

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-213/85-08

Docket No. 50-213

License No. DPR-61

Priority --

Category C

Licensee: Connecticut Yankee Atomic Power Company

P. O. Box 270

Hartford, Connecticut 06101

Facility Name: Haddam Neck Plant

Inspection At: Haddam Neck Site and Northeast Utilities Service Company(NUSCO)

Inspection Conducted: March 25 - 29, 1985

Inspectors: Richard K. Struckmeyer /for  
A. A. Weadock, Radiation Specialist

5/7/85

date

Richard K. Struckmeyer  
R. K. Struckmeyer, Radiation Specialist

5/7/85

date

Approved by: M. M. Shanbaky  
M. M. Shanbaky, Chief  
PWR Radiation Safety Section,  
Emergency Preparedness and  
Radiological Protection Branch

5/10/85

date

Inspection Summary: Inspection on March 25-29, 1985 (Report No. 50-213/85-08)

Areas Inspected: Routine, unannounced inspection of the operational radiological environmental monitoring program, including management organization, environmental sample collection, control of contractor activities, meteorological monitoring, audits, and reports. The inspection involved 54 hours of inspector effort by two region-based inspectors.

Results: One violation was identified: failure of annual audits to include the entire scope required by the Environmental Technical Specifications. Details in Section 7.0.

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## DETAILS

### 1.0 Individuals Contacted

N. Corsi, Environmental Technician A, POSL  
\*R. Crandall, Supervisor, Radiological Engineering Section  
\*J. Doroski, Sr. Engineer, Radiological Engineering Section  
\*W. Eakin, Assoc. Engineer, Radiological Engineering Section  
P. Jacobson, Chairman, Connecticut Yankee Environmental Review Board;  
Manager, Northeast Utilities Environmental Laboratory  
\*D. Lenth, Supervisor, Production Operation Services Laboratory (POSL)  
\*F. Libby, Supervisor, Design and Operations QA  
\*G. Martel, Senior Engineer, POSL  
R. Neffelt, Environmental Technician A, POSL  
\*R. Parker, Environmental Specialist, POSL  
\*D. Powell, Manager, Earth Sciences  
L. Rayburn, Assoc. Scientist, Radiological Engineering Section  
\*R. Rodgers, Manager, Radiological Assessment Branch  
\*J. Santovasi, Scientist, Environmental Programs  
H. Siegrist, Supervisor, Radiological Protection Section  
M. Quinn, Chemistry Supervisor, Haddam Neck Plant

\*Attended the exit interview on March 29, 1985.

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

### 2.0 Purpose

The purpose of this routine inspection was to review the licensee's implementation of its Meteorological and Radiological Environmental Monitoring Programs with respect to the following elements:

- management organization
- environmental sample collection
- control of contractor activities
- meteorological monitoring system operation and calibration
- audits and appraisals
- reports

### 3.0 Management Organization

The inspector reviewed the licensee's organization for the management of the Radiological Environmental Monitoring Program (REMP). Sample collections are performed by environmental technicians within the Production

Operation Services Laboratory (POSL). The supervisor of POSL reports through the Manager, Production Operation Services to the Vice President, Fossil and Hydro Production.

Sample analyses, except TLDs, are performed by contractor laboratories. Routine TLD analyses are performed by POSL. Laboratory oversight, review and analysis of data, and preparation of the annual radiological environmental monitoring program report are the responsibility of engineers in the Radiological Assessment Branch (RAB). The Manager, RAB, reports through the Director of the Nuclear Engineering Department to the Vice President, Nuclear and Environmental Engineering.

#### 4.0 Environmental Sample Collection

The inspector reviewed the licensee's program for the collection of environmental samples by the following methods:

- direct observation of sample collection techniques and environmental monitoring station operability;
- review of various sample collection procedures;
- review of training records for environmental technicians;
- discussion with supervisory personnel.

Within the scope of the above review, no violations were identified. Technicians responsible for environmental sampling had received training and were signed off on the relevant sampling procedures. All observed environmental monitoring stations were found to be operable, within calibration, and at the correct location as identified in the Environmental Technical Specifications.

The licensee has recently developed a chart which is posted in the Production Operations Services Laboratory (POSL) and which identifies required environmental samples and sampling frequencies for the entire year.

This chart is under the direct control of POSL supervisory personnel, and is reviewed frequently to insure all required samples are being collected and to make weekly sampling assignments. Although not charged with the responsibility for environmental sample collection, the Radiological Assessment Branch of the Northeast Utilities Service Company (NUSCO) maintains and keeps current a duplicate of the sample collection chart. The inspector concluded the licensee is providing sufficient management oversight in the environmental sampling program.

#### 5.0 Control of Contractor Activities

The licensee contracts with Chemical Waste Management of Massachusetts, Inc. and Teledyne Isotopes, Inc., to perform analyses of environmental

samples.

The Yankee Atomic Environmental Laboratory is used as the licensee's QA laboratory. The licensee maintains control over contractor activities and verifies the adequacy of environmental sample analyses by three methods:

- 1) implementation of a quality control program for analytical measurements;
- 2) review of analysis results with follow-up for anomalous values;
- 3) audit of contractor facilities.

#### 5.1 Quality Control Program

The inspector reviewed the implementation of the licensee's program for the quality control of environmental sample analysis by the following methods:

- review of procedure RAB 3-2, "Quality Control of Radiological Environmental Monitoring Program;"
- review of the "Connecticut Yankee Quality Control Spiking Data Book;"
- discussion with licensee personnel.

Within the scope of the above review, the following concerns were identified:

The licensee currently receives radioactive standards from the EPA Environmental Monitoring Systems Laboratory in Las Vegas, Nevada. These standards are used by the licensee to spike samples which are sent to its vendor laboratories for analysis. The licensee indicated that all standards received from the EPA laboratory were exempt quantities, and that an NRC materials license was not required for possession. Currently, POSL is licensed only to possess a sealed source used to irradiate TLD's.

The inspector reviewed various calibration certificates that were provided with several shipments of I-131 from the EPA laboratory and concluded, based on activity levels, that a strong possibility exists that the licensee received quantities of I-131 greater than the exempt activity identified in 10 CFR 30.71, Schedule B. Verification was not possible at this time since the licensee, under the assumption that all received standards were of exempt quantity, did not keep adequate records of when specific standards were received. This item is considered unresolved pending subsequent investigation (213/85-08-01).



The inspector discussed spike sample preparation with the licensee, and viewed the radioactive standards storage locker and the sample preparation area. Two immediate concerns were identified:

- 1) the licensee is using radioactive standards in an area used by POSL employees to prepare coffee and as a lunchroom;
- 2) smear surveys of the sample work areas are not being performed.

The licensee indicated they have previously identified the problem of the close proximity between the lunchroom and the sample preparation area and plan to move all sampling laboratory activities to a separate room. The licensee showed the inspector the 1985 POSL budget, which included funds for the purchase of a laboratory sink and exhaust hood to be placed in the new laboratory. The licensee indicated that the new sample preparation area should be complete by September 30, 1985; and committed to performing smear surveys of the sample preparation area on a routine basis until that time. This area will be reviewed in a subsequent inspection (213/85-08-02).

The inspector reviewed procedure RAB 3-2, "Quality Control of Radiological Environmental Monitoring Program," and noted this procedure does not address the preparation of quality control samples (splits, spikes, etc.). The inspector indicated to the licensee that detailed, written procedures should be developed to insure control over the preparation of these samples. The licensee stated they would develop procedures for the preparation of these samples and have them in place by July 31, 1985. The adequacy of the licensee's control of quality control sample preparation will remain unresolved pending review of these procedures (213/85-08-03).

## 5.2 Review of Data Analysis Results

The inspector reviewed the adequacy of the licensee's program for the data review of analyses performed on environmental samples by the following methods:

- review of procedure RAB 3-3, "Radiological Analysis Data Checks"
- review of licensee's "Exemption Reports" Book
- discussion with involved licensee personnel

Results of sample analyses incoming to the Radiological Assessment

Branch receive a three party review. The inspector reviewed the licensee's data review worksheets and verified that the licensee is identifying inconsistencies and problems with the data and adequately complying with procedure RAB 3-3.

The licensee maintains an "Exemption Reports" book to identify and track anomalous values and instances where the vendor laboratory fails to meet Minimum Detectable Levels (MDL) or required analysis timetables. In such instances, the licensee sends a report to the laboratory which requires a response and resolution to the problem. The inspector noted that vendor responses to these reports were current up to March 15, 1985. The licensee indicated the "Exemption Reports" book is used to plan the frequency and scope of vendor laboratory audits.

### 5.3 Audit of Contractor Facilities

Licensee procedure RAB 1-4, "Radiological Environmental Monitoring Audit Program," requires periodic audits of the groups involved in the Connecticut Yankee Radiological Environmental Monitoring Program, including contractor laboratories.

The inspector reviewed several 1983 and 1984 audits of contractor facilities and determined that they were being performed in accordance with the above procedure and that findings were being tracked and adequately resolved.

## 6.0 Meteorological Monitoring System Operation and Calibration

### 6.1 Operation

The inspector examined the licensee's meteorological monitoring system, including the on-site meteorological tower, the recorder charts in the equipment house at the base of the tower, and the control room recorder charts. It was noted that all instrumentation was operative, and that the meteorological data readouts from the equipment house and the control room appeared consistent.

### 6.2 Calibration

Responsibility for the maintenance and calibration of the meteorological monitoring system is held by the Production Operations Services Laboratory (POSL). Calibrations of the instrumentation are performed quarterly. The inspector reviewed the following documents to assess the adequacy of the licensee's calibration program:

-- procedure ES #201, "Wind Direction System Calibration,"

- procedure ES #205, "Wind Speed System Calibration,"
- procedure ES #206, "Analog Recorder Calibration,"
- procedure EPB-III-1-3, "Annual Meteorological Monitoring System Maintenance Audit,"
- 1983 and 1984 instrumentation calibration records,
- 1984 Meteorological Monitoring System Maintenance Audit.

Within the scope of the above review the inspector noted that, for the instruments and calibration periods specified below, the licensee failed to bring "beginning of period" or "as left" calibration measurements to within the tolerances specified in the calibration procedure. Procedure #201 and #205 both require the individual performing the calibration to "make any adjustments or component replacements that are required to bring the measured values within the tolerances as specified..." The instrumentation noted below was then returned to operation without further adjustment.

<u>Period</u>	<u>Instrument System</u>	<u>No. of Out of Tolerance Values</u>
1st Qtr. 1983	196' Wind Direction	3
3rd Qtr. 1983	196' Wind Direction	6
2nd Qtr. 1984	196' Wind Speed	2
4th Qtr. 1984	196' Wind Speed	2
1st Qtr. 1985	196' Wind Speed	2

Licensee failure to follow the calibration procedures as noted above will not be considered a violation as it was noted that the tolerances required by the calibration procedures are more conservative than instrument accuracies required by Regulatory Guide 1.23, On site Meteorological Programs. It was noted that the licensee's out-of-tolerance calibration values exceeded the Regulatory Guide requirements in only one instance.

The inspector discussed with the licensee the recurring inability to bring meteorological monitoring equipment within the tolerance ranges specified in the calibration procedures. The licensee indicated that an interference problem exists within the 9 pairs of underground cable which carry the signal from the meteorological building to the control room meteorological recorders. This results in a back feed of between 0-2 volts on these signal cables which varies between pairs and dates when checked; the licensee indicated that the moisture content of the ground contributes to the problem.

The inspector noted during a review of quarterly calibration data sheets that notes and remarks on the sheets identified interference problems on the control room cable lines as far back as the first



quarterly calibration in 1982. The inspector noted this appeared to be a long-standing problem and discussed with POSL personnel what steps had been taken to notify appropriate management and correct this problem. The licensee produced the following correspondence:

Memo #RAD-83-107, dated August 15, 1983, from POSL to Connecticut Yankee Management and the Environmental Programs Department, NUSCO. Subject: Recommendation for weekly checks on Nuclear Plant Control Room Meteorological Strip Chart Recorder.

Memo #MET-85-103, dated February 5, 1985, from POSL to the Instrument and Control Section at Connecticut Yankee. Subject: Problems with meteorological Signal Cable from Met. Building to Control Room.

The inspector reviewed the above correspondence and noted the August 15, 1983 memo describes inconsistencies with meteorological data available on the control room recorders; however it attributes this to a poorer accuracy in the recorders and a need for more frequent equipment surveillances. At this time POSL began a weekly zero and span check on the control room meteorological recorders to supplement the quarterly system calibrations.

Licensee memo MET-85-163 describes the problem with the transmission cable and suggests options available to correct it. As of the date of this inspection, none of the options suggested had been implemented. POSL personnel also indicated that the Connecticut Yankee Instrument and Control group had been informed of the cable problem in 1984 and had performed a check on control room recorder accuracy; however the POSL group had no documentation of this check.

The inspector reviewed a 1984 audit of the Meteorological Monitoring System Maintenance Program carried out by the NUSCO Environmental Program Department and noted that no problems were identified.

The licensee stated during the exit interview that corrective actions to resolve the identified signal transmission problem would include:

- 1) an immediate fix of the transmission cable;
- 2) an evaluation of the use of alternate methods of data signal transmission, in light of recurring problems with the underground cable.

During a phone conversation subsequent to this inspection the licensee indicated that a spare cable was made available for data signal transmission from the meteorological tower to the Control Room on March 31, 1985. The licensee reported successful instrument calibration after the cable switchover. Documentation of this calibration and further actions by the licensee will be evaluated in a subsequent inspection (213/85-08-04).



## 7.0 Audits and Appraisals

The inspector reviewed the following procedure and audits to assess the licensee's performance in meeting the requirements of Environmental Technical Specifications Section 5.3, Review and Audit:

- Procedure CYERB-1, "Periodic Environmental Audits,"
- Connecticut Yankee Semiannual Environmental Audit #A20021 - Summer, 1983;
- Connecticut Yankee Semiannual Environmental Audit #A20022 - Winter, 1983;
- Connecticut Yankee Semiannual Environmental Audit #A60226 - Summer, 1984;
- Connecticut Yankee Semiannual Environmental Audit #A60429 - Winter, 1984;

The inspector reviewed the final reports and checklists for the above audits and found no evidence to indicate that the Summer 1983 audit #A20021 included a review of the Annual Environmental Operating Report, Part B or the Semiannual Radioactive Effluents Release Report. Additionally, the inspector found no evidence to indicate the Winter 1983 audit #A20022 included a review of the following:

- 1) The Radiological Environmental Monitoring Program,
- 2) the Annual Environmental Operating Report - Part B,
- 3) the Semiannual Effluent Release Report.

Environmental Technical Specifications Section 5.3, Review and Audit, states in part "the Environmental Review Board shall make or cause to be made at least semiannual reviews or audits of the following...surveillance records, written procedures, and reports required for compliance with these Environmental Technical Specifications."

Procedure CYERB-1 has been implemented to insure the specific requirements of E.T.S. Section 5.3 are met. Section 7.1.4 of this procedure identifies the following specific areas to be included in the scope of the Environmental Review Board (ERB) semiannual environmental audit:

- 1) Radiological Environmental Monitoring,
- 2) Annual Environmental Operating Report - Part B,
- 3) Radioactive Effluents Release Report.

The inspector indicated to the licensee that the failure of the 1983 semi-annual audits to include the above areas constitutes an apparent violation of E.T.S. section 5.3 (213/85-08-05). The licensee responded that since the Annual Environmental Operating Report is produced annually, it should not be necessary to review this report semiannually. The inspector noted that both the 1983 semiannual audits failed to review the Annual Environmental Operating Report.

The inspector discussed the assignment of specific responsibilities in completing the ERB semiannual audit with the licensee. The corporate QA section has overall responsibility for insuring the audit is conducted in compliance with the implementing procedure and the Environmental Technical Specifications. Responsibility for performing the actual audit, however, is assigned to a specific section supervisor or manager.

During 1983 and 1984, responsibility for auditing the Radiological Environmental Monitoring Program and related reports has been assigned to the supervisor of the Radiological Engineering Section (RES).

The inspector noted that the delegation of authority described above raises a potential conflict of interest concern with the conduct of the audit, as the RES is the section directly responsible for implementing the Radiological Environmental Monitoring Program and producing all related reports. The licensee stated that the RES section audits its own activities because it is the only section with the necessary technical expertise to do so; additionally, audit responsibilities are assigned such that RES personnel do not audit activities for which they have direct responsibility.

A review of the 1983 and 1984 ERB Audits indicated the scope was largely limited to assessing compliance with the E.T.S. requirements regarding sample frequency, sample volume, etc. The inspector concluded the licensee is in effect performing a peer review, and thereby meeting the E.T.S. Section 5.3 requirement of a "semiannual review or audit..." The above practice does not appear to insure the independence that is required to meet the criteria for an independent audit. The licensee stated that methods for re-structuring the audit process would be evaluated. This area will be reviewed in a subsequent inspection (213/85-08-06).

## 8.0 Reports

The inspector reviewed the 1983 and 1984 Annual Environmental Operating Reports (Part B-Radiological) and determined that these were complete and comprehensive summaries of the sampling, analyses, and results of the REMP, including the various aspects of quality control.

#### 9.0 Exit Interview

The inspector met with the licensee representatives (identified in Paragraph 1) at the conclusion of the inspection on March 29, 1985. The inspector summarized the purpose and scope of the inspection and the inspection findings. At no time during this inspection was written material provided to the licensee by the inspector.