



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

July 29, 2009

Mr. Michael Colomb
Site Vice President
Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION – NRC INTEGRATED
INSPECTION REPORT 05000271/2009003

Dear Mr. Colomb:

On June 30, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vermont Yankee Nuclear Power Station. The enclosed inspection report documents the inspection results, which were discussed on July 22, 2009, with Mr. Chris Wamser and other 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.

Based on the results of this inspection, no findings of significance were identified.

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/

Donald E. Jackson, Chief
Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000271/2009003
w/ Attachment: Supplemental Information

cc w/encl:

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Sincerely,
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Enclosure

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-271

License No.: DPR-28

Report No.: 05000271/2009003

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

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

Dates: April 1, 2009 through June 30, 2009

Inspectors: D. Spindler, Sr. Resident Inspector, DRP
M. Marshfield, Sr. Resident Inspector, DRP
H. Jones, Resident Inspector, DRP
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J. Heinly, Reactor Engineer, DRP

Approved by: Donald E. Jackson, Chief
Projects Branch 5
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000271/2009003; 04/01/2009 – 06/30/2009; Vermont Yankee Nuclear Power Station;
Routine Quarterly Integrated Report.

This report covered a three month period of inspection by resident inspectors and announced inspections by regional health physics and operator licensing inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Findings

None.

REPORT DETAILS

Summary of Plant Status

Vermont Yankee (VY) Nuclear Power Station began the inspection period operating at approximately 100 percent reactor power.

On May 12, VY reduced reactor power to 59 percent for planned Hydraulic Control Unit (HCU) replacements, Main Steam Isolation Valve (MSIV) testing, single control rod scram testing, and control rod sequencing. VY returned to 100 percent reactor power on May 15.

On June 22, the "A" Recirculation Pump Motor-Generator speed control system malfunctioned. As a result, VY decreased power to 94 percent. On June 23, VY reduced power to 24 percent to perform repairs on a main condenser tube and the "A" Recirculation Pump Motor-Generator speed control system. VY returned to 100 percent reactor power on June 25 and remained at or near 100 percent reactor power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 Samples)

.1 Seasonal Readiness (71111.01)

a. Inspection Scope (1 sample)

The inspectors reviewed Entergy's procedures for seasonal preparations to evaluate the process for implementation of warm weather preparedness. The inspectors reviewed adverse weather information contained in the External Events Design Basis Document and compared it to the actions specified in operating procedure (OP) 2196, "Seasonal Preparedness." The inspectors interviewed operators and performed a walk down with the reactor building operator of the emergency diesel generator (EDG) rooms, and the station air compressor room. The inspectors also examined equipment specified in the OP to determine if equipment readiness was maintained or adjusted to meet the onset of warm weather conditions. The inspectors reviewed a sample of seasonal preparedness-related conditions in Entergy's corrective action program to determine if they were appropriately identified and corrected. Additional documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

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.2 Alternating Current (AC) Power System Readiness (71111.01)

a. Inspection Scope (1 sample)

The inspectors performed a review of Entergy's AC power system readiness for adverse weather. The inspectors reviewed Entergy's plant features and procedures for operation and continued availability of their AC power systems to determine if they were appropriate. The inspection focused on Entergy's procedures for communication protocols with the transmission system operator (TSO) to determine if appropriate information would be exchanged when issues arise that could impact the offsite power system. The inspectors also reviewed Entergy's procedures to determine if they addressed necessary actions to be taken if notified by the TSO that they needed to transfer safety-related loads to the onsite power supply, compensatory actions to be taken if it were not possible to predict grid conditions, and required communications between Entergy and the TSO. The inspectors also reviewed training presented to the operators for grid instability issues and reviewed the events logged during the ice storm on December 12, 2008. A list of documents reviewed is provided in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 – 5 samples)

.1 Partial Walk-downs (71111.04Q)

a. Inspection Scope (4 samples)

The inspectors performed partial system walkdowns of the following risk-significant systems listed below to determine the system alignment and to identify any discrepancies that could impact system operability. Observed plant conditions were compared to the standby alignment of equipment specified in applicable piping and instrumentation drawings (P&IDs) and OPs. The inspectors observed valve positions, power supply availability, and the general condition of selected components. Finally, the inspectors evaluated material condition, housekeeping, and component labeling. A list of documents reviewed is provided in the Attachment.

- "B" and "D" Residual Heat Removal (RHR) system during the planned "A" and "C" RHR maintenance outage the week of April 27, 2009
- Reactor Core Isolation Cooling (RCIC) system during the planned High Pressure Coolant Injection (HPCI) surveillance test on May 19, 2009
- HPCI system on June 3, 2009
- Standby Gas Treatment System on June 5, 2009

b. Findings

No findings of significance were identified.

.2 Complete Walk-down (71111.04S)a. Inspection Scope (1 sample)

The inspectors performed a complete system walkdown of the “A” and “C” RHR Service Water system to determine the system alignment and to identify any discrepancies that could impact system operability. Observed plant conditions were compared to the standby alignment of equipment specified in applicable P&IDs and OPs. The inspectors observed valve positions, power supply availability, and the general condition of selected components. Finally, the inspectors evaluated material condition, housekeeping, and component labeling. A list of documents reviewed is provided in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05 – 5 samples)Fire Protection - Tours (71111.05Q)a. Inspection Scope

The inspectors identified five fire areas based on a review of Vermont Yankee’s Safe Shutdown Capability Analysis, the Fire Hazards Analysis, and the Individual Plant Examination for External Events (IPEEE). The inspectors toured plant areas important to safety to evaluate Entergy’s control of transient combustibles and ignition sources, and the material condition and operational status of fire protection systems, equipment, and barriers. A list of additional documents reviewed is provided in the Attachment to this report. The following fire zones (FZs) were inspected:

- Torus Room 213’ North (RB-1);
- Torus Room 213’ South (RB-2);
- RB 280’ North (RB-5);
- RB 280’ South (RB-6); and
- TB 252’ EDG Day Tank Rooms (FA 10 and FA 11).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)a. Inspection Scope

The inspectors reviewed Entergy’s flood protection design and barriers for coping with internal flooding in the intake structure. The inspectors reviewed internal flooding information contained in Entergy’s IPEEE and the Internal Flooding Design Basis Document as they related to the intake structure. Finally, the inspectors performed a

walk down of the intake structure with the system engineer for the service water (SW) system and the engineer for the circulating water (CW) system to ensure equipment and structures needed to mitigate an internal flooding event were as described in the IPEEE and the DBD. Additionally, the inspectors reviewed condition reports (CRs) related to internal flooding to ensure identified problems were properly resolved. A list of documents reviewed is provided in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07 – 1 sample)

Annual Sample Review (71111.07A)

a. Inspection Scope

On April 27, 2009, the “A” RHR heat exchanger was removed from service for maintenance. The heat exchanger was cleaned using extensive hydrolazing processes. Eddy current testing of the heat exchanger began on April 29, 2009. The inspectors observed portions of the hydrolazing process and eddy current testing. The inspectors also reviewed the results of the “A” RHR heat exchanger eddy current testing. The inspectors discussed the test results with the system engineer and reviewed the completed surveillance data to determine whether test results met acceptance criteria. The inspectors also reviewed Entergy’s corrective action program to ensure significant heat exchanger performance issues were appropriately identified and documented, and that the corrective actions assigned, if any, were appropriate. A list of documents reviewed is provided in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11 – 1 sample)

Requalification Activities Review by the Resident Staff (71111.11Q)

a. Inspection Scope

The inspectors observed a simulator-based licensed operator requalification exam on April 7, 2009. The inspectors evaluated “E” crew performance in the areas of clarity and formality of communications; ability to take timely actions; prioritization, interpretation, and verification of alarms; procedure usage; control board manipulations; and command and control. Crew performance in these areas was compared to the Instructor Guide for Simulator session LOR-27-301 Scenarios 5 and 6, Entergy management expectations, and guidelines. The inspectors also compared the simulator configuration with the actual control board configuration. Finally, the inspectors observed VY training

evaluators discuss identified weaknesses with the crew and individual crew members. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12 – 3 samples)

Routine Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors reviewed Entergy's evaluation of three conditions involving structures, systems or components (SSCs) for maintenance effectiveness during this inspection period. The inspectors reviewed Entergy's implementation of the Maintenance Rule, 10 CFR 50.65, to determine if the condition was appropriately evaluated against applicable Maintenance Rule functional failure criteria, as found in Entergy scoping documents and procedures. The inspectors reviewed the applicable system health reports and discussed the issue with the Maintenance Rule Coordinator to determine if the condition was appropriately tracked against the system performance criteria and classified in accordance with Maintenance Rule implementation guidance. The inspectors also reviewed the Maintenance Rule Expert Panel meeting performance evaluation/action plans. Documents reviewed during the inspection are listed in the Attachment. The specific conditions reviewed were:

- Instrument Air approaching established Maintenance Rule criteria;
- 125 V DC Station Main Battery Subsystem from (a)(1) to (a)(2) status; and
- BC-5A, 345 KV Switchyard Battery Charger AC input breaker inadvertently opened (CR 2009-1902).

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors evaluated online risk management for three planned and three emergent maintenance activities. The inspectors reviewed maintenance risk evaluations, maintenance plans, work schedules, and control room logs to determine if concurrent or emergent maintenance activities significantly increased the plant risk. The inspectors compared reviewed items and activities to requirements listed in administrative procedure (AP) 0125, "Plant Equipment," and AP 0172, "Work Schedule Risk Management - Online." Documents reviewed during the inspection are listed in the Attachment. The inspectors also walked down areas of the plant containing equipment

that was determined to have higher risk significance during the following work activities:

- April 16, 2009, EDGs Declared Inoperable During Cooling Tower Alternate Supply Breaker Testing;
- April 27- May 1, 2009, "A" RHR Planned Maintenance Outage (Risk Yellow);
- June 2-4, 2009, AS-1 Battery Charger Emergent Work Concurrent with AS-2 Battery Charger Maintenance Activities;
- June 16, 2009, EDG Degraded Voltage Relay Calibrations (Risk Yellow);
- June 23-25, 2009, "A" Recirculation Pump Motor-Generator Emergent Work; and
- June 28-30, 2009, VELCO Switchyard Emergent Work.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed six operability evaluations prepared by Entergy. The inspectors evaluated the operability evaluations against the guidance contained in NRC Regulatory Issue Summary 2005-20, "Revision to Guidance Formerly Contained in NRC Generic Letter 91-18", "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability," and Entergy procedure EN-OP-104, "Operability Determinations." A list of documents reviewed is provided in the Attachment. The inspectors also discussed the conditions with operators and engineering staff, as necessary. The inspectors reviewed evaluations of the following degraded or non-conforming conditions:

- Microbial Induced Corrosion (MIC) in Standby Fuel Pool Cooling SW System (CR 2009-0500);
- Water Leak On "A" EDG Turbo Charger Cooling Line (CR 2009-1207);
- "A" SW Pump Packing and Oil leak (CR 2009-1423);
- "C" SW Pump Operating Low in Flow Band (CR 2009-1944);
- Recurring Standby Gas Treatment Flow Adjustments (CR 2009-2043); and
- SW Traveling Screen Piping Thru Wall Leakage (CR 2009-2093).

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

The inspectors reviewed the Traveling Screen Wash Water Temporary Supply temporary modification (TM) to ensure that it did not adversely affect the availability,

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reliability, or functional capability of any risk-significant SSCs. The inspectors reviewed the engineering change package and completed work order (WO) which installed the modification, and compared the installation and control of the modification to the requirements of Entergy Corporate Procedure EN-DC-136, Revision 4, "Temporary Modifications." A list of documents reviewed is provided in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 9 samples)

a. Inspection Scope

The inspectors reviewed post-maintenance testing (PMT) activities on risk-significant systems. The inspectors either observed the PMT or reviewed completed PMT documentation to determine if the test data met the acceptance criteria contained in the WO, Technical Specifications (TS), Updated Final Safety Analysis Report (UFSAR), and/or the in-service testing program. When testing was directly observed, the inspectors determined whether installed test equipment was appropriate and controlled, and whether the test was performed in accordance with applicable station procedures. The inspectors also reviewed the test activities to determine if the PMT was adequate to ensure system operability and functional capability following maintenance, if the systems were properly restored following testing, and if discrepancies were appropriately documented in the corrective action program (CAP). Additional documents reviewed are listed in the Attachment. The inspectors reviewed the PMTs performed for the following maintenance activities:

- Drywell Sump Flow Transmitter Replacement (WO 00178181);
- Cooling Tower (CT) 2-1 Inspection and Structural Repairs (WO 51796997);
- "A" Standby Gas Treatment Flow Relay Replacement (WO 00195501);
- "B" EDG Alarm Temperature Switch Replacement (WO 00186645);
- "A" RHR Maintenance Outage for Check Valve Repairs (WO 51074193);
- Torus Vacuum Breaker 5G Maintenance Following Failed Testing (WO 00195389);
- "C" Service Water Pump Planned Replacement (WO 51671311);
- Planned HCU Accumulator Replacements (WOs 00153279 and 00192426); and
- Diesel Driven Fire Pump Maintenance (WO 00174515).

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 7 samples)a. Inspection Scope

The inspectors observed surveillance testing to determine if the specified acceptance criteria was consistent with TS and UFSAR requirements, if the test was performed in accordance with the written procedure, if the test data was complete and met procedural requirements, and if the system was properly returned to service following testing. The inspectors observed selected pre-job briefings for the test activities. The inspectors also verified discrepancies were appropriately documented in the CAP. A list of documents reviewed is provided in the Attachment. The inspectors reviewed the following surveillances:

- Scram Discharge Instrument Volume High Water Functional Test on April 6, 2009;
- Electric Driven Fire Pump Surveillance Test on April 6, 2009;
- “B” and “D” RHR and RHR SW Comprehensive Surveillance Test on April 21, 2009;
- “A” Standby Gas Treatment System Monthly 10 Hour Run on May 5, 2009;
- Station Air Compressor Infrequently Performed Test on May 5, 2009;
- MSIV Closure Time Test (Containment Isolation Valve) on May 12, 2009; and
- Drywell Leakage Rate Surveillance Test on May 28, 2009.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness1EP6 Drill Evaluation (71114.06 – 1 sample)a. Inspection Scope

On May 7, 2009, 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 station procedures.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2PS1 Radiological Environmental Monitoring Program (REMP) and Radioactive Materials Control (71122.03 – 10 samples)

a. Inspection Scope

- (1) The inspector reviewed the 2007 and 2008 Annual Radiological Environmental Operating Reports, and Entergy assessment results, to verify that the REMP was implemented as required by TS and the Off-site Dose Calculation Manual (ODCM). The review included changes to the ODCM with respect to environmental monitoring commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data. The inspector also reviewed the ODCM to identify environmental monitoring stations. In addition, the inspector reviewed the following: Entergy self-assessments and audits, event reports, inter-laboratory comparison program results, the Final Safety Analysis Report for information regarding the environmental monitoring program and meteorological monitoring instrumentation, and the scope of the audit program to verify that it met the requirements of 10 CFR 20.1101.
- (2) The inspector walked down seven environmental air particulate and iodine sampling stations; one south river water sampling station; two dairy farms; and, 37 thermo-luminescent dosimeter (TLD) monitoring locations and determined that they were located as described in the ODCM and determined applicable equipment material condition to be acceptable.
- (3) The inspector observed the collection and preparation of a variety of environmental samples including milk and verified that environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with procedures. Additionally, the inspector observed technicians obtain a plant stack particulate, iodine, and a gaseous sample, and perform a system flow check. The inspector also observed sampling of on-site storm drains.
- (4) Based on direct observation and review of records, the inspector verified that the primary and backup meteorological tower instruments were operable, calibrated, and maintained in accordance with guidance contained in the FSAR, NRC Safety Guide 23, and licensee procedures. The inspector verified that the meteorological data readout and recording instruments in the control room and at the tower were operable and comparable.
- (5) The inspector reviewed each event documented in the Annual Radiological Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions. The inspector conducted a review of Entergy's assessment of any

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positive sample results. The last two annual radiological effluent release reports were also reviewed, which indicated that there were no abnormal or anomalous results identified and no significant changes in reported dose values from previous effluent release reports. These reports were reviewed with respect to the environmental monitoring program, which did not identify any plant-related radioactivity in the offsite environment or in any onsite groundwater monitoring wells. Monthly dose calculations were also reviewed covering the period from September 2008 through March 2009 with respect to license requirements.

- (6) The inspector reviewed any significant changes made by Entergy to the ODCM as a result of changes to the land census or sampler station modifications since the last inspection. The inspector also reviewed technical justifications for any changed sampling locations and verified that Entergy performed the reviews required to ensure that the changes did not affect their ability to monitor the impacts of radioactive effluent releases on the environment.
- (7) The inspector reviewed the calibration and maintenance records for air samplers. The inspector reviewed the following: the results of Entergy's inter-laboratory comparison program to verify the adequacy of environmental sample analyses performed by Entergy; Entergy's quality control evaluation of the inter-laboratory comparison program and the corrective actions for any deficiencies; Entergy's determination of any bias to the data and the overall effect on the REMP; and quality assurance (QA) audit results of the program to determine whether Entergy met the TS/ODCM requirements. The inspector verified that the appropriate detection sensitivities with respect to TS/ODCM are utilized for counting samples and reviewed the results of the quality control program including the inter-laboratory comparison program to verify the adequacy of the program.
- (8) The inspector observed the radioactive material survey and release locations and inspected the methods used for control, survey, and release to include observing the performance of personnel surveying and releasing material for unrestricted use and verifying that the work is performed in accordance with plant procedures.
- (9) The inspector verified that the radiation monitoring instrumentation used for the release of material from the radiologically controlled area (RCA), was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspector reviewed Entergy's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in Circular 81-07 and Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. Calibration records and source certificates for equipment used for the release of personnel and materials were reviewed for adequacy (APTEC personnel contamination monitors, Eberline PM-7 personnel contamination monitors, RM14 friskers, RM20 friskers, Small Article Monitors, Mini-Scalers).

- (10) The inspector reviewed Entergy's audits and self-assessments related to the REMP since the last inspection to determine if identified problems were entered into the corrective action program, as appropriate. Selected corrective action reports were reviewed since the last inspection to determine if identified problems accurately characterized the causes and corrective actions were assigned to each commensurate with their safety significance. Any repetitive deficiencies were also assessed to ensure that Entergy's self-assessment activities were identifying and addressing these deficiencies (see Section 4OA2).

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151 – 2 samples)

a. Inspection Scope

Barrier Integrity Cornerstone

The inspectors sampled Entergy submittals for the performance indicators (PIs) listed below for the period from April 2008 to March 2009. The inspectors reviewed portions of operator rounds surveillances, monthly reactor coolant iodine isotopic reports, and related CRs. The inspectors discussed the methods for compiling the data with the responsible operations department and chemistry department personnel. The PI definitions and guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Rev. 5 and AP 0094, "NRC Performance Indicator Reporting," Rev. 14 were used to verify the accuracy and completeness of the PI data reported during this period. Additional documents reviewed are listed in attachment.

- Reactor Coolant System Activity; and
- Reactor Coolant System Leakage.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 2 samples)

.1 Reviews of Items Entered into the Corrective Action Program

a. Inspection Scope

The inspectors performed a screening of each item entered into Entergy's CAP. This review was accomplished by reviewing printouts of each condition report, attending daily screening meetings, and/or accessing Entergy's database. The purpose of this review

was to identify conditions such as repetitive equipment failures or human performance issues that might warrant additional follow-up.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope (1 sample)

The inspectors performed a review of Entergy's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review nominally considered the six-month period of November 2008 to April 2009. The inspectors compared their results with the results contained in Entergy's quarterly trend reports, operator logs and CRs. The corrective actions assigned to address select individual issues were reviewed for adequacy.

b. Findings and Observations

No findings or observations of significance were identified.

.3 Annual Sample Review - Operator Workarounds

a. Inspection Scope (1 sample)

The inspectors reviewed the cumulative effects of the existing operator work-arounds (OWA), the list of operator burdens, and the list of open main control room deficiencies. This review was performed to identify any effect on emergency operating procedure operator actions, and any impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel were identifying, assessing, and reviewing OWAs as specified in administrative procedure EN-OP-115, "Conduct of Operations" Rev. 7 and DP-0166, "Operations Department Standards" Rev. 19 with Limited Procedure Change 3.

The inspectors reviewed the Vermont Yankee processes to identify, prioritize and resolve main control room distractions to minimize operator burden. The inspectors reviewed the system used to track these operator work-arounds, burdens and control room deficiencies. The inspectors toured the control room and discussed the open items with the operators to ensure the items were being addressed on a schedule consistent with their relative safety significance.

b. Findings and Observations

No findings of significance were identified. At the time of the inspection, Vermont Yankee had one issue classified as an operator work-around and four operator burdens. The one operator work-around and four operator burdens were determined to have a minimal impact on the ability of the operator to promptly and appropriately respond to an

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event.

The tracking system in place appeared to be effective at ensuring operators and management were aware of operator work-arounds and burdens and ensuring these items were addressed in a timely fashion.

.4 Public Radiation Safety Cornerstone

a. Inspection Scope

The inspector reviewed 23 corrective action condition reports associated with REMP program that were initiated from 2007 through 2009. The inspector verified that problems identified by these condition reports were properly characterized in the licensee's event reporting system, and that applicable cause and corrective actions were identified, commensurate with the safety significance of the radiological occurrences. In cases where there were repetitive issues or issues that were not adequately addressed or corrected, Quality Assurance audits and follow-up assessments identified these and initiated actions to correct the condition.

b. Findings and Observations

No findings or observations of significance were identified.

4OA3 Event Follow-up (71153 – 1 sample)

.1 "A" Reactor Cooling Pump Speed Control Signal Failure Results in Reactor Down-Power

a. Inspection Scope

On June 22, operators observed the "A" Recirculation Pump Speed decrease. The associated motor generator speed control system "locked up" and prevented remote operation of the recirculation pump control system, as designed. Reactor power decreased to 96% as a result of the decrease in pump speed and remained steady. Operators then reduced the "B" Recirculation Pump Speed to match the "A" Recirculation Pump speed which further reduced reactor power to stabilize at 94%. The cause of the "lock up" was identified as a loss of control signal due to a failure of a control circuit card in the control system. The operation of the control system in this instance was as designed. The repair and associated testing required reducing reactor power to 24 percent and the removal of the "A" Recirculation loop from service. The loop was then returned to operation after all repairs and post maintenance testing was completed for the recirculation pump speed control system. Inspectors monitored and reviewed licensee performance in all activities of this evolution and determined that licensee performance was satisfactory.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspectors Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to ensure that the activities were consistent with Vermont Yankee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal plant working hours and backshift hours. Specifically, the inspectors:

- Observed operations within the central and secondary security alarm stations; and
- Toured selected security officer response posts.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of inspector normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Exit Meeting Summary

An exit meeting was held with the licensee on May 21, 2009. The licensee acknowledged the results. The inspector verified whether any material provided by the licensee during the inspection was considered proprietary.

On July 22, 2009, the resident inspectors presented the inspection results to Mr. Chris Wamser and other members of the VY staff. The inspectors confirmed that no proprietary information was provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

M. Colomb, Site Vice President
J. Dreyfuss, Director of Nuclear Safety
C. Wamser, General Manager of Plant Operations
D. Mannai, Licensing Manager
N. Rademacher, Director of Engineering
M. Philippon, Operations Manager
S. Wender, Radiation Protection Manager
W. Pittman, Asst. Operations Manager
M. Gosekamp, Acting Maintenance Manager
S. Aprea, Shift Manager
D. Jones, Shift Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

OP 2141, 115kV Switchyard, Rev. 18
OP 2140, 345kV Electrical System, Rev. 50
OP 3179, Grid Instability, Rev. 2
OP 2196, Seasonal Readiness, Rev. 29
OP 3127, Natural Phenomena, Rev. 25
OP 2181, Service Water/Alternate Cooling Operating Procedure, Rev. 109
OP 2192, Heating, Ventilating, and Air Conditioning System, Rev. 65
RP 2188, Advanced Off Gas Closed Cooling Water, Rev. 8
ENN-PL-158, Transmission Grid Interface and Compliance with NERC Standards, Rev. 1
ISO New England Procedure 12, Voltage and Reactive Control, Rev. 3
ISO New England Procedure 4, Action During a Capacity Deficiency, Rev. 7
Alarm response 8-J-9, Safety Bus Voltage Lo, Rev 13

Condition Reports

2008-05465

Training Material

Simulator Scenarios LOR-26-401 (including loss of grid)

Simulator Scenarios LOR-27-201 (including loss of grid)

LOT-00-603 Off Normal procedures (including loss of grid) for simulator

LOT-00-601 Off Normal procedures (including loss of grid) for classroom

Miscellaneous Documents

WANO SOER 1999-1 Training Materials

SOER 99-1, Loss of Grid Addendum, December 9, 2004

Control Room Logs August 16 & 17, 2003

Control Room Logs December 12, 2008

Memo to ISO New England re: 381 Line Out, Dated April 21, 2006

Memo from ISO New England re: Nuclear Plant Transmission Operations, Dated January 1, 2007

UFSAR Section 8.5, Standby Diesel Generator System

Section 1R04: Equipment Alignment

Procedures

OP 2124, Residual Heat Removal System, Rev. 113

OP 2120, High Pressure Coolant Injection, Rev. 55

OP 2121, Reactor Core Isolation Cooling System, Rev. 52

OP 2117, Standby Gas Treatment System, Rev. 17

Drawings

G-191172, Flow Diagram Residual Heat Removal System

G-191174, Flow Diagram Reactor Core Isolation Cooling Sh. 1 and 2

G-191159, Flow Diagram Service Water System Sh. 1

G-191169, Flow Diagram High Pressure Coolant Injection System, Sh. 1 and 2

G-191238, HVAC-Flow Diagram Reactor Building

Section 1R05: Fire Protection

Procedures

OP 2186, Fire Suppression Systems, Rev. 56

OP 3020, Fire Emergency Response Procedure, Rev. 54

PP 7011, Vermont Yankee Fire Protection and Appendix R Program, Rev. 9

Miscellaneous Documents

PFP RB-10, Torus South (RB-2) Elevation 213'-9", Rev 5/1/03

PFP RB-11, Torus North (RB-1) Elevation 213'-9", Rev 5/1/03

PFP RB-4, Reactor Building Elevation 280'-0", Rev 5/1/03

PFP RB-5, Reactor Building Elevation 280'-0", Rev 5/1/03

PFP-TB-5, Diesel Rooms Elevation 252'-6", Rev. Date 5/1/03

Fire Hazards Analysis, Rev. 10

Section 1R06: Flood Protection Measures

Condition Reports

2008-4898 2008-5454 2008-3406

Procedures

ON 3148, Loss of Service Water, Revision 15

OP 5265, Service Water Component Inspection and Acceptance Criteria, Revision 16

Work Orders

51643784 04-3617-000

Drawings

G-191159, Flow Diagram Service Water System, Sheets 1 and 2

G-191349, Conduit, Trays, Grounding and Lighting Plan Intake Structure, Rev. 23, Sheet 1

G-191451, Circulating Water System Intake Structure, Rev. 17, Sheet 1

Miscellaneous Documents

NRC Information Notice 2005-30 Safe Shutdown Potentially Challenged By Unanalyzed Internal Flooding Events and Inadequate Design

VY Individual Plant Examination of External Events (IPEEE), Staff Evaluation Report, For Internal Flooding Analysis, Enclosure 5, 1/19/2001

VY Individual Plant Examination External Events (IPEEE), June 1998

VY Topical Design Basis Document for Internal Flooding, Revision 9

Section 1R07: Heat Sink Performance

Condition Reports

2009-1604 2007-2170

Procedures

OP 5265, Service Water Component Inspection and Acceptance Criteria, Rev. 16

OP 5202, Maintenance/Inspection of Heat Exchangers, Pressure Vessels and Tanks, Rev. 26

NE 8064, Non-code Visual Examination Methods As Good Maintenance Practice, Rev. 2

PP 7021, Service Water Program, Rev. 2

Miscellaneous Documents

VY Inspection Summary of A RHR Heat Exchanger 1999

VY Inspection Summary of A RHR Heat Exchanger 2009

BVY 01-90, Update on Vermont Yankee Generic Letter 89-13 Program Relative to RHR Heat Exchanger Testing and Maintenance Practices

BVY 90-07, Discussion of Current and Proposed Monitoring Methods For The A and B RHR Heat Exchangers

5265.02 Heat Exchanger Inspection Data for A and B RHR Heat Exchanger from 1995-2007

Section 1R11: Licensed Operator Regualification Program

Condition Reports

2009-0846 2009-0944

Miscellaneous Documents

Instructor Guide for Simulator LOR-27-301 Scenarios 5 and 6
 LOT-00-233, "VY Licensed Operator Training Program – Normal and Standby Fuel Pool
 Cooling and Cleanup System"

Section 1R12: Maintenance Effectiveness

Condition Reports

2007-0327	2007-4733	2008-2679	2008-5101
2007-3767	2008-5265	2008-5411	2009-1106
2009-1424	2007-0488	2005-1961	2009-0039
2008-4794	2009-1980		

Work Orders

05-002196	05-065775	05-003796	05-003797
06-06236	170926		

Procedures

ON 3146, Low Instrument/Scram Air Header Pressure, Rev. 20
 OP 5247, Maintenance and Testing of Battery Chargers, Rev. 25
 OP 4210, Maintenance and Surveillance of Lead Acid Storage Batteries, Rev. 54
 EN-DC-205, Maintenance Rule Monitoring, Rev. 2
 EN-DC-203, Maintenance Rule Program, Rev. 1

Miscellaneous Documents

VY System Report for Instrument Air 4th quarter 2008
 PM Basis ME-060, Revision 7
 EN-WM-105, Model OM dated 3/5/09
 Instruction Book for (Atlas Copco) Stationary Air Compressors, 1994-07
 Maintenance Rule Monthly Report for January and March 2009
 Meeting Minutes 3/28/2006, Battery Chargers
 Maintenance Rule Action Plan/Performance Evaluation for 125 VDC Station Main Battery
 Subsystem, Rev. 0, Dated 9/25/2005
 Maintenance Rule Action Plan/Performance Evaluation for 125 VDC Station Main Battery
 Subsystem, Rev. 1, Dated 11/6/2006
 Maintenance Rule Expert Panel Meeting Minutes 11/9/2006
 Maintenance Rule (a)(1) to (a)(2) Disposition Memorandum 11/6/2006
 Data on the AC ripple voltage from the Main Station Battery Chargers from July 2007 through
 May 2009

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Reports

2009-1996 2009-1999

Work Orders

00166616
51698195
51698196
51698197
51658198
51698201

Procedures

AP 0172, Work Schedule Risk Management – On Line, Rev. 19
AP 0091, Risk Assessment Procedure – Temporary Configuration Changes, Rev. 5
OP 2181, Service Water Alternate Cooling Operating Procedure, Rev. 109
OP 4255, Calibration of 4KV Bus Degraded Grid Undervoltage Relays, Rev. 15
EN-WM-101, Online Work Management Process, Rev. 4
EN-WM-104, On Line Risk Assessment, Rev. 0

Drawings

B-191301, Control Wiring Diagram, Cooling Tower No. 2

Miscellaneous Documents

EOOS Risk Assessment for Loss of Electrical Separation Between MCC 8C and MCC 9C dated April 14, 2008
VY EOOS Risk Assessment WW0925 June 15-22
VY EOOS Risk Assessment WW0926 June 22-28
Scheduler's re-evaluation of EOOS during "A" Recirculation Pump MG Set lock up 06/23/2009
Memorandum Regarding Alternate Cooling Power Supply, dated October 15, 1997

Section 1R15: Operability Evaluations

Condition Reports

2007-3696	2008-2447	2009-0238	2009-0291
2009-0500	2009-1423	2009-1427	2009-1429
2009-1847	2009-1944		

Work Order

51671311
114624

Procedures

OP 2117, Standby Gas Treatment, Rev.17
OP 4181, Service Water/ Alternate Cooling System Surveillance, Rev. 68

Drawings

VYI - SW Part 9 sheets 2, 3;
VYI - SW Part 7, sheet 3
B191301, Control Wiring Diagram Standby Gas Treatment System A EP Valves, Sheets 1425, 1427, 1429

Miscellaneous Documents

EC 14072
EC13803
EC13131
VY Calc 3080
IWA – 3000, Standards for Examination Evaluation
License Amendment 130, Supplemental Safety Evaluation
License Amendment 182, Supplemental Safety Evaluation
Memo, Fuel Pool Cooling Stainless Steel Radiography, 4/10/09
EDCR 89-408, Standby Fuel Pool Cooling System
N-513-2, Evaluation Criteria for Temporary Acceptability of Flaws in Moderate Energy Class 2 or 3 Piping, 2/20/2004
Design Basis Document for Service Water, Residual Heat Removal Service Water Alternate Cooling Systems, Rev. 29
EPRI NP-6041-SL, A Methodology for Assessment of Nuclear Power Plants Seismic Margin, Rev. 1
SW Pump “C” data for Pump Capacity, Pump Vibration and Pump Amps dated 5/19/2009
SW Pump “C” IST Pump reference data set established 5/19/2009
VYOPF 4181.04, OP 4181, Rev. 68 Service Water Pump Capacity Test Data Sheet dated 5/18/2009
VYOPF 4181.08, OP 4181, Rev. 68 Service Water Pump Capacity Test dated 5/17/2009

Section 1R18: Plant Modifications

Condition Reports

2009-2093

Work Order

00197972

Drawings

G-191159, Flow Diagram Service Water System, Sh. 1, Rev 76
VYI-SW-Part 3, Piping Isometric Drawing Service Water Outside Intake Structure, Sh. 4

Procedures

AP 0020, Control of Temporary and Minor Modifications, Rev. 78
EN-DC-136, Temporary Alterations, Rev. 4

Miscellaneous Documents

TMOD No. 15648
50.59 Evaluation 2009-001
Repair Plan for SW Pipe Leak at Traveling Screens

Section 1R19: Post-Maintenance Testing

Condition Reports

2009-1267 2009-1795 2009-1813 2009-0691

A-7

2008-0533	2009-1060	2008-2151	2009-1611
2009-1949	2008-4624	2007-0357	2008-0829
2009-1648	2009-1771		

Work Orders

00178181	51796997	51690337	00153279
00192426	00195501	00186645	51671311
00174515	00195389	51074193	

Procedures

OP 2180, Circulating Water/Cooling Tower Operation, Rev. 94
OP 2111, Control Rod Drive System, Rev. 61
OP 4424, Control Rod Scram Testing and Data Reduction, Rev. 44
OP 4115, Primary Containment Surveillance, Rev. 61
OP 4124, Residual Heat Removal and RHR Service Water System Surveillance, Rev. 113
OP 4105, Fire Protection Systems Surveillance, Rev. 43
EN-DC-118, Return to Service Form, Rev. 3

Drawings

5920-4147, Schematic Air/Jacket Coolant System

Miscellaneous Documents

EC 12677
Design Basis Document for EDG and Auxiliary Systems, Rev. 22
Coolant Temperature Alarm Switch Calibration Data Sheet completed 4/13/2009
A RHR/RHR SW LCO Maintenance Plan April 27-May 3, 2009
C Service Water Pump IST Reference Data Sheet established 5/19/2009
C Service Water Pump Capacity Data for 11/3/2008 and 5/17/2009
VYOPF 4424.07, OP 4424 Rev. 44, Scram Timing Checklist dated 5/13/2009
VYOPF 4424.04, OP 4424 Rev. 44, Scram Times Summary Sheet dated 5/12/2009
VYOPF 4424.06, OP 4424 Rev. 44, HCU checklist dated 5/12/2009
VYOPF 4424.010, OP 4424 Rev. 44, Core map of All Existing "Slow" control Rods dated 5/13/2009
VYOPF 4424.01, OP 4424 Rev. 44, Control Room Scram Testing Form dated 5/13/2009

Section 1R22: Surveillance Testing

Condition Reports

2007-4674 2009-1106

Procedures

OP 4310, Scram Discharge Instrument Volume High Water Functional/Calibration, Rev. 32
OP 4105, 18 Month Fire Pump Operability Performance and Capacity Check, Rev. 43
OP 4113, Main and Auxiliary Steam System Surveillance, Rev. 31
OP 4124, Residual Heat Removal and RHR Service Water System Surveillance, Rev. 113
OP 4117, Standby Gas Treatment System Surveillance, Rev. 35

Miscellaneous Document

Air Compressor Troubleshooting Addendum
ESOMs Drywell Leakage Rate Logs from May 19, 2009 to May 28, 2009

Section 2PS1: Radiological Environmental Monitoring Program (REMP) and Radioactive Materials Control

Documents

Off-Site Dose Calculation Manual (ODCM), Revs. 31 and 32
Annual Radiological Environmental Operating Reports (2007 and 2008)
Annual Radioactive Effluent Release Reports (2007 and 2008)
Monthly Effluent Release Off-Site Dose Calculations (Sept 2008 – March 2009)
AREVA Analytics Services Annual Quality Assurance Status Report (Jan – Dec 2008)
AREVA NP Environmental Laboratory 2008 Dosimetry Services Annual Quality Assurance Status Report.
Teledyne Brown Engineering Environmental Services Quality Assurance Report (2008)
J. A. FitzPatrick Environmental Laboratory Quality Assurance Audit Report QA-2/6-2007
J. A. FitzPatrick Environmental Laboratory Quality Assurance Report (2007)
QA-06-2007-VY-1, Quality Assurance Audit Report, Effluent and Environmental Monitoring
QA-02-2008-VY-1, Quality Assurance Audit Report, Chemistry
AREVA Document # 32-9068362-001, VY Site Boundary Direct Dose from N-16 Methodology
Environmental Stations Gas meter calibrations (2007 – 2009)
Meteorological Towers Calibration reports (2007 – 2009 Quarter 1)
Meteorological Joint Frequency Distribution data (2007 – April 2009)
Meteorological Primary and Secondary Tower Data Recovery Rates (2007 – April 2009)
Release of Material Instrument Calibrations and source certificates
Release of Material Snapshot Assessment / Benchmark, March 2009
VTYLO-2008-00154 – VY Radioactive Contamination & Radioactive Material Controls
Vermont Yankee Radiation Protection Program Annual Report (2008)

Condition Reports (23):

2007-2718	2007-3776	2007-3825	2007-3826
2007-3860	2007-3889	2008-0816	2008-0972
2008-1863	2008-2058	2008-2758	2008-2882
2008-3718	2009-0100	2009-0387	2009-1220
2009-0187	2009-1259	2009-1531	2009-1597
2009-1856	2009-1885		
LO-WTVTY-2008-00037			

Procedures:

AP4601, Rev. 18, Environmental Radiation Surveillance Program
DVP-04.01, Rev. 4, Environmental Laboratory Quality Assurance / Quality Control Program
(J. A. FitzPatrick)
EN-CY-102, Rev. 3, Laboratory Analysis Quality Controls
EN-CY-108, Rev. 3, Monitoring of Non-Radioactive Systems
EN-CY-109, Rev. 2, Sampling and Analysis of Groundwater Monitoring Wells

EN-RP-100, Rev. 3, Radworker Expectations
EN-RP-113, Rev. 3, Response to Contaminated Spills/Leaks
EN-RP-121, Rev. 4, Radioactive Material Control
OP 2505, Rev. 21, Handling, Transfer and Storage of On-Site Radioactive Material
OP 2611, Rev. 49, Stack Effluent Sampling and Analysis
OP 4605, Rev. 43, Environmental Radiation Sampling and Analysis
OP 5335, Rev. 17, Primary Meteorological System Functional Calibration Test
OP 5343, Rev. 15, Backup Meteorological System Functional Calibration Test

Section 40A1: Performance Indicator (PI) Verification

Condition Reports

2008-1999	2008-2025	2008-5238	2009-0091
2009-1161	2009-1416		

Procedure

OP 4152, Equipment and Floor Drain Sump and Totalizer Surveillance, Rev. 43
AP0094, NRC Performance Indicator Reporting, Rev. 14

Misc. Documents

Vermont Yankee Gamma Spectroscopy Report dated May 11, 2009
Monthly Reactor Coolant Iodine Isotopics for January through April 2009

Section 40A2: Identification and Resolution of Problems

Procedures

EN-LI-102 Corrective Action Process, Rev. 13

LIST OF ACRONYMS

ADAMS	Agency wide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
AP	Administrative Procedure
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CT	Cooling Tower
CW	Circulating Water
DBD	Design Basis Document
DP	Vermont Yankee Departmental Procedure
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EC	Engineering Change
EDG	Emergency Diesel Generator
FZ	Fire Zone
HPCI	High Pressure Coolant Injection
I&C	Instrumentation and Controls
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Examination for External Events
LER	Licensee Event Report
Met	Meteorological
MIC	Microbial Induced Corrosion
MSPI	Mitigating System Performance Indicator
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NIST	National Institute of Science and Technology
NRC	Nuclear Regulatory Commission
ODCM	Off-Site Dose Calculation Manual
OP	Vermont Yankee Operating Procedure
P&ID	Piping and Instrumentation Drawing
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post Maintenance Testing
QA	Quality Assurance
RCA	Radiological Controlled Area
RCIC	Reactor Core Isolation Cooling
REMP	Radiological Environmental Monitoring Program
RFO	Refueling Outage
RHR	Residual Heat Removal
RP	Radiation Protection
RWCU	Reactor Water Cleanup
RWR	Reactor Water Recirculation
SAM	Small Article Monitor
SBGT	Standby Gas Treatment

SDP	Significance Determination Process
SSC	Structures, Systems, or Components
SW	Service Water
TLD	Thermo-luminescent Dosimeter
TM	Temporary Modification
TS	Technical Specifications
UPS	Uninterruptible Power Supply
UFSAR	Updated Final Safety Analysis Report
VY	Vermont Yankee
WO	Work Order