

October 30, 2006

Mr. Theodore A. Sullivan  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
320 Governor Hunt Road  
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - NRC INTEGRATED  
INSPECTION REPORT 05000271/2006004

Dear Mr. Sullivan:

On September 30, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vermont Yankee Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on October 3, 2006, with members of your staff.

The 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. This report documents two self-revealing findings of very low safety significance (Green).

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Raymond J. Powell, Chief  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-271

Licensee No.: DPR-28

Report No.: 05000271/2006004

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

Location: 320 Governor Hunt Road  
Vernon, Vermont 05354-9766

Dates: July 1, 2006 through September 30, 2006

Inspectors: David L. Pelton, VY Senior Resident Inspector  
Beth E. Sienel, VY Resident Inspector  
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Approved by: Raymond J. Powell, Chief  
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## SUMMARY OF FINDINGS

IR 05000271/2006004; 07/01/06 - 09/30/06; Vermont Yankee Nuclear Power Station; Event Followup.

This report covered a 13-week period of inspection by resident inspectors and announced inspections by regional operations and emergency planning inspectors. Two Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using the Inspection manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### **Cornerstone: Initiating Events**

Green. A self-revealing finding was identified because Vermont Yankee did not correct a previously identified condition that allowed the continued accumulation of dust on non-safety related 4160 Volt electrical bus 2 grounding resistor banks. This accumulation of dust ultimately contributed to the inadvertent initiation of the east switchgear room CO2 fire suppression system, declaration of an unusual event (UE), and performance of a rapid power reduction.

The finding is greater than minor because it is associated with the Equipment Performance-Maintenance attribute of the Initiating Events Cornerstone and affected the associated cornerstone objective of limiting the likelihood of those events that upset plant stability (i.e., performance of a rapid power reduction). The inspectors conducted a Phase 1 screening of the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance because performing the rapid power reduction did not increase the likelihood of a loss of coolant accident, did not contribute to the likelihood of both a reactor trip and the unavailability of mitigating equipment, and did not increase the likelihood of a fire or flooding event. (Section 4OA3.1)

#### **Cornerstone: Mitigating Systems**

Green. A self-revealing finding of very low safety significance was identified because Entergy did not effectively incorporate existing industry operating experience into the preventive maintenance (PM) strategy for the "A" reactor building closed cooling water (RBCCW) system pump motor as required by Entergy's PM program. As a result, conditions that ultimately resulted in the failure of the "A" RBCCW pump motor went unrecognized.

The finding is greater than minor because it is associated with the Equipment Performance attributes of both the Initiating Events and Mitigating Systems Cornerstones and because it affects the associated Cornerstone objectives of limiting the likelihood of those events that upset plant stability and ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 screening of the finding in accordance with IMC 0609, Appendix A, and determined that a Phase 2 screening was required since the finding affected two or more Cornerstones. The inspectors conducted a Phase 2 screening and determined that the finding was of very low safety significance (Green) since no solved accident sequences resulted in a risk significance less than or equal to nine as indicated on the counting rule worksheet. A contributing cause of this finding was related to the cross-cutting area of Problem Identification and Resolution (PI&R). Entergy did not implement and institutionalize industry operating experience through changes to PM strategies for large pump motors. (Section 4OA3.2)

B. Licensee Identified Findings

None.

## REPORT DETAILS

### Summary of Plant Status

Vermont Yankee (VY) Nuclear Power Station began the inspection period at full power. With the exception of minor power reductions to support rod pattern adjustments and periodic alignment of the circulating water system to the cooling towers, VY remained at full power throughout the inspection period.

#### **1. REACTOR SAFETY**

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

##### 1R04 Equipment Alignment (71111.04)

###### a. Inspection Scope (three samples)

The inspectors performed three partial system walkdowns of risk-significant systems to verify system alignment and to identify any discrepancies that could impact system operability. Observed plant conditions were compared to the applicable standby alignment of equipment specified in Vermont Yankee Operating Procedure (OP) 2126, "Diesel Generators;" OP 2121, "Reactor Core Isolation Cooling;" and OP 2122, "Automatic Blowdown System." The inspectors also observed valve positions, the availability of power supplies, and the general condition of selected components to verify there were no obvious deficiencies. The inspectors verified the alignment of the following systems:

- The "A" emergency diesel generator (EDG) while the "B" EDG was out of service for planned maintenance;
- The stand-by readiness of the "B" EDG following the completion of maintenance activities; and
- The reactor core isolation cooling (RCIC) system and automatic blowdown system while the high pressure coolant injection (HPCI) system was out of service to support troubleshooting of the overspeed portion of the trip oil system.

###### b. Findings

No findings of significance were identified.

##### 1R05 Fire Protection (71111.05Q)

###### a. Inspection Scope (nine samples)

The inspectors identified fire areas important to plant risk based on a review of Entergy's Vermont Yankee Safe Shutdown Capability Analysis, the Fire Hazards Analysis, and the Individual Plant Examination External Events (IPEEE). The inspectors toured plant

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areas important to safety in order to verify the suitability of Entergy's control of transient combustibles and ignition sources, and the material condition and operational status of fire protection systems, equipment, and barriers. The following fire areas (FAs) and fire zones (FZs) were inspected:

- "B" emergency core cooling system (ECCS) corner room (FZ RB2);
- HPCI room (FZ RB2);
- Reactor building, 318 foot elevation (FZ RB7);
- Reactor building, 345 foot elevation (FZ RB7);
- Service water system pump room (FZ 15);
- Circulating water system pump room (FZ 14);
- West cooling tower (FA 16);
- Discharge structure (no FA or FZ designation); and
- Augmented offgas building (no FA or FZ designation).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope (one sample)

The inspectors reviewed Entergy's established flood protection barriers and procedures for coping with internal flooding on the 280 foot elevation of the reactor building. The inspectors reviewed Vermont Yankee Off-Normal procedure (ON) 3158, "Reactor Building High Temperature/Water Level" and Emergency Operating Procedure (EOP) 4, "Secondary Containment and Radioactive Release." The inspectors reviewed internal flooding information in Entergy's IPEEE and the internal flooding design basis document (DBD). Finally, the inspectors performed a walkdown of the 280 foot elevation of the reactor building to ensure equipment and structures needed to mitigate an internal flood event were as described in the IPEEE and the DBD.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Requalification Activities Review by the Resident Staff (71111.11Q)

a. Inspection Scope (one sample)

The inspectors observed a simulator-based licensed operator requalification exam provided to operators. The inspectors evaluated crew performance in the areas of clarity and formality of communications; ability to take timely actions; prioritization,

interpretation, and verification of alarms; procedure use; control board manipulations; oversight and direction from supervisors; and command and control. Crew performance in these areas was compared to Entergy management expectations and guidelines as presented in Vermont Yankee Administrative Procedure (AP) 0151, "Responsibilities and Authorities of Operations Department Personnel;" AP 0153, "Operations Department Communication and Log Maintenance;" and Vermont Yankee Department Procedure (DP) 0166, "Operations Department Standards." The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed Entergy evaluators to verify that they also noted the issues to be discussed with the crew.

b. Findings

No findings of significance were identified.

.2 Biennial Review of the Licensed Operator Qualification Program (71111.11B)

a. Inspection Scope (one sample)

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors;" NRC Inspection Procedure 71111.11, "Licensed Operator Qualification Program;" NRC Inspection Manual Chapter 0609, Appendix I, "Operator Qualification Human Performance Significance Determination Process (SDP);" and 10 CFR 55.46, "Simulator Rule" as acceptance criteria.

The inspectors reviewed plant operating history since the last qualification program inspection. The inspectors also discussed facility operating events with the resident staff. Documents reviewed included NRC inspection reports, licensee event reports (LERs), and condition reports (CRs) that involved human performance issues for licensed operators. A listing of documents reviewed is included in the attachment to this report.

The inspectors reviewed three exam sets (i.e., exams administered during weeks 2, 3, and 6 of the testing cycle) including both the comprehensive reactor operator (RO) and senior reactor operator (SRO) biennial written exams as well as the scenarios and job performance measures (JPMs) administered during this current exam cycle. The quality of these exams was compared to the requirements of NUREG-1021 and 10 CFR 55.59, "Qualification." During the onsite weeks of this inspection, the inspectors observed the administration of operating examinations to operating crews "F" and "C." The operating examinations consisted of two simulator scenarios for each crew and one set of five JPMs administered to each individual.

For the site-specific simulator, the inspectors observed simulator performance during the conduct of the examinations and reviewed discrepancy reports to verify compliance with the requirements of 10 CFR 55.46. The inspectors reviewed simulator maintenance, testing and control procedures. The inspectors discussed simulator

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maintenance, testing, configuration control and operation with members of the simulator maintenance staff. The inspectors reviewed a sample of simulator performance tests including transients, core performance, computer real time, steady state, and scenario-based tests. A sample of completed simulator deficiency item simulator condition reports (SCRs) from the past two-year period was reviewed to ensure they effectively addressed the described issue.

The inspectors reviewed all remediation training records for the past two-year training cycle, a sample of licensed operator reactivation records, and a sample of watch-standing documentation for time on shift to verify currency and conformance with the requirements of 10 CFR 55.

The inspectors interviewed instructors, training/operations management personnel, and four operators (i.e., two ROs and two SROs) for feedback regarding the implementation of the licensed operator requalification program to ensure the requalification program was meeting their needs and responsive to their noted deficiencies/recommended changes.

The inspectors conducted an in-office review of licensee requalification exam results. This inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." The inspectors verified that:

- Crew failure rate on the dynamic simulator was less than 20% (there were no failures);
- Individual failure rate on the dynamic simulator test was less than or equal to 20% (there were no failures);
- Individual failure rate on the walkthrough test (i.e., JPMs) was less than or equal to 20% (there were no failures); and
- More than 75% of the individuals passed all portions of the exam (all individuals passed all portions of the exam).

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope (two samples)

The inspectors performed two issue/problem-oriented inspections of actions taken by Entergy in response to increased unavailability and functional failures of the service air compressors and uninterruptible power supply (UPS) 2A, respectively. The service air compressors provide the air supply to the instrument air systems. UPS 2A provides power to the rod worth minimizer and the safety parameter display system (SPDS). The inspectors reviewed work practices that may have contributed to degraded system performance, Entergy's ability to identify and address common cause failures, the

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applicable maintenance rule scoping document for each system, the current classification of these systems in accordance with 10 CFR 50.65 (a)(1) or (a)(2), the applicable system a(1) performance evaluation, and the appropriateness of the performance criteria and goals established for each system. The inspectors also discussed system performance with the responsible system engineers.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation (71111.13)

a. Inspection Scope (four samples)

The inspectors evaluated online risk management for two planned maintenance activities and two emergent repair activities. The inspectors reviewed maintenance risk evaluations, work schedules, recent corrective actions, and control room logs to verify that other concurrent or emergent maintenance activities did not significantly increase plant risk. The inspectors compared reviewed items and activities to requirements listed in AP 0125, "Plant Equipment" and AP 0172, "Work Schedule Risk Management - Online." The inspectors also walked down areas of the plant containing equipment that was determined to have higher risk significance during the following work activities:

- Planned maintenance on the "B" EDG;
- Planned maintenance on the HPCI system;
- Emergent maintenance on the "B" EDG to address the discovery of degraded fuel injector bushings; and
- Emergent maintenance and troubleshooting of the HPCI system due to the discovery of issues with the overspeed trip portion of the trip oil system (i.e., system pressure set low and trip plunger reset spring tension set low).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (five samples)

The inspectors reviewed five operability determinations prepared by Entergy. The inspectors evaluated the operability determinations against the guidance contained in NRC Inspection Manual Part 9900, Technical Guidance, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," as well as Entergy procedure ENN-OP-104, "Operability Determinations."

The inspectors verified the adequacy of the following evaluations of degraded or non-conforming conditions:

- “A” service water (SW) pump motor high winding temperatures;
- “A” EDG after-water cooling pump seal oil leak;
- “B” residual heat removal (RHR) train keep-fill line low pressure;
- “B” EDG operability with degraded fuel injector bushings; and
- Operability of the HPCI system following the discovery of issues with the overspeed trip portion of the trip oil system (i.e., system pressure set low and trip plunger reset spring tension set low).

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope (six samples)

The inspectors reviewed six post-maintenance testing (PMT) activities on risk-significant systems. The inspectors either directly observed the testing or reviewed completed PMT documentation to verify that the test data met the required acceptance criteria contained in the technical specifications (TS), updated final safety analysis report (UFSAR), and inservice testing program. Where testing was directly observed, the inspectors verified that installed test equipment was appropriate and controlled and the test was performed in accordance with applicable station procedures. The inspectors also verified that the test activities were adequate to ensure system operability and functional capability following maintenance, systems were properly restored following testing, and any discrepancies were appropriately documented in the corrective action program. The inspectors reviewed the following PMT activities:

- Testing of the John Deere diesel generator following battery replacement, in accordance with work order (WO) 06-4662;
- Testing of the “B” EDG following the completion of planned maintenance, in accordance with OP 4126, “Diesel Generators Surveillance,” Section B;
- Testing of the drywell-to-torus differential pressure transmitter following replacement, in accordance with WO 05-1136;
- Testing of the “B” EDG following replacement of degraded fuel injector bushings, in accordance with OP 4126, Section B;
- Testing of the HPCI system following restoration of the overspeed trip portion of the trip oil system, in accordance with OP 4120, “High Pressure Coolant Injection System Surveillance,” Sections A and D; and
- Testing of the alternate shutdown battery (AS-2) and charger following cell connector maintenance, in accordance with WO 06-4695.

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b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)a. Inspection Scope (six samples)

The inspectors observed surveillance testing to verify that the test acceptance criteria specified for each test was consistent with TS and UFSAR requirements, the test was performed in accordance with the written procedure, the test data was complete and met procedural requirements, and the system was properly returned to service following testing. The inspectors observed selected pre-job briefs for the test activities. The inspectors also verified that discrepancies were appropriately documented in the corrective action program. The inspectors verified that the following surveillance testing activities met the above requirements:

- “A” EDG monthly surveillance test (routine test) in accordance with OP 4126, Section B;
- RCIC steam line high flow instrument calibration (routine test) in accordance with OP 4364, “RCIC Steam Line High Flow Functional/Calibration;”
- RCIC system quarterly surveillance testing (routine test) in accordance with OP 4121, Sections C and D;
- HPCI system quarterly surveillance testing (in-service test) in accordance with OP 4120, Section A;
- Residual heat removal service water (RHRSW) system “A” and “C” train quarterly surveillance testing (in-service test) in accordance with OP 2124, “Residual Heat Removal and RHR Service Water System Surveillance;” and
- Standby liquid control quarterly pump capacity testing (in-service test) in accordance with OP 4114, “Standby Liquid Control System Surveillance.”

b. Findings

No findings of significance were identified.

**Emergency Preparedness (EP)**1EP2 Alert and Notification System (ANS) Testing (71114.02)a. Inspection Scope (one sample)

An onsite inspection was conducted to assess the maintenance and testing of Entergy’s ANS which uses sirens and tone alert radios. The inspectors reviewed the updated ANS design report to ensure compliance with those commitments for system maintenance and testing. Acceptance testing records for the new siren system were reviewed. During this inspection, the inspectors interviewed a system vendor technician

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and emergency preparedness (EP) staff responsible for implementation of the ANS testing and maintenance. CRs pertaining to the ANS were reviewed for problems, trends, and corrective actions. The inspectors also reviewed the licensee's response to the August 8, 2006, loss of the emergency alert system transmitter. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 02, 10 CFR 50.47(b)(5), and the related requirements of 10 CFR 50 Appendix E.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation Testing (71114.03)

a. Inspection Scope (one sample)

An on-site inspection was conducted of the VY ERO augmentation staffing requirements and the process for notifying the ERO. The inspectors assessed the state of readiness of key staff for timely facility activation by reviewing records from quarterly communications (i.e., call-in drills) during 2005 and 2006 and by verifying that weekly pager tests were completed. Results from an off-hours response drill were also reviewed to verify timely staffing of the emergency facilities. The inspectors reviewed procedures and CRs associated with the ERO notification system and drills. The inspectors interviewed personnel responsible for testing the ERO augmentation process. The inspectors compared qualification requirements to the training records for a sample of ERO members. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03; 10 CFR 50.47(b)(2); and related requirements of 10 CFR 50, Appendix E.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope (one sample)

During the inspection period, the NRC received and acknowledged recent changes made to the emergency plan and implementing procedures. These changes were made in accordance with 10 CFR 50.54(q), which the licensee had determined did not result in a decrease in effectiveness to the plan and concluded that the changes continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. While on-site, the inspectors conducted a sampling review of the changes that could potentially result in a decrease in effectiveness of the licensee's EP program. This review did not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspectors reviewed a sample of 10 CFR 50.54(q) related reviews for recent changes that were made. The inspection

was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4 and 10 CFR 50.54(q).

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope (one sample)

The inspectors reviewed EP self-assessments and audit reports from 2005 and 2006 to assess the licensee's ability to evaluate their performance and programs. The inspectors reviewed CRs initiated by the licensee from drills, self-assessments, and audits. The inspectors assessed the significance of the issues, determined if repeat problems were occurring, and evaluated the effectiveness of corrective actions. The inspectors reviewed documentation for the licensee's response to the May 24, 2006, unusual event declaration. A list of the CRs reviewed during this inspection is attached to this report. This inspection was conducted according to NRC Inspection Procedure 71114, Attachment 05, 10 CFR 50.47(b)(14) and the related requirements of 10 CFR 50, Appendix E.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

.1 Resident Inspector Observation of an Emergency Preparedness Drill

a. Inspection Scope (one sample)

The inspectors observed an August 2, 2006, EP practice drill and the subsequent player and lead controller critiques. Entergy preselected the drill notifications and protective action recommendations to be included in the EP drill performance indicator (PI). The inspectors reviewed the industry guidance provided in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," and discussed the performance expectations and results with Entergy's EP staff to confirm correct implementation of the PI program. The inspectors focused on the ability of licensed operators to perform event classifications and make proper notifications in accordance with the following station procedures and industry guidance:

- AP 0153, "Operations Department Communications and Log Maintenance;"
- AP 0156, "Notification of Significant Events;"
- AP 3125, "Emergency Plan Classification and Action Level Scheme;"
- DP 0093, "Emergency Planning Data Management;"
- OP 3540, "Control Room Actions During an Emergency;" and

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- Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2.

b. Findings

No findings of significance were identified.

.2 Resident Inspector Observation of a Simulator-Based Emergency Preparedness Training Evolution

a. Inspection Scope (one sample)

On August 10, 2006, the inspectors observed an operating crew respond to a simulator-based event during licensed operator requalification training activities. The inspectors discussed the performance expectations and results with the lead instructor. The inspectors focused on the ability of licensed operators to perform event classifications and make proper notifications in accordance with the following station procedures and industry guidance:

- AP 0153, "Operations Department Communications and Log Maintenance;"
- AP 0156, "Notification of Significant Events;"
- AP 3125, "Emergency Plan Classification and Action Level Scheme;"
- DP 0093, "Emergency Planning Data Management;"
- OP 3540, "Control Room Actions During an Emergency;" and
- Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope (three samples)

The inspectors sampled Entergy submittals for the PIs listed below. PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline;" EN-LI-114, "Performance Indicator Process;" and AP 0094, "NRC Performance Indicator Reporting" were used to verify the basis in reporting for each data element.

- Drill/Exercise Performance;
- Emergency Response Organization Drill Participation; and
- Alert and Notification System Reliability.

The inspectors reviewed supporting documentation from EP drills and tests in the second, third, and fourth quarters of 2005 and the first two quarters of 2006 to verify the accuracy of the reported data. The inspectors also discussed the PI data with Entergy EP Department management and staff.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

The inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into Entergy's corrective action program at an appropriate threshold and that adequate attention was being given to timely corrective actions. Additionally, in order to identify repetitive equipment failures and/or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into Entergy's corrective action program. This review was accomplished by reviewing the description of each new CR and/or by attending daily CR screening meetings. A listing of CRs reviewed is included in the attachment to this report.

b. Assessments and Observations

No findings of significance were identified.

4OA3 Event Followup

.1 (Closed) Unresolved Item (URI) 05000271/2006003-01: Condensate Pump Motor Fault and Switchgear Room CO2 Initiation Result in the Declaration of an Unusual Event

a. Inspection Scope (one sample)

The inspectors reviewed Entergy's root cause analysis (RCA) report CR-VTY-2006-1574, "Condensate Pump "C" Motor Ground Detected During Motor Operations and CR 2006-1660, "Unexpected Actuation of the East Switchgear Room [carbon dioxide] CO2 System During the Condensate Pump "C" Motor Ground Event," to verify that Entergy had identified the causes of the conditions resulting in the "C" condensate pump motor ground and the inadvertent actuation of the east switchgear room CO2 fire suppression system. The inspectors interviewed station personnel involved with the development of the RCA reports. The inspectors had previously reviewed Entergy's immediate response to this event and declaration of the UE as documented in NRC inspection report 05000271/2006003.

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b. Findings

Introduction: A self-revealing finding of very low safety significance (Green) was identified because Vermont Yankee did not correct a previously identified condition that allowed the continued accumulation of dust on non-safety related 4160 Volt electrical bus 2 grounding resistor banks. This accumulation of dust ultimately contributed to the inadvertent initiation of the east switchgear room CO2 fire suppression system, declaration of an UE, and performance of a rapid power reduction.

Description: On May 24, 2006, with the plant operating at full power, control room operators identified a ground fault on electrical bus 2. This ground fault was the result of a winding failure within the "C" condensate system pump motor. Electrical current generated by this ground fault was transferred, by design, to a bank of grounding resistors located on top of the bus 2 switchgear located in the east switchgear room. This resistor bank is designed to dissipate the current generated during a ground fault in the form of heat. The heat generated by the resistor bank was sufficient to ionize dust that had been allowed to accumulate on and around the resistor bank. The ionized dust was detected by three adjacent fire detectors resulting in control room alarms and the inadvertent actuation of the automatic CO2 fire suppression system. The combination of the bus 2 ground indications and the initiation of the east switchgear room CO2 system led control room operators to conclude that a fire existed in the room when, in fact, there was no fire. However, the inspectors concluded that the control room operators responded appropriately to this event given the main control panel indications/alarms coupled with in-field observations by fire brigade and security personnel.

In their RCA report, Entergy determined that the "C" condensate pump motor winding failed due to degraded motor winding insulation internal to the pump motor. Entergy had recently performed significant upgrades to their PM program for large pump motors as a result of lessons learned from a 2004 failure of the "A" RBCCW pump motor. (The inspectors' review of the RBCCW pump motor failure is included in Section 4OA3.2 of this report.) Although the upgraded PMs had not been completed on the "C" condensate pump motor at the time of the winding failure, the inspectors concluded that Entergy had taken reasonable steps to prioritize and schedule the completion of the upgraded PMs based on the safety significance of the equipment, risk insights, motor maintenance history, and industry operating experience.

Also identified in the RCA report was the fact that the operators' response to the failed condensate pump motor was significantly complicated by an inadvertent initiation of the east switchgear room CO2 fire suppression system. Entergy identified two previous events, occurring in 1983 and 1989, that also resulted in the inadvertent initiation of the switchgear room CO2 system. Similar to the May UE, these events were the result of the combined effects of a large pump motor failure and the accumulation of dust on electrical bus grounding resistor banks. Following these previous events, VY established a PM activity for the periodic cleaning of dust from the resistor banks. However, the periodicity established (i.e., once every six years) did not prevent the continued accumulation of a sufficient amount of dust that when exposed to elevated

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grounding resistor bank temperatures would ionize and cause the CO2 system to initiate.

Analysis: The performance deficiency associated with this finding is that corrective actions taken following the 1983 and 1989 inadvertent initiations of the switchgear room CO2 fire suppression system did not correct conditions that allowed the continued accumulation of dust on non-safety electrical bus grounding resistors. In the 1980s VY Administrative Procedure (AP) 0007, "Corrective Action Reports," required the licensee to identify and correct conditions adverse to quality, including the two previous inadvertent initiations of the switchgear room CO2 systems. The continued accumulation of dust on the electrical bus grounding resistors ultimately contributed to the May 2006 inadvertent initiation of the east switchgear room CO2 fire suppression system, declaration of a UE, and performance of a rapid power reduction to approximately 57% power. The finding is greater than minor because it is associated with the Equipment Performance-Maintenance attribute of the Initiating Events Cornerstone and affected the associated cornerstone objective of limiting the likelihood of those events that upset plant stability (i.e., performance of a rapid power reduction). The inspectors conducted a Phase 1 screening of the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because performing the rapid power reduction did not increase the likelihood of a loss of coolant accident, did not contribute to the likelihood of both a reactor trip and the unavailability of mitigating equipment, and did not increase the likelihood of a fire or flooding event. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN 05000271/2006004-01, Vermont Yankee Did Not Correct Conditions Leading to the Continued Accumulation of Dust on Non-Safety Related Electrical Bus Grounding Resistors.

Enforcement: No violation of NRC regulatory requirements was identified. Although VY did not correct conditions that allowed the continued accumulation of dust on the non-safety related electrical bus grounding resistors, maintenance of this equipment does not fall under NRC regulatory requirements. This URI is closed.

## .2 Failure of the "A" RBCCW System Pump Motor

### a. Inspection Scope (one sample)

The inspectors reviewed apparent cause evaluation (ACE) CR-VTY-2004-3443 previously issued by Entergy to address the 2004 failure of the "A" RBCCW pump motor. This ACE was reviewed as part of the inspectors' follow-up to the "C" condensate pump motor fault and east switchgear room CO2 initiation event discussed in Section 4OA3.1. The inspectors also interviewed station personnel involved with the development of the ACE and the implementation of associated corrective actions.

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b. Findings

Introduction: A self-revealing finding of very low safety significance (Green) was identified because Entergy did not effectively incorporate existing industry operating experience into the PM strategy for the “A” RBCCW pump motor as required by Entergy’s PM program. As a result, conditions that ultimately resulted in the failure of the “A” RBCCW pump motor went unrecognized.

Description: In 2004, the “A” RBCCW system pump motor unexpectedly failed while in service. Control room operators became aware of the motor failure when they received a RBCCW system low flow alarm and indication that the RBCCW standby pump had automatically started (the RBCCW system is designed to provide an automatic start of the standby pump upon indication of a system low flow condition). Entergy successfully replaced the failed “A” pump motor approximately one day later.

Entergy performed a detailed inspection of the “A” pump motor and identified that the motor internals had become impacted with dirt, dust, and other debris. The debris contributed to the pump failure in a number of ways. First, the debris blocked cooling airflow to the motor windings causing the windings to overheat and become brittle. The debris also abraded the windings when exposed to mechanical vibration normally encountered during pump operation.

Entergy determined that the pump motor had been last disassembled and inspected in 1981. Since 1981, the PM strategies in place for this pump motor involved only periodic minor inspections of the motor externals. Entergy also identified numerous examples of industry operating experience that indicated the need to perform frequent inspections of pump motor internals, periodic motor rewinds, and to take into consideration the effects of aging due to mechanical, thermal, electrical, and environmental stresses placed on large pump motors during their lifetime. Based on the as-found condition of the “A” RBCCW pump motor and the available industry operating experience, Entergy concluded that the PM strategies in place in 2004 for large pump motors were not adequate to have identified and corrected the conditions that resulted in the failure of the “A” RBCCW pump motor.

Since this event, Entergy has performed significant upgrades to their PM program for all large safety and non-safety related pump motors. Although the upgraded PMs have not been completed on all applicable pump motors, the inspectors concluded that Entergy appropriately prioritized the completion of the remainder of the upgraded PMs based on the safety significance of the remaining motors, risk insights, individual motor maintenance history, and industry operating experience.

Analysis: The performance deficiency associated with this finding is that Entergy did not effectively incorporate existing industry operating experience into the PM strategies for the “A” RBCCW pump motor, ultimately leading to the failure of the motor. Procedure AP 0214, “Preventive Maintenance Program Implementation,” required PM strategies be developed using, in part, a reliability-based maintenance evaluation process that considered industry, vendor, and plant experience to support continuous improvement of

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the PM program. The finding is greater than minor since it is associated with the Equipment Performance attributes of both the Initiating Events and Mitigating Systems Cornerstones and because it affects the associated Cornerstone objectives of limiting the likelihood of those events that upset plant stability and ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors conducted a Phase 1 screening of the finding in accordance with IMC 0609, Appendix A, and determined that a Phase 2 screening was required since the finding affected two or more Cornerstones. The inspectors conducted a Phase 2 screening and determined that the finding was of very low safety significance (Green). The inspectors applied the SDP worksheets for Loss of Reactor Building Closed Cooling Water (LORBCCW) and Inadvertent/Stuck-Open Relief Valve (SORV) and determined that there were no accident sequences with a risk significance less than or equal to nine as indicated on the counting rule worksheet. The following were considered while solving the applicable accident sequences:

- The RBCCW system at VY is considered to be a normally cross-tied support system; therefore, the likelihood of a LORBCCW initiating event was increased by one order of magnitude;
- The length of time the RBCCW system was exposed to the failed pump motor was less than three days; and
- The RBCCW system function was maintained via the continued operation of the standby ("B") RBCCW pump thus there was no loss of mitigating capability.

A contributing cause of this finding was related to the cross-cutting area of Problem Identification and Resolution (PI&R). Entergy did not implement and institutionalize industry operating experience through changes to PM strategies for large pump motors.

Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN 05000271/2006004-02, Entergy Did Not Incorporate Industry Operating Experience into the Preventive Maintenance Strategies for the "A" RBCCW Pump Motor.

Enforcement: No violation of NRC regulatory requirements was identified. Although Entergy did not effectively incorporate existing industry operating experience into the PM strategies for the "A" RBCCW pump motor as required by Entergy's PM program, maintenance of this equipment does not fall under NRC regulatory requirements.

#### 4OA5 Other Activities

##### .1 Completion of Extended Power Uprate-Related Inspection Activities (71004)

Between 2004 and 2006, the inspectors completed all required inspection activities described in NRC inspection procedure (IP) 71004, "Power Uprate." A summary of these inspection activities has been included in the attachment to this report. The summary includes a description of each inspection sample, the inspection procedure

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used to inspect the sample, and the applicable inspection report(s) the samples were documented in.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On October 3, 2006, the resident inspectors presented the inspection results to Messrs. John Dreyfuss and Chris Wamser and members of the VY staff. The inspectors asked whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Entergy Personnel

M. Desilets, Training and Development Manager  
 J. Devinentis, Licensing Manager  
 J. Dreyfuss, Director of Nuclear Safety  
 M. Hamer, Licensing  
 E. Harms, Operations Manager  
 W. Maguire, General Manager of Plant Operations  
 K. Pushee, Radiation Protection Manager  
 N. Rademacher, Director of Engineering  
 T. Sullivan, Site Vice President  
 C. Wamser, Work Planning and Outage Scheduling Manager  
 M. Wilson, Emergency Preparedness Manager

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened and Closed

05000271/2006004-01	FIN	Vermont Yankee Did Not Correct Conditions Leading to the Continued Accumulation of Dust on Non-Safety Related Electrical Bus Grounding Resistors (Section 4OA3.1)
05000271/2006004-02	FIN	Entergy Did Not Incorporate Industry Operating Experience into the Preventive Maintenance Strategies for the "A" RBCCW Pump Motor (Section 4OA3.2)

Closed

05000271/2006003-01	URI	Condensate Pump Motor Fault and Switchgear Room CO2 Initiation Result in the Declaration of an Unusual Event (Section 4OA3.1)
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**LIST OF DOCUMENTS REVIEWED**

**Section 1R11.2: Biennial Review of the Licensed Operator Regualification Program**

Procedures

AP 0151      Responsibilities and Authorities of Operations Department Personnel, Rev. 27  
 ON 3160      Loss of DC-2 and DC-3, Rev. 5  
 Licensed Operator Regualification Training Program Description, Rev. 12



Simulator Test Documentation

DR 06-0026, FW Tuning and Run-back EPU Change  
DR 06-0045, Simulator Rod Line vs. Predicted Rod Line  
DR 06-0129, Tune Simulator Response for Condensate Pump Trip  
Extended Power Uprate Task T0407 - ECCS-LOCA SAFER/GESTR  
Extended Power Uprate Task T0902 - Anticipated Transient Without Scram  
Scenario-Based Test Documentation for 2005 and 2006  
Simulator Upgrade Phase 2 Site Acceptance Test Package, dated 12/06/02  
VYM-UM-01, Manual Scram, 11/11/04  
VYM-UM-03, Simultaneous Closure of all MSIV's, 11/11/04  
VYM-UM-04, Simultaneous Trip of all Reactor Recirculation Pumps, 11/11/04  
VYM-UM-07, LOCA/LNP, 11/11/04  
VYM-UM-08, Main Steamline Break, 11/11/04  
VYM-UM-10, Recirculation Loop Suction Side Rupture (Unisolable), 11/11/04  
VYM-UM-11, Loss of Offsite Power, 11/11/04  
VYM-UM-12, Turbine Bypass Valves Fail Full Open, 11/11/04  
VYM-UM-13, Fuel Failure, 11/11/04  
VYM-UM-14, Turbine Trip with Failure of Turbine Bypass Valves to Open, 11/11/04  
VYM-UM-19a, ATWS Turbine Trip, 11/16/04  
VYM-UM-19d, ATWS w/SLC, 11/16/04

Operations Department Assessment Documents

LO-VTYLO-2004-00220, Self Assessment of the Use of the eSOMS Systems at VY  
LO-VTYLO-2004-00339, Self Assessment of Reactivity Management Practices at VY  
LO-VTYLO-2004-00595, Self Assessment of Operations Outage Readiness at Vermont Yankee  
LO-VTYLO-2005-00360, Operations Self Assessment Report  
QA-12-2005-VY-1, Operations  
QA-12-2005-VY-2, Operations  
QS-2004-VY-144, Backshift Control Room Operations  
QS-2004-VY-162, Control Room Activities  
QS-2005-VY-004, High Level Radiation Waste Resin Transfer  
QS-2005-VY-012, Follow-up Assessment of Operations Audit (QA-12-2005-VY-1) Findings  
QS-2005-VY-026, Implementation of EN-OP-102  
QS-2006-VY-005, Overtime Assessment

Miscellaneous Documents

Continuing Training Content Cycles 24.8, 24.9, 25.1, 25.2, 25.3, 25.4, and 25.5  
List of PRA Top 10 Local Operator Actions

Condition Reports

2005-2945      Informal Action - Tracking processes applied to various training committee's proceedings

- 2005-2946 There is no formal process in place to document questioning that may take place following a Task Performance Evaluation
- 2005-2947 Low Level problems have been identified in the area of Management Observations of training in a number of training assessments over the past 3 years
- 2005-2948 Effectiveness evaluations of corrective actions resulting from training self assessment findings in the areas of Task Performance Evaluation and Management Observations of Training lacked appropriate rigor (Including Root Cause analysis)
- 2006-1017 Reactor Operator watch proficiency documentation is incorrect

Coaching Card Summary Data

17773, 17918, 10789, 17129, 17468, 16800 and 16835

Biennial Written Exams 2005

Exams for the first six weeks LORT cycle

Reviewed Scenarios and JPMs - 2006 Annual Operating Exams

Exams for weeks two, three, and six of the LORT cycle

**Section 1R12: Maintenance Effectiveness**

Condition Reports

- 2006-1541 ERFIS analog alarm subsystem out of service for 70 hours
- 2006-1655 SPDS alarm function unavailable
- 2006-2055 B-AS-2 battery terminal float voltage found high
- 2006-2338 B-UPS-2A failed performance test
- 2006-2362 Adverse trend - UPS-2A performance

**Section 1EP2: Alert and Notification System (ANS) Testing**

Emergency Plan, Section 11, Emergency Notification and Public Information, Rev 42

Emergency Plan, Appendix H, Public Notification System, Rev 42

AP 3553, Administration and Maintenance of the Alert and Notification System, Rev 0

Vermont Yankee Nuclear Power Station Alerting and Notification System Design Report, Rev 0

**Section 1EP3: Emergency Response Organization (ERO) Augmentation Testing**

Emergency Plan, Section 8, Organization, Rev 42

AP 3712, Emergency Plan Training, Rev 19

OP 3531, Emergency Call-In Method, Rev 28

OP 3540, Control Room Actions During an Emergency, Rev 8

OP 3547, Security Actions During an Emergency, Rev 8

Communication/Call-In Drills dated 03/16/05, 07/05/05, 11/17/05, 12/14/05, 02/15/06, and 05/31/06

#### **Section 1EP4: Emergency Action Level Revision Review**

Emergency Plan, Rev 41 and 42  
 OP 3504, Emergency Communications, Rev 59  
 OP 3510, Offsite and Site Boundary Monitoring, Rev 41  
 OP 3531, Emergency Call-In Method, Rev 28  
 OP 3540, Control Room Actions During an Emergency, Rev 8  
 OP 3542, Operations of the Technical Support Center, Rev 13  
 OP 3544, Operations of the Operations Support Center, Rev 10  
 OP 3546, Operations of the Emergency Operations Facility / Recovery Center, Rev 18  
 OP 3547, Security Actions During an Emergency, Rev 8

#### **Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies**

EN-LI-102, Corrective Action Process, Rev 7  
 E-Plan Drill Report, May 24, 2005  
 Quality Assurance Department Audit Report QA-7-2005-VY-1  
 Quality Assurance Department Audit Report QA-7-2006-VY-1  
 Quality Assurance Surveillance Report QS-2006-VY-001  
 Emergency Planning Focused Self Assessment Report CR-VTYLO-2005-0390  
 Department Self Assessment Report LO-VTYLO-2004-0551

#### **Condition Reports**

CR-VTY-2005-0029, CR-VTY-2005-0038, CR-VTY-2005-0067, CR-VTY-2005-0083,  
 CR-VTY-2005-0112, CR-VTY-2005-0140, CR-VTY-2005-0168, CR-VTY-2005-0190,  
 CR-VTY-2005-0341, CR-VTY-2005-0440, CR-VTY-2005-0476, CR-VTY-2005-0974,  
 CR-VTY-2005-1101, CR-VTY-2005-1102, CR-VTY-2005-1104, CR-VTY-2005-1125,  
 CR-VTY-2005-1260, CR-VTY-2005-1345, CR-VTY-2005-1481, CR-VTY-2005-1536,  
 CR-VTY-2005-1648, CR-VTY-2005-1671, CR-VTY-2005-1672, CR-VTY-2005-1673,  
 CR-VTY-2005-1674, CR-VTY-2005-1698, CR-VTY-2005-1765, CR-VTY-2005-1927,  
 CR-VTY-2005-2254, CR-VTY-2005-3882 (Apparent Cause Evaluation), CR-VTY-2005-3921,  
 CR-VTY-2005-4031, CR-VTY-2006-0071, CR-VTY-2006-0245, CR-VTY-2006-1913,  
 CR-VTY-2006-1574, CR-VTY-2006-1627, CR-VTY-2006-2451, CR-VTY-2006-2548

#### **Section 4OA2.1: Routine Review of Identification and Resolution of Problems**

#### **Condition Reports**

2004-3443	Failure of the "A" RBCCW system pump motor due to inadequate maintenance
2006-1574	Ground identified on bus 2
2006-1786	Water on floor of Bay 8 torus basement
2006-1799	Packing leak on MS-931
2006-1987	Drywell/torus dp alarm 9-5-G-2 did not clear after torus pump down
2006-2064	Inadvertent isolation of the "E" condemin
2006-2078	RHR loop B not pressurized alarm came in when cycling CS valves per OP 4123
2006-2163	Service water pump "A" high winding temperature
2006-2184	"A" SW pump winding temperature high alarm

2006-2371	Line contacting vegetation causes loss of Northfield 345 KV line
2006-2388	Operability basis for SW pump motor winding temperature did not document the effect of ventilation failure
2006-2451	Aims hill transmitter inoperable
2006-2509	"B" EDG fuel injector bushings show extreme wear
2006-2586	The after-water coolant pump driven side is leaking oil from the mechanical seal
2006-2660	HPCI overspeed trip tappet failed during HPCI operability testing
2006-2723	A radioactive shipment from VY was received by Susquehanna with exterior rad levels greater than DOT/NRC limits.
*2006-2958	Additional enhancements required to be in compliance with B.5.b. order.
*2006-2971	Instructions for the disbursal of fire brigade equipment contained in ON 3177 is not consistent with B.5.b order
*2006-2972	Worker inattentive in the RCA while awaiting the start of SLC system testing

\* Inspector-identified issue.

#### **Section 40A5.1: Completion of Power Uprate-Related Inspection Activities**

<u>Inspection Procedure</u>	<u>Title</u>	<u>Inspection Report</u>	<u>Sample Description</u>
71004	Power Uprate	2005-004	Flow-accelerated corrosion program.
		2006-003	Impact of power uprate on Initiating Event likelihoods (performed in conjunction with inspections performed following the installation of a 115 KV switchyard capacitor bank).
		2006-002	Extended Power Uprate (EPU) Integrated Testing (following first 5% increase in reactor power).
		2006-003	EPU testing (following second 5% increase in reactor power) and tour of the heater bay.
		2006-003	EPU testing (following third 5% increase in reactor power).
		2006-003	EPU testing (following fourth 5% increase in reactor power) and tour of the heater bay.
		2006-003	Condensate pump trip test from 100% power.
71111.02	Evaluations of Changes, Tests, or Experiments	2004-003	Low feedwater suction pressure trip; minor modification package (MM) 2003-024.

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		2004-003	Alternate source term modifications (install steam jet air ejector line check valve); MM 2003-026.
		2004-003	Addition of a main steam safety (Code) valve per calculation VYDC 2003-013.
		2004-003	Recirculation pump runback (feedwater pump trip); MM 2003-016.
		2004-003	Average Power Range Monitor (APRM) flow controlled (biased) trip reference card modification; MM 2003-028.
		2004-003	Nuclear steam supply system (NSSS)/Balance of Plant (BOP) Instruments (main steam high flow trip); MM 2003-039.
		2004-003	345 KV 381 line overload relay setting; MM 2003-053.
		2004-003	Flow induced vibration monitoring; temporary modification (TM) 2003-022.
71111.08G	In-Service Inspection Activities	2004-003	In-service inspection program.
		2004-003	Flow accelerated corrosion (FAC) program.
		2004-003	Vessel clad cracking.
		2004-003	Steam dryer cracking.
71111.11Q	Licensed Operator Requalification	2006-002	Observe "just-in-time" (JIT) training and simulator mods made in support of power ascension.
		2006-003	Observe licensed operator requalification training and JIT for the planned condensate pump trip test and closure review for URI 2006-002-01.
71111.14	Personnel Performance During Non-Routine Evolutions	2006-002	First 5% increase in reactor power EPU.
		2006-003	Second 5% increase in reactor power for EPU.

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		2006-003	Third 5% increase in reactor power for EPU.
		2006-003	Fourth 5% increase in reactor power for EPU.
71111.15	Operability Evaluations	2006-003	Licensee placed a "hold" on EPU testing due to steam flow fluctuations during mechanical-hydraulic control system (reactor pressure control) testing.
		2006-003	Licensee placed a "hold" on EPU testing due to steam flow/feedwater flow mismatch, turbine control valve position verses steam flow mismatch, and unexpected differential pressure between the reactor steam dome and turbine steam chest.
71111.17A	Permanent Plant Modifications	2004-003	Add main steam safety valve in accordance with calculation VYDC 2003-013.
71111.17B	Permanent Plant Modifications	2004-003	Low feedwater suction pressure trip; MM 2003-024.
		2004-003	Alternate source term mods (install steam jet air ejector line check valve); MM 2003-026.
		2004-003	Recirculating pump runback (feedwater pump trip); MM 2003-016.
		2004-003	APRM flow controlled (biased) trip reference card modification; MM 2003-028.
		2004-003	NSSS/BOP Instruments (main steam high flow trip); MM 2003-039.
		2004-003	345 KV 381 line overload relay setting; MM 2003-054.
71111.19	Post-Maintenance Testing	2004-003	Low feedwater suction pressure trip; MM 2003-024.
		2004-003	APRM flow controlled (biased) trip reference card mod; MM 2003-028.
		2004-005	Steam dryer strengthening; VYDC 2003-012.

		2004-005	NSSS/BOP Instruments (main steam high flow trip); MM 2003-039.
		2004-005	Recirculating pump runback (feedwater pump trip); MM 2003-016.
		2006-003	Post maintenance testing for switchyard capacitor bank installation (supports review of Impact of power uprate on initiating event likelihood; loss of off-site power (LOOP)).
71111.20	Refueling and Outage Activities	2004-003	Refueling outage (RFO) 24.
71111.22	Surveillance Testing	2004-003	ECCS integrated automatic initiation testing in accordance with OP 4100.
		2004-003	Reactivity anomalies/shutdown margin testing in accordance with OP 4430
		2004-003	Integrated startup testing following refueling outage RFO-24 in accordance with special test procedure (STP) 2003-004.
71111.23	Temporary Modifications	2004-003	Flow induced vibration monitoring; temporary modification 2003-022.
71122.03	Public Radiation Exposure	2006-003	Boundary line dose methodology review.
71152	Problem Identification and resolution (PI&R)	2004-005	Main steam isolation valve (MSIV) history of as-found local leakage rate testing failures.

#### LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Documents Access and Management System
ANS	Alert and Notification System
AP	Vermont Yankee Administrative Procedure
APRM	Average Power Range Monitor
BOP	Balance of Plant
CFR	Code of Federal Regulations
CO2	Carbon Dioxide
CR	Condition Report
DBD	Design Basis Document
DP	Vermont Yankee Department Procedure

ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
EPU	Extended Power Uprate
ERO	Emergency Response Organization
FA	Fire Area
FAC	Flow Accelerated Corrosion
FIN	Finding
FZ	Fire Zone
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination External Events
IR	Inspection Report
JIT	Just In Time Training
JPM	Job Performance Measure
LER	Licensee Event Report
MM	Minor Modification
MSIV	Main Steam Isolation Valve
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
OA	Other Activities
OE	Operating Experience
ON	Vermont Yankee Off-Normal Procedure
OP	Vermont Yankee Operating Procedure
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Preventive Maintenance
PMT	Post Maintenance Testing
RBCCW	Reactor Building Closed Cooling Water
RCA	Root Cause Analysis
RCIC	Reactor Core Isolation Cooling
RFO	Refueling Outage
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RO	Reactor Operator
SCR	Simulator Condition Report
SDP	Significance Determination Process
SLC	Standby Liquid Control
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
SW	Service Water
TS	Technical Specification
UE	Unusual Event
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supply



URI	Unresolved Item
VY	Vermont Yankee
WO	Work Order