

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/84-17

Docket No. 50-354

License No. CPPR-120 Priority - Category C

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

Facility Name: Hope Creek Generating Station

Inspection At: Maplewood and Salem, New Jersey

Inspection Conducted: October 1-4, 1984

Inspectors: H. J. Bicehouse 10/29/84
H. Bicehouse, Radiation Specialist date

Bruce H. Carson 10/29/84
B. Carson, Radiation Specialist date

Approved by: W. Pasciak 10/29/84
W. Pasciak, Chief, Boiling Water Reactor
Radiation Safety Section date

Inspection Summary: Inspection on October 1-4, 1984 (Inspection Report No. 50-354/84-17)

Areas Inspected: Special announced inspection of the applicant's preoperational environmental surveillance program, including organization and management controls, personnel selection, training and qualification, radiological environmental monitoring program, meteorological program, facilities and equipment, documentation, quality assurance and contractor programs. The inspection involved 42 inspection-hours at the Maplewood, NJ laboratory and at the Salem site by two region-based inspectors.

Results: Within the areas inspected, no violations or deviations were identified. Two weaknesses were identified (Details 3.3 and 8) and discussed with the applicant.

DETAILS

1. Persons Contacted

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

1.1 PSE&G Corporate Office

- *Mr. N. Allman, Principal Staff Radiation Analyst
- *Mr. D. Cooley, Manager, Environmental Licensing
- *Mr. R. Douglas, Manager, Licensing & Analysis

1.2 PSE&G Research and Testing Laboratory

- *Mr. D. Campbell, Manager, Environmental Division
- Mr. K. Harris, Test Engineer
- *Mr. M. Jepson, Chemical Test Engineer
- Dr. L. Lapatnick, Principal Staff Engineer
- Mr. C. Mahoney, Test Engineer
- Mr. W. Polhemus, Assistant Manager, Environmental Division
- Mr. T. Randall, Test Engineer

1.3 Hope Creek Site

- *Mr. J. Grabie, Lead QA Engineer
- *Mr. J. Kotsch, Senior Health Physicist
- *Mr. R. Lovell, Radiation Protection Engineer
- Mr. R. Yewdall, Principal Staff Radiation Analyst

1.4 Contractor Personnel

Dr. D. Martin, Environmental Measurements Teledyne Isotopes

*Attended the exit interview on October 4, 1984.

Other applicant and contractor employees were also contacted or interviewed during this inspection.

2. Purpose

The purpose of this special inspection was to review the applicant's preoperational environmental surveillance program with respect to the following elements:

- Organization and Management Controls;

- Personnel Selection, Training and Qualification in the Research and Testing Laboratory;
- Implementation of the Radiological Environmental Monitoring Program;
- Facilities and Equipment;
- Documentation of procedures, measurements, calibrations and evaluations;
- Quality Assurance; and
- Contractor programs.

3. Organization and Management Controls

3.1 Program Description

Hope Creek Generating Station is co-located with the Salem Generating Station on Artificial Island near Salem, NJ. Since 1968, Public Service Electric and Gas Company (PSE&G) has conducted an offsite radiological environmental monitoring program (REMP) in areas adjacent to Artificial Island. Due to the proximity of Hope Creek and Salem Generating Stations, a common REMP is conducted for both stations.

A 300 foot meteorological tower located on Artificial Island has provided supporting meteorological data for the REMP since 1969.

PSE&G's Research and Testing Laboratory (RTL) has had responsibility for sample collection and maintenance of sampling equipment associated with the REMP since its inception. On July 1, 1983, RTL assumed responsibility for the radiochemical analyses previously conducted by Radiation Management Corporation. Teledyne Isotopes (Westwood, New Jersey) assumed responsibility for "third party" quality assurance (QA) analyses and the thermoluminescent dosimeter (TLD) program on July 1, 1983.

3.2 Organization

The applicant's organization of the preoperational environmental surveillance program was reviewed. The applicant's Nuclear Assurance and Regulation Department provides overall technical direction to the REMP and its supporting meteorological program.

REMP sample collection and analysis are the responsibility of the Research and Testing Laboratory (RTL) Environmental Division. Within the RTL, Test Engineers provide direction to the technicians collecting and analysing the samples. The Test Engineers report through

the Assistant Manager to the Manager, Environmental Division. The Manager, Environmental Division reports to the General Manager, RTL - PSE&G Research Corporation.

Within the Nuclear Assurance and Regulation Department, a Principal Staff Radiation Analyst has responsibility for the REMP. A second Principal Staff Radiation Analyst has responsibility for the supporting meteorological program. These Radiation Analysts report to the Manager, Licensing and Analysis. The Manager, Licensing and Analysis reports to the General Manager, Nuclear Assurance and Regulation Division.

Administrative control of the REMP is provided by departmental orders issued by the Nuclear Assurance and Regulation Department to the PSE&G Research Corporation.

3.3 Administrative Control

The applicant's adherence to commitments made in the Hope Creek Generating Station Operating License Environmental Report (HCGS-OLER) was reviewed. PSE&G Department Order No. NAR-001 and its attachment entitled "Artificial Island Site Radiological Environmental Monitoring Program," (Revision 1, June 6, 1984) were reviewed to determine the applicant's administrative control of the REMP.

Within the scope of this review, the following item was identified:

The applicant stated that sensitivities in analytical procedures used in the REMP were consistent with the USNRC/NRR Radiological Assessment Branch Technical Position on conducting environmental surveillance programs (HCGS-OLER, Pg. 6.1-16). Contrary to this commitment, the attachment to PSE&G Department Order No. NAR-001A, in listing analytical sensitivities, deviated from the Branch Technical Position in each of the following:

<u>Analysis</u>	<u>Analytical Sensitivity</u>	
	<u>PSE&G</u>	<u>NRR Branch Technical Position</u>
• Gross beta in Air Particulates	7E-2 pci/m ³	1E-2 pci/m ³
• Cs-134 in Air Particulates	2E-1 pci/m ³	5E-2 pci/m ³
• Cs-137 in Air Particulates	2E-1 pci/m ³	6E-2 pci/m ³
• Cs-134 in Crabs	80 pci/Kg-wet	60 pci/Kg-wet
• Cs-134 in Beef	80 pci/Kg-wet	60 pci/Kg-wet

The inspector reviewed analytical sensitivities reported by the applicant in Report No. RTL-ENV-84-01, "Artificial Island Radiological Monitoring Program," (applicant's 1983 Radiological Environmental Monitoring Report) and noted that reported analytical sensitivities were consistent with the Branch Technical Position. However, Department Order No. NAR-001A failed to require that these analytical sensitivities be maintained. At the exit interview, the applicant's representative stated that Department Order No. NAR-001A would be reviewed and amended as needed to provide analytical sensitivity requirements consistent with the commitment made in the HCGS-OLER. This action will be reviewed in a subsequent inspection. (50-354/84-17-01)

4. Personnel Selection, Training and Qualification

The selection, training and qualification of the test engineers and technicians implementing the applicant's preoperational environmental program were reviewed against commitments and standards provided in:

- Hope Creek Generating Station Final Safety Analysis Report (HCGS-FSAR), Volume 1, Section 1.8, "Conformance to NRC Regulatory Guides;"
- HCGS-FSAR, Volume 16, Chapter 13, "Conduct of Operations;" and
- ANSI/ANS 3.1-1981, "Selection, Qualification and Training of Personnel for Nuclear Power Plants."

The inspector reviewed the position descriptions for test engineers and technicians, interviewed selected incumbents in those positions and discussed related education and experience with the Manager, Environmental Division.

Within the scope of this review, no deviations were noted.

5. Radiological Environmental Monitoring Program

The implementation of the preoperational REMP was reviewed against criteria and commitments provided in:

- 10 CFR 50, Appendix A, General Design Criterion 64, "Monitoring Radioactivity Releases;"
- Regulatory Guide 4.1, "Programs For Monitoring Radioactivity in the Environs of Nuclear Power Plants;"
- HCGS-OLER, Volume 2, Section 6.1.5, "Off-Site Radiological Monitoring Program;" and
- USNRC/NRR Radiological Assessment Branch Technical Position (Revision 1, November 1979)

The applicant's performance relative to these criteria and commitments was determined by:

- discussions with the cognizant members of the Environmental and Nuclear Assurance and Regulation Division staffs;
- direct observation of six environmental sampling stations and RTL operations; and
- review of Report No. RTL-ENV-84-01, "Artificial Island Radiological Environmental Monitoring Program," Procedure No. SP-1, "Reporting of Abnormal Results Artificial Island Radiological Environmental Program," and Department Order No. NAR-001A.

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

6. Meteorological Program

The implementation of the applicant's preoperational meteorological program was reviewed against criteria and commitments provided in:

- 10 CFR 50, Appendix A, General Design Criterion 64, "Monitoring Radioactivity Releases;"
- Regulatory Guide 1.23, "Onsite Meteorological Programs;"
- Hope Creek Generating Station Final Safety Analysis Report (HCGS-FSAR), Volume 2, Section 2.3, "Meteorology;"
- HCGS-FSAR, Volume 1, Section 1.8, "Conformance to NRC Regulatory Guides;"
- Hope Creek Generating Station Operating License Environmental Report, (HCGS-OLER), Volume 1, Section 2.3.1.1, "Local Meteorology;"
- HCGS-OLER, Volume 1, Section 2.3.2, "On-Site Meteorological Data Collection Program;" and
- HCGS-OLER, Volume 2, Section 6.1.3.1, "Meteorology."

The applicant's performance relative to these criteria and commitments was determined by discussions with the cognizant Principal Staff Radiation Analyst, examination of data provided by the applicant and direct observation.

Within the scope of this review, no violations or deviations were noted.

7. Facilities and Equipment

The applicant's facilities and equipment used in the preoperational environmental surveillance program were reviewed against commitments and descriptions provided in:

- Hope Creek Generating Station Operating License Environmental Report, (HCGS-OLER), Volume 1, Section 2.3.2, "On-Site Meteorological Data Collection Program;"
- HCGS-OLER, Volume 2, Section 6.1.5, "Off-Site Radiological Monitoring Program;" and
- Report No. RTL-ENV-84-01, "Artificial Island Radiological Environmental Monitoring Program."

The applicant's performance relative to these commitments was assessed by direct observation of sampling stations and laboratory equipment used in the preoperational program and discussions with cognizant members of the applicant's staff.

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

8. Documentation

The applicant's documentation of procedures, measurements, calibrations and evaluations was reviewed relative to criteria and commitments contained in:

- Hope Creek Generating Station Operating License Environmental Report, (HCGS-OLER), Volume 1, Section 2.3.2, "On-Site Meteorological Data Collection Program;"
- HCGS-OLER, Volume 2, Section 6.1.5, "Off-Site Radiological Monitoring Program;"
- USNRC/NRR Radiological Assessment Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program," (Revision 1, November 1979);
- Regulatory Guide 4.1, "Programs for Monitoring Radioactivity In the Environs of Nuclear Power Plants;"
- Regulatory Guide 4.6, "Measurements of Radionuclides In the Environment-Strontium-89 and Strontium-90 Analysis;" and
- Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment"

The applicant's performance relative to these criteria and commitments was determined by:

- review of RTL procedures for sample collection, preparation and analysis, standards preparation, and instrument calibration;
- examination of the applicant's census of milk animals and survey of vegetable gardens;
- review of calibrations for 3 GeLi gamma scintillation detectors, a liquid scintillation detector and 2 alpha-beta gas-flow proportional counters; and
- review of sample data, standards preparation and selected data analyses.

Within the scope of this review, the following item was noted: Procedure No. H₂Oa, "Gross Alpha Activity In Water," (Revision 1, November 16, 1983) described the preparation of alpha self-absorption standards using distilled water. Those standards were used in correcting environmental samples for self-absorption. However, environmental aqueous samples included Delaware River samples taken in areas of changing salinity. Since the analytical method coprecipitates the materials in the aqueous sample with ferric hydroxide, the presence of saline materials could provide increased self-absorption of alpha particles resulting in lowered apparent count rates relative to standards produced with distilled water. During the exit interview, the applicant's representative stated that tests to determine the magnitude of the potential source of error would be completed and available for NRC review by January 1, 1985. This item will be reviewed in a subsequent inspection. (50-354/84-17-02)

9. Quality Assurance Program

The RTL provides a quality assurance program for the analytical procedures used in the applicant's preoperational environmental surveillance program. The applicant estimates that approximately 20% of the total analytical effort is spent on quality control including process quality control, instrument quality control, interlaboratory cross-check analyses and data review. The RTL implements its quality assurance program as described in the "Environmental Division Quality Assurance Manual" through procedures for internal quality control in the laboratory and external quality control through participation in the USEPA Laboratory Intercomparison Studies Program.

The applicant's quality assurance program was reviewed against commitments made in the HCGS-OLER. The applicant's program was also reviewed against criteria provided in Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment."

The applicant's performance relative to these commitments and standards was determined by discussions with cognizant members of the RTL staff and review of Report No. RTL-ENV-84-01. Within the scope of this review, no deviations were noted.

10. Contractor Programs

The applicant uses contractors to provide "third party" quality assurance analyses, thermoluminescent dosimeters (TLD) for estimation of ambient gamma exposure in the site environs and aquatic food chain samples. Contractor activities were reviewed relative to the commitments made by the applicant in the HCGS-OLER and HCGS-FSAR during discussions with the applicant and review of various portions of the applicant's preoperational environmental surveillance program.

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

11. Exit Interview

The inspectors met with the applicant's representatives (denoted in paragraph 1) at the conclusion of the inspection at the HCGS site on October 4, 1984. The inspectors summarized the purpose and scope of the inspection and identified findings as described in this report.

At no time during the inspection was written material provided to the licensee by the inspector.