UNITED STATES
**NUCLEAR REGULATORY COMMISSION**
REGION I

February 8, 2005

Docket No. 50-213 License No. DPR-61
ISFSI Docket No. 07200039
EA-05-014

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

SUBJECT: INSPECTION 05000213/2004002, CONNECTICUT YANKEE ATOMIC POWER COMPANY, EAST HAMPTON, CONNECTICUT SITE AND NOTICE OF VIOLATION

Dear Mr. Norton:

On November 30, 2004, we completed our on-site inspection activities for an integrated inspection at your Haddam Neck reactor facility of activities authorized by the above listed NRC license. In-office inspection of spent fuel transfer concerns continued until December 31, 2004. We discussed our findings with Mr. Gary Bouchard, and others of your staff on December 16, 2004 and on January 27, 2005. The enclosed report presents the results of this inspection.

During this inspection period, we inspected your operations and maintenance, engineering, and plant support programs through selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors. We also evaluated your response and corrective actions for several events including: two fires; yard crane performance problems during fuel cask movements; evaluation of water intrusion in the Vertical Concrete Casks; and the evaluation of vacuum drying time of loaded Transportable Storage Canisters (TSCs). We generally considered the programs to be adequate.

Based on the results of this inspection, the NRC determined that two Severity Level IV violations of NRC requirements occurred. The violations were evaluated in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Action (Enforcement Policy), NUREG-1600.

The first violation involved a failure to meet vacuum drying times for TSCs in accordance with the Certificate of Compliance Technical Specification 3.1.1. We note that this violation was self-identified, of low safety significance, entered into your corrective action program, and effectively corrected, therefore this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.8 of the Enforcement Policy. The details of the NCV are discussed in Section E2.1 of the enclosed inspection report. No response to this NCV is required.

The second violation involved a failure to package Low Specific Activity material in a strong tight package that prevents leakage of the radioactive contents under normal conditions of transport in accordance with the requirements of 49 CFR 173.427(b)(3), and 10 CFR 71.5. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in Section R1.2 of the enclosed inspection report. This violation is being treated as a Severity Level IV violation consistent with Section VI.B of the Enforcement Policy. We note that the State of South Carolina took enforcement for several violations including breach of package integrity, and on December 20, 2004, issued a civil penalty in the amount of $4000 for this infraction. The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, is already adequately addressed on the docket in this inspection report. Therefore, you are not required to respond to this violation unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

If you contest these violations or the significance of these violations, 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.

We appreciate your cooperation with us during this inspection.

Sincerely,

***/RA/***

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

Enclosures:
1. Inspection Report No. 05000213/2004002
2. Notice of Violation

cc w/encls:
M. Thomas, Vice President and Chief Financial Officer
K. Heider, Vice President
B. Kenyon, Chief Executive Officer
G. Bouchard, Director, Nuclear Safety/Regulatory Affairs
R. Benner, Director, Decommissioning
K. Smith, Communications Manager
G. van Noordennen, Regulatory Affairs Manager
G. Garfield, General Counsel
R. Bassilakis, Citizens Awareness Network
J. Brooks, CT Attorney General Office
T. Bondi, Town of Haddam

E. Woollacott, NEAC
H. Curley, CDAC
State of Connecticut SLO

# NOTICE OF VIOLATION

Connecticut Yankee Atomic Power Company
Haddam Neck, CT

Docket No. 05000213
License No. DPR-61

During an NRC inspection conducted from June 9 - December 31, 2004, one violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), NUREG-1600, the violation is listed below:

A. 10 CFR 71.5(a)(1)(i), "Transportation of Licensed Material" states, in part, that each licensee who transports licensed material outside the site of usage, as stated in the NRC license, shall comply with the applicable requirements of the DOT regulations in 49 CFR Parts 170 through 189 appropriate to the mode of transport and that the licensee shall particularly note DOT regulations in Packaging - 49 CFR 173: Subpart I.

49 CFR 173.427(b)(3), states, in part, that Low Specific Activity (LSA) materials must be packaged in a strong, tight package that prevents leakage of the radioactive content under normal conditions of transport.

Contrary to the above, on May 26, 2004, it was identified that one exclusive use shipment containing LSA material had leaked its contents onto a flatbed trailer while at the burial site. The integrity of the package was not maintained in that the licensee did not package LSA materials in a strong, tight package that prevents leakage of the radioactive material under normal conditions of transport.

This is a Severity Level IV violation (Supplement V.D.1).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance will be achieved is already adequately addressed on the docket. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region I, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, any response which contests an enforcement action shall be submitted under oath or affirmation.

Your response will be placed in the NRC Public Document Room (PDR) and on the NRC Web site at http://www.nrc.gov/reading-rm.html. To the extent possible, it should, therefore, not include any personal privacy, proprietary, or safeguards information so that it can be made publically available without redaction. However, if you find it necessary to include such information, you should clearly indicate the specific information that you desire not to be placed

in the PDR, and provide the legal basis to support your request for withholding the information from the public.

Dated This 8th day of February 2005

# U.S. NUCLEAR REGULATORY COMMISSION
# REGION I

## INSPECTION REPORT

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|---|---|
| Inspection No. | 05000213/2004002 |
| Docket Nos. | 50-213 & 72-039 |
| License No. | DPR-61 |
| Licensee: | Connecticut Yankee Atomic Power Company (CYAPCO) |
| Location: | P. O. Box 270<br>Hartford, CT 06141-0270 |
| Inspection Dates: | June 9, 2004 through December 31, 2004 |
| Inspectors: | Laurie Kauffman, Health Physicist<br>Decommissioning Branch (DB)<br>Division of Nuclear Materials Safety (DNMS)<br><br>John Wray, Health Physicist<br>DB, DNMS<br><br>Frank Jacobs, Transportation & Storage Safety Inspector<br>Spent Fuel Program Office (SFPO), Nuclear Materials Safety and Safeguards (NMSS)<br><br>Ronald Parkhill, Senior Mechanical Engineer<br>SFPO, NMSS |
| Approved By: | Ronald R. Bellamy, Chief<br>DB, DNMS, Region I |

## EXECUTIVE SUMMARY

Connecticut Yankee Atomic Power Company
NRC Inspection Report No. 05000213/2004002

This integrated inspection included aspects of licensee activities regarding operations and maintenance, self assessment, quality assurance, engineering, radioactive effluent control, and radioactive waste management and transportation programs. The report covers approximately a six-month period of announced inspections by two regional inspectors and two inspectors from the Spent Fuel Project Office in NMSS.

### Operations & Maintenance

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.

The licensee effectively maintained the structures, systems and components associated with safe storage of spent fuel. Licensee procedures for tracking, trending and monitoring spent fuel pool inventory and makeup were adequate, personnel were knowledgeable of their responsibilities and trending data were adequately assessed.

The licensee maintained an adequate program to identify safety concerns, programmatic weaknesses, and areas of declining performance. Regarding the yard crane performance problems, the licensee was able to restore the yard crane and safely transfer a loaded Transportable Storage Canister (TSC) in a Transfer Cask (TFR) to the Independent Spent Fuel Storage Installation (ISFSI).

Abnormal Operating Procedures, Defueled Emergency Plan, Defueled Emergency Plan Implementing Procedures, and Defueled Emergency Action Level Basis Documents were implemented as required. The licensee's assessments regarding classification and notification of the containment fire and roof fire were timely and appropriate. Response to both events was appropriate.

The licensee adequately implemented the requirements of 10 CFR 50.59 for facility changes.

The licensee exceeded the time limits specified in the Certificate of Compliance Technical Specification (TS) 3.1.1, "Canister Maximum Time for Vacuum Drying", for 15 of the first 18 TSCs used for dry cask storage at an on-site ISFSI. The time duration from completion of draining the canister through completion of vacuum dryness testing and the introduction of helium backfill exceeded the times for the specified heat loads and loading categories. This is a Severity Level IV violation. Because the TS non-compliance was licensee-identified, of low safety significance, entered into the corrective action program, and adequate corrective actions were taken to prevent recurrence, NRC considered this issue as a Non-Cited Violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy.

**Plant Support and Radiological Controls**

The Radioactive Effluent Release Program was implemented within the scope of the Radiological Environmental Monitoring Offsite Dose Calculation Manual and Technical Specifications. No new release pathways were created as a result of the relocation of the Waste Water Processing System from the former Waste Disposal Building (WDB) to the RadWaste Reduction Facility. All liquids discharged to the environment, including an unplanned release of rainwater from the east west pipe trench, contained very small fractions of the effluent release limits for radioactive materials.

The solid radioactive waste management and transportation programs were generally implemented adequately. Radioactive waste was properly characterized, classified, stored, packaged and shipped with one exception. The licensee failed to package Low Specific Activity (LSA) material in a strong tight package that prevents leakage of the radioactive content under normal conditions of transport in accordance with DOT and NRC regulations. Because this event was of low safety significance but was not identified by the licensee, it is being considered a Severity Level IV violation consistent with Section VI.B of the Enforcement Policy.

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# REPORT DETAILS

Summary of Facility Activities

The plant was maintained in a permanently shutdown condition during this inspection period. Spent fuel loading from the spent fuel pool (SFP) to the NAC International Multi-Purpose Canister (NAC-MPC) dry cask storage system was performed. The transfer of spent fuel to the onsite Independent Spent Fuel Storage Installation (ISFSI) was in progress. Dismantlement and removal of commodities in the loop areas of containment were in progress. Characterization and Final Status Surveys were ongoing. Removal of the Administration Building slab and footings was completed. Removal and packaging of soil from the radiologically controlled area (RCA) were in progress.

I. Decommissioning Operations

## O1 Conduct of Operations

O1.1 Cold Weather Preparations

a. Scope (Inspection Procedure (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 (PM) and operations procedures, checklists, completed surveillances, the schedule of equipment tests and checks, and completed preparations for 2004. The inspector toured the Spent Fuel Building (SFB) with the licensee to verify the status of freeze protection equipment, such as heaters, thermostats, and heat tracing.

b. Observations and Findings

The Spent Fuel Pool Island Cold Weather Operation Checklist procedure (PMP 9.1-52) 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 ISFSI Systems and Component Cold Weather Procedure (GPP-GGNO-00014-000) addressed the haul road, heavy haul trailer, barrier truck and diesel air compressor. The inspector noted that the licensee initiated implementation of the checklists in mid-October 2004. 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 checklists. 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.

O1.2 Maintenance and Surveillance Program

a. Inspection Scope (IP 60801)

The inspector reviewed the licensee's maintenance and surveillance program including planned and completed maintenance and surveillance activities of structures, systems and components important to the safe storage of spent fuel and proper operation of radiation monitoring and effluent control equipment. The inspector reviewed quarterly and monthly PM activities related to the Spray Loop Pumps, Emergency Generator and a safety related battery for September - October 2004. The annual Spent Fuel Pool Integrity Evaluation report was reviewed. The inspector toured the SFB and observed the material condition of plant areas, equipment and components. The inspector also observed SFP water level, and inventory and leakage monitoring equipment.

b. Observations and Findings

Structures, systems and components were in good material condition including the backup diesel generator building, and areas of the SFP purification loop necessary to support a stand alone spent fuel storage island. Appropriate security and fire protection measures were in place and housekeeping was adequate.

The SFP water level and makeup were monitored in accordance with procedural requirements and no adverse trends were identified. The licensee monitors and tracks the water level in the void space around the SFP liner on a weekly basis. The inspector noted that licensee personnel adequately reviewed associated data, operator logs, and applicable instrument readings. Licensee personnel were knowledgeable of procedural requirements and trending reports were adequate. No findings of significance were identified.

c. Conclusions

The licensee effectively maintained the structures, systems and components associated with safe storage of spent fuel. Licensee procedures for tracking, trending and monitoring SFP inventory and makeup were adequate, personnel were knowledgeable of their responsibilities and trending data were adequately assessed.

## O7 Quality Assurance in Operations

O7.1 Self-Assessment, Auditing, and Corrective Action Program (CAP)

a. Scope (IP 60856 and IP 40801)

The inspector assessed the Quality Assurance (QA) Audit and Surveillance reports to determine the licensee's capability to self-identify and resolve conditions adverse to quality, and to prevent problems. The scope of this inspection area included an evaluation of the: (1) status of two licensee identified findings regarding configuration management and document controls as a result of the 2002 Audit Report 02-A10-01, (2) licensee's follow-up to Quality Surveillance Report (QSR) 03–010-CY/YR, "Corrective Action Follow-up of NAC-International", regarding procedural controls for maintaining license document configuration and the associated

Condition Report (CR), (3) licensee identified finding regarding water in the base of several Vertical Concrete Casks (VCC) (CR-04-0909), and (4) Yard Crane out of service (CR-04-1605, CR-04-1613, CR-04-1614).

b. Observations and Findings

During a previous inspection (NRC Inspection Report 05000213/2003003), 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 had been completed and was satisfactory.

During a previous inspection (NRC Inspection Report 05000213/2004001), the inspector noted that the licensee identified a concern regarding procedural controls for maintaining transportation (10 CFR 71) license document configuration, generated a CR (CR-03-0103), and documented the results in QSR 03-010-CY/YR. During this inspection period, the inspector noted that the audit results and long range corrective actions including implementation of the NAC identified corrective actions were satisfactory to prevent recurrence.

The inspector noted that the licensee, during an inspection of two VCCs, identified a potential generic condition regarding water intrusion into the base of the VCCs. The licensee conducted an investigation and operability determination to ascertain the extent of condition. The operability investigation confirmed that the water does not pose an operability concern.

On November 28, 2004, the licensee was conducting operations in the SFB to move a Transfer Cask (TFR) containing a Transportable Storage Canister (TSC), filled with spent fuel to the ISFSI. During the first portion of the operation, which was to lift the TFR using the Yard Crane, the crane stopped traveling upward at the 47 foot elevation in the SFB (after traveling approximately 14 feet). The licensee was immediately able to manually lower the cask onto a platform in the SFB and relax the cable tension. Repairs to the crane were made about seven days later after several iterations of troubleshooting, and the licensee subsequently completed the transfer of the TSC to the ISFSI on December 11, 2004. No injuries occurred as a result of this issue. The licensee generated several CRs and formed a team to investigate the problem. The NRC will review the corrective actions and investigation results in the next inspection period.

c. Conclusion

The licensee maintained an adequate program to identify safety concerns, programmatic weaknesses, and areas of declining performance. Regarding the yard crane performance problems during fuel cask movement, the licensee was able to restore the yard crane and safely transfer a loaded TSC in a TFR to the ISFSI.

## O8 Miscellaneous Operations Issues

O8.1 Fire on Roof of Old Administration Building

a. Inspection Scope (IP 71801)

The inspector observed and evaluated the licensee's response to a fire on the roof of the old Administration Building. The licensee's Unconditional Release Survey results and the NRC Confirmatory Survey of the Administration Building at the Connecticut Yankee Haddam Neck Plant Report, dated September 14, 2004, were reviewed. The inspector interviewed cognizant personnel to understand and evaluate the licensee's assessment of the event.

b. Observations and Findings

On September 27, 2004, roof insulation was ignited by a welding torch being used to cut a beam under the roof of the old administration building that was undergoing demolition. The area was evacuated, the fire watch team began to apply water, and the offsite local fire department was called to provide assistance. The licensee generated CR-04-1271 to document the event and initiated corrective actions. The inspector's review of the licensee's Unconditional Release Survey results for the building and the NRC Confirmatory Survey Report, dated August 2004, confirmed that no detectable activity above background was identified. No findings of significance were identified.

O8.2 Unusual Event - Fire in Containment

a. Inspection Scope (IPs 71801 and 84750)

The inspector observed and evaluated the licensee's response to a fire in the lower level of the containment building. The shift manager's log and the analytical results from the effluent monitor and containment air sampler were reviewed. The inspector viewed photographs taken after the event to determine the extent of the fire and interviewed cognizant personnel to understand and evaluate the licensee's assessment of the event.

b. Observations and Findings

On November 16, 2004, at 7:15 a.m., the Operations Shift Manager (OSM) received a report of a possible burning odor in the containment building, and entered the Abnormal Operating Procedure (AOP) for station fires. The Fire Brigade Leader (FBL) conducted an investigation and subsequently found a smoldering fire in the lower loop area. The FBL applied water and the local fire department was called to provide assistance. At 9:25 a.m., the fire was declared to be extinguished. The inspector noted that the licensee collected and analyzed grab samples from the effluent monitor and containment air sampler. The inspector reviewed the results and confirmed that radioactive contamination was confined to the lower level of containment and no radioactive material was released to the environment.

The licensee generated several CRs (CR-04-1555, CR-04-1556, CR-04-1557, CR-04-1558) and entered them into the CAP. A root cause analysis team was chartered to determine the root

cause of the event and corrective actions necessary to prevent recurrence. The inspector will review the results of the root cause analysis after the licensee has completed the investigation and the CRs have been closed. No findings of significance were identified.

c. Conclusions

Abnormal Operating Procedures, Defueled Emergency Plan, Defueled Emergency Plan Implementing Procedures, and Defueled Emergency Action Level Basis Documents were implemented as required. The licensee's assessments regarding classification and notification of the containment fire and roof fire were timely and appropriate. Response to both fire events was appropriate.

## II Engineering

### E1 Conduct of Engineering

E1.1 Safety Reviews, Design Changes, and Modifications

a. Inspection Scope (IP 37801)

The inspector reviewed the licensee's 10 CFR 50.59 summary report for safety evaluations in support of system changes for 2004. Design Change Packages (DCP) for Demolition and Decommissioning and ISFSI work were reviewed for January 2004 - September 2004.

b. Observations and Findings

The inspector reviewed two Safety Evaluations (SY-EV-03-001, Implementation of the NAC-MPC TSC Storage System at CY, and SY-EV-03-004, Final Safety Analysis Report (FSAR) Change for Circulating Water System Abandonment). The safety evaluation summaries adequately supported the conclusions that the margin of safety, as defined in the basis for any technical specification (TS), had not been reduced. The inspector reviewed five DCPs (24265-000-DCP-00077 thru 24265-000-DCP-00081) regarding alternate waste water discharges, water processing, groundwater treatment, fire pump isolation and modification, and abandonment of the fire detection system. The supporting documents were complete and comprehensive and adequately addressed safety issues. No safety concerns were identified.

c. Conclusion

The licensee adequately implemented the requirements of 10 CFR 50.59 for facility changes.

## E2 Engineering Support of Facilities and Equipment

### E2.1 Licensee Event Report (LER) Follow-up

a. Inspection Scope (IPs 60855 and 71153)

The inspector reviewed the circumstances related to an LER (Number 41089), which addressed a potential unanalyzed condition of 18 TSCs loaded with spent nuclear fuel (SNF). The inspector reviewed several documents, including the condition report (CR-04-1286); the fuel handling operating procedures; the Root Cause Analysis Report, dated November 3, 2004; the NAC thermal evaluation of de-watering and vacuum drying the first 18 TSCs; the NAC-MPC Certificate of Compliance No. 1025 for Spent Fuel Storage Casks, (CoC) and Appendix A of the CoC, TS for the NAC-MPC Dry Cask Storage System; and the NAC-MPC FSAR. The above reviews were conducted to determine whether the licensee was in an unanalyzed condition while conducting drying operations for the first 18 TSCs.

b. Observations and Findings

The licensee uses the NAC-MPC system for dry cask storage at an on-site ISFSI. The inspector noted that the licensee's process for preparing a TSC is documented in the NAC-MPC Operating Manual and the licensee's fuel handling procedures, consistent with the technical basis described in Chapter 8 of the NAC FSAR. The fuel handling procedure outlines the drying process after fuel had been safely loaded into a TSC. The process consists of several steps, including drain-down of excessive water, a series of blow-downs using nitrogen to maximize the elimination of water prior to vacuum drying, vacuum drying to ensure all water had been evacuated, backfilling with a helium cover gas, sealing the TSC, and leak testing to ensure canister integrity.

On September 29, 2004, the licensee identified a potential unanalyzed condition that may have existed during loading of the first 18 TSCs. The licensee determined that the procedure accounted for the duration of the nitrogen blow-down process in the drain-down time limit when it should have been accounted for in the vacuum drying time limit. The licensee immediately suspended processing of the TSCs, entered the issue into their corrective action program (CR-04-1286), promptly notified the NRC during the inspection and through the LER process, and initiated a root cause investigation. As a result of the investigation, the licensee discovered discrepancies between the NAC FSAR, the CoC TS, and their fuel handling procedure. Upon further review, the licensee determined that three of the 18 TSCs did not exceed the CoC TS vacuum drying time limits. The licensee requested that the contractor, NAC, perform additional calculations to determine if the 15 remaining TSCs exceeded the drying times as specified in the CoC TS, and if the peak spent fuel clad temperature limits were exceeded based on the actual excessive drying times. NAC determined that the remaining 15 canisters exceeded the CoC TS drying times. The vacuum drying times in the TS were established based on the latent heat characteristics of the SNF and the thermal analyses in Chapter 4 of the NAC FSAR, which does not include nitrogen blow-down. NAC also performed bounding calculations and determined that the licensee did not exceed the peak spent fuel clad temperature limits as a result of the excessive drying times, and therefore maintained fuel clad integrity at all times. The inspector reviewed NAC's bounding calculations and evaluation of the thermal analyses

calculations in Chapter 4 of the NAC FSAR, and determined that the calculations incorporated enough conservatism to prevent an unsafe condition.

Based on the above findings, the inspector determined that the licensee's failure to meet the vacuum drying time limits was a violation of the NAC-MPC, Certificate of Compliance TS LCO 3.1.1. This violation is a Severity Level IV violation. However, because it was licensee-identified, of low safety significance, entered into the corrective action program, and corrective actions taken to prevent recurrence were adequate and timely, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy. **(NCV 50-213/04-02-01)**

c. Conclusions

The licensee exceeded the time limits specified in the CoC TS 3.1.1, "Canister Maximum Time for Vacuum Drying", for 15 of the first 18 TSCs used for dry cask storage at an on-site ISFSI. The time duration from completion of draining the canister through completion of vacuum dryness testing and the introduction of helium backfill exceed the times for the specified heat loads and loading categories. This is a Severity Level IV violation. Because the TS non-compliance was licensee-identified, of low safety significance, entered into the corrective action program, and adequate corrective actions were taken to prevent recurrence, NRC considered this issue as a NCV, consistent with Section VI.A.8 of the NRC Enforcement Policy.

## III Plant Support

## R1 Radiological Protection and Chemistry Controls

R1.1 Radioactive Waste Treatment and Effluent Monitoring

a. Inspection Scope (IP 84750)

The inspector evaluated the effectiveness of the licensee's radioactive liquid and gaseous effluent control programs through a walk-down of facilities and equipment, a review of the Annual Effluent Release Report for 2003, the most recent calibration results for radiation monitors, test results for the in-place testing of Spent Fuel Building Ventilation, selected effluent release permits, projected dose calculations, and associated procedures. The inspector evaluated the relocation of the Waste Water Processing System from the former Waste Disposal Building (WDB) to the RadWaste Reduction Facility (RRF) to verify that no new release points were created as result of relocation. The inspector evaluated a release of rainwater from the east west pipe trench, to determine if the discharge was monitored.

b. Observations and Findings

The Annual Effluent Release Report for 2003 contained the required summaries pertaining to the effluents released from the site. The calibration results for the radiation monitors were within acceptance criteria. The projected dose contribution was performed using the Radiological Environmental Monitoring Offsite Dose Calculation Manual (REMODCM). The in-place testing results for Spent Fuel Building Ventilation were within acceptance criteria. The relocation of the Waste Water Processing System from the WDB to the RRF was implemented according to the RadWaste Quality Assurance Plan. No new release points were created as a result of the relocation.

On November 10, 2004, the licensee emptied a B-25 box filled with rainwater to the yard drain system and subsequently to the environment. After the discharge, the licensee determined that the rainwater had collected in the east west pipe trench. The licensee immediately sampled and analyzed residual water from specific points along the discharge pathway, including yard drain No. 6. Yard drain No. 6 contains an effluent composite sampler required by the REMODCM. The concentration of radioactivity was significantly below the effluent release limits. A CR (CR-04-1523) was initiated and incorporated into the CAP. No findings of significance were identified.

c. Conclusions

The Radioactive Effluent Release Program was implemented within the scope of the REMODCM and TS. No new release pathways were created as a result of the relocation of the Waste Water Processing System from the former WDB to the RadWaste Reduction Facility. All liquids discharged to the environment, including an unplanned release of rainwater from the east west pipe trench, contained very small fractions of the effluent release limits for radioactive materials.

R1.2 Solid Radioactive Waste Management and Transportation of Radioactive Materials

a. Scope (IP 86750)

The implementation of the solid radioactive waste and transportation programs was inspected relative to waste processing, waste characterization, the development and application of scaling factors, and shipping activities. The inspection was conducted through an evaluation of licensee performance related to implementing procedures and records, interviews with cognizant personnel, and direct observation of work activities. Ten shipping records were reviewed for shipments of radioactive waste made since the last inspection. The inspector also conducted a follow-up review regarding apparent violations identified by the South Carolina Department of Health and Environmental Control (SCDHEC). Specifically, the inspector reviewed an exclusive use shipment, CY Shipment No. 2004-234 (Barnwell Shipment No. 0504-12315), containing Low Specific Activity (LSA) material. The inspection was conducted using criteria contained in various NRC and Department of Transportation (DOT) regulations including 10 CFR 20, 10 CFR 61, 10 CFR 71, and 49 CFR 100-179.

b. Observations and Findings

The Process Control Program procedure, effective August 18, 2004, was updated as a result of a Nuclear Safety Audit (CY-04-A07-01), and provided a description of the facility's waste types generated and waste processing methods. Scaling factors were appropriately developed from sample data, per 10 CFR 61 requirements, and properly used in characterizing waste shipped. Selected shipping records and supporting documentation for recent shipments were reviewed. The licensee implemented the new NRC and DOT Regulations by October 1, 2004. No findings of significance were identified.

The licensee had notified the inspector of apparent violations identified by the SCDHEC regarding two sea vans that had been shipped on May 20, 2004 to the Chem-Nuclear Systems Facility located in Barnwell, SC for burial. The sea vans contained LSA material (one loop stop valve per sea van) and were shipped exclusive use per DOT regulations.

The inspector conducted a follow up review and determined that one of the SCDHEC apparent violations, CY Shipment No. 2004-234 (Barnwell Shipment No. 0504-12315), was an apparent violation of NRC regulations. On May 26, 2004, a Chem-Nuclear health physicist and an onsite SCDHEC inspector discovered a buildup of condensation inside the sea van. Condensation had dripped onto the valve, deteriorated the water-soluble fixative, and released loose radioactive contamination onto the floor of the package. The contaminated liquid subsequently leaked through the package and contaminated a four inch x four inch area of the flatbed trailer. A large area swipe resulted in an activity of 16,000 disintegrations per minute (DPM) and additional swipes confirmed contamination activities between 2,000 and 5,000 dpm/100cm$^2$. The contamination activities were below the DOT transportation limits for exclusive use (22,000dpm/100cm$^2$ for beta/gamma activity). Although the contamination activities were below the DOT limits, the licensee did not package the LSA material in a strong tight package that prevents leakage of the radioactive content under normal conditions of transport, contrary to DOT Regulation 49 CFR 173.427(b)(3), which states, in part, that LSA materials must be packaged in a strong, tight package that prevents leakage of the radioactive content under normal conditions of transport, as required by 10 CFR 71.5(a)(1)(i) "Transportation of Licensed Material".

The inspector noted that the licensee had generated a CR (CR-04-0718) and incorporated the issue into their CAP and immediately traveled to the burial facility to conduct an investigation to identify the cause(s) and corrective actions. The licensee developed several corrective actions to be applied to the upcoming shipments containing the remaining loop valves and pipes. The inspector noted that this violation was entered into the corrective action program and timely and effective corrective actions were taken to prevent recurrence. The inspector also noted that the State of South Carolina took enforcement for several violations including breach of package integrity, and on December 20, 2004, issued a civil penalty in the amount of $4000 for this infraction.

Based on the above findings, the inspector determined that the licensee's failure to package LSA materials in a strong, tight package that prevents leakage of the radioactive content under normal conditions of transport was a violation of the requirements of 49 CFR 173.427(b)(3) and 10 CFR 71.5(a)(1)(i). This violation is being treated as a Severity Level IV violation consistent with Section VI.B of the Enforcement Policy. This violation was considered a Severity Level IV Violation because it was not identified by the licensee. **(VIO 50-213/04-02-01)**

c. Conclusion

The solid radioactive waste management and transportation programs were generally implemented adequately. Radioactive waste was properly characterized, classified, stored, packaged and shipped with one exception. The licensee failed to package LSA material in a strong tight package that prevents leakage of the radioactive content under normal conditions of transport in accordance with DOT and NRC regulations. Because this event was of low safety significance but was not identified by the licensee, it is being considered a Severity Level IV violation consistent with Section VI.B of the Enforcement Policy.

## IV. 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 December 16, 2004, a summary of the inspection findings for the entire inspection period was presented to Mr. Gary Bouchard and others of your staff. A subsequent telephone conference, on January 27, 2005, with Mr. Bouchard discussed the disposition of the spent fuel storage and the transportation findings. 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 16, 2004, the Chief, Decommissioning Branch, Region I, and a Region I Health Physicist attended the Community Decommissioning Advisory Committee (CDAC) meeting. The meeting was open for public participation. A total of 30 people attended the meeting, including two local news reporters. The NRC discussed the results of recent inspection activities, plans for future onsite inspections, and the status of licensing actions currently pending before the NRC. The NRC also responded to questions concerning spent fuel accountability, the status of fuel transfer to onsite dry cask storage, and drying of the spent fuel stored in theVCC.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee and Contractor Staff

*R. Benner, Director, Decommissioning
*G. Bouchard, Director, Nuclear Safety and Regulatory Affairs
*J. Bourassa, Site Closure Manager
*P. Clark, Regulatory Affairs
H. Farr, Radiological Engineer
B. Holmgren, Dry Cask Storage Manager
M. Marston, Fuel Transfer Manager
J. McCann, Regulatory Affairs Manager
*J. McCarthy, Engineer
*R. Mitchell, Unit Manager
W. Norton, President
M. Powers, Civil Structural Engineer
D. Roberson, Health Physics Supervisor
*W. Rogers, Training Coordinator
G. Sergent, Nuclear Safety Engineer
*J. Tarzia, Radiation Protection Manager
*G. van Noordennen, Regulatory Affairs Manager
A. Yates, Chemistry Supervisor
R. Yetter, FSS Project Lead

State of Connecticut
M. Firsick, Connecticut DEP

* These individuals participated in the exit briefing held on December 16, 2004

## INSPECTION PROCEDURES AND TEMPORARY INSTRUCTIONS USED

| | |
|---|---|
| IP 37801 | Safety Reviews, Design Changes, and Modifications |
| IP 40801 | Self Assessment, Auditing, and Corrective Actions |
| IP 60855 | Operation of an ISFSI |
| IP 60856 | Review of 10 CFR 72.212(b) Evaluations |
| IP 60857 | Review of 10 CFR 72.48 Evaluations |
| IP 61801 | Maintenance and Surveillance |
| IP 71153 | Event Followup |
| IP 71801 | Decommissioning Performance and Status Review |
| IP 71714 | Cold Weather Preparations |
| IP 84750 | Radioactive Waste Treatment, and Effluent and Environmental Monitoring |
| IP 86750 | Solid Radioactive Waste Management and Transportation of Radioactive Materials |

## ITEMS OPEN, CLOSED, AND DISCUSSED

Opened
None

Opened and Closed

| | | |
|---|---|---|
| 05000213/2004002-01 | NCV | Vacuum drying times not consistent with Certificate of Compliance Technical Specifications 3.1.1 |
| 05000213/2004002-01 | VIO | Failure to package LSA material to prevent leakage in accordance with 49 CFR 173.427 and 10 CFR 71.5 |

Closed
None

Discussed
None

## LIST OF ACRONYMS USED

| | |
|---|---|
| AOP | Abnormal Operating Procedure |
| CAP | Corrective Action Program |
| CDAC | Community Decommissioning Advisory Meeting |
| CoC | Certificate of Compliance |
| CR | Condition Report |
| CY | Connecticut Yankee |
| CYAPCO | Connecticut Yankee Atomic Power Company |
| DB | Decommissioning Branch |
| DCP | Design Change Package |
| DNMS | Division of Nuclear Materials and Safety |
| DOT | Department of Transportation |
| DPM | Disintegrations per Minute |
| FBL | Fire Brigade Leader |
| FSAR | Final Safety Analysis Report |
| IP | Inspection Procedure |
| ISFSI | Independent Spent Fuel Storage Installation |
| LCO | Limiting Condition for Operation |
| LER | Licensee Event Report |
| LSA | Low Specific Activity |
| NAC-MPC | NAC International Multi-Purpose Canister |
| OSM | Operations Shift Manager |
| PDR | Public Document Room |
| PM | Preventive Maintenance |
| QA | Quality Assurance |
| QSR | Quality Surveillance Report |
| RCA | Radiologically Controlled Area |
| REMODCM | Radiological Environmental Monitoring Offsite Dose Calculation Manual |
| RRF | RadWaste Reduction Facility |
| SCDHEC | South Carolina Department of Health & Environmental Control |
| SFB | Spent Fuel Building |
| SFP | Spent Fuel Pool |
| SFPO | Spent Fuel Project Office |
| SNF | Spent Nuclear Fuel |
| TFR | Transfer Cask |
| TS | Technical Specifications |
| TSC | Transportable Storage Canisters |
| VCC | Vertical Concrete Cask |
| WDB | Waste Disposal Building |