U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Combined Report Nos. 50-272/86-17
50-311/86-17

Docket Nos. 50-272;
50-311

License Nos. DPR-70
DPR-75 Priority - Category C

Licensee: Public Service Electric and Gas Company
P. O. Box 236
Hancocks Bridge, New Jersey 08038

Facility Name: Salem Generating Station

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: May 28, June 2-3, 1986

Inspectors: H. J. Bicehouse 6/19/86
H. J. Bicehouse, Radiation Specialist date

H. J. Bicehouse for 6/19/86
T. F. Dragoun, Radiation Specialist date

H. J. Bicehouse for 6/19/86
B. S. Davidson, Radiation Specialist date

Approved by: W. J. Pasciak 6/20/86
W. J. Pasciak, Chief, Effluents Radiation Protection Section date

Inspection Summary: Inspection on May 28, and June 2-3, 1986 (Combined Inspection Report Nos. 50-272/86-17 and 50-311/86-17.

Areas Inspected: Special, announced safety inspection of the licensee's preparation, packaging and shipping of spent primary demineralizer resin (licensee shipment No. 86-40) to resolve radiological controls concerns identified during Inspection Nos. 50-272/86-05; 50-311/86-05.

Results: No violations were identified.

DETAILS

1. Persons Contacted

During the course of this special inspection, the following personnel were contacted or interviewed:

1.1 Licensee Personnel

*J. Zupko, Jr., General Manager-Salem Operations
*W. Britz, Manager Radiation Protection Services
*J. Clancy, Principal Health Physicist
J. Frick, Technical Supervisor-Radiation Protection
J. Gomeringer, Technical Supervisor-Radiation Protection
*W. Hunkele, Senior Supervisor-Radiation Protection
G. Livermore, Associate Quality Assurance Engineer
M. Malony, Quality Control Engineer
*J. Rupp, Operations Licensing Engineer
*J. Trejo, Radiation Protection/Chemistry Manager

Other licensee personnel were also contacted or interviewed during this inspection.

1.2 U.S.NRC Personnel

*T. Kenny, Senior Resident Inspector
*M. Shanbaky, Chief, Facilities Radiation Protection Section

*Attended the Exit Interview on June 5, 1986.

2. Purpose

During Combined Inspection Nos. 50-272/86-05; 50-311/86-05, the adequacy of the licensee's radiological controls associated with primary resin transfer, dewatering, container preparation and movement was considered unresolved pending further review. Discussions with the licensee indicated that, during the period covered by this inspection, spent primary resin from Unit No. 1 would be transferred from the Unit No. 1 Spent Resin Storage Tank (SRST) to a liner, dewatered and prepared for shipment (as radioactive waste (radwaste)) to an authorized radwaste burial site. The purpose of this special announced inspection was to review the radiological controls associated with the operation including changes made by the licensee to improve the radiation protection radwaste operations. Since primary resin transfer is an infrequent event, (i.e. approximately annually for each unit), this resin transfer provided an opportunity to review the operation in detail.

3. Previously Identified Item

(Closed) Unresolved Item (50-272/86-05-03; 50-311/86-05-03) Adequacy of radiological controls associated with primary resin disposal. This inspection reviewed and resolved issues associated with primary resin disposal as discussed below.

4. Resin Disposal Operation

From May 28, 1986 through June 3, 1986, spent primary demineralizer resins (totalling 227 curies) were sluiced from the Unit No. 1 SRST to a High Integrity Container (HIC), dewatered, transferred via the HIC to a CNSI 8-120 shipping container and shipped (as license shipment No. 86-40) to a waste burial site. The operation was reviewed relative to requirements in 10 CFR 20, 10 CFR 61, 10 CFR 71 and the licensee's Technical Specifications and good practices recommended by nuclear industry standards groups. Licensee performance relative to the requirements and recommendations was determined by:

- interviews and discussions with the Senior Supervisor - Radiation Protection, members of the radwaste staff and others participating in the operation;

- review of procedures, radiation work permits, surveys, shipping papers and other documents associated with Shipment No. 86-40;

- observation of work in progress during sluicing, dewatering verification, HIC lid securing, HIC transfer to the shipping container and shipping container preparation for shipment; and

- measurements of radiation fields associated with the HIC transfer operation.

Special emphasis was placed on reviewing the following aspects of the resin disposal operation:

- high radiation area control practices and procedures used;

- radiation work permits and other administration controls used to minimize exposure;

- personnel dosimetry practices during various phases; and

- resin spill prevention and confinement practices.

Within the scope of this review, no violations were identified. However, the following items were noted and discussed with the licensee:

- Procedures controlling the use of remote dose rate meters, (i.e. Eberline Model RM-16), during the resin operation used the words "if available." On May 28, 1986, the remote dose rate meter monitoring, the liner (i.e. HIC) was operable but the meter monitoring the resin transfer tubing wasn't. Remote dose rate meters (including alarming capability) provide additional continuous protection against sudden, unexpectedly high dose rates at the liner or resin transfer tubing as an indication of trouble/warning to radwaste workers in the "Demin Cage." On June 2-3, 1986, neither remote dose rate meter was in service during dewatering verification, HIC lid securing and HIC transfer operations. Since permanent area radiation monitors do not provide coverage of the work area, remote dose rate meters provide additional safety for the operation. At the exit interview on June 5, 1986, the licensee indicated that the use of remote dose rate meters to provide additional continuous protection against sudden, expectedly high dose rates would be considered.

- Audible - alarming dosimeters were used on May 28, 1986 by radwaste workers in the "Demin Cage." However, audible-alarming dosimeters were not used on June 2-3, 1986 during HIC lid securing and HIC transfer operations. The HIC lid securing operation accounted for approximately 80% of the radiation dose for the resin disposal operation (see related item below). Audible-alarming dosimeters provide an adjunct dose control for individual radwaste workers (in addition to health physics technicians assigned to the operation) and monitor exposures during crucial dose-intensive steps (e.g. HIC lid securing operations in very high radiation fields). At the exit interview on June 5, 1986, the licensee indicated that expanded use of audible-alarming dosimeters during resin disposal operations would be considered.

- The licensee logs resin additions to the SRST to maintain an inventory of the total activity in the SRST. However, high-retention resins (with increased radioactivity) could provide inventories too large to be safely handled using current licensee methods. A formal administrative control program for SRST inventories based on dose rate limitations necessitated by handling considerations and analysis of source term inventories to meet those dose rate limitations was discussed with the licensee. At the exit interview on June 5, 1986, the licensee stated that further review and analysis would be completed to provide a basis for administrative control of SRST inventories.

- Review of personnel dosimetry placement during the resin disposal operations indicated that personnel monitoring devices were placed on the upper torso. The inspector questioned the placement of the monitoring devices due to the non-uniform radiation fields encountered during work on the HIC lid and shipping cask for decontamination. The licensee stated that extensive studies had been completed using dosimeters on the extremities, head and torso which

showed that the placement was adequate to monitor the exposures to those areas. However, the licensee was unable to locate records of those studies. At the exit interview on June 5, 1986, the licensee stated that either the records would be located and provided for review or, if the records were not available, the studies would be repeated. The inspector stated that this item would be reviewed in a subsequent inspection (50-272/86-17-01; 50-311/86-17-01).

- The Auxiliary Building watertight door isolates the radwaste operations area from the truck bay. The door is equipped with an inflatable seal and provides confinement for possible resin spills. On May 28, 1986 and June 2, 1986, the water-tight door was open. On those days, the truck bay rollup door was closed. During the HIC transfer to the shipping cask on June 3, 1986, the water-tight door was closed. The inspector discussed the closure of the water-tight door during the resin sluicing operation as an additional barrier to localize potential spills to the radwaste operations area and provide protection against environmental releases. The licensee indicated that the water-tight door would be used for operations with a potential for spills (i.e. sluicing of the resin and HIC transfer).

- The HIC lid is secured by rotating the lid 360° to thread it into the HIC. The operation uses special tools provided by the HIC supplier and requires a radwaste worker to enter the high radiation field directly above the HIC opening, (i.e. unshielded in the licensee's handling configuration). The keyways in the HIC lid deform during rotation causing the tool to lose its grip on the lid. This problem appears to be inherent in the HIC lid's design. The licensee has discussed this problem with the HIC vendor and attempted to modify the tool to ensure a secure grip. On June 2, 1986, problems with securing the HIC lid caused by the deformation problem required two entries into the area above the HIC to secure the HIC lid. At the exit interview on June 5, 1986, the licensee stated that studies of the HIC lid and tool design would be undertaken to attempt to alleviate the problem and its resultant additional radiation exposure.

5. Exit Interview

The inspector met with the licensee's representatives (denoted in Paragraph 1) at the conclusion of the inspection on June 5, 1986. The inspector summarized the scope of the inspection and findings at that time.

At no time during this inspection was written material provided to the licensee by the inspector. No information exempt from disclosure under 10 CFR 2.790 is discussed in this report.