



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
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KING OF PRUSSIA, PA 19406**

November 15, 2001

Mr. K. Heider, Vice President
Operations and Decommissioning
Yankee Atomic Electric Company
49 Yankee Road
Rowe, Massachusetts 01367

SUBJECT: NRC INSPECTION REPORT NO. 05000029/2001002

Dear Mr. Heider:

On September 30, 2001, the NRC completed an inspection at your nuclear reactor facility in Rowe, Massachusetts which covered an inspection period that began on June 12, 2001. The findings of the inspection were discussed with Mr. Brian Wood and members of his staff on October 1, 2001. The enclosed report presents the results of that inspection.

Your self-assessment and corrective action programs, Spent Fuel Pool (SFP) activities, Radiological Environmental Monitoring Program (REMP), and construction activities involving your Independent Spent Fuel Storage Installation (ISFSI) were inspected during this sixteen-week inspection period. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. Effective programs for protecting the safety of workers and the public during ISFSI construction activities and SFP operations were noted. However, there were three self-identified instances where the radiation protection program was not being fully implemented.

Based on the results of this inspection, the NRC has determined that three Severity Level IV violations of NRC requirements occurred during this inspection period. These violations concern a discrepancy from Technical Specification requirements regarding the alarm setpoint of the SFP Area Radiation Monitor, failure to post a High Radiation Area, and failure to control access to another High Radiation Area. These violations are being treated as Non-Cited Violations (NCVs), consistent with Section VI.A of the NRC Enforcement Policy. The NCVs are described in the subject inspection report. If you contest any of the violations or severity level of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with Section 2.790 of the NRC's "Rules and Practices," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosure will be placed in the NRC Public

Mr. K. Heider

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Document Room (PDR) and will be accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html>. No reply to this letter is required.

Sincerely,

/RA/

Ronald R. Bellamy, Chief
Decommissioning and Laboratory Branch
Division of Nuclear Material Safety

Docket No. 05000029
License No. DPR-03

Enclosure: NRC Region I Inspection Report No. 05000029/2001002

cc w/encl:

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Mr. K. Heider

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 05000029

License No. DPR-03

Report No. 05000029/2001002

Licensee: Yankee Atomic Electric Company
580 Main Street
Bolton, Massachusetts 01740-1398

Facility Name: Yankee Nuclear Power Station

Location: Rowe, Massachusetts

Dates: June 12, 2001 to September 30, 2001

Inspectors: John Wray, Health Physicist

Approved by: Ronald R. Bellamy, Chief
Decommissioning and Laboratory Branch
Division of Nuclear Materials Safety, RI

EXECUTIVE SUMMARY

Yankee Facility
NRC Inspection Report No. 05000029/2001002

Inspections were conducted to determine whether the decommissioning activities carried out at the Yankee Rowe facility were conducted safely and in accordance with NRC requirements. This report covers a sixteen week period of inspection. Areas reviewed included the corrective action program, self assessments, Spent Fuel Pool (SFP) activities, the Radiological Environmental Monitoring Program (REMP), and construction activities involving the Independent Spent Fuel Storage Installation (ISFSI). The inspector noted effective programs for protecting the safety of workers and the public during ISFSI construction activities and SFP operations.

Operations and Decommissioning Status

The licensee conducted required surveillances of the SFP and maintained an adequate program to ensure compliance with SFP Technical Specifications (TS).

The licensee maintained an adequate safety review program to verify that decommissioning activities do not involve unreviewed safety questions or changes to plant TSs, in conformance with 10 CFR 50.59. The licensee conducted effective safety reviews of facility design changes and modifications in accordance with established procedures and maintained sufficient management control of the program.

The licensee and NAC maintained effective corrective action programs and performed very good audits and assessments to help self-identify and correct issues and problems. However, one self identified violation of TS requirements regarding the SFP Area Radiation Monitor setpoint was identified.

Timely and effective security enhancements were implemented following the terrorist events of September 11, 2001.

Plant Support and Radiological Controls

The licensee has generally provided good controls to limit exposures of workers to external sources of radiation. However, two separate instances of inadequate posting of a High Radiation Area (HRA) and inadequate control of a HRA were identified.

The licensee maintained an adequate REMP program. Effluent monitors were properly calibrated and maintained. The Annual Effluent Report was submitted in a timely manner and releases were within regulatory requirements.

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REPORT DETAILS

Summary of Facility Activities

Decommissioning activities at the Yankee Rowe Nuclear Power Station continued under the approval granted through a letter from the NRC (reference correspondence, dated October 28, 1996, from Mr. Morton Fairtile to Mr. James Kay).

I. Operations and Decommissioning Status

O1 Conduct of Operations

O1.1 Spent Fuel Pool Activity

a. Inspection Scope (60801)

A review of the TS required surveillances and operator actions for the SFP with was conducted. The interface between Yankee and Fuel Transfer Operations Contractor (FTOC) operators was also evaluated.

b. Observations

The inspector reviewed FTOC nuclear operator logs and Yankee operator logs of required surveillances for the SFP. All specified surveillances and actions were completed in accordance with TS requirements. The inspector examined procedure DP-2121 regarding the make-up rate calculation for the SFP and reviewed the spread sheet maintained to determine if a significant leak of SFP water has occurred. The licensee has followed procedural steps and is tracking pool make-up rates appropriately. No leakage from the SFP has been detected.

The licensee has turned over some of the TS required surveillance activities to the FTOC. The inspector verified that all required surveillances were performed either by FTOC operators during normal working hours, or by Yankee personnel on back shifts and weekends when FTOC operators were not onsite. Yankee management confirmed that Yankee operations maintained overall responsibility for TS compliance and checked all required actions to ensure compliance. The inspector had no further questions.

c. Conclusions

The licensee conducted required surveillances of the SFP and maintained an adequate program to ensure compliance with SFP TSs.

O1.2 Nuclear Safety Reviews

a. Inspection Scope (37801)

The inspection consisted of selected reviews of facility safety evaluations and temporary change requests to determine compliance to 10 CFR 50.59 and licensee commitments.

b. Observations

The inspector reviewed selected Safety Evaluations regarding the submersible filtration/demineralization system for the SFP and the installation, operation, and removal of the submersible Greater Than Class C (GTCC) sorting equipment used in the SFP. The Safety Evaluations were complete and thorough. All questions were answered with appropriate specificity. The inspector also reviewed temporary change requests for modifications to the SFP building cask hatch, the north wall for transfer cask seismic stabilization restraints and the cask setdown pad. The evaluations and change requests were reviewed by the Plant Operations Review Committee (PORC) where appropriate. The inspector verified that, where required, applicability determinations in accordance with 10 CFR 72.48 were completed. No safety concerns were identified.

c. Conclusions

The licensee maintained an adequate safety review program to verify that decommissioning activities do not involve unreviewed safety questions or changes to plant TSs, in conformance with 10 CFR 50.59. The licensee conducted effective safety reviews of facility design changes and modifications in accordance with established procedures and maintained sufficient management control of the program.

O1.3 Self-Assessment, Auditing, and Corrective Action Program

a. Inspection Scope (40801)

A review was performed to evaluate the effectiveness of licensee controls in identifying, resolving, and preventing issues that degrade safety or the quality of decommissioning. The inspector evaluated the licensee's self-assessment, auditing, corrective actions, and root cause evaluations through a review of licensee documents and interviews with licensee personnel.

b. Observations

The inspector reviewed selected Quality Assurance (QA) Audits and Surveillances of licensee activities. Audits performed by the licensee and NAC as their contractor were thorough and detailed with adequate management attention to effect timely resolution to issues raised in the audits. The inspector reviewed selected corrective action reports and determined that an appropriate threshold for initiating a condition report exists.

On June 26, 2001, during a QA Audit of SFP activities, a discrepancy was identified regarding the alarm setpoint for the SFP Area Radiation Monitor (ARM). TS 3.3 requires the alarm setpoint for the ARM be maintained less than 5 mr/hr or two times the background radiation level, whichever is greater, while moving fuel, control rods or sources. A review of SFP area radiation survey records indicated that the background radiation level had been 2 mr/hr and the ARM setpoint was 7 mr/hr, thus greater than the TS requirement. Although no fuel handling activities were being conducted at the time that this discrepancy was discovered, the licensee determined that fuel handling activities in August of 1999 and April/May of 2000 were conducted under similar circumstances. This is a violation of TS 3.3.

The inspector verified that immediate corrective action was initiated, including conducting a root cause analysis, writing a significant condition report, suspending all future fuel movement

activities until the ARM was recalibrated with the proper setpoint, rewriting the setpoint procedure to prevent recurrence, discussion and training of appropriate personnel, and issuance of an LER in accordance with 10 CFR 50.73(a)(2)(i)(B). The inspector also verified that no individual was exposed to unnecessary levels of radiation because of this TS violation. The inspector stated that although this is a violation of plant TSs, because of the low safety significance and the timeliness and effectiveness of the licensee's corrective actions, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (**NCV 50-029/01-002-01**).

c. Conclusions

The licensee and NAC maintained effective corrective action programs and performed very good audits and assessments to help self-identify and correct issues and problems. However, one self identified violation of TS requirements regarding the SFP ARM setpoint was identified.

O1.4 Security Response to 9/11/01 Events

a. Inspection Scope (71801)

Following the terrorist events of September 11, 2001, the licensee initiated enhanced security measures in accordance with their Security Plan and regulatory guidance. The inspector reviewed enhanced security measures and evaluated compliance to requirements and commitments.

b. Observations and Findings

The licensee's enhanced security measures taken in response to the terrorist events of September 11, 2001 were observed by the inspector. The inspector discussed program and physical changes and toured the site with licensee personnel.

c. Conclusions

Timely and effective security enhancements were implemented following the terrorist events of September 11, 2001.

II. Plant Support and Radiological Controls

R1 Radiological Protection Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750 and 60701)

The inspector reviewed the licensee's routine radiation protection surveillances and planning for significant decommissioning activities, such as the GTCC sorting project, to determine adequacy of the licensee's radiation protection program under various conditions. The inspector also interviewed selected radiation protection managers and staff.

b. Observations

During tours of the facility, the inspector observed that areas in the RCAs were appropriately posted and labeled for radioactive materials. Posting and labeling of radioactive materials and radiation areas continued to meet regulatory requirements. However, on July 24, 2001, a worker disregarded an HRA posting, and entered a restricted area to complete a visual surveillance, which was not associated with the resin sluicing which required the HRA posting. The sluicing activities had not been initiated prior to the time of the posting violation and therefore, no exposure to excessive radiation occurred. The licensee immediately removed the worker from the area and conducted appropriate discipline. A significant condition report was written and a root cause analysis was conducted. The licensee stopped work and discussed the violation with plant personnel. The inspector stated that although the individual did not enter an area greater than 100 mr/hr, he did violate an HRA posting and a violation of 10CFR20 and plant procedures occurred. However, because of the low safety significance and the timeliness and effectiveness of the licensee's corrective actions, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy **(NCV 50-029/01-002-02)**.

The FTOC continued sorting GTCC waste in the SFP during this inspection period. The inspector noted that this project was extremely challenging and that radiological controls were, for the most part, adequate. However, the inspector noted that surveys following work on August 23, 2001, reduced the posting around the SFP to a Radiation Area and that a pre work survey on August 29, 2001, determined that an HRA existed in the corner of the SFP operating floor. The source of the HRA was a rag (6R/hr) from cleanup activities which was stored in an uncontrolled manner under temporary lead blankets. Dose rates on top of the lead shielding were 1 to 2 R/hr (200 mr/hr at 30 cm). This area of the SFP floor was not posted nor controlled as an HRA. The inspector reviewed logs and verified that no work was performed between August 23 and August 29 in the SFP. Personnel exposure records were reviewed for those workers who entered the SFP between August 23 and August 29 to complete surveillances and no measurable exposure were received. When the unposted HRA was discovered, the licensee immediately suspended work activities in the SFP building and initiated an investigation. A significant condition report was written and a root cause analysis was started. A detailed survey was performed and the proper posting and controls were established. The inspector stated that the lack of posting this HRA is a violation of 10 CFR 20. However, because of the low safety significance and the timeliness and effectiveness of the licensee's

corrective actions, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (**NCV 50-029/01-002-03**).

c. Conclusions

The licensee has generally provided good controls to limit exposures of workers to external sources of radiation. However, two separate instances of inadequate posting of an HRA and inadequate control of an HRA were identified.

R1.2 Radiological Environmental Monitoring Program

a. Inspection Scope (84750)

The inspector reviewed the licensee's Radiological Environmental Monitoring Program (REMP) to determine conformity to license requirements.

b. Observations

The inspector reviewed selected QA audits of the REMP and periodic surveillances of the program. The Annual Effluent Report was also reviewed. The audits were comprehensive and thorough. No abnormalities were identified in the Annual Effluent Report. The inspector reviewed the most recent liquid effluent release documentation, including the liquid effluent monitor setpoint and calibration information. The effluent monitor was properly calibrated and its setpoint was determined correctly. Liquid releases did not exceed regulatory limits for the site.

The inspector observed plant REMP thermoluminescent dosimeter (TLD) and sample locations and reviewed TLD results for these areas. Sample and TLD stations are located in accordance with the Offsite Dose Calculation Manual (ODCM). All sample and TLD results were within allowable limits.

The inspector discussed changes to the ODCM including Rev 15 which addressed the removal of the site meteorological tower. The licensee has alternate meteorological data gathering capabilities when the site meteorological tower is dismantled. No safety concerns were identified.

The inspector reviewed onsite well sample results and compared them to leak rate calculations from the SFP Building. The licensee maintained an adequate sampling and analysis program for SFP leakage detection. No leakage from the SFP was detected. Plant chemistry logs and plant ventilation stack sample results were evaluated. No violations of TS requirements were identified.

c. Conclusions

The licensee maintained an adequate REMP program. Effluent monitors were properly calibrated and maintained. The Annual Effluent Report was submitted in a timely manner and releases were within regulatory requirements.

III. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management periodically during the inspection, and during an exit meeting with Mr. B. Wood and others on October 1, 2001. The licensee acknowledged the findings presented by the inspectors. The inspector reviewed with the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

X2 Management Meetings

On September 4, 2001, Ron Bellamy, Region I Decommissioning and Laboratory Branch Chief, Division of Nuclear Materials Safety, visited the site and observed licensed activities. He met with licensee management and NAC International staff to discuss project schedules.

On September 19, 2001, the Yankee Rowe Community Advisory Board held their routine scheduled public meeting at the Yankee Rowe site in Rowe, Massachusetts. John Wray attended the meeting and discussed with the committee the NRC's position regarding terrorism and Spent Fuel Safety. There was approximately twenty people in attendance at the meeting.

PARTIAL LIST OF PERSONS CONTACTED

R. Berry, DE&S, Operations Oversight
*G. Babineau, Safety Oversight Manager
W. Blackadar, Radiation Protection Oversight
J. Bourassa, QA Manager, YAEC
J. Chapman, DE&S, YAEC Oversight
S. Garvie, Security Supervisor
K. Heider, Vice President, YAEC
*F. Helin, NAC, Site Project Manager
*B. Holmgren, Dry Cask Storage Oversight Manager
*J. Kay, Manager of Regulatory Affairs
K. LaDuke, QA Auditor
D.R. LeFranois, NAC, Site Engineering Manager
J. McCumber, DE&S, YAEC Oversight
T. Osterhoudt, NAC, Operations Manager
C. Palmer, NAC, Health Physics Manager
J. Parker, Duke Engineering and Services
S. Racz, Quality Assurance Supervisor
*N. Rademacher, NAC, Site QA Manager
J. Rucki, NAC, Operations Supervisor
R. Sauer, NAC, Site Project Manager (Acting)
B. Sklar, NAC, Plant Services Manager
M. Vandale, Radwaste Supervisor, DE&S
*F. Williams, Plant Superintendent
M. Williams, Framatone, Fuel Handling Operations Manager
*B. Wood, Site Manager

* These individuals participated in the exit briefing held on October 1, 2001

LIST OF ACRONYMS

ARM	Area Radiation Monitor
CAB	Community Advisory Board
CFR	Code of Federal Regulations
FTOC	Fuel Transfer Operations Contractor
GTCC	Greater Than Class C
HRA	High Radiation Area
ISFSI	Independent Spent Fuel Storage Installation
NCV	Non-Cited Violation
ODCM	Offsite Dose Calculation Manual
PDR	Public Document Room
PORC	Plant Operations Review Committee
QA	Quality Assurance
REMP	Radiological Environmental Monitoring Program
TLD	Thermoluminescent Dosimeter
TS	Technical Specification
SFP	Spent Fuel Pool

INSPECTION PROCEDURES USED

IP 37801	Safety Reviews, Design Changes and Modifications
IP 40801	Self-Assessment and Corrective Action
IP 60710	Fuel Handling Activities
IP 60801	SFP Safety
IP 71801	Decommissioning Performance
IP 83750	Occupational Radiation Exposure
IP 84750	Radwaste Treatment/Effluent & Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

2001-002-01	NCV	SFP ARM Setpoint not in accordance with TS requirements
2001-002-02	NCV	Worker Bypassing HRA Posting
2001-002-02	NCV	Inadequate Posting of HRA

Closed

2001-002-01	NCV	SFP ARM Setpoint not IAW TS requirements
2001-002-02	NCV	Worker Bypassing HRA Posting
2001-002-02	NCV	Inadequate Posting of HRA

Discussed

NONE