adopted. This value was reasonable and was used to calculate and record DAC-hour dose for the workers. The protection factor allowed by 10 CFR 20 Appendix A for respirator usage was appropriately included in the calculations. Records of sample analysis and dose calculations were well kept and readily retrievable. Within the scope of this review, the CEDE dose assigned to workers in alpha contamination zones was found to be ALARA and within NRC limits.

The inspector noted that all aspects of the respirator and sample analysis laboratory programs relied heavily on support provided from TMI. Continuation of this support

was not guaranteed due to the **proposed** sale of TMI. The Site Supervisor stated that some support could be obtained from contractors. Difficult to replace and other critical support from TMI had been identified to GPU upper management. A similar concern was expressed in a recent letter to the President of GPU from the Citizens Task Force but no reply was received yet. This matter will be reviewed in a future inspection.

c. Conclusions

The radiological controls applied during welding of openings in the pressurizer satisfied regulatory requirements.

5.0 Changes and Modifications

a. Inspection Scope (Inspection Procedure 37801)

For the closure welding of the pressurizer openings, the inspector reviewed:

- welder training and certifications,
- work instruction, and
- the 50.59 review.

b. Observations and Findings

All welders were contract workers. Welders were tested and certified on site in accordance with the GPU welding program. This involved welding test coupons to pipe sections on site which were sent off site for testing and inspection. The record of welder certifications, documented in a GPU letter dated September 8, 1998, listed the procedures that each welder was authorized to perform. All welders who signed in on RWP 41 for work on the pressurizer were certified for GPU Welding Procedure 111, dissimilar metal welds. This was required since many of the welds involved carbon steel to stainless steel. The contractor (Raytheon) site superintendent stated that all completed welds would be inspected in accordance with the GPU program.

The specific work instruction for the pressurizer closure welding (SWI-98-056, rev. 0) was clear, detailed and comprehensive. This procedure had been reviewed and approved as required by TS 3.6. Nonradiological safety precautions included controls for hot work, monitoring for gases, and handling of removed components. The gas-tech monitor (oxygen and explosive gas monitor) used by the industrial hygienist alarmed on low oxygen concentration as discussed in Section 4.0 above. Control of industrial hazards seemed proper.

The 50.59 review of the work (facility change) was attached to the SWI. It provided detailed job specific analysis of potential accidents associated with the work. The justification and rationale for each conclusion of no unreviewed safety question was thorough and technically sound.

c. Conclusions

Closure welding of pressurizer penetrations was done in accordance with regulatory requirements and licensee commitments.

6.0 Exit Interview (Inspection Procedure 30703)

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on September 17, 1998. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

James Byrne, Manager, DD&E
Perry Carmel, Site Supervisor
Rod Case, GRCS
William Heysek, Licensing Department
Robert Holmes, Technical Consultant
Robert Lewis, Raytheon Site Superintendent
Sylvia Morris, Sr. Public Affairs Representative
Arthur Paynter, Radiation Safety Officer
Gordon Powers, Raytheon Engineer
Louis Shamanek, GPU Site Superintendent
Lawrence Simon, Radwaste Shipping Supervisor
G. A. Kuehn, Program Director

Saxton Citizens Task Force

Roger Granlund, Independent Assessor (Penn. State University)

INSPECTION PROCEDURES USED

IP 30703:	ENTRANCE AND EXIT INTERVIEWS
IP 37801	SAFETY REVIEWS, DESIGN CHANGES, AND MODIFICATIONS
IP 71714	COLD WEATHER PREPARATIONS
IP 71801	DECOMMISSIONING PERFORMANCE AND STATUS REVIEW
IP 83750	OCCUPATIONAL RADIATION EXPOSURE
IP 86750	SOLID RADIOACTIVE WASTE MANAGEMENT

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CV	Containment Vessel
DAC	Derived air concentration
DD&E	Decontamination and Decommissioning Engineering
DOT	Department of Transportation
GPU	General Public Utilities Corporation
GRCS	Group Radiological Controls Supervisor
HP	Health Physicist
HEPA	High Efficiency Particulate Air filter
IP	Inspection procedure
NRC	Nuclear Regulatory Commission
RWP	Radiation Work Permit
TMI	Three Mile Island power station
TS	Technical Specifications