U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-272/91-20 and 50-311/91-20

Docket Nos. 50-272 and 50-311

License Nos. DPR-70 AND DPR-75

Licensee: Public Service Electric and Gas Company
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: July 8-12, 1991

Inspector: Jason C. Jang 7-18-91
Jason C. Jang, Sr. Radiation Specialist date
Effluents Radiation Protection Section (ERPS)
Facilities Radiological Safety and
Safeguards Branch (FRS&SB)

Approved by: Robert J. Bores 7-18-91
Robert J. Bores, Chief, ERPS, FRS&SB, date
Division of Radiation Safety and Safeguards

Inspection Summary: Inspection on July 8-12, 1991 (Combined Inspection Report Nos. 50-272/91-20 and 50-311/50-91-20)

Areas Inspected: Routine, announced inspection of the licensee's radioactive liquid and gaseous effluent control programs including: management controls for these programs, calibration of effluent/process radiation monitors, air cleaning systems, and implementation of the Offsite Dose Calculation Manual.

Results: Very good routine liquid and gaseous effluent control programs were implemented by the Chemistry Department. The licensee was pursuing the radiation monitoring system upgrading projects vigorously in the right direction. However, two unresolved items which were identified in 1989 could not be closed during this inspection. Management attention and support are needed to resolve these items. Within the areas inspected, no violations or deviations were identified.

DETAILS

1.0 Individuals Contacted

1.1 Licensee Personnel

R. Allen, Technical Supervisor, RP/Chemistry Department
S. Branosky, I&C Supervisor
*D. Budzik, Maintenance Engineer
J. Carey, Principal Electrical Engineer
*T. Cellmer, Radiation Protection/Chemistry Department Manager
J. Dierickx, Technical Supervisor, RP/Chemistry Department
*P. Duca, Delmarva Power - Salem Site Representative
E. Galbraith, Principal Chemistry Engineer,
*P. Galleshaw, Project Manager, E&PB
*J. Grimm, System Engineer
*R. Heaton, Senior I&C Supervisor
*M. LeFevre, External Affairs
P. McNulty, Technical Supervisor, RP/Chemistry Department
*D. Miller, Radiation Protection and Chemistry Services
L. Moore, Project Manager (HVAC)
*M. Morroni, Technical Department Manager
*T. Murphy, RMS Project Engineer, E&PB
*P. Ott, Technical Engineer
*V. Polizzi, Operations Manager
F. Roberts, Senior Staff Engineer
*C. Rukes, Nuclear Licensing
*W. Schultz, Station QA Manager
*M. Shedlock, Maintenance Manager
S. Simpson, Senior Supervisor, Radiation Protection
*E. Villar, Station Licensing Engineer
*C. Vondra, General Manager - Salem Operations
*R. Yewdall, Radiation Protection and Chemistry Services
D. Zak, Technical Supervisor, RP/Chemistry Department

1.2 NRC

*S. Barr, Resident Inspector
*A. Lopez, Reactor Engineer
*S. Pindale, Resident Inspector
T. Johnson, Senior Resident Inspector

* Denotes those present at the exit interview on July 12, 1991. Other licensee employees were contacted and interviewed during this inspection.

2.0 Purpose

The purpose of this inspection was to review the licensee's ability to control and quantify radioactive liquids, gases, and particulates during normal and emergency operations.

3.0 Review of Previously Identified Items

(Open) Unresolved Item (UNR 50-272/89-10-02; 50-311/89-09-02) Provide air balance and relative humidity test results for air cleaning systems to the NRC. (See Inspection Report Nos. 272/89-10 and 311/89-09 for details.)

Regarding the air balance tests, the licensee established a task team (Salem HVAC Project Team) for the design, maintenance, and operation of the various HVAC systems in 1990. The task team completed the material condition study and the project plan (Phase I-Initial Scoping) in September and December 1990, respectively. During the initial scoping, the task team identified lower air flow rates than designed for the auxiliary building ventilation systems of both units. These material study and initial scoping results were transferred to the "Salem Revitalization" program for management review in 1991.

Regarding the relative humidity tests near the charcoal filters, design basis calculations are being prepared to assess maximum and minimum humidity levels expected in the building considering all building loads, both latent and sensible, as well as outside design conditions. These calculations will be completed in the near future. The task team will request appropriate design modifications, as necessary.

Based on the above review, this item remains open pending the progress of the Salem Revitalization program and the completion of the relative humidity tests.

(Open) Unresolved Item (UNR 50-272/89-15-08) Oxygen concentrations in the Unit 1 waste gas decay tank exceeded Technical Specification limits and were not reduced within the required time. (See Inspection Report Nos. 50-272/90-16 and 50-311/90-16 for details.)

The root causes of this event were system design and procedural problems. The inspector was informed that the procedure was being reviewed for the final approval as of July 12, 1991. The system evaluation and recommendation results were transferred to the "Salem Revitalization" program. This item remains open pending the procedure approval and the progress of the "Salem Revitalization" program.

4.0 Management Controls

4.1 Program Changes

There were no significant changes in the licensee's Radiological

Effluent Control Programs since the previous inspection conducted on May 29-June 1, 1990.

4.2 Audit

The inspector reviewed the 1990 audit report (Audit Number 90-151) for radioactive effluent controls and implementation of the Offsite Dose Calculation Manual (ODCM). The audit was conducted by the Nuclear Quality Assurance Department. The inspector noted that the scope and technical depth of the audit were very good to assess the effluent control programs, and the recommendations were thorough and of good quality. The appropriate department responded to these recommendations in a timely manner.

4.3 Review of Semiannual Reports

The inspector reviewed the semiannual radioactive effluent release reports for 1990, and determined that the licensee met the Technical Specification requirements. No anomalous measurements, omissions or trends were noted.

5.0 Radioactive Liquid and Gaseous Effluent Controls

The inspector examined selected radioactive liquid and gaseous release permits to determined the implementation of Technical Specification requirements. The inspector also reviewed Procedure SC.CH-TI.ZZ-0189, "Radiological Effluent Discharge Report Generation and Completion", and other related procedures.

Based on the reviews of radioactive liquid and gaseous releases permits and the associated procedures, including Procedure SC.CH-TI.ZZ-0189, the inspector determined that the licensee implemented the radioactive liquid and gaseous effluent control programs effectively.

6.0 Calibration of Effluent/Process Radiation Monitors

The inspector reviewed the most recent calibration results for both units for the following effluent/process radiation monitors to determine the implementation of the Technical Specification requirements.

- o Liquid Radwaste Effluent Line Monitors
- o Steam Generator Blowdown Monitors
- o Main Steam Line Monitors
- o Containment Fan Cooler-Service Water Monitors
- o Containment Vent Monitors
- o Plant Vent Effluent Monitors
- o Control Room Area Monitors

The I&C Department has the responsibility to perform electronic and

radiological calibrations for all effluent and process radiation monitors. All calibration results were within the licensee's acceptance criteria. The inspector had no further questions in this area.

Although calibration results were within the licensee's acceptance criteria, the inspector determined that the licensee did not systematically trend the radiation monitoring system (RMS) versus known effluent releases to indicate monitor reliability. To track the reliability of radioactive liquid and gaseous effluent monitors, the Chemistry Department predicted the expected monitoring results prior to release [counts per minute (cpm)] using actual liquid and/or gaseous effluent sample counting results [microCi/cc (uCi/cc)] and appropriate radiation monitor sensitivity (cpm/uCi/cc). The actual monitoring results were recorded in the radioactive liquid and gaseous release permits. The inspector reviewed the predicted versus actual monitoring results and noted that the results did not always correspondence. The reasons appeared to be due to high background for the liquid RMS and variation of the plant vent flow rate (dilution factor) for the gaseous RMS. The inspector stated that the Chemistry Department had a good trending program to review the reliability of the effluent RMS and other departments (I&C and Operations) should utilize the program. The licensee stated that this program will be reviewed in the near future and implemented, as appropriate.

Based on the review of the above radiation monitor calibration records for both units, the inspector determined that the calibrations were performed as required by the appropriate procedures and by the Technical Specifications.

7.0 Upgrading Status of Radiation Monitoring Systems (RMS)

During the previous inspection conducted on May 29-June 1, 1990, the inspector determined that the major root cause of events identified in Licensee Event Reports (LERs) and Special Reports was equipment failure, rather than inadequate procedures or personnel errors. The licensee generated 27 LERs during the period of August 1989 to September 1990 as a result of Emergency Safety Feature actuations due to malfunctions of various RMS. The licensee subsequently established short and long term projects to upgrade the RMS.

During this inspection, the progress of these projects was discussed with the licensee. The inspector also reviewed the Engineering and Plant Betterment Project Scope Proposal (EWR No. 062-89-1116), "Radiation Monitoring System-Short Term RMS Modifications". This proposal contained (1) statement of problem, (2) objectives, (3) project team matrix, (4) project schedule, (5) issues and considerations, and other supporting documents.

Based on the discussion with the licensee and the above proposal, the inspector determined that the licensee was pursuing these projects vigorously in the right direction. The inspector stated that the progress of the RMS upgrading will be reviewed during a subsequent inspection.

8.0 Air Cleaning Systems

The inspector reviewed the licensee's most recent surveillance test results to determine the implementation of the following technical specification requirements for both units.

- o Containment Building
- o Fuel Handling Area Ventilation Systems
- o Auxiliary Building Exhaust Air Filtration Systems
- o Control Room Emergency Filtration Systems

The following inspection and test results for the above systems were reviewed.

- o Visual Inspections
- o In-Place HEPA Leak Tests
- o In-Place Charcoal Leak Tests
- o Air Capacity Tests
- o Pressure Drop Tests
- o Laboratory Tests for the Iodine Collection Efficiencies

All reviewed test results were found to be within the licensee's acceptance criteria. Based on the this review, the inspector determined that the licensee implemented the above Technical Specification requirements effectively.

9.0 Exit Interview

The inspector met with licensee representatives (denoted in Section 1.1) on July 12, 1991. The inspector summarized the purpose, scope, and findings of the inspection.