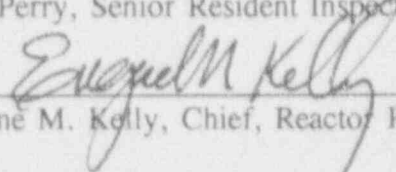


U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No: 50-29/92-11
Docket No. 50-29
Licensee No: DPR-3
Licensee: Yankee Atomic Electric Company
580 Main Street
Bolton, Massachusetts 01740-1398
Facility Name: Yankee Nuclear Power Station
Inspection at: Rowe, Massachusetts
Dates: November 14, 1992 - February 1, 1993

Inspector: Neil Perry, Senior Resident Inspector

Approved by:


Eugene M. Kelly, Chief, Reactor Projects Section 3A

2/5/93
Date

Summary:

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

Results: See Executive Summary

EXECUTIVE SUMMARY

Yankee Nuclear Power Station
Report No. 50-29/92-11

Plant Operations

Plant equipment and general housekeeping were found good in all areas of the plant.

Radiological Controls

Activities associated with the disposal of the control rod blades and followers were properly controlled by radiation protection technicians, though several weaknesses were observed in health physics practices. Liquid effluent releases for 1992 were found to be fewer than in the past with the total activity released well within allowable levels, and below that released in the past.

Engineering and Technical Support

No deficiencies were identified with the initial installation of an auxiliary service water pump and the 6 month fire suppression system flushing process.

Safety Assessment and Quality Verification

An improved trend in the regular use of safety devices, in response to weaknesses previously identified with safety practices for activities around the spent fuel pit, was noted. The Plant Operation Review Committee performed comprehensive reviews with good corporate involvement.

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DETAILS

1.0 FACILITY STATUS

The Yankee Nuclear Power Station has been shut down since October 1, 1991, and the reactor vessel defueled since February 15, 1992. The plant has operated under a Possession Only License (POL) since August 5, 1992. Under the terms of the POL, YAEC may perform additional decontamination work, disassemble components and store and ship spent fuel as long as the activities do not foreclose decommissioning options or substantially increase the cost of decommissioning. An NRC approved Certified Fuel Handler program replaced the Licensed Operator program and was implemented in July 1992. The Defueled Security Plan was approved on November 24, 1992. YAEC implemented the Defueled Security Plan and the Defueled Emergency Plan on December 19, 1992, after appropriate procedures were approved and implemented and after completion of required training.

On January 1, 1993, plant staffing at the Yankee Nuclear Power Station was reduced to 59 full time, permanent, employees. Approximately 65 employees had their employment severed on December 31, 1992. Since announcement of the permanent shutdown of the facility, approximately 61 employees found employment with other companies, 9 employees retired, and 25 employees were relocated to Yankee Nuclear Services Division (YNSD). No further staff reductions are anticipated by YAEC throughout 1993.

2.0 PLANT OPERATIONS (71707)

The inspector ensured by direct observation that plant equipment was operated and maintained safely and in conformance with license and regulatory requirements. Control Room staffing met all requirements. Operators were found to be alert, attentive and responded properly to annunciators and plant conditions. Operators adhered to approved procedures and understood the reasons for lighted annunciators. The inspector reviewed control room log books for trends and activities, observed control room instrumentation for abnormalities, and verified compliance with Technical Specifications. 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.

2.1 Plant Housekeeping

During this inspection period, the inspector periodically toured the facility to verify that plant equipment was being maintained as required, and that general housekeeping was commensurate with activities being conducted in the area. Plant equipment and housekeeping were found good in all areas of the plant. No weaknesses were observed.

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 principally

associated with spent fuel pit activities were observed. In general, these were found to be adequate with respect to program implementation, and commensurate with the radiological hazards.

3.1 Control Rod Disposal Program

In October, plant personnel began a project to properly dispose of the control rod blades and followers stored in the spent fuel pit. At the beginning of this inspection period, the crushing/shearing equipment was being prepared in the spent fuel pit. The inspector observed portions of the control rod crushing/shearing process to determine if the activities were being properly controlled and that good radiation protection practices were being followed. During performance of the observed activities, there were typically two radiation protection technicians present, observing and providing overall control of the activities from a radiological perspective. The inspector concluded that, in general, the observed activities were properly and conservatively controlled, and the radiation protection technicians maintained a good, positive control of the ongoing activities in the spent fuel pit area.

3.2 Radwaste Shipments

During this inspection period, three radwaste shipments occurred, associated with the control rod crushing/shearing activities. The inspector observed portions of the preparation and shipment of the casks containing the crushed/sheared control rods and followers. Additionally, the inspector reviewed a quality assurance (QA) inspection report concerning the first shipment. The QA report was found to be complete and comprehensive. The inspector identified no deficiencies.

3.3 Health Physics Practices

Through periodic tours of the facility and through observation of ongoing activities, the inspector identified several weaknesses in health physics (HP) practices. In November, tape used in marking radiological areas was found misused to hold a deficiency tag on emergency diesel generator No. 1 door. The inspector informed an HP technician, who promptly replaced the tape with appropriate tape. Additionally, in November, during control rod crushing/shearing operations and spent fuel pit building security modifications, a plant worker reached across a rope barrier into a contaminated area, to hit an exit button, to exit the building; the rope had apparently previously fallen and had not been properly replaced. The inspector described the situation to an HP technician who verified that the exit button was not contaminated, then repositioned the rope to allow access to the exit button.

In December, the inspector observed a radiological worker suiting up in protective clothing in the spent fuel pit building, under direct observation of an HP technician, to work in a contaminated area. The inspector noted that the worker was not dressed as required by the radiation work permit, in that his protective clothing was not properly taped at the ankles. The inspector commented to the HP technician and worker, and the worker corrected the

deficiency. Additionally, in December, several instances were observed of an HP supervisor reaching across a roped boundary, identifying a potentially contaminated area in the spent fuel pit building, without meeting the appropriate suiting requirements of the radiation work permit, in that no gloves were worn. After a short time, a nearby HP technician commented to the supervisor, who refrained from further reaching across the boundary. In one other instance in December, during a routine tour of the radiologically controlled area, the inspector noted areas, out of doors, where the required postings for various radiation areas were obscured by snow, due to drifting or plowing of the snow after a snow storm, which ended the day before. The inspector commented to an HP supervisor, who indicated that the inadequate postings would be corrected. The inspector verified that the postings were adequately visible the next day and after subsequent snow storms, and identified no other deficiencies.

For the above instances, the inspector was concerned that plant personnel were not identifying and correcting deficiencies in a timely manner. Additionally, the inspector noted that plant management was not as involved with the activities as in the past. The inspector discussed the concerns with plant management, who indicated that the activities being planned for the near future will be better planned and controlled in a manner similar to how refueling outages have been handled in the past. Personnel in charge of activities will be well-defined in advance, and additional personnel will be available from YNSD, Vermont Yankee and Maine Yankee, many of whom have worked at Yankee Rowe and are familiar with the facility and the policies. The inspector had no other concerns.

3.4 Decontaminations and Liquid Releases to the Environment

Since YAEC announced the permanent shutdown of the Yankee Nuclear Power Station, in February, little decontamination has occurred. In the containment vessel and the primary auxiliary building, strippable coatings were applied and are expected to remain in place for a number of years. Plant personnel estimate that the total amount of water processed, due to decontamination activities, in 1992, has been less than or equal to that generated in past years.

The inspector reviewed plant records of individual batch liquid releases from July 1992 through November 1992. The origin of most of the liquid was from the draining of systems, including the main coolant system, and the processing (removal of potassium chromate) of water from the neutron shield tank and the component cooling water system. The water from the neutron shield tank and the component cooling water system was passed through resins to remove the potassium chromate, and this process also removed almost all of the radiological activity in the water. All of the water was stored in the waste holdup tank. This water was evaporated, condensed, and stored in the test tanks. The test tanks were recirculated and sampled prior to discharge to the service water system; the service water system discharges to Sherman Reservoir, whose outlet is the Deerfield River. During discharge, the water was monitored, and automatic isolation would have occurred if a high

level of activity was detected. Since the last day of reactor operation had been October 1, 1991, there are no short-lived nuclides currently present, and therefore these have been appropriately deleted from reporting tables. There were no batch gaseous releases during 1992.

Technical Specifications allow releases up to the concentration limits specified in 10 CFR 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained gases. Release data for 1992 were reviewed; all isotope concentrations were below the specified limits. Additionally, the last two Semiannual Effluent Release Reports indicated that all releases during those periods were below specified limits. The monthly doses from radioactive materials in liquid effluents were reviewed for 1992, through November; results were found to be below the Technical Specification limits. Radioactive effluent release data for 1992, in general, indicated a decreasing trend through the year, due to a decrease in the generation of water needing processing. Release data results for 1992 were consistent with, or lower than, that of prior reporting periods.

The inspector concluded that there has been less liquid effluent generated from decontamination activity than in the past. Liquid effluent releases for 1992 have been fewer than in the past, with the total activity released well within allowable levels.

4.0 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.

5.0 ENGINEERING AND TECHNICAL SUPPORT (71707, 92702)

5.1 Auxiliary Service Water Pump

During this inspection period, plant personnel began a modification to install a smaller service water pump in parallel with the existing service water pumps, because of the reduced heat load on the service water system. The existing service water pumps provide a much larger flow than is necessary, due to fewer systems in operation. One of the existing two vapor container service water booster pumps was removed from the primary auxiliary building and will be installed in parallel with the existing service water pumps in the screen house. At the conclusion of the inspection period, the pump was in place and the piping was scheduled to be completed before the end of February 1993.

The inspector reviewed portions of the preparation and installation, and reviewed the memorandum concerning the design change plan. The complete safety evaluation was reviewed in NRC Inspection Report 50-029/93-01. The inspector identified no deficiencies.

5.2 Fire Suppression System Flushing

During a quality assurance (QA) surveillance, in November 1992, QA personnel identified an apparent deficiency in the flushing of fire suppression system piping. During performance of the flushing, the diesel fire pump automatically started and was allowed to run. With the diesel fire pump running, the QA personnel believed that certain portions of fire system piping might not get flushed. The Fire Protection Technical Requirements Manual requires that a system flush be performed at least once every 6 months. QA Surveillance Report Number 92-39 documented the deficiency, requiring a response from plant personnel.

The inspector reviewed the flushing process to determine if the technical requirements were being met. The controlling procedure, OP-4244, Fire Suppression System Flush, Revision 15, and safety class flow diagram, M-25, Flow Diagram Fire Protection, Revision 8, were reviewed, and performance of the procedure was discussed with QA personnel and fire protection personnel. The inspector noted that although portions of the fire system piping might not get properly flushed with the diesel fire pump running, the procedure adequately flushes the piping at another time during performance of the procedure. However, plant personnel agreed that the procedure contained weaknesses regarding the appropriate stopping of the diesel fire pump, and that the procedure would be revised to address this weakness. Through discussions with QA personnel, the inspector determined that the deficiency was being addressed to their satisfaction. The inspector concluded that the overall process of flushing the fire system piping has been adequate to meet the technical requirements, and that the procedure enhancement was appropriate.

6.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION (71707)

6.1 Safety Practices

During the last inspection period, the inspector observed weaknesses in the safety practices of personnel involved in activities associated with the spent fuel pit. Early in this inspection period, additional similar problems were observed. On December 1, 1992, during preparation work on the control rod shipping cask in the south decontamination room, two persons were observed on the roof with no fall protection, as required by plant policy. Also, workers were standing on Herculite, which is slippery, and were approximately 20 feet off the floor. Additionally, during work on the cask, an individual was observed standing on the cask, approximately 6 to 8 feet off the floor, wearing plastic shoe covers, without fall protection used. On December 2, 1992, during transport of the cask into the spent fuel pit building, the rope around the spent fuel pit was lowered to get the cask into the pool and was not replaced for several minutes, rather than right away.

The inspector expressed concern to plant management that activities were possibly being rushed to meet deadlines, and that management oversight of the activities was weak. Plant management indicated that upcoming activities would be planned and supervised better, in a manner similar to how refueling outages have been handled in the past. During the later

portions of the inspection period, the inspector noted an improving awareness by plant personnel and an improving trend in the regular use of safety devices. The inspector also noted that good safety practices are stressed in the general employee training and at the periodic safety meetings.

6.2 Plant Operation Review Committee

During the inspection period, the inspector attended several meetings of the Plant Operation Review Committee (PORC). In general, the PORC meetings were found to be well attended, and the required reviews were comprehensive. In particular, the inspector found the reviews of the draft defueled Technical Specifications to be thorough and complete, with good involvement and participation by appropriate corporate personnel.

7.0 MANAGEMENT MEETINGS (30702)

7.1 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 on February 3, 1993 and prior to report issuance.

7.2 NRC Inspections

One Region-based inspection was conducted during this inspection period. Inspection results were discussed with senior plant management at the conclusion of the inspection.

<u>Dates</u>	<u>Subject</u>	<u>Inspection No.</u>	<u>Lead Inspector</u>
1/25-28	Post-POL Implementation	93-01	B. Norris

7.3 Other Meetings

On November 24, 1992, and December 8, 1992, meetings were held between the NRC and YAEC, in Rockville, Maryland, to discuss the current plans for decommissioning the Yankee Nuclear Power Station. The Decommissioning Plan is due to be submitted to the NRC in February 1994, though YAEC expects to submit it earlier in 1993. The meeting was informational in nature.