UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

March 3, 2004

Mr. Wayne A. Norton
President
Connecticut Yankee Atomic Power Company
362 Injun Hollow Road
East Hampton, CT 06424-3099

SUBJECT: NRC INTEGRATED INSPECTION REPORT 05000213/2003003

Dear Mr. Norton:

On February 6, 2004, we completed an integrated inspection at your Haddam Neck reactor facility of activities authorized by the above listed NRC license. We discussed our findings with Mr. Noah Fetherston, and others on February 25, 2004. The enclosed report presents the results of that inspection.

During this approximately three-month inspection period, we inspected your decommissioning operations and maintenance, security and safeguards, and plant support programs through selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors. We consider the programs to be appropriately implemented.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations (CFR), a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

We appreciate your cooperation with us during this inspection.

Sincerely,

Ronald R. Bellamy

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

Enclosure:
Inspection Report No. 05000213/2003003

Docket No. 50-213
License No. DPR-61
ISFSI Docket No. 07200039

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cc w/encl:
T. Bennet, Vice President and Chief Financial Officer
K. Heider, Vice President
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G. Bouchard, Director, Nuclear Safety/Regulatory Affairs
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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No.	05000213/2003003
Docket Nos.	50-213 & 72-039
License No.	DPR-61
Licensee:	Connecticut Yankee Atomic Power Company (CYAPCO)
Location:	P. O. Box 270 Hartford, CT 06141-0270
Inspection Dates:	October 27, 2003 through February 6, 2004
Inspectors:	John Wray, Health Physicist Decommissioning Branch (DB) Division of Nuclear Materials Safety (DNMS) Laurie Peluso, Health Physicist DB, DNMS E. Harold Gray, Senior Reactor Inspector Systems Branch Division of Reactor Safety
Approved By:	Ronald R. Bellamy, PhD, Chief Decommissioning Branch, DNMS, Region I

EXECUTIVE SUMMARY

Connecticut Yankee Atomic Power Company
NRC Inspection Report No. 05000213/2003003

This integrated inspection included aspects of licensee activities regarding dismantlement and decommissioning of the facility such as operations & maintenance, security and safeguards, and plant support programs. The report covers approximately a three-month period of announced inspections by three regional inspectors.

Operations & Maintenance

Collection of site specific information regarding the Material Control and Accounting (MC&A) program at Haddam Neck was completed in accordance with the requirements of Phase I and Phase II of TI 2515/154.

The license continues to prepare for movement of spent fuel to its Independent Spent Fuel Storage Facility. Equipment and processes, such as heavy load lifting, welding, and vacuum drying were tested.

The identification of significant conditions adverse to quality, cause of conditions, and corrective actions were documented and reported to appropriate levels of management. Audits were performed in accordance with written procedures by appropriately trained personnel. Followup action, including re-audit of deficient areas, was taken where applicable.

An effective maintenance and surveillance program relative to safe storage, maintenance, and control of spent fuel, was implemented.

The licensee established an adequate cold weather operations program to maintain the operability of systems and equipment important to safety and effectively implemented the program to protect safety-related systems against extreme cold weather.

Status of Facilities and Equipment

The licensee safely removed the Reactor Pressure Vessel (RPV) from containment and temporarily stored the RPV package on site.

Plant Support

The licensee safely transferred the RPV package to the Barnwell, SC, low level radioactive waste burial facility for disposal.

Security and Safeguards

Connecticut Yankee effectively implemented their security program for compliance with the May 23, 2002 Order for Interim Compensatory Measures for safeguards and security for Haddam Neck.

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REPORT DETAILS

Summary of Facility Activities

The spent fuel remains safely in storage in the spent fuel pool (SFP) while the licensee plans for long-term storage of the spent fuel in dry casks onsite. The reactor pressure vessel (RPV) was safely removed from containment, temporarily stored on site, and shipped to the Barnwell, SC, low level radioactive waste facility. Dismantlement of the waste tank farm and removal of commodities in the loop areas were in progress. Characterization and final status surveys were ongoing.

I. Operations & Maintenance

O1 Conduct of Operations & Maintenance

O1.1 Spent Fuel Material Control and Accounting (MC&A) at Nuclear Power Plants

a. Scope (Temporary Instruction (TI) 2515/154)

The inspector evaluated the effectiveness of the licensee's Spent Fuel MC&A program. The inspection consisted of interviews with cognizant personnel, and review of licensee procedures and reports relating to spent fuel accountability and control.

b. Observations and Findings

TI 2515/154 requires review of records to determine if MC&A issues identified at Millstone I regarding the loss of two spent fuel rods are applicable at Haddam Neck. Based on discussions with cognizant licensee representatives, the inspector determined that Connecticut Yankee (CY) separated fuel rods from their parent assembly and completed fuel reconstitution activities in the past at Haddam Neck (Phase I of TI 2515/154 complete). Phase II of the TI consists of a series of 12 questions which is intended to provide general information concerning the licensee's MC&A program. The inspector verified that the licensee tracked individual fuel rods through the reconstitution process, established written MC&A procedures addressing roles and responsibilities, configuration control, and oversight functions, and stored fuel assemblies in spent fuel racks. The inspector toured the SFP and observed storage of spent fuel rods in locations depicted on a controlled SFP locator map. In addition, the inspector reviewed a Spent Fuel Rod Accountability (SFRA) Assessment, (Revision I, December 10, 2001) which documented rod traceability throughout the life of the facility and demonstrated full Special Nuclear Material (SNM) accountability. The inspector also reviewed the final report of the CY Fuel Reconstitution project dated June, 2003. Phase I and II of TI 2515/154 were completed. Selection of sites requiring completion of Phase III will occur following analysis by NRC and may be performed during a subsequent inspection. No findings of significance were identified.

c. Conclusion

Collection of site specific information regarding the MC&A program at Haddam Neck was completed in accordance with the requirements of Phase I and Phase II of TI 2515/154.

O1.2 Pre-operational Testing of an Independent Spent Fuel Storage Installation (ISFSI)

a. Scope (IP 60854)

The inspection scope included observations of the welding equipment and welding area; the spent fuel pool area, the heavy lift sequence load path inside the plant fence, the 100 ton yard crane; and the transportable storage canister (TSC) water drain, vacuum drying, and helium gas fill equipment. Also, the Quality Assurance (QA) audit and surveillance plans, the preliminary 10 CFR 72.212 evaluation documentation, condition report (CR) 04-0109 on procurement and receipt inspection and one 10 CFR 72.48 change document were reviewed.

The inspector discussed the work steps and plans with those involved and reviewed portions of various controlling procedures (work packages) to verify their adequacy. The inspector also observed the video tape on the TSC lid cutting removal demonstration applicable to the CY site as well as the Yankee Rowe and Maine Yankee sites. The cask loading plan for each TSC and heat generation calculation was reviewed.

Observations were compared with the commitments and requirements contained in the Safety Analysis Report (SAR), the NRC's Safety Evaluation Report (SER), the Certificate of Compliance (CoC), the licensee's QA program, and 10 CFR Part 72.

b. Observations and Findings

The inspector observed ISFSI components and plant conditions and reviewed portions of ISFSI related procedures. The licensee has been developing ISFSI procedures and equipment to demonstrate capability for spent fuel transfer from the spent fuel pool to the ISFSI. The steps include safely loading spent fuel from the spent fuel pool into a TSC, properly sealing the TSC by welding, leak testing the TSC, loading the TSC into a vertical concrete cask (VCC), and moving the loaded VCC to the ISFSI storage pad.

The licensee is preparing to do a series of dry runs, without spent fuel, for the purpose of providing practice to the ISFSI team in using the task procedures and equipment. The procedures sampled were well developed and much of the equipment had been previously demonstrated on other ISFSI work. The 10 CFR 72.212 evaluation, while preliminary, was essentially complete. A Fuel Transfer Readiness Assessment of significant scope was planned and will be reviewed during a subsequent inspection. No findings of significance were identified.

c. Conclusion

The license continues to prepare for movement of spent fuel to its Independent Spent Fuel Storage Facility. Equipment and processes, such as heavy load lifting, welding, and vacuum drying were tested.

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

a. Scope (IP 40801)

The inspector assessed QA Audits and CRs for 2003 to determine the licensee's capability to self-identify and resolve conditions adverse to quality, and to prevent problems. The inspector assessed conditions adverse to quality associated with structures, systems, and components (SSCs) important to the safe storage of spent fuel and radiation safety. The inspector conducted interviews with cognizant personnel and reviewed administrative controls, such as tracking and trending. Observations and document reviews were compared with the commitments and requirements contained in 10 CFR 50, Appendix B and the licensee's QA Program.

b. Observations and Findings

During a previous inspection documented in Inspection Report Number 05000213/ 2003001 (ADAMS Accession Number ML031840631), the inspector assessed the status of corrective actions for a finding regarding configuration management (CR-02-0532) that was identified during the 2002 audit (02-A10-01). During this inspection period, the inspector noted that the Apparent Cause evaluation was completed but needed to be signed by management. The inspector also noted that the 2003 audit (03-A11-01) was recently completed. The inspector attended the audit exit meeting. The preliminary audit results identified four deficiencies and the licensee generated a CR for each. Inspection of these areas will continue during a subsequent inspection.

The inspector selected 22 significant condition CRs to review for timeliness of initiation, appropriateness of problem identification, and effectiveness of corrective action. No findings of significance were identified.

c. Conclusion

The identification of significant conditions adverse to quality, cause of conditions, and corrective actions were documented and reported to appropriate levels of management. Audits were performed in accordance with written procedures by appropriately trained personnel. Followup action, including re-audit of deficient areas, was taken where applicable.

O1.4 Maintenance and Surveillance Program

a. Scope (IP 62801)

The inspector reviewed selected planned and completed maintenance and surveillance activities of SSCs important to the safe storage of spent fuel and proper operation of radiation monitoring and effluent control equipment. The inspector toured the SFP building, reviewed selected implementing procedures, work orders, performance goals and work prioritization, and observed the performance of selected activities.

b. Observations and Findings

The reviewed SSCs were in good material condition and pumps were in good working order. Informational tags on equipment were appropriate and housekeeping was adequate. Appropriate security and fire protection measures were in place. Procedures were followed during the operators' routine rounds. The inspector noted that 12 work orders for non-safety related systems or components were listed as backlog items. This is an increase from two since the previous inspection of this area. No findings of significance were identified.

c. Conclusion

An effective maintenance and surveillance program relative to safe storage, maintenance and control of spent fuel, was implemented.

O1.5 Cold Weather Preparations

a. Scope (IP 71714)

The inspector reviewed the licensee's cold weather preparations to maintain the operability of systems and equipment important to safety during the cold weather season. The inspector reviewed the preventive maintenance and operations procedures, checklists, completed surveillances, the schedule of equipment tests and checks, and completed preparations for 2003. The inspector toured the SFP building with the licensee to verify the status of freeze protection equipment, such as heaters, thermostats, and heat tracing. The cold weather preparations were reviewed against the requirements of Technical Specification (TS) Section 6.6.6.

b. Observations and Findings

The Cold Weather Operation Checklist procedure provided guidance to conduct daily, weekly, and monthly inspections of specified equipment during the cold weather months to ensure operability in accordance with TS Section 6.6.6. The procedure required the checklist to be implemented from the first day in November to the first day in April each calendar year. The inspector noted that the licensee initiated implementation of the checklist in mid-October 2003. Required preventive maintenance inspections were completed for heat trace equipment and associated control circuits, and blankets and insulation. During the tour, the inspector observed the licensee conduct portions of the checklist. The inspector verified that thermostats and breakers were set, heating units were in place, vents were closed, and heat trace was energized as required by the checklist. No findings of significance were identified.

c. Conclusion

The licensee established an adequate cold weather operations program to maintain the operability of systems and equipment important to safety and effectively implemented the program to protect safety-related systems against extreme cold weather.

O2 Status of Facilities and Equipment

O2.1 Decommissioning Performance and Status Review

a. Scope (IP 71801)

The inspector reviewed activities associated with the removal of the RPV from containment, and the girth weld on the RPV shipping canister. The inspection consisted of discussions with cognizant licensee personnel, routine weekly telephone conference calls, observations from tours of the facility, and performance of independent radiological surveys of the transport package.

b. Observations and Findings

On October 30, 2003, the RPV was removed from containment and placed in temporary storage in the south west corner of the radiological controlled area (RCA). The inspector observed the licensee lift the RPV package, lay it on its side, and move it outside containment. The inspector noted that the RPV shipping canister was in good condition. The inspector reviewed documents and verified that the lift and removal of the RPV was completed in accordance with approved procedures and established safety protocols. Records indicated that lifting tolerances of the modified containment building polar crane and yard crane were not exceeded during transfer of the RPV to the transport vehicle. The inspector reviewed personnel exposure records of workers who completed the transfer evolution. No regulatory exposure limits were exceeded. The inspector reviewed an area radiological survey of the south west RPV storage area after placement of the package. Required postings were correctly positioned and no unrestricted area dose rate limits were exceeded. The inspector conducted independent radiation surveys of the RPV package while stored on site during routine tours of the facility.

The inspector also reviewed the procedure and the quality control hold points for the RPV package girth weld. The welding parameters, materials, and quality assurance inspections were controlled by the vendor's procedures. The welding and quality assurance inspections were conducted by qualified individuals. No findings of significance were identified.

c. Conclusion

The licensee safely removed the RPV from containment and temporarily stored the RPV package on site.

II. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Solid Radioactive Waste Management and Transportation of Radioactive Materials

a. Scope (IP 86750)

The inspector reviewed activities associated with packaging the RPV for shipment, placement of the package on the barge, and shipment of the RPV package to the Barnwell, SC, low level radioactive waste disposal facility. The inspector reviewed the packaging and transportation activities against NRC requirements 10 CFR Parts 20 and 71 and the U.S. Department of Transportation (DOT) requirement 49 CFR 107.105, "Application for Exemption".

b. Observations and Findings

On December 10, 2003, the inspector observed the transfer of the RPV package from its onsite storage location onto a barge in the discharge canal. The transfer was accomplished safely and required de-energizing site power lines over the travel route. Proper radiological controls were observed as the package exited the RCA boundary. Once positioned on the barge, the inspector performed a radiation survey using a Ludlum #19 MicroR meter (NRC # 033515, calibrated 11/21/03). The inspector compared survey results to the licensee's survey map and identified no discrepancies. The RPV package was properly secured to the barge in accordance with site approved procedures and the DOT approved transportation plan.

The RPV was packaged in a custom container and shipped under DOT exemption #124682. The inspector reviewed the transportation plan and DOT Exemption which detailed the package contents and acceptance criteria for shipment. The inspector noted revisions were made and accepted by DOT when it was determined that the reactor head, nozzles, and insulation would not be included in the RPV package as originally planned. This change altered the center of gravity of the package on the barge and shifted the load requirements.

The inspector verified that the Coast Guard was notified and completed an inspection of the barge prior to its departure. The NRC was informed of the shipment in a timely manner in accordance with NRC Safeguards Advisory SA-03-02, (10 day prior notification for shipments greater than 200 curies). The inspector reviewed the shipping manifest and related paperwork. The RPV package was waste class C, stabilized with concrete grout. Total activity was approximately 2.3E4 curies of Cs-137, Co-60, and Am-241. The inspector verified that the RPV package was properly labeled and that the barge was placarded in accordance with DOT regulations.

On December 18, 2003, the barge with the RPV package left the Haddam Neck site. The approved route included travel by barge down the Connecticut River to the Long Island Sound, south along the Atlantic coastline to the Port of Savannah through open

ocean, and up the Savannah River to the Department of Energy's Savannah River Site in Aiken, SC. The RPV was then transferred 22 miles by a land transporter to Barnwell. A qualified licensee health physics technician accompanied the shipment and daily contact with the coast guard was maintained. The licensee provided NRC with routine progress reports on the transport. On January 7, 2004, the RPV package was received at Barnwell and subsequently placed in an underground trench. No findings of significance were identified.

c. Conclusion

The licensee safely transferred the RPV package to the Barnwell, SC, low level radioactive waste burial facility for disposal.

S1 Conduct of Security and Safeguards

S1.1 Interim Compensatory Measures (ICMs) at Decommissioning Nuclear Power Plants

a. Scope (TI 2561/004)

The inspector reviewed CY's implementation of ICMs for safeguards and security measures at their Haddam Neck facility. Reviewed areas included staffing and armament, protective strategies, and access control procedures and equipment. Information was gathered through a review of procedures and documents, tours of the site, and interviews with cognizant security personnel.

b. Observations and Findings

The inspector reviewed the licensee's responses to the May 23, 2002, Order for ICMs for safeguards and security for Haddam Neck Plant. CY's responses are contained in letters dated June 11, 2002, and December 4, 2002, which both contain Safeguards Information. The inspector examined physical features of the site, including installed equipment for access control, and reviewed plans and procedures for compliance with the ICMs. The inspector discussed security force staffing, training, armament, equipment, and protective strategies with cognizant security staff. Activities for general site access, spent fuel pool access, and onsite and offsite communications were directly observed by the inspector. During an earlier inspection (Report Number 05000213/ 2003001, ADAMS Accession Number ML031840631) the inspector verified that the licensee's defueled Emergency Preparedness program had been adequately revised to address the security interface requirements associated with the ICMs. No findings of significance were identified.

c. Conclusion

Connecticut Yankee effectively implemented their security program for compliance with the May 23, 2002 Order for Interim Compensatory Measures for safeguards and security for Haddam Neck.

V. Management Meetings

X1 Exit Meeting

The inspectors presented the inspection results to representatives of the licensee's staff at the end of each inspection visit during the inspection period. On February 25, 2004, a summary of the inspection findings for the entire inspection period was presented to Mr. Fetherston, and others. Although proprietary items were reviewed during the inspection, no proprietary information is presented in this report. Licensee representatives acknowledged the inspection findings.

X2 Other Meetings

On November 18, 2003, the Chief of the Decommissioning Branch and a regional inspector attended the Community Decommissioning Advisory Committee (CDAC) meeting. The meeting was open for public participation. Approximately 35 members of the public and the CDAC were in attendance. During the meeting, the licensee discussed recent site activities regarding safety performance, radiological exposure performance, status of decommissioning, and status of groundwater monitoring. The NRC provided an overview of recent inspection findings confirmatory measurements, and future planned inspection activities.

PARTIAL LIST OF PERSONS CONTACTED

Licensee and Contractor Staff
S. Berger, Technical Support, Duratek
J. Bourassa, Site Closure Manager
P. Clark, Regulatory Affairs
K. Cominsky, Environmental Engineer
E. Darois, Site Closure
S. Day, Regulatory Affairs
H. Farr, Radiological Engineer
N. Fetherston, Director of Decommissioning
K. Gavin, Project Field Engineer
B. Holgren, Dry Cask Storage Manager
J. McCann, Regulatory Affairs Manager
J. McCarthy, Engineer
R. McGrath, Site Release Manager
R. Mitchell, Unit Manager
W. Norton, President
M. Powers, Engineer
D. Roberson, Health Physics Supervisor
G. Sergent, Nuclear Safety Engineer
J. Tarzia, Nuclear Safety Manager
G. van Noordennen, Regulatory Affairs Manager
A. Yates, Chemistry Supervisor

State of Connecticut
M. Firsick, Connecticut DEP

INSPECTION PROCEDURES AND TEMPORARY INSTRUCTIONS USED

IP 40801:	Self Assessment, Auditing, and Corrective Actions
IP 62801:	Maintenance and Surveillance Program
IP 60854:	Pre-operational Testing of an Independent Spent Fuel Storage Installation
IP 71714:	Cold Weather Preparations
IP 71801:	Decommissioning Performance and Status Review
IP 86750:	Solid Radioactive Waste Management and Transportation of Radioactive Materials
TI 2515/154:	Spent Fuel Material Control and Accounting at Nuclear Power Plants
TI 2561/004:	Interim Compensatory Measures at Decommissioning Nuclear Power Plants

ITEMS OPEN, CLOSED, AND DISCUSSED

Items Opened: None

Items Closed: None

Items Discussed: None

LIST OF ACRONYMS USED

CDAC	Community Decommissioning Advisory Meeting
CoC	Certificate of Compliance
CR	Condition Report
CY	Connecticut Yankee
CYAPCO	Connecticut Yankee Atomic Power Company
DB	Decommissioning Branch
DNMS	Division of Nuclear Materials and Safety
DOT	Department of Transportation
DRS	Division of Reactor Safety
HP	Health Physics
ICM	Interim Compensatory Measures
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
LTP	License Termination Plan
MC&A	Material Control and Accounting
PDR	Public Document Room
QA	Quality Assurance
RCA	Radiologically Controlled Area
RPM	Radiation Protection Manager
RPV	Reactor Pressure Vessel
SAR	Safety Analysis Report
SER	Safety Evaluation Report
SFP	Spent Fuel Pool
SFRA	Spent Fuel Rod Accountability
SNM	Special Nuclear Material
SSC	Structures, Systems, and Components
TI	Temporary Instruction
TS	Technical Specifications
TSC	Transportable Storage Canister
VCC	Vertical Concrete Cask