

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

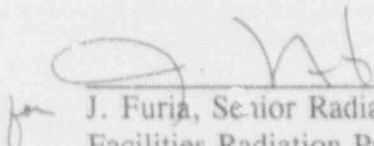
Report No. 50-213/92-25  
Docket No. 50-213  
License No. DPR-61  
Licensee: Connecticut Yankee Atomic Power Company  
Post Office Box 270  
Hartford, Connecticut 06141-0270

Facility Name: Haddam Neck Plant

Inspection At: Haddam Neck, Connecticut

Inspection Conducted: December 14-17, 1992

Inspector:

  
for J. Furia, Senior Radiation Specialist,  
Facilities Radiation Protection Section (FRPS),  
Facilities Radiological Safety and Safeguards  
Branch (FRSSB), Division of Radiation Safety  
and Safeguards (DRSS)

12/22/92  
date

Approved by:

  
W. Pasciak, Chief, FRPS, FRSSB, DRSS

12-24-92  
date

Areas Inspected: Management organization, training, assurance of quality, radiation control during normal operations, ALARA, and implementation of the above programs.

Results: Continued strong performance in the radiation protection program was noted. Training of radiation protection technicians, including continuing training and training for contractor radiation protection personnel was a notable strength. No radiological safety concerns or violations of regulatory requirements were identified.

## DETAILS

### 1. Personnel Contacted

#### 1.1 Licensee Personnel

- \* R. Aft, Training Coordinator
- G. Bouchard, Unit Director
- T. Burns, Supervisor, Technical Training
- \* W. Gates, Radiation Protection Supervisor
- E. Gugallis, Station Technician
- \* M. Hadfield, Operations Assistant
- R. Haight, Radioactive Materials Handling Supervisor
- \* J. Hawkins, Senior Station Technician
- \* T. McDonald, Maintenance Manager
- \* R. McGrath, Radiological Engineering Supervisor
- \* W. Nevelos, Health Physics Manager
- J. Powell, Senior Radiation Protection Technician
- \* D. Ray, Director, Nuclear Services
- \* M. Sweeney, Radiation Protection Supervisor - Services

#### 1.2 NRC Personnel

- P. Habighorst, Resident Inspector
- \* W. Raymond, Senior Resident Inspector

\* Denotes those present at the exit interview on December 17, 1992.

### 2. Purpose

The purpose of this safety and health inspection was to review the licensee's programs for radiation safety during normal operations. Inspection areas included radiological work control and housekeeping, ALARA, dosimetry and training.

### 3. Previously Identified Items

(Closed) Inspector Follow-Up Item (50-213/92-11-01) Posting of radiation area boundaries. The licensee conducted an evaluation of the current posting practices utilized in the outside yard area, which represents the bulk of the Radiologically Controlled Area (RCA) during normal power operations, and concluded that the posting of discrete radiation area boundaries was impractical due to the need for the movement and storage of materials, both radioactive and non-radioactive, throughout the yard area. As part of its preparations for implementation of the "new" 10 CFR Part 20, the licensee was preparing to evaluate all radiological postings at both Haddam Neck and Millstone, and would implement any necessary changes on January 1, 1994. This item is closed.

(Open) Violation (50-213/92-16-01) Failure to perform Technical Specification required audit of the Process Control Program (PCP) every 24 months. The licensee conducted audit A60299 (Radwaste/PCP, Connecticut Yankee) to meet the Technical Specification requirement, in August 1992. Additional corrective actions involving the development of a computerized matrix to track audit requirements were scheduled for completion by January 31, 1993. This item remains open pending licensee completion and NRC review of this long term corrective action.

#### 4. Radiation Protection Program

As mentioned in earlier inspection reports, the licensee developed and has now implemented a Health Physics Department reorganization. The new structure has three supervisors; Radiological Engineering, Radiation Protection and Radiation Protection Services. These supervisors report directly to the Health Physics Manager. The Radiological Engineering section is responsible for: engineering evaluations; ALARA planning, reviews, controls and monitoring; radwaste systems; program effectiveness evaluations; regulatory standards review and compliance; the Whole Body Counter and count room program; internal dose assessment; outage planning; and special projects. All support positions within this organization, with the exception of the ALARA Coordinator, were filled at the time of this inspection. Until the ALARA Coordinator position could be filled, the previous ALARA coordinator was detailed to provide continuing support to this program area. The Radiation Protection section is responsible for: Personnel monitoring; job coverage; count room operations; fire brigade; unconditional release of materials; radioactive material handling and processing; radwaste shipment and disposal, tool and area decontamination; and procedures review and revision. The Radiation Protection Services section is responsible for: dosimetry; health physics records; whole body counting; respirator qualification; instrument calibration; the 10 CFR 20 revision project; and the internal audit program.

##### 4.1 As Low As Reasonably Achievable (ALARA) Program

As noted above, responsibility for the development of the ALARA program rests with the ALARA Coordinator, who reports to the Radiological Engineering Supervisor. At the time of this inspection, the licensee was evaluating applicants for this open position, and planned to have the position filled by the end of January 1993. For 1992, the licensee had established an ALARA goal of not more than 193.4 Person-Rem. Due to the extended length and scope of the 16th refueling outage, which was not completed until March 16, 1992, the licensee exceeded its budget of 119.7 Person-Rem for the outage in 1992 by 46.7%. Since the close of the outage, the licensee has been well within its budget of 73.7 Person-Rem for non-outage operations for the remainder of 1992, and it appears that the licensee will finish the year only 10% over its initial goal.

As part of its Health Physics Department reorganization, the licensee had recently created a position of Station Technician to support the computer generation of surveys, reports and graphics. The Station Technician attended the morning meetings of the Maintenance Department in order to better coordinate the efforts of the Health Physics Department in supporting work being conducted in the RCA. In addition, the scope and depth of data being maintained by the Station Technician, and its availability and use by the station staff, was a notable licensee strength.

The licensee had developed a Radiation Exposure Reduction program for the years 1992 through 1996, with the emphasis on dose rate reduction in the containment. As the data above indicates, the licensee's exposures during normal power operations are comparable to other PWRs in the United States. However, during outages the licensee experiences higher exposure rates due to significant radiation levels in the pump bays of the containment. The licensee's goal by 1996 is to be at the Institute for Nuclear Power Operation (INPO) established three year average of 185 Person-Rem per year. In order to meet this goal, the licensee's ALARA staff identified twenty dose reduction techniques, some of which have already been implemented at Haddam Neck. Included in this listing was: High Boration Shutdown for use at the end of cycle 17 operations; ultrafine filters, which the licensee had installed in the Chemical and Volume Control System (CVCS), down to 0.2 micron porosity; and Zircalloy Fuel Cladding, with the first batch of Zircalloy clad fuel placed in the reactor as part of the sixteenth refueling outage. Also proposed were zinc injection and full system decontaminations. Both would require significant engineering studies and major outlays of capital in order to be instituted.

#### 4.2 Work Control and Housekeeping

As part of this inspection, tours of many of the accessible areas of the RCA were conducted. In general, the RCA was found to be well maintained with no significant housekeeping, posting or contamination problems noted. Since the inspector's last visit to the site in July 1992, a significant reduction in the size and number of contaminated areas was noted. This reduction in contaminated areas reduces radwaste generation, improves the ease with which workers can accomplish their jobs, and reduces the chances for personnel contaminations.

During the evening prior to the start of this inspection, the licensee identified a problem with the control over one of its Locked High Radiation Areas (LHRA). This represents the third LHRA event at the facility in 1992. In this instance, an Auxiliary Operator (AO), while performing his shift rounds, entered the Spent Resin Building from the RCA yard. This building had been



posted one week earlier as a LHRA. A hasp and LHRA padlock were attached to the door leading to this area with appropriate postings placed on the door. The AO unlocked the door to enter the area, remained for less than one minute in the Spent Resin Building, and then exited the Building. Upon exit, the AO failed to secure the LHRA padlock. A second lock, permanently attached as part of the door, engaged when the door was closed. The AO recalled verifying that the door was locked, but did not remember that the LHRA padlock also needed to be secured. Although the licensee's procedure for maintaining the LHRA control required use of the LHRA padlock, the area was never accessible to an inadvertent intruder and was clearly posted as a LHRA. In response to previous LHRA problems, the licensee had installed audible and visual alarms on the permanent LHRA doors. However, such an alarm was not present at the Spent Resin Building entrance because it was only a temporary LHRA.

The licensee, upon discovering the LHRA problem, began an investigation to identify the cause of the event and notified this inspector upon his arrival at the site. The licensee interviewed the AO, requested a Human Performance Evaluation, and in general took the event very seriously. Suggested corrective actions were viewed from both a short and long term plant-wide perspective. Discussions with licensee personnel indicated that an aggressive LHRA control program was in place at Haddam Neck. Key control, which had been identified by the NRC as a concern several years earlier, had been significantly improved. Access control for the RCA was observed to be a licensee strength. This event appears to be isolated and not reflective of a breakdown or significant weakness in the licensee's Locked High Radiation Area control program.

#### 4.3 Dosimetry

The licensee's dosimetry program was under the direction of the Radiation Protection Services supervisor and included respiratory protection, external and internal dosimetry and all radiation protection records. As part of this inspection, a review of randomly selected dosimetry records was conducted. All files were for current plant employees or contractors, and were found to contain, where appropriate, NRC Forms 4 and 5; official verification of previous dose received at other facilities and licensees; medical approvals for the wearing of respirators, along with respirator fit testing data; internal dose assessments; and approvals for dose extensions. No discrepancies were noted in these records.

#### 4.4 Training

The licensee had developed three training programs for radiation protection technicians including initial training, continuing training, and contractor technician training. Both initial and continuing training included significant systems training. The continuing training program stressed the radiological conditions associated with plant systems at normal power operations, during outages, and during emergency situations.

Continuing training for 1993 was scheduled to include two training sessions totaling 80 hours, plus an additional 20 hours available for industry updates, revisions to procedures (especially for the implementation of the new 10 CFR Part 20), and other instruction as deemed appropriate by the Training and Health Physics Department managers. Discussions with Health Physics Department managers indicated that there was, in general, good responsiveness on the part of the Training Department to HP training needs. There were frequent communications between the departments regarding the training program.

The licensee's Training Department has led the way in the development of a national registry of contractor health physics technicians, including training qualifications. The licensee developed a basic knowledge training manual and examination for incoming contractor technicians, and was developing a similar program for basic job skills. This program has promoted better utilization of the limited training time available for preparing contractor technicians for work during outages by allowing more time to be spent on site specific training issues. The national registry of contractor technicians contains information concerning who has taken the examination, their examination score, and the date of testing. This registry allows the licensee to pre-approve contractor technicians for work at Haddam Neck, and to waive the testing if the contractor took the examination within the past two years and passed the examination with a score that is acceptable to the licensee. This is a notable achievement for the licensee. The registry represents a significant expenditure of manpower and financial resources that has led to significant improvement in the licensee's contractor technician training program.

#### 5. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on December 17, 1992. The inspector summarized the purpose, scope and findings of the inspection.