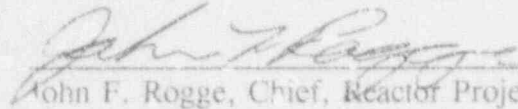


U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No: 50-29/92-02  
Docket No. 50-29  
Licensee No: DRP-3  
Licensee: Yankee Atomic Electric Company  
580 Main Street  
Bolton, Massachusetts 01740-1398  
Facility Name: Yankee Nuclear Power Station  
Inspection at: Rowe, Massachusetts  
Date: March 24 - April 27, 1992  
Inspectors: Neil Perry, Senior Resident Inspector

Approved by:

  
John F. Rogge, Chief, Reactor Projects Section 3A

*May 1, 1992*  
Date

Summary:

Areas Inspected: Plant operations, radiological controls, maintenance and surveillance, emergency preparedness, security, engineering and technical support, and safety assessment and quality verification.

Results: See Executive Summary

## **EXECUTIVE SUMMARY**

Yankee Nuclear Power Station  
Report No. 50-29/92-02

### **Radiological Controls**

Activities associated with the installation of the reactor vessel head were supervised, controlled and accomplished very well with very good health physics involvement. Two examples of inadequate risk practices were observed with good corrective action taken by management.

### **Maintenance and Surveillance**

Maintenance and surveillance testing of the emergency diesel generators was thorough and well-coordinated.

### **Emergency preparedness**

Appropriate notifications were made concerning several major losses of communications. The equipment was returned to service within a reasonable amount of time, and plant personnel were well-informed of the situations.

### **Security**

Security personnel responded very well to the loss of one of the plant area security lights.

### **Engineering and Technical Support**

A test of the spent fuel pin heat-up rate was well-controlled and monitored. Three open items were closed.

### **Safety Assessment and Quality Verification**

An improved fall protection system was installed around the shield tank cavity.

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## **DETAILS**

### **1.0 SUMMARY OF FACILITY ACTIVITIES**

At the start of this inspection period, the plant was in Mode 6 (Refueling) with no fuel in the reactor vessel, plant personnel were reassembling the reactor vessel, without fuel or control rods, in order to drain down the shield tank cavity. Additionally, meetings were being held to plan and coordinate the application for a Possession Only License, submittal of the decommissioning plan, and possible alternatives for safely storing the spent fuel on site. On March 25, the reactor head was placed on the reactor vessel, and eight reactor head studs were installed and tensioned on April 7.

### **2.0 PLANT OPERATIONS (71707)**

The inspector ensured by direct observation that the facility was operated safely and in conformance with license and regulatory requirements. Control Room staffing was as required and operators exercised control over access to the Control Room. Operators adhered to approved procedures and understood the reasons for lighted annunciators. Shift turnovers adequately addressed necessary information. The inspector reviewed control room log books for trends and activities, observed recorder traces for abnormalities, and verified compliance with Technical Specifications. During normal work hours and on backshifts, accessible areas of the plant were toured; plant conditions, activities in progress, and housekeeping conditions were observed. Additionally, selected valves and breakers were verified to be aligned correctly.

Backshift inspections were conducted on the following dates: March 24, 25; April 16, 21, and 22. Deep backshift inspections were conducted on April 20. Operators were alert, attentive, and responded appropriately to annunciators and plant conditions.

### **3.0 RADIOLOGICAL CONTROLS (71707)**

Radiological controls were periodically reviewed to confirm that radiation work permits were effectively implemented, dosimetry was worn properly, protective clothing was used as required, and radiation areas were properly posted. Selected work evolutions were observed to determine the adequacy of program implementation commensurate with the radiological hazards and importance to safety.

#### **3.1 Installation of the Reactor Vessel Head**

On March 25, the inspector observed the installation of the reactor vessel head on the reactor vessel. The inspector noted good management supervision by health physics and maintenance personnel, and very good health physics coverage and involvement. However, upon exiting the vapor container, the inspector noted two instances of plant personnel performing inadequate whole body frisks. When informed, health physics management:

indicated that the inadequate frisk problem would be looked into and corrected. The inspector observed no further instances of inadequate frisks, and concluded that management involvement was appropriate to ensure that adequate frisks are performed as necessary.

#### **4.0 MAINTENANCE AND SURVEILLANCE (61726, 62703)**

The inspector observed and reviewed maintenance and surveillance activities relative to industry standards, administrative controls, and regulatory requirements. Selected work evolutions and surveillance tests were observed to verify safety and compliance. Specific areas examined were use of station procedures, codes and standards, QA/QC involvement, management oversight, safety tag use, jumper use, equipment alignment and post-maintenance testing. In addition, the inspector evaluated radiological controls for worker protection, fire protection, limiting conditions for operation (LCO), deficiency review, resolution and reporting per Technical Specifications.

##### **4.1 Emergency Diesel Generator Relay Maintenance**

On April 14, for the #1 emergency diesel generator (EDG), and on April 21, for the #2 EDG, the inspector observed periodic maintenance of the R2 relays. The quarterly required maintenance consists of visually inspecting the relay contacts for degradation, and cleaning the contacts as necessary. This maintenance is in response to past problems experienced with the R2 relays. In both cases, plant electricians removed the relays from the casings and visually inspected the contacts. In both cases, the contacts were in very good condition and required no cleaning. The relays were reinstalled and post-maintenance testing was performed with the electricians observing the R2 relay's response.

In both cases, the inspector reviewed the tagout of the diesel generator, examined the R2 relay contacts, and observed the post-maintenance and surveillance testing. The electricians did a very thorough inspection, and good coordination was noted between the electricians, the quality assurance personnel and the operations personnel.

#### **5.0 EMERGENCY PREPAREDNESS (71707)**

##### **5.1 Major Loss of Communication**

While installing a new communication console, on April 2, the work took long enough that the plant paging system was not returned to service until approximately one hour after normal work hours. A major loss of communications existed with the system out of service for more than 15 minutes after normal work hours, requiring a one hour notification of the NRC. All of the appropriate notifications were made as required. The inspector concluded that plant personnel followed the appropriate procedures and made the required notifications.

## 5.2 Major Loss of Portion of Public Notification System

On April 12, Yankee Rowe control room personnel were notified that the Ames Hill transmitter was out of service due to a lightning strike. The lightning strike affected the communications lines such that a noise was induced which made the system unreliable. The Ames Hill transmitter is part of the National Weather Service Tone Alert System. Loss of the Ames Hill transmitter constitutes a major loss of communications capability, requiring a one hour NRC notification; the states were also notified as required. The transmitter was returned to service on April 14.

An ice and snow storm on April 17, caused a loss of the Ames Hill transmitter, due to a loss of power, once on April 17, and twice on April 18. In all instances, the appropriate notifications were made and the transmitter was returned to service within a reasonable amount of time. The inspector concluded that control room personnel were informed of the transmitter's status in a reasonable amount of time in each case, and appropriate actions were taken to return the transmitter to service. Additionally, all notifications were made as required.

## 6.0 SECURITY (71707)

Selected aspects of plant physical security were reviewed during regular and backshift hours to verify that controls were in accordance with the security plan and approved procedures. This review included the following security measures: guard staffing, vital and protected area barrier integrity, maintenance of isolation zones, and implementation of access controls including authorization, badging, escorting, and searches. No inadequacies were identified.

### 6.1 Security Lighting

During an evening plant tour on March 27, the inspector noted that one of the plant area security lights was not working. The inspector contacted security personnel, who indicated that they and control room personnel were aware of the problem and had called in electricians to investigate the light. When the lights were energized, the main breaker tripped. The electricians found a short circuit in the cord cap and receptacle at the base of the light pole, and repaired the light and returned it to service that night.

After identifying the out of service light pole, the inspector confirmed that the appropriate plant personnel were aware of the problem and that corrective actions were being taken. Additionally, the inspector verified that the appropriate compensatory actions were taken. The inspector concluded that the actions taken by plant personnel in response to the out of service light pole were conservative and corrective actions taken were accomplished within a reasonable amount of time.

## **7.0 ENGINEERING AND TECHNICAL SUPPORT (71707, 92701)**

### **7.1 Spent Fuel Pit Heat-up Rate**

On April 7, plant personnel stopped spent fuel pit cooling in order to measure the heat-up rate of the spent fuel pit. Fifteen thermocouples were installed to measure the temperatures in the pit and of the surrounding air. The average temperature of the pit at the start of the test was 78° F. Spent fuel pit cooling was reestablished on April 11, after the pit temperature reached 140° F. The time required to raise the temperature of the pit 62° F was 85 hours. Temperatures throughout the pit remained quite uniform (within approximately 1° F) during the four days. Also, as expected, temperatures rose at a slightly slower rate as the pit temperature increased. Plant management indicated that they plan to repeat the test in the future in order to measure the reduction in the heat-up rate as the spent fuel decays.

The inspector observed portions of the test, discussed it with plant personnel and management, and reviewed the results. The test was controlled and monitored closely, and results were appropriately compiled and reported to plant management.

### **7.2 Walkdown of the Spent Fuel Pit Systems**

During this inspection period, plant engineering personnel walked down the spent fuel cooling system and relevant portions of the component cooling and service water systems in order to update relevant drawings for future use. Many minor discrepancies were noted; revision notices were issued for the appropriate drawings and Control Room drawings were marked up.

The inspector reviewed the discrepancies identified, compared them to those identified by the NRC inspectors (see NRC Inspection Report No. 50-29/92-05), and discussed the discrepancies with the plant engineering personnel. The inspector concluded that the walkdown performed was comprehensive and complete. Additionally, actions taken to correct the discrepancies were appropriately taken.

### **7.3 (Closed) Violation 90-14-01**

This violation concerned an inadequate post-maintenance test to verify that each emergency diesel generator would perform satisfactorily while in service. Corrective actions included revising the appropriate surveillance and maintenance procedures to require testing in accordance with Technical Specifications. Additionally, Yankee Atomic reviewed all surveillance procedures used for Technical Specification surveillances and all IST Program procedures used for equipment surveillance to ensure that the acceptance criteria verify the capability of the equipment to meet the design basis operability requirements. The inspector reviewed documentation of the actions taken, and concluded that they were comprehensive and adequately addressed the concern. This item is closed.

#### 7.4 (Closed) Violation 90-18-01

This violation concerned the failure to incorporate emergency diesel generator (EDG) frequency acceptance criteria for pre-operational testing and failure to adequately review test results. As corrective action, specific training was given to all corporate personnel engaged in preparation or implementation of similar pre-operational testing procedures for new or replacement plant equipment. Additionally, since the February 26, 1992, announcement to close the plant permanently, and since Yankee Atomic committed to maintain the reactor defueled, the EDGs will not be required to be operable again. This item is administratively closed since adequate corrective actions have been taken and since the concern is no longer relevant for plant operations in the future.

#### 7.5 (Closed) Violation 90-20-01

This violation concerned the failure of post-maintenance testing to detect a vapor container recirculation fan contactor wiring problem. Yankee Atomic concluded that this was an isolated instance of failure of a facility employee to properly implement and adhere to approved procedures. Corrective action included correctly fastening the incorrectly fastened leads and successfully completing the required surveillance test. Additionally, the employee involved was the subject of formal disciplinary action and an independent review of electrical maintenance performed during the outage was performed with no discrepancies identified. The inspector concluded that the corrective actions were appropriate to the circumstances and this item is closed.

### 8.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION (90712, 90713)

#### 8.1 Review Of Periodic Reports

Upon receipt, the inspector reviewed periodic reports submitted pursuant to Technical Specifications. This review verified that the reported information was valid and included the NRC-required data. The following report was reviewed:

-- Monthly Statistical Report for plant operations for March 1992.

No deficiencies were identified.

#### 8.2 Shield Tank Cavity Fall Protection

During this inspection period, a new fall protection system was installed around the shield tank cavity. The previous system consisted of a rope and pulley system which allowed for movement of the refueling bridge crane without interruption. The adequacy of this rope and pulley system was discussed in NRC Inspection Report 50-77/91-20. The new system consists of cables connected to stanchions, and was designed to comply with OSHA regulations for a fall protection system. The Health and Safety Supervisor addressed a memo

to all plant departments informing personnel about the new fall protection system. This memo specifically detailed that the new system is not a personal fall arrest system, and that it is not approved for attaching safety belts or any other type of personal fall arrest equipment to.

The inspector examined the new fall protection system and concluded that it is an improvement over the old system, and still allows use of the refueling bridge crane. In addition, the inspector was informed that the new system is expected to be further improved in the future.

## **9.0 MANAGEMENT MEETINGS (30702)**

### **9.1 Preliminary Inspections Findings**

At periodic intervals during this inspection, meetings were held with senior plant management to discuss the findings. A summary of findings for the report period was also discussed at the conclusion of the inspection period and prior to report issuance.