December 20, 2001

Mr. Michael A. Balduzzi
Senior Vice President
and Chief Nuclear Officer
Vermont Yankee Nuclear Power Corporation
400 Worcester Road
Framingham, MA 01702

SUBJECT: VERMONT YANKEE NUCLEAR POWER CORPORATION - NRC INSPECTION REPORT 50-271/01-11

Dear Mr. Balduzzi:

On, November 17, 2001, the NRC completed an inspection at your Vermont Yankee facility. The enclosed report documents the inspection findings which were discussed on December 19, 2001, with Mr. Kevin Bronson and other Vermont Yankee managers.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified three issues of very low safety significance (Green) that were determined to involve violations of NRC requirements. However, because of the very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations (NCV), consistent with Section VI.A.1 of the NRC's Enforcement Policy, issued on May 1, 2000, (65FR25368). If you contest these NCVs, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Vermont Yankee.

Since September 11, 2001, Vermont Yankee has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

The NRC continues to interact with the Intelligence Community and to communicate information to Vermont Yankee. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site in the Public Electronic Reading Room, http://www.nrc.gov/reading-rm.html.

Sincerely,

/RA/

Clifford J. Anderson, Chief
Projects Branch 5
Division of Reactor Projects

Docket No. 50-271
License No. DPR-28

Enclosure: Inspection Report 50-271/01-11

Attachment: Supplementary Information

cc w/encl:
R. McCullough, Operating Experience Coordinator - Vermont Yankee
G. Sen, Licensing Manager, Vermont Yankee Nuclear Power Corporation
D. Rapaport, Director, Vermont Public Interest Research Group, Inc.
D. Tefft, Administrator, Bureau of Radiological Health, State of New Hampshire
Chief, Safety Unit, Office of the Attorney General, Commonwealth of Massachusetts
D. Lewis, Esquire
G. Bisbee, Esquire
J. Block, Esquire
T. Rapone, Massachusetts Executive Office of Public Safety
D. Katz, Citizens Awareness Network (CAN)
M. Daley, New England Coalition on Nuclear Pollution, Inc. (NECNP)
R. Shadis, New England Coalition Staff
State of New Hampshire, SLO Designee
State of Vermont, SLO Designee
Commonwealth of Massachusetts, SLO Designee

<u>Distribution</u> w/encl:
Region I Docket Room (with concurrences)
B. McDermott, DRP - NRC Resident Inspector
H. Miller, RA
J. Wiggins, DRA
C. Anderson, DRP
R. Summers, DRP
P. Bonnett, DRP
R. Junod, DRP
T. Bergman, RI EDO Coordinator
E. Adensam, NRR
R. Pulsifer, PM, NRR
D. Starkey, Backup PM, NRR

DOCUMENT NAME: G:\BRANCH5\VY0111.WPD
After declaring this document "An Official Agency Record" it **will/will not** be released to the Public. **To receive a copy of this document, indicate in the box:** "**C**" = Copy without attachment/enclosure "**E**" = Copy with attachment/enclosure "**N**" = No copy

OFFICE	RI/DRP		RI/DRP	
NAME	BMcDermott/RJS for		CAnderson/CA	
DATE	12/20/01		12/20/01	

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-271
Licensee No.	DPR-28
Report No.	50-271/01-11
Licensee:	Vermont Yankee Nuclear Power Corporation
Facility:	Vermont Yankee Nuclear Power Station
Location:	Governor Hunt Road Vernon, Vermont 05354
Dates:	October 1 - November 17, 2001
Inspectors:	Brian J. McDermott, Senior Resident Inspector Edward C. Knutson, Resident Inspector Joseph T. Furia, Senior Health Physicist Paul D. Kaufman, Senior Reactor Inspector George W. Morris, Reactor Engineer Frank J. Arner, III, Reactor Engineer
Approved by:	Clifford J. Anderson, Chief Projects Branch 5 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000271-01-11, on 10/1-11/17/01; Vermont Yankee Nuclear Power Station; Vermont Yankee Nuclear Power Corporation; Maintenance Rule Implementation, Permanent Plant Modifications, Event Follow-up

This inspection was performed by the resident inspectors and region-based inspectors specializing in engineering and radiation safety. The inspection identified three Green findings that were also determined to involve non-cited violations. The significance of the findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

A. Inspector Identified Findings

Initiating Events

- **Green.** The inspector identified a Non-cited violation of 10CFR50, Appendix B, Criterion XI, "Test Control," for failure to follow the approved test procedures and specify a post-modification test to demonstrate that a modification of the emergency core cooling system (ECCS) power supply would not result in an unanticipated ECCS actuation.

  This finding was considered more than minor because the failure to test the entire circuit design and follow approved test procedures for safety-related equipment could contribute to a inadvertent ECCS actuation and a reactor scram. However, this finding was determined to be of very low safety significance (Green) based on a Phase 1 SDP because even though the frequency of an initiating event may have increased, the ECCS and reactor scram actuation equipment remained operable. Because the finding is of very low safety significance and was captured in the licensee's corrective action program, this finding is being treated as a Non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. (Section 1R17)

Barrier Integrity

- **Green.** The inspector identified a Non-cited violation of 10CFR50, Appendix B, Criterion III, "Design Control" for inadequate design control of the instrument tubing (wall thickness) used in the primary containment atmosphere H_2O_2 monitoring system that contributed to a failure of this line on November 4, creating an open pathway in the physical integrity of primary containment.

  The finding was considered more than minor because it had an actual impact on the physical integrity of primary containment. This finding was of very low safety significance based on a Phase 2 SDP because (1) the 0.25 inch diameter instrument tubing could not cause a large early release of radioactive materials under post accident conditions; (2) the failures resulted in control room alarms so control room operators could take timely action to isolate the system; and (3) any releases via this pathway would be into the reactor building's filtered and monitored ventilation system. Because the finding is of very low safety significance and was captured in the licensee's corrective action program, this finding is being treated as a Non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. (Section 1R12)

Mitigating Systems

Green. The inspector identified a Non-cited violation of 10CFR50, Appendix B, Criterion XVI, "Corrective Action" for failure to identify a significant condition adverse to quality, when on September 20, 2001, radiation monitor 17-453B failed to meet the low-trip setpoint acceptance criteria of OP 4326 and no Event Report was initiated as required by AP 0009. Also, on September 30, the degraded condition leading to this failure was the primary cause of an event involving Primary Containment Isolation System (PCIS) Group 3 actuation.

This finding was considered more than minor because it had an actual impact in that it caused a PCIS Group 3 actuation. Although this problem resulted in a safety system actuation, the finding was of very low safety significance based on a Phase 1 SDP because the mitigation function of the Group 3 isolation valves and the standby gas treatment system remained operable. Because the finding is of very low safety significance and was captured in the licensee's corrective action program, this finding is being treated as a Non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. (Section 4OA3)

B. Licensee Identified Findings

None.

Report Details

Summary of Plant Status: Vermont Yankee (VY) operated at 100 percent power throughout the inspection period with one exception. On November 15, operators reduced reactor power to 90 percent for a planned control rod pattern adjustment.

1. REACTOR SAFETY

Initiating Events, Mitigating Systems, Barrier Integrity [REACTOR - R]

1R02 Evaluations of Changes, Tests, or Experiments

a. Inspection Scope

The inspectors reviewed safety evaluations associated with mitigating systems and barrier integrity cornerstones to verify that changes to the facility or procedures as described in the Final Safety Analysis Report (FSAR) were reviewed and documented in accordance with 10CFR50.59. Safety evaluations were selected based upon the safety significance of the changes and the risk to structures, systems and components.

The inspectors also reviewed applicability reviews (10CFR50.59 safety screens) for changes, tests and experiments for which the licensee determined that a safety evaluation was not required. This review was performed to verify that the licensees' threshold for performing safety evaluations was consistent with 10CFR50.59.

Finally, the inspectors reviewed a sample of event reports documenting problems identified by the licensee in their corrective action program related to safety evaluations to verify the effectiveness of corrective actions.

A listing of the 10CFR50.59 safety evaluations, safety screens, and event reports reviewed is provided in Attachment 2.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed partial system walkdowns (visual inspections) to verify system alignments and to identify any discrepancies that would impact system operability. Observed plant conditions were compared with the standby alignment of equipment specified in VY's system operating procedures. In addition, the inspectors referenced the general guidance in NRC Inspection Procedure 71111, Attachment 4, "Equipment Alignment."

The inspectors observed valve positions, the availability of electrical power, and the general condition of selected components in the following systems:

- The residual heat removal (RHR) system and its support equipment, prior to preventive maintenance on the core spray system. The operability requirements for this system are listed in technical specification (TS) 3.5 and the system's standby alignment is prescribed by VY operating procedure OP 2124.

- The high pressure coolant injection (HPCI) system, during planned maintenance on the reactor core isolation cooling (RCIC) system. The operability requirements for this system are listed in TS 3.5 and the system's standby alignment is prescribed by VY operating procedure OP 2120.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors toured plant areas important to safety in order to assess VY's control of transient combustibles and ignition sources, and the material condition and operational status of fire protection systems, equipment, and barriers. The inspectors identified fire areas important to plant risk based on the Fire Protection Program and the Individual Plant Examination of External Events (IPEEE). Additional plant areas were selected based on their increased significance due to ongoing plant maintenance. The inspection elements identified in NRC Inspection Procedure 71111, Attachment 5, "Fire Protection," were used in evaluating the following plant areas:

- Fire zone RB-3, due to increased risk significance during RCIC system maintenance requiring entry into a limiting condition for operation (LCO).

- Cable vault, due to increased risk significance during the RCIC system LCO maintenance.

- West switchgear room, due to increased risk significance during A emergency diesel generator LCO maintenance.

- Reactor building 252' elevation, due to safety significance.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 Repeat Failure of the B Containment Atmosphere Hydrogen/Oxygen Monitor Instrument Tubing

a. Inspection Scope

On October 25 a mechanical failure of the containment atmosphere H_2O_2 monitoring system's sample pump caused a break of the attached 0.25 inch diameter instrument tubing. Control room operators were alerted to this problem by a system trouble annunciator and isolated the broken tubing within 25 minutes. This event was reported to the NRC in accordance with 10CFR50.72(b)(3) after an engineering review determined that leakage from the broken tubing would exceed the allowable containment leakage limits under accident conditions. This event was captured in VY's corrective action process as ER 2001-2226.

On November 4 a second failure of this instrument line occurred in the same location. Control room operators were again alerted to the problem by a system trouble annunciator and they isolated the broken tubing after approximately 35 minutes. During this second event no problem with the sample pump was observed. VY made a second 10CFR50.73 notification for this event. This event was captured in VY's corrective action process as ER 2001-2314.

Both events were characterized by VY as maintenance rule functional failures. As a result of the repeat failure, VY will be required to initiate a performance evaluation for the system. The inspectors confirmed that VY was appropriately implementing the requirements of their Maintenance Rule Program and examined VY's corrective actions. The inspectors verified the operator actions to isolate the degraded equipment and subsequently reviewed these events with cognizant VY personnel.

b. Findings

Green. The inspector identified a non-cited violation of 10CFR50, Appendix B, Criterion III, "Design Control" for inadequate design control of the instrument tubing (wall thickness) used in the primary containment atmosphere H_2O_2 monitoring system. On November 4 an instrument line in this system cracked, creating an open pathway in the physical integrity of primary containment. VY's installation of the incorrect type of 0.25 inch diameter instrument tubing on November 1 contributed to this failure. Operators were alerted to the failure by a control room annunciator and were able to quickly isolate the cracked line.

The October 25 failure of instrument tubing in the H_2O_2 monitoring system was induced by a significant mechanical failure of the system's sample pump. A circumferential break occurred at a compression fitting where stress caused by the tubing configuration and fitting installation were exacerbated by the high vibration of the failing pump.

The November 4 tubing failure occurred at the same location, but in this case a crack in the tubing developed as the result of stress from the tubing configuration, fitting installation, and the normal level of vibration caused by the sample pump. VY had experienced tubing failures in the system during the 1980s. One corrective action at that time was to install thick wall tubing (0.049 inches) in portions of the system susceptible to failures. The details of this action were not captured as part of the system's design. During repairs for the October 25 failure, thin wall tubing (0.035 inches) was used where thick wall tubing had previously existed.

The failure to provide adequate design control for the H_2O_2 monitoring system was considered more than minor since it contributed to a failure that impacted the physical integrity of primary containment. However, the inspectors in consultation with a Region I Senior Reactor Analyst determined this issue was Green (of very low safety significance) based on an SDP Appendix H Phase 2 evaluation. The following information was considered: (1) the 0.25 inch diameter instrument tubing could not cause a large early release of radioactive materials under post accident conditions; (2) the failures resulted in control room alarms and operators could take timely actions to isolate the system from the control room; and (3) any releases via this pathway would be into the reactor building's filtered and monitored ventilation system.

10CFR50, Appendix B, Criterion III, "Design Control," requires that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, design changes to the H_2O_2 monitoring system requiring the use of thick-wall (0.049 inches) instrument tubing were not adequately documented. As a result, repairs to the system on November 1, 2001, replaced thick-wall tubing with thin-wall tubing (0.035 inches) that failed in service on November 4, 2001. This violation is being treated as a non-cited violation, consistent with Section VI.A.1 of the Enforcement Policy, issued May 1, 2000 (65FR25368). This issue was entered in VY's corrective action program as ER 2001-2314.
(NCV 50-271/01-11-01)

.2 Routine Observations

a. Inspection Scope

The inspectors reviewed VY's implementation of the Maintenance Rule for structures, systems and components that exhibited performance problems. The inspectors also reviewed a sample of risk significant systems to verify proper identification and resolution of maintenance rule-related issues. NRC Inspection Procedure 71111, Attachment 12, "Maintenance Rule Implementation," and VY Program Procedure PP 7009, "10 CFR 50.65, Maintenance Rule Program," were used as references during this inspection. VY's performance monitoring for the following systems and/or assessments of component failures were reviewed during this inspection period:

- Failure (unanticipated lockup) of the B feedwater regulating valve caused by maintenance on control room panel 9-18 for installation of design change VYDC 2000-06, "Hydrogen Water Chemistry."

- Failure of radiation monitor power supply ES 451B that caused a Group 3 isolation on September 30. On October 1 the power supply was replaced and a retrospective look at the September 30 event determined that the downscale trip was inoperable. This issue is discussed further in section 4OA3 of this report.

- Failure of the RCIC flow control to generate the correct output signal following system maintenance on October 20.
- 345 KV electrical system based on continuing issues with sulfur hexafluoride quench gas leakage from switchyard breakers.
- Fuel pool cooling systems (normal, standby, and alternate cooling system) based on risk significance.
- Condensate storage and transfer system, based on risk significance.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed two planned maintenance activities based on the guidance in NRC Inspection Procedure 71111, Attachment 13, “Maintenance Risk Assessment and Emergent Work Control.” VY procedures AP 0125, "Equipment Release" and AP 0172, "Work Schedule Risk Management - Online," were used as criteria to assess VY's activities.

- Reactor core isolation cooling system (RCIC) planned maintenance during the week of October 14. This limiting condition for operation (LCO) maintenance period included repair of seat leakage from the turbine steam admission valve, V13-131.
- Emergency diesel generator (EDG) A planned maintenance during the week of October 21. This LCO maintenance period included the vendor's recommended five-year overhaul and inspection activities.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed a sample of operability determinations prepared by VY using the guidance in NRC Generic Letter 91-18 for evaluation of degraded or non-conforming conditions. The following plant issues were reviewed:

- RCIC system operability following identification of a turbine control system capacitor that had exceeded its in-service lifetime. This operability determination was documented as part of ER 2001-2084.

- An incorrect normal operating range for reactor pressure used in a setpoint uncertainty analysis. This operability determination was documented as part of ER 2001-2151.

- RHR service water flow instrument uncertainty due to fouling. This operability determination was documented as part of ER 2001-2230.

- Two rags discovered in the A EDG lube oil sump during a five-year overhaul and inspection of the engine. VY determined that the rags had been in the sump for an extended period of time but concluded that they would not have impacted operability of the engine due to the size of the lube oil pump's suction strainer and the location of one rag. This operability determination was documented as part of ER 2001-2212.

- The as-found setting of the A EDG speed sensing switch did not meet the acceptance criteria of surveillance OP 4126. This switch is used to activate interlocks and equipment during startup of the EDG. An evaluation of the potential impact on past operability was documented as part of ER 2001-2246.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of operator workarounds identified in VY's Workaround List dated August 22, 2001. The inspectors also reviewed active switching and tagging orders and caution tags, and toured various areas of the plant, to determine if any significant items were not on the list.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors selected and reviewed a sample of permanent plant modifications at VY. The modifications were selected from the population of design changes completed since 1998 based on risk insights from the VY probabilistic risk assessment and the potential for impacting reactor safety cornerstones. The modifications involved safety-related piping and components, safety-related electrical power systems, and changes to plant operating procedures.

Review of selected portions of the modification packages included the safety evaluation screening forms, 10CFR50.59 safety evaluations, design calculations, set point changes, and results of post-modification testing. Where appropriate, the inspectors discussed the scope and extent of the modifications, technical aspects of the changes, and implementation of the changes with the responsible engineering personnel.

In addition, the inspectors reviewed a sample of ERs documenting problems identified by the licensee related to plant modifications in order to verify the effectiveness of VY's corrective actions. A list of the modifications and ERs reviewed by the inspectors is provided in Attachment 2.

b. Findings

Replacement of 24V ECCS Battery Power with an Electronic DC-DC Converter (VYDC 2000-030)

Green. The inspector identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XI, Test Control, for failure to follow the approved test procedures and specify a post-modification test that demonstrated that the design modification of the ECCS power supply would not result in an unanticipated ECCS actuation. This finding was determined to be of very low safety significance (Green) based on a Phase 1 SDP because even though the frequency of an initiating event may have increased mitigation equipment was available.

The inspectors determined that the post-modification test failed to test the entire circuit design and therefore failed to determine that the installed converter was different than the manufacturer’s specification sheet. The test failed to determine the trip voltage of the converter output monitoring relay which could also trip the converter. The test procedure failed to specify the allowable limits on the converter output voltage with reference to the ECCS analog trip unit input voltage requirements.

The licensee reviewed the test documentation in detail and repeated portions of the test on November 1, 2001 and found other problems with the test and the test procedure.

The licensee entered these discrepancies into their corrective action program as ER 20012284, ER 20012306 and ER 20012307 and specified that a required operability determination be performed within 30 days by BMO 2001-07.

10 CFR 50, Appendix B, Criterion XI, Test Control, requires in part that testing demonstrate that structures, systems and components perform satisfactorily in service and that test procedures incorporate the requirements and acceptance limits contained in applicable design documents, ... tests are performed under suitable environmental conditions and... tests results are evaluated to assure that the test requirements have been met.

Contrary to the above, the licensee failed to: (1) establish acceptance criteria that identified the operational or performance requirement of the converter to maintain a stable voltage to the ECCS Trip Logic when isolating a fault on the non-safety related side of the isolation fuse, and specify a post-modification test that demonstrated that the design would not result in an unanticipated ECCS actuation; (2) establish required environmental conditions for qualification tests of the converter, such as the switchgear room maximum temperature, and to specify and document the ambient temperature during the thermal shutdown test; (3) follow the approved test plan when testing the thermal shutdown feature, thereby failing to identify that the installed or spare converters failed to conform to the technical data contained in purchase order VY010773 regarding the output current limit included on the converter specification sheet; and (4) establish maintenance and surveillance requirements to verify operation of the converter output.

This finding was considered more than minor because the failure to test the entire circuit design and follow approved test procedures could contribute to inadvertent ECCS actuation and a reactor scram. However, while the associated condition may have resulted in an increase in the frequency of an initiating event, mitigation equipment remained available, therefore the finding was determined to be of very low safety significance. This issue was entered into the licensee's corrective action program and is being treated as a non-cited violation of 10 CFR 50, Appendix B, Criterion XI, Test Control, for inadequate test acceptance criteria, consistent with Section VI.A 1 of the NRC Enforcement Policy **(NCV 50-271/01-11-02)**

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed documentation and/or observed portions of the post-maintenance testing associated with online maintenance. The review was performed using the guidance provided in NRC Inspection Procedure 71111, Attachment 19, "Post-Maintenance Testing." VY operating procedures, work documents and TS requirements were used as criteria, when applicable, for this inspection.

Post-maintenance testing associated with the following activities was evaluated:

- Replacement of journal and thrust bearings for the A EDG in accordance with WO 01-002294-009.
- Maintenance of the A EDG low speed sensing switch, per OP 4126.
- Restoration from A EDG air start solenoid valve independent operability testing per OP 4126.
- Repair of the automatic transfer switch for the alternate power supply diesel generator, DG-3.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors reviewed procedures and observed portions of testing related to the following surveillance tests using the guidance provided in NRC Inspection Procedure 71111, Attachment 22, "Surveillance Testing":

- A EDG overspeed trip test per OP 4126 prior to start of the LCO maintenance period.
- Standby liquid control system quarterly pump capacity test per OP 4114.
- RHR and RHR service water quarterly pump surveillance per OP 4124.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications

a. Inspection Scope

The inspectors reviewed Temporary Modification 2001-026, "Installation of Test Equipment for Determining B Stator Cooling Pump Autostart Issue." This temporary modification added instrumentation to monitor system parameters that would likely have caused several unexpected starts of the standby stator cooling pump. The stator water cooling system is risk significant as a transient initiator because loss of stator water cooling results in an automatic turbine trip in one minute.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Public Radiation Safety [PS]

2PS2 Radioactive Material Processing and Shipping

a. Inspection Scope

The inspector reviewed the licensee's facilities, processes and programs for the collection, processing, treatment, shipping, storage and disposal of radioactive materials and radwaste. The inspector conducted reviews of the following: in-plant liquid and solid waste systems; waste processing and sampling program; shipment activities and records; assurance of quality, including corrective action reports; and training.

The inspector conducted system reviews, which included system descriptions, control panel review, facilities tours, and a review of system changes in accordance with 10CFR50.59. Systems/subsystems reviewed included: high purity waste; low purity waste; chemical waste; detergent waste; and, solid waste. The inspector also toured current and abandoned in-place radwaste equipment and facilities, and interim storage locations used for processed radwaste. Areas toured included the following cubicles: condensate phase separator tanks (TK-23-1A & -1B) room; spent resin tank (TK-30-1A) room; waste sludge tank (TK-18-1A) room; floor drain collector, waste collector, and chemical waste collector tanks (TK-15-1A, TK-9-1A, & TK-19-1A) room; resin centrifuge and hopper rooms; and, cask handling room.

The inspector reviewed the licensee's Process Control Program (PCP), including: PCP procedure (PP 7504, Rev 3, "Process Control Program," dated 9/19/01); process documentation; scaling factor derivation, sampling type, sampling frequency, and effect of changing plant conditions (OP 2527, Rev 7, "Sampling and Analysis for Radwaste Classification," dated 10/23/00); and, determination of waste characteristics and waste classification.

The inspector selected five solid radwaste shipping records for detailed review against the requirements contained in 10 CFR Parts 20, 61 and 71, and 49 CFR Parts 100-177. The shipments selected included spent resin, laundry, and dry active waste, and were nos. 2001-26, 2001-30, 2001-37, 2001-42, and 2001-47.

The inspector reviewed the licensee's program for assurance of quality in the radwaste processing and radioactive materials transportation program by reviewing: quality assurance audits and surveillances (Audit VY-2000-09, "Radwaste/Process Control Program"; Assessment Report 2001-014, "Radwaste Packaging and Transportation"; Assessment Report 2001-033, "Radwaste Processing"; Surveillance Report 2001-038, "Performance of Sampling for 10CFR61"; and, Surveillance Report 2000-084, "Spent Fuel Pool Volume Reduction"); departmental self-assessments (Radwaste and

Transportation Training Requirements; Radwaste Activities, December 1999; North Warehouse; Phase Separator Sampling; Fuel Pool Cask Optimization; Casks for Disposal; Laundry; and, High Integrity Container Density Study); and, event reports involving the radwaste and transportation program in 2001.

The inspector reviewed the licensee's program of training for personnel involved in the radwaste and radioactive materials transportation program with regard to the requirements contained in NRC IE Bulletin 79-19 and 49 CFR, Subpart H. Records reviewed included training requirements, course outlines/training modules (RPX-21-301, Rev 0, "Packaging, Shipping and Receipt of Radioactive Material"), test questions, examinations and examination scores. Reviewed records were for licensee personnel in materials handling, radiation protection and radwaste.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

.01 Occupational Radiation Safety

a. Inspection Scope

The inspector reviewed a listing of licensee event reports for the period April 1, 2001 through November 6, 2001 for issues related to the occupational radiation safety performance indicator. The information contained in these records was compared against the criteria contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 1, to verify that all conditions that met the NEI criteria were recognized, identified, and reported for the Performance Indicator.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 Primary Containment Isolation System (PCIS) Group 3 Actuation

a. Inspection Scope

The inspectors reviewed the circumstances involving an invalid actuation of Refuel Floor High Radiation Monitor, RM-17-453B, that caused a PCIS Group 3 actuation on September 30. The radiation monitor's 70 mr/hr setpoint was reduced to 35 mr/hr by degradation of its power supply, ES 451B. Electronic noise caused a spike on the radiation monitor that exceeded the reduced setpoint and initiated the Group 3 actuation. All required valves isolated and both trains of the standby gas treatment system (SGTS) started, as designed, in response to the Group 3 actuation.

NRC Inspection Procedure 71153, "Event Followup" was used as guidance during the inspectors' review. VY operating procedure OP 4326, "Reactor Building Ventilation and Refueling Floor Radiation Monitors Functional/Calibration," Revision 20, and administrative procedure AP 0009, "Event Report," Revision 12, were also referenced by the inspectors.

b. Findings

Green. The inspector identified a non-cited violation of 10CFR50, Appendix B, Criterion XVI, "Corrective Action" for failure to identify a significant condition adverse to quality. On September 20, radiation monitor 17-453B failed to meet the low-trip setpoint acceptance criteria of OP 4326 because the output voltage of power supply ES-451B had drifted. Although the condition was corrected under a work order, no Event Report was initiated as required by AP 0009 for failure to meet the acceptance criteria. Also, on September 30, the degraded output of power supply ES-451B was the primary cause of a PCIS Group 3 actuation.

VY's September 20 evaluation of the degraded condition of power supply ES-453B was not adequate to identify that the low-trip (downscale) function was inoperable at the time of discovery, or that the power supply was not functioning properly. This evaluation was not performed as part of the corrective action process, as is required by AP 0009. The problems noted above were recognized during VY's subsequent evaluation of the Group 3 actuation and actions taken to restore the equipment on September 30. The power supply was replaced and all acceptance criteria met on October 1. VY captured the September 30 event and the degraded power supply in ER 2001-2024 and ER 2001-2030.

The performance deficiency associated with this event was the failure to properly identify a significant condition adverse to quality that led to the actuation of safety related systems and made the low-trip design feature inoperative. This finding was greater than minor because it had the actual impact of the Group 3 isolation and because the radiation monitor was restored without a proper evaluation of the inoperative low-trip design feature. However, the inspectors determined that this event was of very low safety significance (Green) using a Phase 1 SDP, since the mitigation function of the isolation features and SGTS system remained operable.

10CFR50, Appendix B, Criterion XVI, "Corrective Action," requires that significant conditions adverse to quality are identified and corrected in a timely manner. VY administrative procedure AP 0009 requires that an ER be initiated when the acceptance criteria of a surveillance procedure can not be met. Contrary to the above, on September 20, VY personnel failed to initiate an ER when the low-trip function of radiation monitor RM-17-453B did not meet the acceptance criteria in surveillance procedure OP 4326. This violation is being treated as a non-cited violation, consistent with Section VI.A.1 of the Enforcement Policy. This issue was entered in VY's corrective action program as ER 2001-2565. **(NCV 50-271/01-11-03)**

4OA6 Exit Meeting

On December 19, 2001, the resident inspectors presented their overall findings to members of VY management led by Kevin Bronson, Plant Manager, who acknowledged the findings presented. Regional inspectors provided VY management a summary of their preliminary findings at the conclusion of their on-site inspections.

The inspectors asked whether any materials examined during the inspection should be considered proprietary. Where proprietary information was identified, it was returned to VY after review.

ATTACHMENT 1

SUPPLEMENTARY INFORMATION

a. List of Items Opened, Closed and Discussed

Opened and Closed

NCV 50-271/01-11-01:	Inadequate Design Control for H2O2 Monitor Instrument Lines (10CFR50, App. B, Crit. III)
NCV 50-271/01-11-02	Inadequate Test Control For 24Vdc ECCS Logic Power Supply (10CFR50, App. B, Crit. XI)
NCV 50-271/01-11-03:	Failure to Initiate Corrective Action Process for Degraded Radiation Monitor Power Supply (10CFR50, App. B, Crit. III)

b. List of Documents Reviewed

i. 10CFR50.59 Safety Evaluations

99-0015	99-0024	00-0004	00-0023	00-0037	01-0001
01-0004	01-0014	01-0016	01-0024	01-0026	

ii. 10CFR50.59 Safety Screens

96-002	98-074	99-056	00-021	01C-015	01C-061
EE1625					

iii. Plant Modifications

Barrier Integrity

99-006	00-042	00-051

Mitigation Systems

00-007	00-028	00-029	00-030	01-0020	1279C

iv. Event Reports

19970408	19990608	19991153	19991329	20001578	20011379
20012215	20012224	20012271	20012284	20012306	20012307

v. Calculations

VYC-2153

vi. Drawings

G-191297	Analog Trip System 24V DC One Line Diagram, Rev. 17
G-191301	480V Auxiliary One Line Diagram, Sht. 2, Rev. 20
G-191372	125V DC One Line Diagram, Sht. 1, Rev. 58
NLI-059041	125V DC-24V DC Converter Wiring Diagram

vii. Procedures

ON 3161	Loss of DC-3, Rev. 3
OP 0150	Operator Round Sheets, Form VYOPF 0150.05, Rev. 35
OP 2145	Normal 125VDC Operation, Rev. 23
OP 4210	Maintenance and Storage of Lead Acid Storage Batteries
OP 4215	Main Station Battery Service Test, Rev. 11, LPC # 1

viii. Vendor Technical Documents

NLI QR-059041-1	125-24 Volt DC Converter Qualification Report
NLI IM-059041-1	125-24 Volt DC Converter Instruction Manual 125-24 Volt DC Converter
RS-1476	Standby Battery Vented Cell Installation and Operating Instructions
TIR-059041-5	12 Amp Fuse Output Load Test

ix. Misc. Documents

DBD	HVAC Systems, Rev. 1

c. List of Acronyms

BMO	Basis for Maintaining Operation
CFR	Code of Federal Regulations
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ER	Event Report
FSAR	Final Safety Analysis Report
HPCI	High Pressure Coolant Injection
IPEEE	Individual Plant Examination External Events
LCO	Limiting Condition for Operation
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PCIS	Primary Containment Isolation System
PCP	Process Control Program
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SDP	Significance Determination Process
SGTS	Standby Gas Treatment System
TS	Technical Specification
VY	Vermont Yankee