

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-213/80-25

Docket No. 50-213

License No. DPR-61 Priority - Category C

Licensee: Connecticut Yankee Atomic Power Company

P. O. Box 270

Hartford, CT 06101

Facility Name: Haddam Neck Plant

Inspection at: Haddam, CT and Berlin, CT

Inspection conducted: December 2 - 5, 1980

Inspectors: T. J. Jackson  
T. J. Jackson, Radiation Specialist

March 23, 1981  
date signed

C. A. Skenas  
C. A. Skenas, Radiation Specialist

March 23, 1981  
date signed

Approved by: Robert J. Boes  
R. J. Boes, Chief, Independent  
Measurements and Environmental  
Protection Section, EP&PS Branch

date signed  
March 25, 1981  
date signed

Inspection Summary:

Inspection on December 2 - 5, 1980 (Report No. 50-213/80-25)

Areas Inspected: Routine, unannounced inspection of environmental monitoring programs for operations. The areas inspected included: management controls, the licensee's program for quality control of analytical measurements, implementation of the environmental monitoring program--radiological and biological/ecological, and a follow-up on licensee action on previous environmental inspection findings. The inspection involved 62 onsite inspector-hours by two regionally-based NRC inspectors.

Results: Of the five areas inspected, no items of noncompliance were identified.

## DETAILS

### 1. Individuals Contacted

#### Connecticut Yankee Atomic Power Company (CYAPCO)

\*R. Graves, Plant Superintendent  
\*P. L'Heureux, Engineer  
M. Quinn, Chemistry Supervisor  
J. Waters, Chemist  
D. Bement, Nuclear Records Supervisor  
T. Riccio, Instrument and Control Specialist  
R. Milardo, Control Operator

#### Northeast Utilities Service Company (NUSCo)

D. Powell, Supervisor, Physical Sciences  
D. Lenth, Environmental Supervisor  
R. Crandell, Senior Engineer  
\*\*J. Doroski, Engineer  
R. Nejfelt, Environmental Technician  
D. Balcom, Biologist  
W. Peterson, Senior Environmental Technician

\*Denotes those present at exit interview

\*\*Also contacted by telephone on January 22 and 28, 1981

### 2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (77-01-03): Continuous dissolved oxygen (DO) monitor operability. The inspector noted that a revision to the ETS was issued on March 15, 1979, eliminating the requirement to monitor dissolved oxygen. This item is therefore closed.

(Closed) Unresolved Item (77-01-04): Position of thermal and chemical sensors at the intake structure. The inspector noted that a revision to the ETS was issued on March 15, 1979, designating the location of the sensors to be outside of the intake structure. The current locations of these sensors satisfy this requirement.

(Closed) Unresolved Item (78-03-09): Definition of MDC in Environmental Procedures. The inspector reviewed the licensee's procedures on the reporting of MDC values and noted that the procedure specifies the use of  $4.66 \times \sigma_B$ , where  $\sigma_B$  is the standard deviation of the background count rate. This procedure now matches the actual method of calculation in use. The inspector had no further questions in this area.

(Open) Unresolved Item (78-03-10): Completion of TLD Performance Evaluation. The inspector reviewed the licensee's evaluation of TLD

performance and noted that TLD response to energies between 1MeV and 3MeV was not determined under calibration conditions as specified in ANSI N545 and Regulatory Guide 4.13. This item will remain unresolved pending completion of this study.

(Closed) Unresolved Item (78-03-11): Adequacy of Analysis of Airborne I-131. The inspector discussed with the licensee and the radioanalytical contractor the methods used for determination of background activity for I-131 in air samples, and noted that an ETS change was issued in March 1979 defining MDL =  $2\sigma$ . The inspector reviewed selected 1979 and 1980 air charcoal data and noted that the required sensitivities were met. The inspector had no further questions in this area at this time.

### 3. Management Controls - Environmental Monitoring

#### a. Changes

The inspector reviewed the licensee's organization for management of the environmental programs and identified no changes which would result in a decrease in overall effectiveness of management controls. The inspector had no further questions in this area.

#### b. Licensee Audits

The inspector reviewed the semi-annual audits of the environmental programs, conducted by the Environmental Review Board (ERB) from 1978 through 1979. The inspector determined that the audits had been conducted in accordance with Procedure CYERB-1, Rev. 0, "Periodic Environmental Audits" and determined that responses to identified deficiencies were issued in a timely manner.

The inspector determined through records review that the primary radiological analytical contractor (Interex) was audited in 1979 and 1980. The quality control analytical contractor (Radiation Management Corp.) was audited in 1980. Satisfactory responses had been received for all audits in the time specified with the exception of several items from 1980 (80/I/6 and 80/R/1,4,7). The licensee stated that the contractor laboratories would be contacted on these responses. The inspector stated that these additional responses would be reviewed during a subsequent inspection of this area. (213/80-25-01).

No items of noncompliance were identified in this area.

### 4. Licensee Program for Quality Control of Analytical Measurements

The inspector identified through review of the program from 1978 through 1980 that provisions existed for the:

- a. assignment of responsibility to manage and conduct the program;
- b. type and number of measurements checks;
- c. acceptance criteria; and
- d. follow-up to correct identified deficiencies.

The inspector reviewed records of the quality control program and noted that acceptance criteria had been applied to the results. Discrepancies were addressed and corrective actions taken as appropriate.

No items of noncompliance were identified.

5. Implementation of the Environmental Monitoring Program - Radiological

a. Review of Annual Reports

The inspector reviewed annual reports for 1977-1979 and preliminary radiological program data available from 1980 and determined that the licensee had complied with the ETS in terms of sampling frequencies and locations, measurements, sensitivities and reporting schedules.

The inspector noted that unusual levels of Ra-226 had been reported in some well water samples. The licensee stated that the anomalous Ra-226 results were based on a decay correction which assumed that all the activity present was due to Ra-226, which is not necessarily an accurate assumption unless equilibrium of Ra-226 and daughters is known to exist. The licensee stated in the discussion section of the 1979 Annual Report that the activity was not really Ra-226 but rather the daughter product Bi-214. This was concluded since equilibrium of Ra-226 and Bi-214 could not be assumed to exist in well water. The inspector stated that only confirmed measurements should be reported and that reporting Bi-214 would be preferable if the presence of Ra-226 could not be confirmed.

The inspector noted that Cs-137 results for water, fish, and shellfish were obtained through a radiochemical separation procedure and counted by a proportional counter. The inspector stated that this method was unsuitable to distinguish Cs-137 from Cs-134 and is actually a determination of total radioactive cesium. The licensee also performed a gamma spectral analysis but the detection limit for Cs-134 was generally higher than the positive results of the total cesium procedure. The inspector stated that only total cesium should be reported for the chemistry procedure if the absence of Cs-134 cannot be confirmed by a method of comparable sensitivity.

The inspector stated that the reporting of data as measured will be re-evaluated in a subsequent inspection (213/80-25-02).

b. Observation of Sampling Equipment

The inspector examined selected air sampling, water sampling, and TLD monitoring stations.

The inspector noted that none of the air sampling stations examined had provisions for direct discharge of exhaust air from the sampler housing. This created a potential for recirculation of filtered air from the cabinet because the sampler intake was also located inside the cabinet. The licensee stated that discharge lines would be provided for each sampler to direct pump exhaust outside of the cabinets. The inspector stated that this area will be re-evaluated during a subsequent inspection (213/80-25-03).

c. Review of Non-routine Reports

The inspector reviewed the licensee's anomalous tritium measurements reports dated:

October 27, 1978                      ETS-NR/50-213/73-10

May 28, 1980                         ETS-NR/50-213/80-04

The licensee's corrective action has been to request a change in reporting requirements since installation of an automatic sampler has not eliminated this occurrence. The licensee also stated that an alternate location is being evaluated for the river water composite sampler, with the goal being to sample the river at a location more representative of well-mixed discharge and river water. The inspector reviewed the licensee's dose evaluation and noted that the released concentrations were a small fraction of the limits allowed by 10 CFR 20. The inspector had no further questions in this area.

d. Meteorological Monitoring

The inspector reviewed the instrumentation at the base of the meteorological tower and in the control room, and determined that it was functioning at the time of inspection. The inspector reviewed calibration and maintenance procedures and reviewed selected records.

The inspector had no further questions in this area at this time.

6. Implementation of the Environmental Monitoring Program -  
Biological/Ecological

a. Review of Annual Reports

The inspector reviewed the nonradiological environmental operating reports for 1978 and 1979, and determined that the required sampling, analyses, and reporting had been performed. Areas reviewed included the water quality monitoring parameters, fish impingement monitoring and shad monitoring studies. No items of noncompliance were identified.

b. Observation of Impingement Sampling

The inspector observed the weekly fish impingement sampling and counting, and noted that the required collections and analyses were performed as outlined in the ETS. The inspector had no further questions in this area.

c. Review of Non-routine Reports

The inspector reviewed the licensee's non-routine environmental reports No. 78-04 (NR/78-04), NR/78-05, NR/78-9, NR/78-11, NR/78-16, and NR/79-01 concerning fish impingement overruns and discussed these occurrences with the licensee. The inspector also reviewed NR/78-13 concerning loss of one 24-hour impingement sample. The inspector discussed the licensee's evaluation of associated impingement impacts and licensee action to prevent further sample losses and noted that associated impacts on river fish populations appeared to be minimal. The inspector noted that the impingement sampling reporting levels of Section 3.1.1.3 of the ETS had been deleted by Amendment No. 32, issued March 15, 1979. The inspector had no further questions regarding the above submitted non-routine reports.

The inspector reviewed the following non-routine reports concerning plant effluent water quality.

<u>Report Date</u>	<u>Report No.</u>	<u>Subject</u>
April 10, 1978	ETS-NR/78-03	pH limit exceeded
June 7, 1978	ETS-NR/78-06	rate of change of discharge temperature exceeded
September 20, 1978	ETS-NR/78-08	rate of change of discharge temperature exceeded
November 30, 1978	ETS-NR/78-12	rate of change of discharge temperature exceeded
January 15, 1979	ETS-NR/78-15	rate of change of discharge temperature exceeded
April 12, 1979	ETS-NR/78-17	rate of change of discharge temperature exceeded
February 12, 1979	ETS-NR/79-02	rate of change of discharge temperature exceeded
May 25, 1979	ETS-NR/79-04	release of sodium hypochlorite
November 26, 1979	ETS-NR/79-05	release of sodium hypochlorite
March 3, 1980	ETS-NR/80-01	chlorine release rate exceeded



The inspector reviewed the licensee's actions relative to the above reports, including examination of high-level alarm subsequently installed on the caustic metering tank; discussions of circumstances regarding exceeding the allowed rate of change of discharge temperature and subsequent re-instruction of personnel to prevent simultaneous shutdown of two circulating pumps while at power; and subsequent modifications made to the hypochlorination system, including electrical timing circuitry, design changes and rerouting of hypochlorite tank overflow lines to prevent direct discharge. Such chlorine discharges would not likely result in other than temporary localized effects on aquatic biota in the river. The inspector also reviewed Revision 3 of Procedure NOP 2.20-4, dated October 9, 1980, which instructed operators not to operate both hypochlorite pumps simultaneously. The inspector had no further questions regarding the above corrective actions at this time.

7. Exit Interview

The inspector met with the licensee representatives denoted in Detail 1 at the conclusion of the inspection on December 5, 1980. The inspector also contacted the licensee by telephone on January 22 and 28, 1981. During this meeting/contacts, the inspector discussed the purpose, scope and findings of this inspection.