U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-443/86-38; 50-444/86-02

Docket Nos. 50-443; 50-444

License Nos. CPPR-135; CPPR-136 Category B

Licensee: Public Service of New Hampshire
P.O. Box 700
Seabrook, New Hampshire 03874

Facility Name: Seabrook Power Station, Units 1 and 2

Inspection At: Seabrook, New Hampshire

Inspection Conducted: June 23-27, 1986

Inspectors: J. J. Kottan for Richard K. Struckmeyer, Radiation Specialist — 7/24/86 date

J. J. Kottan for Karen L. Rabatin, Radiation Specialist — 7/24/86 date

Approved by: Marie Miller for Walter J. Pasciak, Chief, ERPS, EPRB — 7/23/86 date

Inspection Summary: Inspection on June 23-27, 1986 (Combind Report Nos. 50-443/86-38; 50-444/86-02)

Areas Inspected: Routine, announced inspection of the preoperational radiological environmental monitoring program including: management controls; the licensee's program for quality control of analytical measurements; training and qualifications; implementation of the radiological environmental monitoring program; meteorological monitoring; reports; and audits.

Results: Within the scope of this inspection, no violations were identified.

DETAILS

1.0 Individuals Contacted

1.1 New Hampshire Yankee

R. Harvey, Lead Engineer, Radiological Engineering Group
*D. Kochman, Health Physicist, Nuclear Services Group
*J. Kwasnik, Principal Health Physicist, Nuclear Services Group
J. Lavoie, Control Room Operator
P. Neault, H. P. Supervisor - Dosimetry
W. Nichols, Foreman, I&C
*T. Pucko, Licensing Engineer
*J. Rafalowski, Supervisor, Health Physics Department
*S. Stasek, Licensing Engineer

1.2 Yankee Atomic Electric Laboratory

D. Danielski, QA Officer
C. Harrington, Analytical Services Leader
D. McCurdy, Laboratory Director
N. Stanford, Radiation Dosimetry

1.3 Contractor and Other Personnel

*R. Gregory, Licensing Engineer, UE&C
*W. Middleton, QA Staff Engineer, YAEC
V. Sanchez, Site Licensing Supervisor, YAEC
*J. Singleton, Assistant QA Manager, YAEC

1.4 USNRC

*A. Cerne, Senior Resident Inspector
*D. Ruscitto, Resident Inspector

In addition to those listed, other licensee and contractor personnel were contacted during this inspection.

*Denotes those present at exit meeting on June 27, 1986.

2.0 Management Controls

The inspector reviewed the licensee's management controls for the Radiological Environmental Monitoring Porgram, including assignment of responsibility, program audits, and corrective actions for identified problem areas in the program.

2.1 Assignment of Responsibility

The REMP is administered by the Nuclear Services Group. The Nuclear Services Manager reports to the Vice President - Nuclear Production. Collection of most environmental samples is performed by personnel in the station health physics organization. These personnel report through the Health Physics Department Supervisor and the Chemistry and Health Physics Manager to the Seabrook Station Manager, who also reports to the Vice President - Nuclear Production. The inspector reviewed the "Interface Agreement for the Radiological Environmental Monitoring Program," in which the responsibilities of the Nuclear Services Group and the Health Physics Department are established and well-defined. Collection of aquatic samples (radiological as well as non-radiological) are collected by a contractor. Environmental samples, except TLDs, are analyzed by the Yankee Atomic Environmental Laboratory, a division of Yankee Atomic Electric Company.

Oversight of the laboratory's activities is provided by a committee of representatives from the utilities that utilize its services. The New Hampshire Yankee representative on this committee, known as the Laboratory Quality Control Audit Committee (LQCAC), is the Principal Health Physicist in the Nuclear Services Group.

2.2 Program Review and Audits

The inspector reviewed the LQCAC audits of the Yankee Atomic Environmental Laboratory conducted in 1984 and 1985. Areas audited in 1985 included: sample collection and procedures; sample preparation and analysis; nuclear counting techniques; bioassay techniques; record-keeping and reporting; qualification of laboratory personnel; radiation protection and safety; and radiation dosimetry. Audited areas may change from year to year. The laboratory's corrective actions for identified findings were reviewed and closed out by the LQCAC in its meetings subsequent to the audits.

The licensee's Nuclear Quality Assurance Department performs surveillances of the activities (sample collections, instrument calibrations, etc.) carried out by Seabrook Station staff in support of the REMP. The frequency of these surveillances ranges from quarterly to semiannually, depending on the nature of the activity and the frequency at which it is performed. The inspector reviewed reports of Quality Assurance Surveillances of the environmental TLD program, performed in April and October, 1985. The scope and method of surveillance were clearly stated. No deficiencies were identified. The inspector will review additional surveillances in a future inspection.

2.3 Training and Qualification

The inspector reviewed the Qualification Guide for the Radiological Support Group. The Guide dicusses the various duties of radiological support technicians, including those concerned with the Radiological Environmental Monitoring Program. Within the sections related to the REMP, the guide requires the technician to demonstrate the method of performing the various required sample collections (e.g., milk, air particulates and iodine, vegetation), as well as an ability to calibrate the air sampler and the manual TLD reader. Appropriate procedures for these activities are referenced. The inspector reviewed the qualification records for technicians who perform the environmental sample collections and found that they were properly qualified.

The licensee stated that all Radiological Support Group technicians may perform environmental sample collections following completion of the required qualification; however, personal preferences among technicians have lead to the performance of this and other functions by certain individuals most of the time. In the case of environmental sample collections, one technican normally performs this function, and another serves is a primary backup.

3.0 Laboratory Quality Control

The inspector reviewed the licensee's program for quality control of analytical measurements. One aspect of this program consists of duplicate samples that are sent to the laboratory by each of the licensees participating in the LQCAC. These samples are "blind" duplicates, i.e., the laboratory does not know which samples are sent for quality control purposes. After the analyses are performed and results reported to the licensees, the LQCAC determines whether the two analyses are in statistical agreement. This program measures the laboratory's precision only, not accuracy. A measure of accuracy is obtained by the laboratory's participation in the USEPA Laboratory Intercomparison Program. In this program, samples containing quantities of radioactivity ("spikes") are sent to the laboratory. The amount of radioactivity is not known by the laboratory until after it has performed the analyses and reported the results to the EPA. The inspector noted that under the criteria used by the EPA for determining whether the laboratory's results are in statistical agreement with the known value, all but 2 out of 204 of the analyses were in agreement during 1985. The laboratory also receives spiked and duplicate samples from another utility (not a participant in the LQCAC) as a part of that utility's quality control program for its primary laboratory. In this program for 1985, all YAEL results of spiked samples met the criteria imposed by the utility.

The licensee stated that the ultimate criterion for determining whether agreement has been obtained between the results of duplicate samples is to examine the standard deviation(σ) of the activity concentration for each sample; if the mean plus 2 sigma of the smaller result is greater than or equal to the mean minus 2 sigma of the larger result, the results are considered in agreement, i.e.,

$$X_S + 2\sigma_S \geq X_L - 2\sigma_L$$

where the subscripts S and L refer to the smaller and larger results, respectively. The licensee stated that a reference for this criterion was not immediately available. The inspector stated that such a reference should be obtained and documented as part of the licensee's quality control oversight for the contractor environmental analysis laboratory. This will be reviewed in a future inspection (443/86-38-01).

4.0 Implementation of the Radiological Environmental Monitoring Program

The inspector reviewed the licensee's commitments with respect to its preoperational radiological environmental monitoring program, and changes that will be made in the sampling program for the operational phase of the REMP. The inspector determined that the licensee's preoperational program conforms to or exceeds the commitments stated in the Seabrook Final Environmental Statement (FES). (The number of TLD stations (44) is greater than stated in the FES). Changes that will be made to the operational program are as follows: (1) Sampling of ground water (i.e., wells) will be deleted. The licensee stated that due to the lack of any liquid storage tanks exterior to the facility, and the fact that the ground water gradient (flow) is toward the ocean, there is very little or no likelihood that drinking water supplies would be affected by plant operations. (2) Surface water grab samples, rather than composite samples, will be taken in the area of the plant discharge. This is a continuation of the method used in the preoperational program. (3) The number of ocean sediment samples will be reduced from four (three near the discharge area plus a control location) to two (one near the discharge plus a control). (4) Sampling of vegetation will be conditional on the availability of milk samples; if milk is available, no vegetation samples need be obtained. The latter two changes are consistent with the guidance provided by the NRC in the Radiological Assessment Branch Technical Position, Rev. 1, November, 1979.

The inspector examined selected environmental monitoring stations including air samplers for iodines and particulates, and TLDs for direct radiation measurement. These were located as stated in the licensee's Offsite Dose Calculation Manual. The air samplers were operational at the time of the inspection. The inspector reviewed records of calibration for the dry gas meters used in the air sampler assemblies, and found them acceptable.

The inspector reviewed reports covering the preoperational radiological environmental monitoring program for 1983, 1984, and 1985. These reports provided a comprehensive summary of the results of radiological environmental monitoring around the Seabrook Station, and appeared to meet the reporting requirements that will be incorporated into the operating license Radiological Effluent Technical Specifications.

5.0 Meteorological Monitoring

The inspector examined the licensee's meteorological monitoring system, including the meteorological tower with its sensors for wind speed, wind direction, and temperature, the recorder charts in the equipment house at the tower, and the displays in the Control Room and Technical Support Center. The equipment appeared to be operating properly at the time of the inspection. The inspector also reviewed procedure IX 0654.500, Rev. 0, "Meteorological System Calibration - Technical Specification," and the most recent (May 1986) calibration of the meteorological sensors. The licensee stated that new sensors were installed at the time of this calibration. The equipment had been calibrated in accordance with the procedure.

6.0 Environmental TLD Program

The licensee conducts its own environmental TLD program using the Panasonic system, including the model UD-814 badge and a Model UD-702 manual reader. The licensee stated that responsibility for the environmental TLD program would pass from the Nuclear Services Group to the site Dosimetry group, in Health Physics, at the beginning of the third quarter of 1986. The Nuclear Services Group has been using a computer code, ENVTLD, to convert the raw TLD data into actual environmental doses. The licensee stated that no documentation was on file to show that this code had been verified; however, it was further stated that this code would not be used after the environmental TLD program was turned over to the Dosimetry Group. The inspector stated that if this code is to be used again, it should be documented and verified independently, using predetermined data test sets. The status of this code, and any necessary documentation, will be reviewed in a subsequent inspection (443/86-38-02).

The inspector reviewed the licensee's documentation pertaining to the ability of its environmental TLD system to meet the criteria of Regulatory Guide 4.13 and ANSI N545-1975. These documents state that the requirements for testing of the TLDs may be met by reference to prior documents (the licensee need not perform these tests if it has access to documents that show that the tests have previously been performed and the criteria have been met).

The licensee is not required to meet the criteria of RG 4.13 and ANSI N545, but has made an effort to do so with respect to the reproducibility and uniformity tests. The inspector reviewed the results of these tests and noted that the uniformity test criterion was met for a batch of 100 TLDs. The reproducibility test criterion was met for 13 out of 15 TLDs tested. The test method requires that only one badge be tested, therefore

the criterion has been met. The licensee stated that all of the performance tests, including reproducibility and uniformity, were performed on a similar system using a model 801 badge. The inspector stated that this may not be sufficient to satisfy the Regulatory Guide test criteria. However, due to the fact that the licensee's Technical Specifications contain no requirement to meet these test criteria, this will not be carried as an open item.

The inspector reviewed the licensee's quality control program for the environmental TLD measurements. This program is addressed in Station Operating Procedure HX0956.10: Radiological Environmental Surveillance Quality Assurance Program and includes dosimeter quality control, reader quality control, and interlaboratory comparisons. The manual reader is calibrated quarterly using Station Operating Procedure HX0957.02: Calibration of the Environmental Thermoluminescent Dosimeter Reader prior to reading the field dosimeters. The inspector noted that this procedure addresses only calibration of the photon counter region of the reader and stated that proper calibration should include the photon counter and frequency counter region. The licensee stated both regions would be calibrated in the future. This area will be subsequently reviewed (443/86-30-03).

The licensee also participates in the International Environmental Dosimeter Intercomparison Projects. The inspector reviewed results from the sixth and seventh Intercomparisons. The licensee's results were somewhat low compared to the known delivered doses, ranging from 80 to 88% of the known valves. The licensee stated that a new batch of dosimeters has been in use since the first quarter of 1986, and that these were also used in the Eigth International Comparison. The results of this comparison were not available at the time of this inspection. They will be reviewed in a future inspection.

7.0 Exit Interview

The inspector met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on June 27, 1986. The inspector summarized the purpose and scope of the inspection, and discussed the findings. At no time during this inspection was written material provided to the licensee by the inspector.