U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-272/86-13
50-311/86-13

Docket No. 50-272
50-311

License No. DPR-70
DPR-75 Category C

Licensee: Public Service Electric and Gas Co.

P.O. Box 236

Hancocks Bridge, New Jersey 08038

Facility Name: Salem Generating Station, Units 1 & 2

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: April 21-25, 1986

Inspectors: Marino Kaminski for T. Dragoun, Radiation Specialist — 5/30/86 date

Marino Kaminski — 5/30/86
M. Kaminski, Radiation Specialist — date

Approved by: M. Shanbaky — 5/30/86
M. Shanbaky, Chief, Facilities Radiation Protection Section — date

Inspection Summary: Inspection on April 21-25, 1986 (Report Nos. 50-272/86-13 and 50-311/86-13).

Areas Inspected: Routine, unannounced inspection of the radiation safety program including: training and qualification of contractor HP technicians, an incident involving entry into the Reactor Vessel Sump Room, control of work in radiologically hazardous areas, review of procedure revision project, and implementation of ALARA for the outage.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

During the course of this routine safety inspection the following personnel were contacted or interviewed:

1.1 Licensee Personnel

*L. Miller, Assistant Superintendent
*J. Trejo, Radiation Protection and Chemistry Manager
*W. Britz, Radiation Protection Services
*J. Clancy, RP Services
M. LeFevre, Radiation Protection Supervisor
S. Simpson, RP Senior Supervisor
*R. Dulee, Station Quality Assurance
*J. Rupp, Licensing

1.2 NRC Personnel

*K. Gibson, Regional Inspector

*Attended the exit interview on April 25, 1986.

2.0 Purpose

The purpose of this routine inspection was to review the licensee's radiation protection program with respect to the following elements:

- Training and Qualification of Contractor HP Technicians.
- Reactor Vessel Sump Room Incident.
- Control of Work in Radiation Areas.
- Status of HP Procedure Revisions.
- ALARA Implementation for the Outage.

3.0 Training and Qualification of Contractor HP Technicians

The licensee's program for the training and qualifications of contractor technicians hired to provide outage support was reviewed against criteria contained in:

- Technical Specification 6.3 "Facility Staff Qualifications".
- Technical Specification 6.4 "Training".

- ANSI N18.1-1971 "Selection and Training of Nuclear Power Plant Personnel".
- Radiation Protection Program Manual.
- Salem Radiation Protection Qualification Manual.
- Nuclear Department Training Procedure #404.

The licensee's performance relative to these criteria was determined from:

- Interviews with RP supervisors and training department personnel.
- A review of selected records, lesson plans, qualification cards and exams.
- A tour of training facilities.

Within the scope of this review no violations were identified. The licensee's program conforms to standard industry practice. Contractor RP technicians are screened to ensure that ANSI 18.1 training and experience criteria are met, are given a written test to verify basic knowledge, and are provided with copies of station procedures for review. The licensee has improved this program by instituting a practical factors requirement, i.e., technicians must demonstrate the ability to perform assigned tasks such as use of survey instruments during the training phase. A weakness was noted in that the technician training lesson plans did not include information on the station ALARA program. The licensee stated that this information will be incorporated prior to the upcoming Unit 2 outage (86-13-01). In addition the inspector noted that no formal guidance had been provided to the RP supervisors who screened the resumes submitted by the contractors. The licensee stated that written guidance will be provided (86-13-02).

The inspector observed that instructors from the training center were assigned various in-plant responsibilities to support the outage. Besides providing additional supervisory oversight during the outage, this action could provide instructors with valuable insight into the stations training needs.

4.0 Reactor Vessel Sump Room Incident

The licensee briefed the inspector regarding an incident that occurred on March 30 involving an improper entry into the Reactor Vessel Sump Room while the flux thimbles were retracted creating very high radiation levels. A shift supervisor (SS), unaware of the status of the room, directed an Equipment Operator and HP technician escort to check the Reactor Vessel Sump for leakage through the inflatable refueling cavity seal. The key used by the SS would not open the lock so the Operator defeated the lock

and entered with the technician. During descent from the main level the technician noted abnormally high readings and directed an evacuation. A subsequent short entry was made by the Refueling SRO to the main level since a leak was suspected. Personnel doses were less than 50 mrem. Although there was no significant exposure to personnel, the licensee identified problems including procedure inconsistencies, communications breakdown, procedure nonconformances, and weak locking devices on other high radiation exclusion areas. The licensees investigation of this incident was thorough. The short term and long term corrective actions were appropriate and judged to be effective in preventing a recurrence. Although violations of refueling and HP procedures occurred no NRC citations will be issued in accordance with 10 CFR 2 Appendix C. The licensee is to be commended for his aggressive and timely corrective actions and for his initiative for self-identification and correction of problems.

5.0 Control of Work

The licensee's program for the control of worker access to radiological areas and the radiation work permit system were reviewed with respect to criteria contained in:

- 10 CFR 19.12 Instructions to workers.
- 10 CFR 20.206 Instruction of personnel.
- 10 CFR 20.101 Radiation dose standards for individuals in restricted areas.
- 10 CFR 20.103 Exposure of individuals to concentrations of radioactive materials in air in restricted areas.
- Station Procedure RP 1.013 Revision 10 including Advance Change Notices 1 and 2, "Radiation Work Permit/Extended Radiation Work Permit."

The licensee's performance relative to these criteria was determined by observation of control point operations, review of selected RWPs, and observation of work in progress. Within the scope of this review no violations were observed. Licensee program improvements were noted as follows:

The main control point for access to the auxiliary and containment buildings has been completely renovated including a new floor plan. A new "open" concept allows technicians to observe all personnel and material entering and leaving the radiological areas. This change significantly improves the controls. Computer terminals are used by workers to record the RWP used and to track the self reading dosimeter results. Automated frisking stations are used to check workers prior to exit in lieu of the commonly used pancake GM probe/

RM-14 friskers. This equipment provides for improved control of radioactive material due to increased sensitivity and consistent results by eliminating errors in frisking technique.

The radiation work permits are now generated by a computer program. Additional information for the worker has been included on the form. Storage of the information in the computer files allows analysis, trending, and retrieval for use in future outages.

6.0 Procedures Revision

In early 1984 the licensee began a major project to restructure and rewrite the controlling procedures for the radiation protection department. This effort was prompted by the excessive number of procedures and inconsistencies between procedures. The licensee's progress on this project was determined from discussions with senior HP supervisors and the Radiation Protection Manager. The inspector determined that the person in charge of the project has left the station, other major programmatic changes have diverted attention from the project, and the project remains incomplete.

The licensee stated that a firm schedule for completing this project will be issued by June 1, 1986. The schedule will include periodic progress reviews by upper level management. This matter is unresolved and will be reviewed in a future inspection (86-13-03).

7.0 ALARA

The licensee's efforts to achieve ALARA were reviewed against criteria contained in:

- 10 CFR 20.1 Purpose
- Nuclear Department ALARA Manual
- Administrative Procedure 24 - Radiological Protection Program
- Administrative Procedure 7 - ALARA Program

The licensee's performance relative to these criteria was determined from:

- Reviews of ALARA Committee meeting minutes and other ALARA meetings.
- Reviews of printouts of exposure data tied to RWPs, ALARA estimates and ALARA budgets.
- Discussions with the ALARA coordinator, RP supervisors and the station superintendent.

- Review of policy statements and presentation to workers during General Employee training.

Within the scope of this review, no violations were observed. The licensee's ALARA performance continues to be outstanding. The ALARA goal for 1986 was established at 190 man-Rem per plant (380 man-Rem site total). This was increased to 250 man-Rem per plant (500 man-Rem site total) due to additional outage work. However, this level of exposure remains well below average PWR exposure levels.

The licensee has introduced an innovative technique to limit exposure by including an ALARA goal in contract specifications. A contractor (Westinghouse) was required to complete all refueling evolutions including reactor disassembly and miscellaneous work with an ALARA budget of 100 man-Rem. As a result, extensive preplanning resulted in documentation of all work with generation of RWPs prior to the beginning of the outage. The exposure goal was achieved as a result of this excellent program.

The licensee modified approximately 400 valves by installing a low leakage packing offered by Chesterton. Among the benefits anticipated are reduced personnel exposures due to reduced valve maintenance and reduced contaminated areas as radioative liquid leakage is stopped.

8.0 Exit Meeting

The inspector met with licensee personnel denoted in Section 1.1 at the conclusion of the inspection on April 25, 1986. The scope and findings of the inspection were discussed at that time. During this inspection effort no written material was provided to the licensee by the NRC Inspector.