U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/91-03

Docket No. 50-354

License No. NPF-57

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

Facility Name: Hope Creek Nuclear Generating Station

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: January 14-18, 1991

Inspectors: David J. Chawaga 1/31/91
D. Chawaga, Radiation Specialist date
Facilities Radiation Protection Section

M Austin for 2/6/91
D. Mann, Radiation Specialist date
Facilities Radiation Protection Section

Approved by: Joseph Durr for 2/6/91
W. Pasciak, Chief, Facilities date
Radiation Protection Section, DRSS

Inspection Summary: Inspection on January 14-18, 1991 (Report No. 50-354/91-03).

Areas Inspected: A routine, unannounced inspection of the radiological controls program at your facility was conducted by D. Mann and D. Chawaga on January 14-18, 1991. Areas covered in this inspection included a review of: previously identified items, portable radiation protection instrumentation, in-plant housekeeping and radiological postings, work activities, vendor health physics staff qualifications, radiological occurrence reports, the 1990 exposure and 1991 exposure projections, and procedures associated with these areas.

Results: Within the scope of this inspection, one non-cited violation was identified.

DETAILS

1.0 Personnel Contacted

1.1 Licensee Personnel

*J. Clancy, Radiation Protection/Chemistry Manager - H.C.
*R. Gary, Sr. Radiation Protection Supervisor - Operations
*J. Hagan, General Manager - Hope Creek Operations
*E. Karpe, Senior Radiation Protection Supervisor - ALARA
J. Molner, Sr RP/Chemistry Supervisor - Support
*J. O'Neil, Station QA - H.C.
*M. Prystupa, Radiation Protection Engineer
*D. Smith, Station Licensing Engineer - H.C.
K. Strait, Station Licensing Engineer - Environmental
*J. Wray, Radiation Protection Engineer - Salem

1.2 NRC Personnel

*K. Greene, NRR Staff Assistant
*K. Lathrop, Resident Inspector

*Denotes those present at the exit meeting on January 18, 1991.

2.0 Previously Identified Items

The equation for calculating individual exposures to concentrations of airborne radioactive material, i.e. MPC-Hours, is found in procedure HC.RP-TI.[illegible]-0015(Q) - Rev. 2; "MPC-HOUR ACCOUNTING". The inspectors outlined, in inspection report 90-22, the following errors in this equation:

- The equation did not enclose the sum of three factors within brackets, which is required using standard mathematical notation.

- The procedure defines MPC_P, MPC_I and MPC_T as "the total MPCs for particulates, iodines, and tritium from Reference 6.1". During inspector discussions with licensee personnel, the licensee identified an error in Reference 6.1.

- No factor in the equation accounted for the actual nuclide concentration present in the air, which would be determined by taking an air sample. Also, no factor was defined to include the actual nuclide concentration

present in the air.

A revised procedure (HC.RP-TI.ZZ-0015(Q) - Rev. 3) was issued during inspection 90-22; however, the equation did not include a factor or definition to account for the actual nuclide concentration present in the air. Therefore, a further revision was initiated. The latest revision was reviewed during this inspection (91-03).

Procedure HC.RP-TI.ZZ-0206(Q) - Rev. 0, MPC-hour Accounting was reviewed as a follow-up to these problems. This procedure, formerly numbered HC.RP-TI.ZZ-0015(Q) - Rev. 3, was re-numbered as part of the Salem/Hope Creek procedure standardization process.

The equation used in the current procedure is in the correct mathematical format, references the correct table from 10 CFR 20, and would appropriately calculate MPC-hours.

The licensee's gamma spectroscopic analysis system calculates MPC-hours. Tnis system is the licensee's primary method for assigning MPC-hours to workers. The inspector reviewed a sample of the spectroscopic analysis print-outs and determined that the computer algorithm correctly calculates MPC-hours.

3.0 Procedure Review

A sample of procedures was reviewed to determine their quality and ease of use. The sample included: MPC-hour Accounting, Radiation and Contamination Surveys, and others that applied to the areas reviewed during this inspection. Based on this review, the procedures were found to be well written, easy to read, and technically correct. However, a review of procedure HC.RP-TI.ZZ-0602(Q) - Rev.2 identified one non-cited violation.

Step 5.3.1.C states: "All routine and job related surveys shall include an evaluation of airborne radioactivity. This evaluation may be based on grab sampling, AMS trends or constant air sampling data." Also, NOTE 5.3.1.C states: "All routine surveys shall have an air sample taken, unless waived by RP Supervision."

Contrary to this, between 8/27/90 and 1/14/91, surveys were performed without evaluating the airborne radioactivity based on grab samples, AMS trends or constant air sampling data.

These surveys were performed both inside and outside the Radiologically Controlled Area (RCA).

Due to the low severity level and the prompt corrective actions taken by the licensee prior to the end of the inspection, the violation meets the criteria outlined in 10 CFR 2 Appendix C. V. A. for issuing a non-cited violation. (50-354/91-03-01)

3.0 Review of Portable Radiation Protection Instrumentation

The inspector reviewed the licensee's program for maintaining and issuing portable radiation protection instrumentation (i.e., survey instruments).

The licensee performs a primary calibration of their survey instrumentation on an annual basis. This frequency is consistent with the frequency specified in ANSI N323-1978, in section 4.7.1, "Primary Calibration Frequency". This section states in part that "primary calibration will be required at least annually". The licensee stated that they intend to change the calibration frequency to semi-annually. The inspector felt that the change would be a good licensee initiative.

The licensee performs a daily source check of their survey instruments for each dose rate scale normally used. This check is usually performed during the back shift to support day shift work. This practice appears to meet the intent in ANSI N323-1978, section 4.6 "Periodic Performance Test". Section 4.6 states in part that prior to each intermittent use, a reference reading should be obtained for one point on each scale or decade normally used.

4.0 Plant Tours, Posting, and Access Control

Tours of the licensee's facilities were conducted during this inspection. This included the reactor, turbine, and radwaste buildings. The tours showed housekeeping within the plant to be good. Any housekeeping problems were attributed to the outage. Postings in the RCA and access control to the controlled areas was found to be good.

5.0 Observation of Work Activities

5.1 Remove and Replace Reactor Water Clean-up (RWCU) Line

The inspector observed the cut out and removal of a RWCU line. This line is a carbon steel pipe located in the overhead of the Reactor Building, 145' elevation corridor. Exposure rates measured near this piping are up to 800 mR/hr. The high dose rates required shielding to allow personnel free access to the corridor. To reduce the dose rates and alleviate the need for shielding, the licensee is replacing a part of this carbon steel line with stainless steel piping.

The inspector reviewed the radiological controls and postings for this work and determined that they were appropriate. The inspector discussed with the radiation protection technicians, the job evolution and the ALARA controls. The technicians appeared to be knowledgeable of the evolution as well as the ALARA controls.

The ALARA exposure estimate for this evolution was 1.280 person-rem. At the completion of the radiologically sensitive portion of the work, only 0.668 person-rem had been expended. This would indicate that the ALARA controls were effective and contributed significantly to reducing the worker dose for the job.

5.2 Installation of Ladders and Platforms in the Torus Room

The inspector observed workers installing walkways and stairs in the torus room. The radiological controls appeared to be appropriate for the conditions.

The inspector noted that the licensee was extensively using small, portable, canister type high efficiency particulate air (HEPA) filters. This allowed workers to perform work in contaminated areas without using respiratory protection equipment. The licensee purchased these because of their transportability. The inspector viewed this as a good licensee initiative.

6.0 Review of Vender Technician Qualifications

Technicians working as Senior Nuclear Technician-Radiation Protection at the Hope Creek station must meet as a minimum the training and experience required by ANSI/ANS 3.1-1981,

"Selection and Training of Nuclear Plant Personnel".

The inspector reviewed a random selection of vendor technician resume's and determined that they meet or exceeded the minimum training and experience required.

The inspector noted that ANSI/ANS 3.1-1981 requires only working experience, not nuclear power plant experience. This would allows an individual who worked in a hospital or university radiation protection department to be credited as having equivalent experience to an individual who worked in a nuclear power plant. However, the inspector also noted that these experiences are not necessarily equivalent.

Procedure RP-TI.ZZ-103(Q) Rev. 0, "Qualification Process" does not make a distinction between working experience and nuclear power plant experience. Although none of the resume's indicated that nuclear power plant experience had been credited for other radiation protection experience, the lack of distinction was discussed with the licensee.

7.0 Review of Radiological Occurrence Reports (RORs)

The inspectors reviewed the RORs generated during the outage. At the time of the inspection, there was an unusually high number (68) of clothing contaminations. These contaminations were predominately shoe contaminations. The licensee's analysis showed that these shoe contaminations were the result of cobalt hot particles and that many of them appeared to be related. The licensee traced the origin of these particles to an area where temporary scaffolding was stored. Further analysis showed that the hot particles were becoming dislodged from the scaffolding as it was being moved out of the area to support outage work. The licensee, having identified the problem, took prompt corrective actions. The inspector felt that this was a good licensee initiative and that it demonstrated that their ROR program was effective.

8.0 Review of 1990 Exposure and 1991 Exposure Projections

The 1990 ALARA dose projection was 160 person-rem. This projection was increased to 180 person-rem when the refuel outage #3 (RF03) was re-scheduled to begin December 26, 1990. The dose expended during 1990 was 180-190 person-rem. The licensee had not yet processed the thermoluminescent dosimetry (TLD) at the time of the inspection. Therefore the 180-190

person-rem was only an approximation.

The dose projections for 1991 were reviewed during the inspection. The licensee projected that <370 person-rem will be expended. The allows <256.5 person-rem for RFO3, <24 person-rem for planned outages, <8 person-rem for forced outages, and <81.5 person-rem for routine operations. The projection for personnel contaminations is <160 and the volume of radwaste buried is <160 m^3. The inspector viewed the projections as both reasonable and challenging.

9.0 Exit Meeting

The inspector met with licensee representative at the conclusion of this inspection, on January 18, 1991. The inspector reviewed the purpose and scope of the inspection and discussed the inspection findings.