

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-443/92-17
Docket No. 50-443
License No. NPF-86
Licensee: North Atlantic Energy Service Corporation
Post Office Box 300
Seabrook, New Hampshire 03874
Facility Name: Seabrook Nuclear Power Station
Inspection At: Seabrook, New Hampshire
Inspection Conducted: August 14, 1992

Inspectors: Laurie Peluso 9/8/92
Laurie Peluso, Radiation Specialist
Effluents Radiation Protection Section (ERPS)
Facilities Radiological Safety and
Safeguards Branch (FRSSB) Date

Approved by: Richard H. Strickmeyer 9/8/92
for Marie T. Miller, Acting Chief, ERPS, FRSSB, Date
Division of Radiation Safety and Safeguards (DRSS)

Areas Inspected: Announced safety inspection of the radiological environmental monitoring program including: management controls, quality assurance audits, meteorological monitoring program, quality control program for analytical measurements, and implementation of the above programs and the Offsite Dose Calculation Manual (ODCM).

Results: Within the areas inspected, the licensee effectively implemented the above program. No safety concerns or violations of regulatory requirements were identified.

DETAILS

1.0 Individuals Contacted

1.1 Licensee Personnel

- * B. Clark, Radiological Services Supervisor
- * R. Cooney, Assistant Station Manager
- R. Donald, Lead Auditor, Quality Assurance Department
- * R. Faix, Mechanical Engineering Manager
- J. Fralick, Health Physics Technician, Radiological Services
- * D. Kochman, Senior Engineer, Environmental Engineering
- J. Kwasnik, Senior Engineer, Environmental Engineering
- * W. Leland, Chemistry/Health Physics Manager
- * J. Linville, Chemistry Department Supervisor
- * T. Murphy, Maintenance Support Department
- * J. Pescher, Regulatory Compliance Supervisor
- * P. Plazeski, Radiological Services Supervisor
- * T. Pucko, NRC Coordinator
- J. Savold, Senior Instrument and Controls Technician
- * R. Sher, Environmental Engineering Supervisor
- * M. Toole, Instrument and Controls Supervisor

1.2 NRC Personnel

- * N. Dudley, Senior Resident Inspector
- * Denotes those individuals present at exit interview on August 14, 1992.

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

2.0 Purpose

The purpose of this inspection was to verify the licensee's capability to implement the Radiological Environmental Monitoring Program (REMP) including the Meteorological Monitoring Program (MMP) according to Technical Specifications (TS), the Offsite Dose Calculation Manual (ODCM), and appropriate procedures during normal and emergency operations.

3.0 Management Controls

3.1 Organization

The inspector reviewed the organization and administration of the REMP for any changes made since the previous inspection conducted in September 1991.

There was a change in this portion of the licensee's organization on January 1, 1992. Prior to this reorganization, the responsibilities for the REMP were implemented by the Principal Health Physicist (HP) and the HP, who reported to the Executive Director, Nuclear Production through the Nuclear Services Manager. The REMP responsibilities have been transferred to the Environmental Engineering Department and the Principal HP and the HP were renamed Environmental Engineers and now report to the Environmental Engineering Supervisor. The Environmental Engineering Supervisor reports to the Mechanical Engineering Manager, who, in turn reports to the Executive Director of Engineering and Licensing through the Manager of Engineering.

Based on the review and discussions with the licensee, the inspector determined that the organizational change has had no negative impact on implementing the REMP effectively.

3.2 Quality Assurance Audits

The inspector reviewed the following Quality Assurance audit reports as part of the implementation of the Technical Specification requirements.

- o QA Audit 91-A10-02, "REMP and ODCM", December 24, 1991
- o QA Audit 92-A06-01, "REMP and ODCM", August 3, 1992
- o Final 1991 LQCAC Audit Report", December 31, 1991

The Quality Assurance (QA) audits were conducted by members of the QA Department and a technical specialist. The 1991 audit was performed September 9 - November 27, 1991 and the 1992 audit was performed June 15 - 30, 1992. The above audits covered the stated objectives, were thorough and of good technical depth. The 1992 audit identified one finding and three observations. Response to the audit finding was not yet due at the time of the inspection. The inspector discussed the proposed response with members of the appropriate department. Based on the discussion, the response appeared to be acceptable.

The inspector noted that the 1991 audit identified one finding and two observations which were all closed. Response and corrective actions were timely and generally appropriate, however, the inspector determined that the response to one of the observations was not acceptable and investigated the matter further. The observation documented that the dry gas meter used to obtain total air sample volume which passes through the charcoal cartridge located on the primary vent stack sample system was not calibrated. The response from the I&C department indicated that the meter does not need to be calibrated. The inspector discussed this with members of the Chemistry Department who stated that they had initiated an amendment to the response

and the meter would be calibrated using a cross calibration technique. The I&C department had taken steps to have a Repetitive Task Sheet (procedure for simple tasks where full procedures are not necessary) written and approved. Based on the discussion, the actions taken were acceptable.

The Laboratory Quality Control Audit Committee (LQCAC) Audit is a combined effort of technical specialists from the five sponsor companies (Yankee Atomic, Vermont Yankee, Maine Yankee, New Hampshire Yankee, and Boston Edison) to assess the Yankee Atomic Environmental Laboratory annually. The 1991 LQCAC audit covered the stated objectives and was of excellent technical depth. The audit identified 3 deficiencies and 33 observations. The findings were of no safety significance. The deficiencies and observations appeared to be reasonable and were assigned to the appropriate departments.

3.3 Review of the Annual Radiological Environmental Operating Report

The inspector reviewed the Annual Radiological Environmental Operating Report for 1991, as well as the available 1992 analytical data for the REMP. The report provided a comprehensive summary of the analytical results of the REMP around the Seabrook site and met the TS reporting requirements. The results indicated that all samples were collected as required and the analytical data for 1991 and 1992 appeared to be reasonable. No obvious omissions or anomalous data were identified.

4.0 Radiological Environmental Monitoring Program

4.1 Direct Observations

The inspector examined selected sampling stations to determine whether samples were being obtained from the locations designated in the TS and the ODCM and whether air samplers were operable and calibrated. These sampling stations included air samplers for particulates and airborne iodines, two milk sampling stations, and a number of thermoluminescent dosimeter (TLD) stations for measurement of direct ambient radiation. The inspector witnessed the weekly exchange of charcoal cartridges and air particulate filters at all the TS locations. The selected air sampling equipment was operational at the time of this inspection, with one exception. The exception was corrected by the licensee during the inspection. Milk samples were available at the locations specified in the ODCM. The TLDs were placed at the designated locations as specified in the ODCM. Sample collection was performed according to the appropriate procedures. The observed air sampling equipment appeared to be well maintained and the associated air volume measurement equipment was in calibration.

4.2 Review of the REMP Procedures, Documentation and Controls

The inspector reviewed a number of procedures as part of the evaluation of the implementation of the REMP in accord with Technical Specifications and the ODCM. The following procedures were reviewed.

- o EC 3.1, Radiological Environmental Sampling of Air Particulates and Radioiodine
- o EC 3.2, Environmental Monitoring of Direct Radiation
- o EC 3.5, Radiological Environmental Sampling of Milk
- o EC 3.6, Land Use Census Performance
- o EC 3.8, Radiological Environmental Monitoring Quality Assurance Plan
- o EC 3.9, Calibration of Environmental Air Samplers

The inspector noted that the above procedures were being updated and revised to reflect the organizational change and current sampling practices. These sampling procedures will be removed from the EC Manual and will be implemented and controlled by Radiological Services. The inspector reviewed the final draft procedures. They appeared to be appropriate. The reviewed procedures were concise and provided the required direction and guidance for implementing an effective program.

In addition to the procedure review, the inspector also evaluated other aspects of the REMP, including sampling techniques for various environmental sample media, sampling frequencies, and calibration records of air samplers. The calibrations were performed as scheduled and the results were within the licensee's acceptance criteria.

Based on the above review and evaluation, the inspector determined that the licensee met the requirements for sampling and analysis of environmental media, frequency of sampling and analysis, and the lower limits of detection (LLD) for required analyses, and that the licensee implemented the REMP very effectively.

4.3 Environmental Dosimetry Program Comparison

The results of the Nuclear Regulatory Commission (NRC) TLD Direct Radiation Monitoring Network are published quarterly in NUREG-0837. This network provides continuous measurements of the ambient radiation levels around 72 nuclear power plant sites throughout the United States. Each site is monitored by approximately 30 to 50 TLD stations in two concentric rings extending to about five miles from the nuclear power plant.

One purpose of this network is to provide a means of comparing the results of the direct radiation monitoring programs conducted around individual nuclear power plants with that of the nation-wide NRC program. Therefore, several NRC TLDs are collocated with each licensee's TLD stations. The Scabrook site has five collocated TLD stations.

During this inspection, the monitoring results of the collocated TLDs were evaluated using the statistical analysis, student t-test. The results have been listed in Table 1. The comparison results during the first and third quarters of 1991 were in agreement at the 95% confidence level, with the exception of NRC 1 and SEA 8 for the third quarter. All the comparison results during the second and fourth quarters of 1991 were in disagreement at this confidence level. The disagreements may be attributed to many variables, such as annealing techniques, transit dose, and length of field exposure. This will be reviewed during a subsequent inspection. Although there were some disagreements in the comparison results using the student t-test at the 95% confidence level, the results were still acceptable to the NRC.

The inspector noted that the licensee had shown good initiative in documenting the locations of the collocated TLDs, tracking and comparing the monitoring results of both the NRC TLDs and its TLDs.

5.0 Quality Control for Analytical Measurements

The inspector reviewed the licensee's program for quality control to determine whether the licensee had adequate control with respect to sampling, analyzing samples and evaluating data for the implementation of the REMP. The quality control program for analysis of environmental samples is conducted by the Yankee Atomic Environmental Laboratory (YAEL), located in Framingham, MA. The laboratory conducts a blind duplicate program, an intralaboratory quality control program, and participates in the EPA-cross check program to verify the quality of laboratory analysis. The inspector reviewed selected results from these programs and noted that the results were within the licensee's acceptance criteria.

Based on the above review and discussions with the licensee, the inspector determined that the licensee had a very good quality control program.

7.0 Meteorological Monitoring Program (MMP)

The inspector reviewed the licensee's meteorological monitoring program to determine whether the instrumentation and equipment were operable, calibrated and maintained. The inspector reviewed several calibration procedures and the most recent calibration results for wind speed, wind direction, and delta temperature at the primary and back-up meteorological towers. Calibrations were performed quarterly

by the licensee and its contractor. All reviewed calibration results were within the licensee's acceptance criteria. The inspector compared the meteorological parameters between the control room and the equipment house located at the base of the primary meteorological tower. The comparisons were in good agreement. The inspector noted that the chart recorders and instrumentation at the primary tower were operable and well maintained at the time of the inspection. The inspector also noted that the control room operators, as well as the senior engineer responsible for the MMP, have the capability to access real-time data from the control room computers.

Based on the above record review and discussions with the licensee personnel, the inspector determined that the licensee has implemented the MMP effectively.

8.0 Exit Interview

The inspector met with the licensee representatives denoted in Section 1.1 of this inspection report at the conclusion of the inspection on August 14, 1992. The inspector summarized the purpose, scope, and findings of the inspection.

TABLE 1

Environmental TLD Monitoring Results 1991 (mR/std. qtr.)

	1st quarter	2nd quarter	3rd quarter	4th quarter
NRC 1	14.3 ± 0.7	18.5 ± 0.6	14.1 ± 0.7	18.1 ± 0.6
SEA 8	15.2 ± 0.4	15.3 ± 0.6	19.1 ± 0.9	14.9 ± 0.5
NRC 9	15.6 ± 0.7	21.4 ± 0.7	17.2 ± 0.8	20.9 ± 0.7
SEA 35	15.7 ± 0.6	15.7 ± 0.5	16.2 ± 0.5	15.4 ± 0.5
NRC 11	13.6 ± 0.7	19.1 ± 0.6	14.6 ± 0.7	18.8 ± 0.6
SEA 31	14.6 ± 0.3	15.1 ± 0.6	14.8 ± 0.3	14.8 ± 0.1
NRC 12	14.4 ± 0.7	18.4 ± 0.6	13.8 ± 0.7	18.6 ± 0.6
SEA 3	15.1 ± 0.5	15.1 ± 0.3	14.9 ± 0.3	14.9 ± 0.5
NRC 13	13.5 ± 0.7	18.5 ± 0.6	14.1 ± 0.7	19.1 ± 0.6
SEA 5	14.9 ± 0.4	15.2 ± 1.0	14.8 ± 0.4	14.3 ± 0.5

NRC Net Exposure in milliroentgens/standard quarter (90 days).
 SEA Net Exposure in mR/std. qtr. (91 days).