

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-146/88-01

Docket No. 50-146

License No. DPR-4 Priority        Category       

Licencee: Saxton Nuclear Experimental Corporation / GPU Corporation  
1 Upper Pond Road  
Parsippany, New Jersey 07054

Facility Name: Saxton Reactor

Inspection At: Saxton, PA and TMI Nuclear Station, Harrisburg, PA

Inspection Conducted: April 27-29 and May 3, 1988

Inspector: A. Weidock 5/25/88  
A. Weidock, Radiation Specialist date

Approved by: S. Shanbaky 5/25/88  
M.M. Shanbaky, Chief, Facilities Radiation date  
Protection Section

Inspection Summary: Inspection on April 27-29 and May 3, 1988 (50-146/88-01)

Areas Inspected: Routine, unannounced inspection by one region-based inspector to review radiation protection activities associated with the decontamination of the Saxton Nuclear Experimental Corporation (SNEC).

Results: One apparent violation was identified: failure to document a release survey (section 4.0). Deficiencies were also noted with the level of pre-planning, management oversight, and attention to detail associated with radiation protection activities.

## DETAILS

### 1.0 Persons Contacted

#### 1.1 Licensee Representatives

S. Acker	SNEC Radiation Safety Officer-designee
*+J. Auger	PWR Licensing Engineer
*+G. Baker	SNEC General Manager
*+D. Etheridge	SNEC Radiation Safety Officer
*+J. Garry	Saxton Site Supervisor, GPUN
+J. Hildebrand	Emergency Preparedness and Environmental Controls Director, GPUN
*D. Husking	Operations QA Manager, TMI
*+S. Molello	GPUN Environmental, Oyster Creek
*C. Pollard	Radiological Assessor, GPUN
*M. Roche	Vice-President, SNEC
*H. Teichmann	Operations QA, TMI
*G. Tomb	Media Relations Manager, GPUN

#### 1.2 NRC Representatives

A. Adams, Jr.	Saxton Project Manager, NRR
*+M. Shanbaky	Chief, Facilities Radiation Protection Section Region I
*+A. Weadock	Radiation Specialist, Region I

\* Attended the exit interview on 5/3/88.

+ Participated in a telephone conference call on 5/16/88.

Other licensee personnel were also contacted during the course of this inspection.

### 2.0 Purpose

The purpose of this routine, unannounced inspection was to review radiation protection activities associated with the Saxton Nuclear Experimental Corporation (SNEC) reactor site. The following areas were included in this review:

- status of previously identified items,
- status of decontamination efforts,
- status of ongoing release survey effort,
- review of SNEC records maintained at the TMI EOF in Harrisburg, PA,
- review of radiological status of the Saxton site soil.

During the course of this inspection the NRR Project Manager visited the site on April 28, 1988 for familiarization purposes.

### 3.0 Status of Previously Identified Items

- 3.1 (Closed) Violation (146/86-02-01): Failure to submit 15 day written follow-up reports for three Containment Vessel sump water samples in excess of 10 CFR 20 activity concentrations in accordance with Technical Specification requirements.

In response to the above violation the licensee initiated the use of already existing GPUN procedures governing regulatory correspondence at Saxton to insure required reports are made. The inspector reviewed Containment Sump sample results and corresponding 15 day reports for sump samples collected during the last quarter of 1986, all of 1987, and the first quarter of 1988. Reports were generated as required for all high activity samples. The inspector did note, however, that the time from sample collection to report generation was typically approximately 30 days, rather than the 15 day notification as required by the Technical Specifications. This apparent untimeliness was also noted and reported by the licensee's Operations QA group.

The inspector discussed the above timeliness concern with the licensee. The licensee indicated that, due to the site's remote location and need to ship samples back to TMI for analysis, significant delays could occur between sample collection and analysis. The licensee indicated they felt the "15 day clock" started when they received the sample analysis results from the lab. This was often 2-3 weeks after sample collection. The inspector recognized the potential for delay and considered the licensee's response reasonable. This item is closed.

- 3.2 (Closed) Inspector Follow-up Item (146/86-02-02): Review Saxton Radiological Environmental Monitoring Program (REMP) annual reports for 1982, 1983, and 1984.

NRC Inspection Report No. 50-146/79-01 identified specific areas outside the Saxton site fence but within the PENELEC fence where soil radioactivity concentrations (primarily Cs-137) were above background. Review of the above licensee REMP reports also indicated above background levels of Cs-137 activity are present in the soil within the Saxton fence. The status of the Saxton soil and licensee plans for additional evaluation are discussed in section 7.0. This item is closed.

As of the date of the inspection, REMP reports for 1985 and 1986 were not available. The licensee indicated that although samples had been collected and analyzed for these periods, results had not received final review and the final reports had not been issued. The licensee indicated an individual has been detailed to complete these reports and stated during the conference call on May 16, 1988 that a

comprehensive REMP report would be available by May 31, 1988. This report will be reviewed during a subsequent inspection.

#### 4.0 Status of Decontamination Activities

From approximately July, 1987 to February, 1988, decontamination work was performed by the licensee in the Radioactive Waste Disposal Facility (RWDF), the Control and Auxiliary Building (CAB), and the pipe tunnel to reduce surface contamination levels to Regulatory Guide 1.86 limits. Easily removable items (partitions, vent ducting, etc.) were surveyed by Health Physics (HP) technicians and released when appropriate. Material above the release limits (including scabbled concrete and the sectioned Refueling Water Storage Tank) was shipped offsite as radioactive waste for burial or for additional decontamination/volume reduction.

The inspector reviewed radiological controls associated with the above activities by the following methods:

- review of applicable SNEC procedures,
- review of the SNEC HP logbook,
- discussion with cognizant personnel,
- review of selected Operations QA monitoring reports,
- review of selected surveys,
- tour of the SNEC site.

Within the scope of the above review, one apparent violation, concerning a failure to document a release survey, was identified and is discussed below.

#### 4.1 Failure to Document Survey

During a tour of the site the inspector noted that decontamination activities in certain areas had been extensive; for example, certain areas of floor had been excavated in the CAB and RWDF. During the tour the inspector noted a residual cut section of a large (approx. diameter 22") pipe jutting out of the pipe tunnel. The licensee indicated the pipe, which was originally approximately 20 feet long and ran below-grade from the RWDF to the pipe tunnel, had been exposed and surveyed in August, 1987. Approximately half of the pipe was released as clean material at that time. The licensee indicated the remaining section of pipe (excluding the residual portion) was surveyed and released in March, 1988.

The inspector reviewed the survey performed in August, 1987 and noted the portion of pipe released at that time was clearly shown to meet SNEC release criteria (i.e., less than 100 net cpm). This survey showed the remaining section of pipe included measurable activity above release limits (200 net cpm). The licensee stated that when this remaining section of

pipe was released in March, 1988, a survey was performed and all sections of pipe above release limits were cut out of the pipe and disposed of separately as radioactive waste. The licensee stated, however, that the survey performed in March, 1988 was not documented.

10 CFR 20.201(b) requires the licensee to perform surveys as necessary to demonstrate compliance with the regulations and as are reasonable to evaluate radiation hazards. 10 CFR 20.401 requires the licensee to maintain records showing the results of surveys performed to comply with 10 CFR 20.201(b). Based on corroborating evidence by several individuals involved in the pipe survey and disposal occurring in March, 1988, the inspector concluded that the licensee did in fact survey the pipe prior to disposal but failed to document this survey. Failure to document the survey of the pipe demonstrating it met release criteria prior to its disposal constitutes an apparent violation of 10 CFR 20.401 (146/89-01-01).

The licensee stated that it was felt the above deficiency in survey documentation was an isolated instance and not a generic concern. The licensee also stated, however, that a review would be performed to insure additional lapses in survey documentation had not occurred for material that had been released. The licensee also indicated that efforts would be made to retrieve the subject portion of pipe from the landfill to verify it had been adequately surveyed. Licensee efforts in this area will be reviewed in conjunction with the licensee's response to the violation.

#### 4.2 Audits of Radiation Protection Activities

Both the TMI Radiological Assessor and the Operations QA group provided independent assessments of activities at Saxton during the decontamination work. The inspector reviewed selected QA reports and noted that they identified repeated HP deficiencies, including the following:

- individual failing to frisk upon exit from a contaminated area,
- individuals wearing clean protective clothing outside the site fence,
- repeated failure to appropriately label and seal drums containing scabbled concrete,
- inappropriate control of a drum containing scabbled concrete.

Due to the low levels of contamination involved, the above instances do not represent violations of NRC posting and labeling requirements. They are indicative, however, of a lack of appropriate management oversight and control of the decontamination work. The licensee's organization to support the work may have contributed to this lack of oversight: both the decontamination workers and the HP technicians responsible for maintaining radiological controls were supplied by the same vendor. Consequently, there was not an effective organizational separation and independence of HP and production personnel.

The licensee indicated that upper management became aware of radiological control concerns at Saxton and that personnel changes and upgrades were made to improve oversight. These included appointment of a new Radiation Safety Officer and establishment of a GPUN qualified HP technician at the site as lead technician. The inspector noted these improvements were of limited effectiveness; several deficient conditions reflecting a lack of management attention were still observable during the inspection and are discussed in section 5.0.

The overall level of QA and Radiological Assessor involvement at Saxton was noted to be a licensee strength and appeared to be effective in identifying significant concerns.

#### 5.0 Status of Release Survey Effort

The licensee started performing surveys to demonstrate the CAB, RWDF, and the pipe tunnel are within the contamination limits of RG 1.86 (i.e., building release surveys) on February 1, 1988. Surveys were still being performed during the time period of this inspection. The licensee is using NUREG/CR-2082, "Monitoring for Compliance With Decommissioning Termination Survey Criteria," as guidance for the performance of these surveys. Completed surveys are reviewed by a qualified HP technician and then by the Saxton RSO or his designee to insure compliance with licensee procedure 9400-ADM-450C.12, "Radiological Surveys: Requirements & Documentation."

The inspector reviewed the licensee's performance in this area by the following methods:

- discussion with cognizant personnel, including individuals performing release surveys,
- review of selected release surveys,
- review of selected Operations QA monitoring reports,
- review of selected licensee procedures.

Within the scope of the above review, several significant deficiencies were noted which collectively question the adequacy of the release surveys performed up to the date of the inspection. The following specific deficiencies were noted by the inspector:

o No specific procedure was in place to control the performance of the building release surveys. The inspector noted the licensee had approved both a radiation and contamination survey procedure; however these were noted to be general in nature and did not address specifics being performed during the building release surveys.

The licensee stated that a draft "final survey" procedure had been produced but that significant changes in survey methodology kept occurring which created difficulties in keeping the draft up to date.

o Training for individuals performing building release surveys was informal and incomplete. The inspector noted the licensee was using a practical factor sign-off form, which indicated that individuals had demonstrated proficiency in instrument use, as documentation that surveyors were qualified to perform their activities. The inspector noted, however, that no procedure was in place recognizing this sign-off form and that no lesson plan or procedure was available to indicate how reviewers judged the individual's proficiency before signing the form. The inspector also noted numerous surveys had been completed by individuals using instruments they had not been signed-off on.

o Formal procedures did not exist for calibration of several of the instruments used during the performance of the release surveys. Specifically, no approved calibration procedure exists for the PRM-6 and the ASP-1. Additionally, although a calibration procedure is currently in place for the PRS-1 and PRS-2, these instruments were used prior to the development of a calibration procedure. For the above instruments, calibrations were performed using the vendor manual as a guide. This concern was originally identified by the licensee's QA group.

o Completed building release surveys were of poor quality and did not meet the requirements or standards of the licensee's survey documentation procedure (9400-ADM-4500.12). In addition to poor overall legibility, the following deficiencies were noted:

- non-standard forms were used; consequently, required information concerning instrument type, calibration date, etc., was not present on each page of each survey,
- survey information was given in pencil, rather than the industry standard of indelible black ink,
- correction fluid was used to make corrections on some of the surveys, rather than a single line-out with initials,
- extraneous comments not relevant to the survey had been included on some of the survey sheets.

The inspector noted the above deficiencies existed on surveys that had already passed initial and in some cases secondary review by the licensee.

In light of the above weaknesses in procedures, training, instrument calibration, and overall survey legibility and level of review the inspector concluded that the adequacy of the building release surveys performed up to the present date was extremely questionable. The inspector

noted that the potential existed for several apparent violations of Technical Specifications section 4.d, which requires in part that radiation surveys be performed in accordance with written procedures. The inspector recognized, however, that the status of the above release surveys was still "unofficial," in that no buildings had been released based on their results and the licensee had not formally submitted them to the NRC for review.

The licensee stated that the above deficiencies with the building release surveys had already been recognized by licensee management. During the week of this inspection the Radiological Assessor and Saxton RSO held a previously scheduled meeting to review the release surveys and assess their adequacy and whether or not they could be used. During the exit meeting senior licensee management stated that the following actions would be completed:

- overall review of surveys would be completed,
- procedures for instrument calibration, qualification of surveyors, and for performance of the release survey would be developed and approved,
- all questionable surveys would be redone.

The status of the licensee's final building release surveys will remain unresolved pending review of the above improvements (146/88-01-02).

The inspector stated during the exit meeting that licensee performance during the decontamination and surveying activities was not commensurate with that seen at other GPU facilities and reflected a lack of effective planning and management involvement. The licensee noted this concern and stated that effective control may have been hampered, in part, by the remoteness of the location and the heavy reliance on an extremely transient contractor workforce. The licensee indicated that several steps had already been taken to improve the level of management control upon initial identification of performance deficiencies at Saxton (see section 4.0).

#### 6.0 SNEC Record Review

On April 27, 1988, the inspector reviewed SNEC files maintained at the TMI EOF in Harrisburg, PA. No deficiencies were noted. The inspector was unable to find, and consequently requested from the licensee the following documents:

- copies of original site construction plans showing the location of pipes, tanks, etc. in the site yard,

- copy of the original site release survey performed in 1973.

The licensee indicated they would search their records and provide the requested information if available.

#### 7.0 Radiological Status of the Saxton Soil

A telephone conference call was held between the individuals denoted in section 1.0 on May 16, 1988 to discuss radiological status of the soil in and around the Saxton site fence. During that call, the licensee indicated the following:

- Contamination within the Saxton site fence appeared to be restricted to a dark, flyash-like soil. The licensee indicated maximum activity levels in this flyash-like soil ranged from 50-60 pCi/g. The licensee indicated typical background levels ranged from 2-4 pCi/g. The inspector noted that the licensee's 1982 REMP report showed an 870 pCi/g sample taken within the "roped-off" area within the Saxton fence. The licensee acknowledged this high sample result but indicated the 50-60 pCi/g range was a more representative, repeatable value.
- Soil activity was primarily due to Cs-137 which appeared to be tightly bound to the flyash-like soil.
- Surveys performed by the licensee outside the Saxton fence but within the PENELEC fence in 1986 identified several areas of localized soil activity above background. The maximum level identified was 2200 pCi/g Cs-137. The licensee stated that soil in these localized areas was dug up and disposed of as radioactive material.

The licensee also indicated during the call that they were currently negotiating contracts to have additional characterization studies performed on the Saxton site and immediate environs. Planned studies include an extensive aerial or ground radiation survey, a geophysical analysis of the flyash-like soil and sub-soil at the site, and additional radiological analyses of the soil. Results of these studies will be reviewed during a subsequent inspection.

#### 8.0 Exit Meeting

The inspector met with licensee representatives, denoted in Section 1.0 of the report, on May 3, 1988. The inspector summarized the purpose of, scope and findings of the inspection at that time.