

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/88-06

Docket No. 50-354

License No. NPF-50 Priority B

Licensee: Public Service Electric and Gas Co.
80 Park Plaza 17 C
Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: February 29, 1988 through March 3, 1988

Inspectors: Jean A. Gresick for 4/19/88
R. L. Nimitz, Senior Radiation Specialist date
Jean A. Gresick 4/19/88
J. A. Gresick, Radiation Specialist date
Approved by: M. Shanbaky 4/20/88
M. Shanbaky, Chief, Facilities date
Radiation Protection Section

Inspection Summary: Inspection on February 29-March 3, 1988.
Report No. 50-354/88-06

Areas Inspected: Routine, unannounced inspection of the following: licensee action on previous findings; organization and staffing; communications, audits, ALARA; high radiation area access control; and in-plant radiological controls during the outage.

Results: No violations were identified.

Details

1.0 Persons Contacted

1.1 Public Service Electric and Gas

- * S. LaBruna, General Manager
- * J. Lovell, Radiation Protection and Chemistry Manager
- * T. Cellmer, Radiation Protection Engineer
- * R. Beckwith, Station Licensing Engineer
- * M. LaVecchia, Principal QA Engineer
- * D. Mohler, Radiation Protection/Chemistry Services Manager

1.2 NRC

W. Borchardt, Senior Resident Inspector
D. Allsop, Resident Inspector

The inspector also contacted other personnel.

* denotes those individuals attending the exit meeting on
March 3, 1988.

2.0 Purpose of Inspection

This inspection was an unannounced radiological controls inspection during the outage. The following matters were reviewed.

- Licensee Action on Previous Findings;
- Organization and Staffing;
- Training and Qualification;
- ALARA;
- External Exposure Control;
- Internal Exposure Control;
- Radioactive and Contaminated Material Control.

3.0 Licensee Action on Previous Findings

3.1 (Closed) Inspector Follow-Up Item (50-354/86-37-01)

Licensee to improve Radiological Controls Assessment and Audit Programs. The licensee has upgraded and formalized the Corporate Radiological Controls Assessment Program to improve assessment quality, station response to findings and tracking of assessment findings. The licensee has also committed to improve corporate QA

audit quality by use of technical specialists, where needed, as audit team members. Inspector discussions with licensee QA management indicated technical specialists would be used as audit team members in an upcoming audit. The quality of audits and assessments, and tracking and resolution of audit findings will be reviewed during future inspections. This item is closed.

3.2 (Open) Inspector Follow-Up Item (50-354/86-45-02)

Licensee to verify acceptability of Post-Accident Sample System containment atmosphere sampler flow measuring device. The licensee evaluated the critical flow orifice and indicated procedures would be revised to incorporate review findings and correction curves.

4.0 Organization and Staffing

The inspector reviewed the organization and staffing of the radiological controls organization. The review was with respect to criteria contained in applicable Technical Specifications and licensee procedures.

The following matters were reviewed:

- Adequacy and effectiveness of the organization to support and oversee ongoing radiological work activities.
- Adequacy and effectiveness of inter-and intra-departmental communications.
- Definition of responsibilities of augmented organization members.

Within the scope of this review, no violations were identified. The following observations were made and discussed with the licensee:

- The Radiological Controls Organization was augmented to support outage activities. An augmented organizational structure was established and displayed. Responsibilities of the augmented radiological controls organization were not well defined. In particular responsibilities and accountabilities of control point radiological control personnel was not well defined.

The licensee immediately initiated action to establish clearly defined responsibilities.

- Communications between radiological controls personnel providing oversight of drywell radiological work activities was of marginal quality. Some personnel overseeing ongoing work were unaware of radiation work permit requirements for the work being covered. Although the personnel had continuous communication capabilities by use of headsets with technicians at the access control point, these capabilities were considered not to be effectively used.

The licensee initiated an immediate review of this matter.

5.0 Corrective Action Program

The inspector reviewed selected aspects of the licensee's program for review and evaluation of work in-progress and review of radiological incidents and events.

The following observations were made:

- Radiological Controls Supervisory and Management personnel were observed on numerous occasions performing plant tours and assessment of work in-progress.
- The licensee assigned corporate Radiological Controls personnel to the station to act as assessors in overseeing work in-progress. The assessors were used to ensure work was performed in accordance with appropriate procedural requirements and industry practices.
- Licensee Radiation protection personnel visited other stations in order to understand potential radiological control problems which could be encountered during the outage. Special emphasis was placed on review of heat exchanger work.

Within the scope of this review, the following concerns were identified and discussed with the licensee:

- The administrative control and oversight of the Radiological Occurrence Report (ROR) program was considered in need of improvement. The following concerns were identified:
 - The ROR program incorporated several forms which were subject to misplacement or loss. A complete ROR package was not readily available for review for several recent radiological events.
 - The inspector identified several Level 3 RORs which documented several apparent violations of licensee procedures. However, the licensee was unable to provide the completed, signed off RORs indicating what corrective actions were taken for the concerns.

Inspector discussions with licensee personnel indicated the current ROR Program is being revised to provide better control of RORs and their closure. The licensee's ROR program will be reviewed during a subsequent inspection.

The circumstances and licensee corrective actions for the Level 3 RORs are considered an unresolved item and will be reviewed during a subsequent inspection (50-354/88-06-01).

6.0 Training and Qualifications

The inspector reviewed selected aspects of the training and qualification program for radiation protection personnel and radiation workers. The review was with respect to criteria contained in applicable regulatory requirements and licensee procedures.

The following matters were reviewed:

- Training and qualification of contractor radiation protection personnel.
- Training and qualification of radiation workers.

Within the scope of this review, no violations were identified.

Within the scope of this review, the following matters were brought to the licensee's attention for review:

- The licensee recently implemented revised radiation protection procedures for qualifying contractor radiation protection personnel. The inspector was unable to locate qualification sign-offs for several technicians. The licensee initiated a review of this matter.
- The licensee revised access control procedures to include guidance for use of ALNOR alarming dosimeters. The dosimeters were issued at the main access control point and are used to meet, in part, Technical Specification high radiation area access control requirements. The following was noted:
 - The procedure revision was issued on February 12, 1988 and placed in Technician required reading file on February 18, 1988. As of March 3, 1988 the majority of the access control point technicians had not signed the required reading log indicating they had read and understood the revised procedure.
 - One contractor technician, issuing the ALNOR dosimeters on March 3, 1988, indicated no procedures were established and implemented for the dosimeters. The technician was unaware of the existence of a revised procedure covering this area.

Although a licensee radiation protection supervisor indicated personnel had been trained on the procedure revisions, immediate action was taken to ensure personnel had signed the required reading log.

- The licensee did not have any administrative controls in place to ensure contractor radiation protection technicians had read and understood new procedures or procedure revisions subsequent to their initial training. The licensee had hired about 80 contractor technicians to augment the radiation protection organization.

The licensee initiated an immediate review of all new recent procedures and procedure revisions to identify any procedures that the contractor technicians should be instructed in since they had been initially trained.

The licensee did not identify any other new procedures or significant procedure revisions (with the exception of the access control procedures revisions for use of ALNOR dosimeters discussed above) for which technicians should receive training. The licensee took immediate action to establish an administrative control system to ensure contractor technicians receive instruction in new procedures or procedures changes subsequent to initial training.

7.0 ALARA

The inspector reviewed selected aspects of the ALARA Program. The review was with respect to criteria contained in applicable licensee procedures and regulatory guidance.

The following matters were reviewed:

- ALARA planning and preparation for work.
- Generation of exposure goals for work.
- ALARA oversight of work in-progress to ensure exposure accumulation is consistent with initial exposure estimates.
- Initiation of appropriate reviews when exposure accumulation is inconsistent with initial estimates.

Within the scope of this review, no violations were identified. The following areas for review and improvement were identified:

- Improve initial exposure goal development. Exposure goals did not incorporate full work scope.
- The program for performing ALARA review of work in-progress was not well defined and considered ineffective.
- Because of unanticipated high exposure dose rates encountered during change out of Reactor Water Clean-Up Heat Exchanger Diaphragms, licensee management requested that additional ALARA effort be directed to overseeing the work to ensure efforts associated with the replacement were conducted to minimize personnel exposure. Licensee management efforts to focus additional ALARA attention on the diaphragm change out were noteworthy.

However, inadequate priority was placed on other significant radiological work activities (e.g. undervessel control rod drive equipment changeout). The licensee immediately initiated action to enhance ALARA oversight of other work activities.

8.0 External Exposure Controls

The inspector reviewed selected aspects of the external exposure control program. The review was with respect to applicable regulatory requirements and licensee procedures.

The following matters were reviewed:

- Generation of appropriate radiation surveys for use in pre-planning and establishing radiological controls for work.
- Establishment of adequate radiation work permits to support radiological work activities.
- Implementation of high radiation area access controls.
- Posting, barricading, access control, as appropriate to radiation and high radiation areas.
- Maintenance of dosimetry records.
- Use of appropriate, properly calibrated radiation survey instrumentation.
- Use of personnel dosimetry.

Within the scope of this review, no violations were identified. The following positive observations were made:

- Radiation work permits were implemented and provided adequate radiological controls for work activities.
- Dosimetry records were complete and well maintained.
- Radiation surveys were adequate to support work activities.
- Radiation survey instrumentation was calibrated and periodically checked for operability.
- Adequate controls were maintained of all keys to exclusion area (greater than 10 R/hr) and locked high radiation area (greater than 1 R/hr). Oversight of the status and location of controlled keys was performed once each shift by the lead control point technician.

Within the scope of this review, the following areas for improvement were identified:

- Some radiation work permits for refueling floor work did not contain precautions for removal of equipment from the reactor cavity while others did. Although the reactor cavity was posted with signs prohibiting equipment removal without radiation protection personnel oversight, the licensee initiated a review of RWP consistency.
- Some radiation work permits indicated dosimetry use/placement requirements were "per supervision". Lack of explicit guidance on radiation work permits for use and placement of personnel dosimetry was considered a poor practice.

The licensee immediately initiated action to review and correct (as appropriate) the above matters.

9.0 Internal Exposure Controls

The inspector reviewed selected aspects of the internal exposure control program. The following matters were reviewed:

- Performance of appropriate airborne radioactivity surveys.
- Use of engineering controls to minimize airborne radioactivity.
- Adequacy and implementation of the respiratory protection program.
- Generation of internal exposure records and/or reports.

The review was with respect to criteria contained in applicable regulatory requirements and procedures.

Evaluation of licensee performance was based on discussions with cognizant personnel, review of documentation and observations during plant tours.

Within the scope of this review, no violations were identified. The following observations were made:

- The licensee makes extensive use of engineering controls to limit airborne radioactivity levels.
- The procedures for respirator maintenance, cleaning, repair and issue were clear, concise, and comprehensive for the conduct of the program.
- Personnel at the respirator cleaning and testing facility were well-trained and knowledgeable in their responsibilities.
- There were adequate administrative controls in-place to ensure that only qualified people were issued respiratory protective devices. Respirator issue personnel were cognizant of plant conditions and the RWPs that required additional controls.

- There were adequate supplies of replacement parts. The respirator fitting equipment was properly maintained.
- Adequate controls were maintained on the in-house breathing air supplies. Breathing air quality was checked regularly and verified to meet Grade D specifications.

The following areas for improvement were discussed with licensee personnel:

- Procedure RP-EU.KG-002(Q), revision 0, "Operation of Breathing Air Systems", discussed the use of the MAKO-K-15, a breathing air bottle filling system, which is not in use at Hope Creek. The licensee indicated that this will be reviewed.
- Procedure RP-TI.ZZ-012(Q), revision 4, "Testing of Breathing Air Quality," describes testing of breathing air by the Chemistry department. However, this is never performed. Chemistry does not have the analytical equipment to perform these analyses. The licensee indicated that this would be reviewed.
- Respirator storage was haphazard, with respirators piled up on shelves. Also, respirator straps were pulled over the visor, creating potential problems with respirator sealing surfaces.
- Workers were observed cutting off the plastic ID tags of respirators because they caused facial discomfort.
- Breathing airline headers in the drywell were observed unprotected from contamination. Licensee personnel indicated the headers were not being used.
- One of 3 battery airline hose couplings in the Reactor Water Clean-up heat exchanger cubicle was found unprotected from contamination. The coupling was checked, found not to be contaminated, and covered.
- Several examples of lack of optimum positioning of airborne radioactivity samples were identified but quickly corrected by the licensee.

10.0 Radioactive and Contaminated Material Control Including Personnel Contamination Control

The inspector reviewed the following aspects of the radioactive and contaminated material control program and personnel contamination control program:

- Posting and labeling of radioactive material containers
- Control of Contaminated Material/Areas
- Personnel Frisking Practices

- Hot Particle Control.

The review in this area was with respect to applicable licensee procedures and regulatory requirements.

Evaluation of licensee performance was based on discussions with cognizant personnel, review of documentation and observations during plant tours.

Within the scope of this review, no violations were identified. The following observations were made:

- License control of posting and labeling of radioactive and contaminated material was adequate.
- Personnel were performing adequate whole body frisking.
- The licensee has not established and implemented a formalized hot particle control program (e.g. surveillance procedures). However, the following initiatives were noted:
 - Whole body friskers have been placed throughout the plant for personnel frisking.
 - Personnel leaving potential hot particle protected areas (e.g. drywell and refueling floor) are required to perform immediate whole body frisking.
 - The licensee is establishing a hot particle training program.

The following areas for review and improvement were identified:

- Two radiation protection technicians exhibited poor contamination control techniques as follows:
 - On March 1, 1988, a technician allowed work to proceed on repair of contaminated valves in the Condenser Bay but did not set up a contamination control zone. Workers were in full protective clothing including gloves and shoe covers. The inspectors were able to walk directly up to the workers without any indication or warning that they may be entering a "Contaminated/RWP Area." Valve packing removed measured up to about 10,000 dpm/100 cm² removable contamination.
 - A technician monitoring assembly of a feed water check valve in the drywell on March 2, 1988 entered a posted high contamination area with standard protective clothing (i.e. coveralls, gloves, skull cap, and boots). However, personnel in the area were wearing full plastic suits and respirators in addition to standard protection clothing. The technician intermingled with the workers.

This practice was permitted by the RWP because the technician was not actually involved in assembly of the valve. Although this did not violate the RWP it is considered a poor radiological practice.

The licensee immediately counseled the two individuals when the instances were brought to his attention. Also, other technicians were counseled to effectively implement contamination control techniques. Contamination control will be reviewed during future inspections.

11.0 Drywell Access During Fuel Movement

The inspector reviewed licensee controls for drywell access during fuel movement. The review was with respect to criteria contained in the following:

- General Electric Operating Experience Report No. 78, Radiation Levels and Shielding Recommendations for the Upper Drywell Area During Fuel Transfer
- General Electric Service Information Letter No. 354, Potential Radiation Levels In Upper Drywell Areas During Fuel Movement Activities
- SA-AP.ZZ-049(Q), Control of Fuel Handling and Core Alterations
- SA-AP.ZZ-046(Q), Radiological Access Control Program
- RP-TI.XX-001(Q), Primary Containment (Drywell Entries)

Within the scope of this review, no violations were identified. The following observations were made:

- The licensee was aware of the potential for increased dose rates in the upper elevations of the drywell during fuel movement and aware of industry concerns in this area.
- The licensee performed a special test in which a spent fuel element was moved around various areas of the reactor vessel and reactor cavity. Radiation dose rates were measured by use of portable remote read out area radiation monitors and by read-out of fixed TLDs. No unusual dose rates were encountered. As expected some elevated dose rates were noted in the upper drywell areas. Special procedure instructions have been established for controlling access to the upper elevations of the drywell.
- Access to upper levels of the drywells was strictly prohibited.

The following areas for improvement were identified:

- The licensee has installed portable area radiation monitors in the drywell to alert personnel of unexpected increases in general area dose rates. However, there was no guidance in place for performing periodic operability checks and alarm set point checks of the area radiation monitors.

- Procedure guidance did not provide minimum requirements/personnel contacts to be made in the event access to the upper elevation of the drywell was necessary.

The licensee immediately initiated action to review and correct (as appropriate) these items.

12.0 Exit Meeting

The inspector met with licensee personnel (denoted in Section 1.0 of the report) at the conclusion of the inspection. The inspector summarized the purpose, scope and findings of the inspection.