



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

April 29, 2011

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 05000271/2011002

Dear Mr. Colomb:

On March 31, 2011, 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 April 11, 2011, with you and other members of your staff.

The inspection examined activities performed 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). These findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they have been entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCV), consistent with Section 2.3.2.a of the NRC's Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Vermont Yankee. In addition, if you disagree with any cross-cutting aspects assigned to the findings in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at Vermont Yankee.

M. Colomb

2

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Sincerely,

A handwritten signature in black ink that reads "Donald E. Jackson". The signature is written in a cursive style with a large, stylized "D" and "J".

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

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

Enclosure: Inspection Report No. 05000271/2011002
w/ Attachment: Supplemental Information

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Sincerely,

/RA/

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

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Enclosure: Inspection Report No. 05000271/2011002
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-271

License No.: DPR-28

Report No.: 05000271/2011002

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

Location: Vernon, Vermont 05354-9766

Dates: January 1, 2011 through March 31, 2011

Inspectors: D. Spindler, Sr. Resident Inspector, Division of Reactor Projects (DRP)
S. Rich, Resident Inspector, DRP

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

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS.....	3
REPORT DETAILS.....	5
1. REACTOR SAFETY.....	5
1R01 Adverse Weather Protection	5
1R04 Equipment Alignment	6
1R05 Fire Protection	7
1R06 Flood Protection Measures	8
1R11 Licensed Operator Requalification Program	8
1R12 Maintenance Effectiveness	9
1R13 Maintenance Risk Assessments and Emergent Work Control	9
1R15 Operability Evaluations.....	10
1R18 Plant Modifications	11
1R19 Post-Maintenance Testing.....	11
1R22 Surveillance Testing	14
1EP6 Drill Evaluation	14
4. OTHER ACTIVITIES	15
4OA1 Performance Indicator (PI) Verification	15
4OA2 Identification and Resolution of Problems.....	16
4OA3 Event Follow-up	16
4OA6 Meetings, including Exit.....	20
4OA7 Licensee-Identified Violations.....	20
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED.....	A-2
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS.....	A-9

SUMMARY OF FINDINGS

IR 05000271/2011002; 01/01/2011 – 03/31/2011; Vermont Yankee Nuclear Power Station; Post-Maintenance Testing; Event Follow-up.

This report covered a three-month period of inspection by resident inspector staff and region-based inspectors. Two Green, self-revealing findings, which were determined to be non-cited violations (NCV), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." The cross-cutting aspects for the findings were determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the significance determination process 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 4, dated December 2006.

Cornerstone: Mitigating Systems

- Green. A self-revealing, non-cited violation (NCV) of very low safety significance (Green) of Technical Specifications 6.4, "Procedures," was identified for inadequate implementation of Entergy procedure EN-MA-118, "Foreign Material Exclusion," Revision 6, which resulted in foreign material intrusion into the Residual Heat Removal Service Water (RHRSW) system. Specifically, Entergy did not establish a Foreign Material Exclusion (FME) Zone 1 around the open RHRSW system between completing the closeout inspection and system closure following pump replacement. Entergy's immediate corrective actions included conducting a "stand down," reinforcing the standards and requirements for FME controls and general procedural compliance, as well as reinforcing expectations for the attention to detail of work practices. Entergy entered the issue into their corrective action program to evaluate for additional corrective measures.

The inspectors determined that the finding was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences, (i.e., core damage). Specifically, foreign material made its way into the 'A' Residual Heat Removal Heat Exchanger (RHR HX) and rendered the 'A' RHRSW train inoperable for several days. A review of NRC Inspection Manual Chapter (IMC) 0612, Appendix E, "Minor Examples," revealed that no minor examples were applicable to this finding. The inspectors used IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding required a Phase 2 review because the 'A' RHRSW train had an actual loss of safety function for greater than its allowed outage time (7 days). This finding was assessed using IMC 0609 and was determined to be of very low safety significance (Green) based on a Phase 2 analysis. The finding had a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because Entergy personnel did not follow EN-MA-118. Specifically, they did not establish a FME Zone 1 after the system closeout inspection. [H.4(b)] (Section 1R19)

Enclosure

- Green. A self-revealing, Green NCV of Technical Specification 6.4, "Procedures," was identified in which maintenance and planning personnel did not involve engineering personnel as required by Entergy procedure EN-MA-101, "Fundamentals of Maintenance," Revision 9, and EN-WM-105, "Planning," Revision 8, resulting in the incorrect material being used to replace the gasket on the flange of High Pressure Coolant Injection System (HPCI) steam trap 23T-3. Entergy ultimately replaced the gasket with the correct material and entered this issue into their corrective action program.

The inspectors determined that the finding was more than minor because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance (Green) in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," using Significance Determination Process (SDP) Phases 1, 2 and 3. A Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis because the Phase 2 analysis indicated that the finding had the potential to be greater than very low safety significance (Greater than Green). This finding had a cross-cutting aspect in the Human Performance cross-cutting area, Decision Making component, because Vermont Yankee personnel did not obtain interdisciplinary input on the decision to use a different, incorrect gasket material in a steam trap in the HPCI system. [H.1(a)] (Section 4OA3)

Other Findings

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Vermont Yankee (VY) Nuclear Power Station began the inspection period operating at 100 percent power. On February 14, 2011, VY performed a planned power reduction to 58 percent power to perform main steam line isolation valve testing, main turbine stop valve testing, and a rod pattern adjustment. VY returned to 100 percent power on February 15, 2011, and remained at or near 100 percent power for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Impending Adverse Weather

a. Inspection Scope (1 sample)

The inspectors reviewed Entergy's procedures in order to evaluate the process for implementation of extreme cold temperature preparedness. This review was conducted from January 21, 2011, through January 24, 2011, due to forecasted overnight low temperatures below negative 15 degrees Fahrenheit. The inspectors reviewed adverse weather information contained in Vermont Yankee's Individual Plant Examination for External Events and compared it to the actions specified in Entergy operating procedure (OP) 3127, "Natural Phenomena," Revision 26 and OP 2196, "Seasonal Preparedness," Revision 31. The inspectors reviewed documents, interviewed personnel and performed a walkdown of the reactor building, turbine building and intake structure to verify that actions required by the above procedures had been taken and that indoor temperatures were not low enough to impact equipment operability.

b. Findings

No findings were identified.

.2 External Flooding Readiness

a. Inspection Scope (1 sample)

The inspectors reviewed Entergy's flood protection barriers and procedures for coping with external flooding. The inspectors reviewed external flooding information contained in the Updated Final Safety Analysis Report (UFSAR) and Individual Plant Examination for External Events, and compared it to the actions specified in OP 3127, "Natural Phenomena," Revision 26. The inspectors performed walkdowns of the switchgear rooms, cooling towers, intake structure, and outside areas. They also examined the

Enclosure

equipment specified in the OP (sump pumps, floor drain plugs, sandbags, etc.) to determine if it was available for use. The inspectors also reviewed a sample of external flooding-related conditions identified in VY's CAP to determine if they were appropriately identified and corrected. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Equipment Alignment (71111.04Q)

a. Inspection Scope (5 samples)

The inspectors performed five partial system walkdowns to verify correct 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, and operating procedures. The inspectors verified valve positions and the general condition of selected components. Finally, the inspectors evaluated material condition, housekeeping, and component labeling. The documents reviewed are listed in the Attachment. The following systems were inspected:

- Core Spray with 'A' Residual Heat Removal (RHR) Train Unavailable;
- Remote Shutdown Systems;
- 'B' Emergency Diesel Generator with 'A' Service Water Train Unavailable;
- Automatic Depressurization System during High Pressure Coolant Injection System Testing; and
- 'A' RHR Service Water Train with 'B' Train Unavailable.

b. Findings

No findings were identified.

.2 Complete Equipment Alignment (71111.04S)

a. Inspection Scope (1 sample)

The inspectors performed a complete equipment alignment inspection of the safety-related portion of the 4 kilovolt (kV) electrical distribution system. The inspectors compared the actual system configuration to approved drawings, the UFSAR, and operating procedures. Through a system walkdown, the inspectors evaluated whether the switchgear rooms were properly ventilated, Direct Current (DC) control power was available, associated transformers were free of leaks and other degraded conditions, and deficiencies had been entered into the corrective action program. The inspectors

also assessed housekeeping and component labeling. In addition, the inspectors reviewed the system health reports, and evaluated a sample of previously identified deficiencies to determine if they had been properly addressed. The inspectors performed a search of the corrective action program for equipment alignment problems to verify that Entergy was identifying problems at an appropriate threshold and resolving them appropriately. These activities constituted one complete equipment alignment inspection sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection (71111.05Q)

a. Inspection Scope (5 samples)

The inspectors performed inspections of five fire areas based on a review of the Vermont Yankee Safe Shutdown Capability Analysis and the Fire Hazards Analysis. The inspectors reviewed Entergy's fire protection program to determine the specified fire protection design features, fire area boundaries, and combustible loading requirements for the selected areas. The inspectors verified, consistent with applicable administrative procedures, that combustibles and ignition sources were adequately controlled; passive fire barriers, manual fire-fighting equipment, and detection and suppression equipment were appropriately maintained; and compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with Entergy's fire protection program. The inspectors evaluated the fire protection program for conformance with the requirements of License Condition 3.F. The documents reviewed are listed in the Attachment. The following fire areas were inspected:

- Turbine Lube Oil Tank and Storage Room, FZ-6;
- Control Building El. 262' Cable Vault, FA ASD, FZ-2;
- HPCI Room, FZ RB-2;
- 'B' EDG Room with Barrier Breach, FA-9; and
- Main, Auxiliary and Startup Transformers.

b. Findings

No findings were identified.

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

The inspectors reviewed Entergy's flood protection design and barriers for coping with internal flooding on the Reactor Building 252' elevation. The inspectors reviewed internal flooding information contained in Vermont Yankee's Individual Plant Examination for External Events (IPEEE) and the internal flooding design basis document. The inspectors performed a walkdown of the area to ensure equipment and structures needed to mitigate an internal flooding event were as described in the IPEEE and the design basis document. Additionally, the inspectors reviewed CRs related to internal flooding to ensure identified problems were properly addressed for resolution. Documents reviewed are listed in the Attachment. These activities constituted one internal flood protection measures inspection sample.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)Quarterly Inspection (71111.11Q)a. Inspection Scope (1 sample)

The inspectors observed a simulator-based licensed operator requalification (LOR) exam on February 7, 2011. The inspectors assessed the performance of risk significant operator actions, including the use of emergency operating procedures. 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 usage; control board manipulations; and command and control. The inspectors also compared the simulator configuration with the actual control board configuration. Finally, the inspectors verified that evaluators were identifying and documenting crew performance problems. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)Quarterly Inspection (71111.12Q)a. Inspection Scope (3 samples)

The inspectors reviewed performance-based problems involving selected in-scope structures, systems and components (SSCs) to assess the effectiveness of the maintenance program. The reviews focused on the following aspects when applicable:

- Proper Maintenance Rule scoping in accordance with 10 CFR 50.65;
- Characterization of reliability issues;
- Charging system and component unavailability;
- 10 CFR 50.65 paragraph (a)(1) and (a)(2) classifications;
- Identifying and addressing common cause failures;
- Appropriateness of performance criteria for SSCs classified paragraph (a)(2); and
- Adequacy of goals and corrective actions for SSCs classified paragraph (a)(1).

The inspectors reviewed the applicable system health reports, maintenance backlogs, and Maintenance Rule basis documents. The documents reviewed are listed in the Attachment. The following structures, systems and components were inspected:

- Augmented Off-gas System;
- Instrument Air System; and
- Service Air System.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)a. Inspection Scope (5 samples)

The inspectors evaluated five maintenance risk assessments for planned and emergent maintenance activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. The inspectors reviewed maintenance risk evaluations, maintenance plans, work schedules, and control room logs to determine if concurrent or emergent maintenance or surveillance activities significantly increased the plant risk. The inspectors reviewed risk assessments to determine if they were performed as required by 10 CFR 50.65 paragraph (a)(4) and implemented in accordance with Entergy's administrative procedure (AP) 0172, "Work Schedule Risk Management - Online." When emergent work was performed, the inspectors observed activities to determine if plant risk was promptly reassessed and managed. The inspectors conducted plant walkdowns to verify that appropriate risk management

actions had been taken. The documents reviewed are listed in the Attachment. The following maintenance activities were inspected:

- Work Week 1101 – Emergent Work on 'A' RHRSW and RHR Trains;
- Work Week 1103 – 'B' Diesel Generator Testing and Battery B-AS-2 Maintenance;
- Work Week 1105 – Service Water Valve testing;
- Work Week 1107 – Emergent Work on HPCI; and
- Work Week 1111 – Service Water Strainer maintenance and Standby Liquid Control Surveillance.

b. Findings

See Section 4OA7.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (5 samples)

The inspectors reviewed five operability evaluations associated with degraded or non-conforming conditions to assess the acceptability of the evaluations, the use and control of applicable compensatory measures, and compliance with Technical Specifications. The inspectors reviewed and compared the technical adequacy of the evaluations with the Technical Specifications, UFSAR, associated design basis documents, and Entergy's procedure EN-OP-104, "Operability Determinations." The documents reviewed are listed in the Attachment. The inspectors reviewed evaluations of the following degraded or non-conforming conditions:

- CR 2011-00301 – 'B' RHRSW Pump Met In-service Testing Action Limit for Low Pump Differential Pressure;
- CR 2011-00694 – Main Diesel Fuel Oil Flash Point at Procedural Lower Limit;
- CR 2011-00876 and 2011-00880 – Water Leakage Found on Cylinder Adapter Plates on 'B' Emergency Diesel Generator (DG-1-B) ;
- CR 2011-00773 – RCIC Environmental Qualification (EQ); and
- CR-2010-0556, 2010-05023, 2011-00193, 2011-00652, and 2011-00713 – General Electric Hitachi Design Life of 'D' and 'S' Lattice Marathon Control Rod Blades.

b. Findings

No findings were identified.

Enclosure

1R18 Plant Modifications (71111.18)Permanent Plant Modificationsa. Inspection Scope (2 samples)

The inspectors reviewed EC21288, "Replace V76-3B with a New Check Valve," and EC17444, "Chemical Treatment Connections to the Spent Fuel Cooling (SFPC) System," to ensure that they did not adversely affect the availability, reliability, or functional capability of any risk-significant SSCs. The inspectors reviewed the engineering change packages, and observed the systems in operation following the implementation of the modifications. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)a. Inspection Scope (7 samples)

The inspectors reviewed seven post-maintenance test (PMT) activities on risk-significant systems. The inspectors reviewed these activities to determine whether test acceptance criteria were clear and consistent with design basis documents. 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 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," and applicable station procedures. Upon completion, the inspectors performed a walkdown to verify that equipment was returned to the proper alignment necessary to perform its safety function, and evaluated whether conditions adverse to quality were entered into the CAP for resolution. The documents reviewed are listed in the Attachment. The inspectors reviewed the PMTs performed for the following maintenance activities:

- RHR Pumps 'A' and 'C' and RHR Service Water Pump 'A' Testing Following RHR Heat Exchanger Work;
- Fire Protection Check Valve V76-3B Replacement;
- 'B' Service Water Pump Replacement;
- 'B' Emergency Diesel Generator Overhaul;
- Repair of HPCI Steam Trap 23T-3;
- 'C' Circulating Water Pump Replacement; and
- 'B' RHR Service Water Pump Replacement.

b. Findings

Introduction: A self-revealing, NCV of very low safety significance (Green) of Technical Specifications 6.4, "Procedures," was identified for inadequate implementation of Entergy procedure EN-MA-118, "Foreign Material Exclusion," Revision 6, which resulted in foreign material intrusion into the RHRSW system. Specifically, Entergy did not establish a procedurally required FME Zone 1 around the open RHRSW system between completing the closeout inspection and system closure following pump replacement.

Discussion: On December 27, 2010, Entergy began removal of the 'C' RHRSW pump for a planned replacement. During the planned replacement of the 'C' RHRSW pump, the 'A' train of RHRSW was planned to remain in an operable status, since the 'A' RHRSW pump was not planned to be affected by the 'C' pump replacement, and since one RHRSW pump provides sufficient capacity to perform the safety function of the 'A' RHRSW train. During the work activity, the area was controlled as a FME Zone 2, which requires some FME boundaries and work practices, but does not require material entering the zone to be either tracked on a log or tied down as is required in a FME Zone 1. On December 30, 2010, Entergy personnel performed a closeout inspection of the 'C' RHRSW pump and piping prior to final pump assembly, but did not upgrade the area to a FME Zone 1. EN-MA-118, "Foreign Material Exclusion," states that a FME Zone 1 should be established, "when a final visual inspection of internal cleanliness before system closure is not possible." During the final steps of pump assembly, Entergy personnel used a number of cloth FME covers to prevent nuts and washers from falling into the open piping. Because the area was not designated a FME Zone 1, the cloth covers were not tied down or logged as FME zone inventory, and one cover was left behind in the system after the pump was completely installed. During post-maintenance testing on December 30, 2010, Entergy observed that the pump did not meet the flow rate acceptance criterion that is required for operability. On January 2, 2011, the newly installed pump was removed for internal inspection, and a cloth FME cover was found lodged in the pump. Part of the cover had been torn away during the pump run and carried further into the RHRSW system. Subsequent system inspection identified a large piece of the cover on the 'A' Residual Heat Removal Heat Exchanger (RHR HX) baffle plate and small pieces in other areas of the 'A' RHRSW train. Discovery of this material in the 'A' RHR HX rendered the entire RHRSW 'A' train inoperable as of December 30, when the unacceptable flow rate was first discovered. Entergy subsequently removed all of the foreign material from the 'A' RHRSW train. On January 7, 2011, Entergy successfully tested the 'A' RHRSW train and returned it to service. The 'C' RHRSW pump was successfully tested and returned to service on January 8, 2011.

This issue was entered into Vermont Yankee's corrective action program. Shortly after retrieval of the FME cover, Entergy conducted a "stand down" to discuss the event and reinforce FME control standards. Immediate corrective actions included conducting a "stand down," reinforcing the standards and requirements for FME controls and general procedural compliance, as well as reinforcing expectations for the attention to detail of work practices. Additionally, Entergy entered the deficiency into their corrective action program to evaluate for additional corrective measures.

Enclosure

Analysis: The performance deficiency was that Entergy did not fully implement written procedures, as required by Technical Specification 6.4 and Entergy procedure EN-MA-118, covering preventive and corrective maintenance operations which could have an effect on the safety of the reactor. Specifically, Entergy performed the closeout inspection prior to RHRSW system closure, and did not establish a FME Zone 1 during the remaining work activities prior to system closure. This issue was within Entergy's ability to foresee and correct and should have been prevented. This led to foreign material intrusion into the 'A' train of RHRSW, rendering the 'A' train inoperable. Traditional Enforcement did not apply; as the issue did not have actual or potential safety consequences, had no willful aspects, nor did it impact the NRC's ability to perform its regulatory function. A review of NRC IMC 0612, Appendix E, "Minor Examples," revealed that no minor examples were applicable to this finding. The inspectors determined that the finding was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences, (i.e., core damage). Specifically, material from the FME cover made its way into the 'A' RHR HX and rendered the 'A' RHRSW train inoperable for greater than 7 days. A review of NRC IMC 0612, Appendix E, "Minor Examples," revealed that no minor examples were applicable to this finding.

The inspectors used IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined that the finding required a Phase 2 review because the 'A' RHRSW train had an actual loss of safety function for greater than its allowed outage time (7 days). Using IMC 0609 Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," and an event likelihood of 3-30 days, the inspectors determined that the finding was of very low safety significance (Green). The most dominant core damage sequence was a transient without the power conversion system (TPCS): $TPCS(1) + CHR(2) + CV(3) = 6$ (Green). The risk was mitigated by the unaffected 'B' RHR heat exchanger and by the containment vent.

The finding had a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because Entergy personnel did not follow procedure EN-MA-118. Specifically, Entergy failed to establish a FME Zone 1 after the system closeout inspection. [H.4(b)]

Enforcement: Technical Specification 6.4, "Procedures," requires that written procedures be implemented for activities including "preventive and corrective maintenance operations which could have an effect on the safety of the reactor." Contrary to the above, the requirements of EN-MA-118, "Foreign Material" were not fully implemented during the pump assembly portion of the work activity. This led to foreign material intrusion into the 'A' RHRSW train that rendered it inoperable from December 30, 2010 to January 7, 2011. Immediate corrective actions included conducting a "stand down," reinforcing the standards and requirements for FME controls and general procedural compliance, as well as reinforcing expectations for the attention to detail of work practices. Additionally, Entergy entered the issue into their corrective action program to evaluate for additional corrective measures. Because this finding is of very

low safety significance and Entergy has entered it into their corrective action program (CR-VTY-2011-0007), this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. (**NCV 05000271/2011002-01: Failure to Follow Foreign Material Exclusion Procedure**)

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (6 samples)

The inspectors observed six surveillance tests and/or reviewed test data of selected risk-significant SSCs to determine whether the testing adequately demonstrated equipment operational readiness and the ability to perform the intended safety functions. The inspectors reviewed selected prerequisites and precautions to determine if they were met; evaluated whether the tests were performed in accordance with the written procedure; determined whether the test data was complete and met procedural requirements; and assessed whether SSCs were properly returned to service following testing. The inspectors also verified that conditions adverse to quality were entered into the CAP for resolution. The documents reviewed are listed in the Attachment. The inspectors reviewed the following surveillance tests:

- 'A' Emergency Diesel Generator Monthly Surveillance;
- Service Water Pump Testing;
- 'B' Loop RHR/RHRSW Pump and Valve Operability and Full Flow Test;
- Main and Auxiliary Steam System Surveillance;
- Quarterly Main Turbine Valve Performance Testing; and
- Reactor Coolant System Leak Detection Surveillance (RCS LD).

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness (EP)

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill

a. Inspection Scope (2 samples)

The inspectors observed an emergency preparedness (EP) drill on January 19, 2011, and observed the player critiques. Entergy's EP staff preselected the drill notifications and protective action recommendations to be included in the EP drill performance indicator (PI). The inspectors 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 the ability of designated personnel to make proper notifications in accordance with Entergy's

Enclosure

procedures and industry guidance. The inspectors evaluated the drill for conformance with the requirements of 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." The inspectors compared Entergy's self-identified issues with observations from the inspectors' review to ensure that performance issues were properly identified and documented. The documents reviewed are listed in the Attachment.

The inspectors observed licensed operator "as found" simulator training on February 7, 2011. The inspectors evaluated the operating crew activities related to accurate and timely classification and notification of an Alert. Additionally, the inspectors assessed the critique process used by the training evaluators for its ability to identify performance deficiencies. The documents reviewed are listed in the Attachment.

These activities constituted two drill evaluation inspection samples.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator (PI) Verification (71151 – 3 samples)

Initiating Events Cornerstone

a. Inspection Scope

The inspectors reviewed Entergy's submittals and PI data for the cornerstones listed below for the period from January 2010 to December 2010. The inspectors reviewed selected operator logs, plant process computer data, licensee event reports, and condition reports. The PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, EN-LI-114, "Performance Indicator Process," Revision 4, and AP 0094, "NRC Performance Indicator Reporting," Revision 15, were used to verify the accuracy and completeness of the PI data reported during this period. The PIs reviewed were:

- Unplanned scrams per 7000 critical hours;
- Unplanned power changes per 7000 critical hours; and
- Unplanned scrams with complications.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Reviews of Items Entered into the Corrective Action Program

a. Inspection Scope

The inspectors performed a daily screening of each item entered into Entergy's CAP. This review was accomplished by reviewing printouts of each CR, 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 or observations were identified.

.2 Operator Workarounds

a. Inspection Scope (1 sample)

The inspectors reviewed the cumulative effect of operator workarounds, operator burdens, enhanced surveillances and control room deficiencies on the reliability, availability and potential mis-operation of mitigating systems with a particular focus on issues that had the potential to affect the ability of operators to respond to plant transients and events. The inspectors reviewed the auxiliary operator round sheets/turnover sheets for the reactor building, turbine building, and outside areas of the plant, and compared these with Entergy's listed operator burdens and workarounds. The inspectors reviewed selected off-normal procedures and walked down related areas of the plant to determine whether the procedure steps could be implemented by operations personnel and required equipment was properly staged. In addition, the inspectors reviewed Entergy tracking systems for operator burdens, control room deficiencies, and disabled control room alarms. The inspectors discussed selected issues with responsible operations personnel to ensure they were appropriately categorized and tracked for resolution.

b. Findings

No findings or observations were identified.

4OA3 Event Follow-up (71153)

.1 Plant Event Review

a. Inspection Scope (1 sample)

On February 16, 2011, while performing the quarterly surveillance test on the High Pressure Coolant system (HPCI) turbine, a steam leak developed at the flange on steam

trap 23T-3 after full steam line pressure was applied to the trap during the test. HPCI room temperatures increased causing local fire alarms to activate. Based on the rapid rise in temperature in the HPCI room, operators manually isolated the HPCI system. This action occurred before the room temperatures reached the automatic isolation set point for the HPCI system. The inspectors observed plant parameters from the control room and reviewed control room operator performance. The inspectors communicated the plant event to regional personnel and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of additional reactive inspection activities. The inspectors reviewed Entergy's corrective actions to ensure they were implemented commensurate with their safety significance.

b. Findings and Observations

Introduction: A self-revealing, Green NCV of Technical Specification 6.4, "Procedures," was identified in which maintenance and planning personnel did not involve engineering personnel as required by EN-MA-101, "Fundamentals of Maintenance," Revision 9, and EN-WM-105, "Planning," Revision 8, resulting in the incorrect material being used to replace the gasket on the flange of HPCI steam trap 23T-3. Entergy ultimately replaced the gasket with the correct material and entered this issue into their corrective action program.

Description: On February 1, 2011, the HPCI system was removed from service to repair a small steam leak in non-safety related one-inch piping downstream of steam trap 23T-3. The flange on the trap had to be disassembled to access and replace the piping with the steam leak. The flange was originally sealed with a spiral wound flexitallic gasket. This type of gasket was not readily available and the licensee determined that a Garlock 9920 gasket was an acceptable replacement. The decision was made by maintenance supervision based on a previous Technical Evaluation (04-00600 revision 0) provided in the work package by the planning department. This technical evaluation states that this material should not be used in systems greater than 250 psig. This limitation was overlooked and the Garlock 9920 gasket was put into place on 23T-3. Entergy procedure EN-MA-101 states that replacement components shall be "like for like," and EN-WM-105 states that the Procurement Engineering Group (PEG) be notified if items cannot be verified by procedure or EN-DC-313, "Procurement Engineering Process," Revision 5. Neither procedure was followed for the replacement gasket in this instance.

After replacing the steam trap flange gasket with Garlock 9920, the HPCI system was restored to standby status. Work Order (WO) 252692 required the piping and flange be tested for leakage at full system pressure (approximately 1000 psig). The post-maintenance test (PMT) listed in the work order did not provide the operations department with detailed guidance in establishing initial conditions for the test. Operators believed that the steam trap gasket was at the required PMT pressure when aligned to the standby configuration. However, with HPCI in a standby configuration, a series of two normally-opened isolation valves provided a drain pathway to the main condenser hotwell environment. Due to the low pressure condition at the steam trap

flange gasket, the PMT had been inappropriately considered satisfactory, and Entergy declared the HPCI system to be operable on February 1.

On February 16, during HPCI quarterly surveillance testing, the steam trap and associated piping were exposed to full HPCI system steam pressure because the isolation valves to the main condenser automatically closed as part of the HPCI start-up sequence for the post-maintenance testing. The new gasket failed when exposed to pressure beyond its design rating, and allowed steam to escape between the flange and the steam trap body. The amount of steam that issued from 23T-3 was substantial enough to fill the room and raise the ambient temperature. Auxiliary operators in the HPCI room immediately reported the steam leak to the main control room, where licensed operators remotely isolated the HPCI steam line to stop the flow of steam.

This deficiency was entered into Entergy's corrective action program as CR-VTY- 2011-00667. Entergy determined that the root cause of the event was determined to be the incorrect use of the Garlock 9920 material for the gasket. Additionally, Entergy determined that inadequate post maintenance testing was a contributing cause. On February 18, 2011, Entergy replaced the 23T-3 flange gasket with the appropriate material, and completed a successful post maintenance test.

Analysis: The inspectors determined that the installation of inappropriate material for the steam trap flange gasket was a performance deficiency which caused the HPCI system to be inoperable for greater than the time allowed by Technical Specifications. This performance deficiency was within Entergy's ability to foresee and correct and should have been prevented. Traditional enforcement does not apply as the issue did not have an actual safety consequence, had no willful aspects, nor did it impact the NRC's ability to perform its regulatory function.

The inspectors reviewed Inspection IMC 0612, Appendix E, "Minor Examples," and determined that this deficiency was not similar to any of the minor examples. Additionally, using IMC 0612, "Power Reactor Inspection Reports," Appendix B, the inspectors determined that the finding was more than minor because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," using significance determination process (SDP) Phases 1, 2 and 3. Phase 1 screened the finding to Phase 2 because it represented an actual loss of the HPCI system safety function. A Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis because the Phase 2 analysis, conducted by the inspectors using the VY Pre-solved Risk-Informed Inspection Notebook, indicated that the finding had the potential to be greater than very low safety significance (Greater than Green).

The SRA used the VY Standardized Plant Analysis Risk (SPAR) model, Revision 8.16, to conduct the Phase 3 SDP evaluation, assuming that HPCI would not have been able to perform its safety function over the 19 day period from February 1, 2011 to February

19, 2011. This analysis indicated an increase in core damage frequency (Δ CDF) for internal initiating events in the range of 1 core damage accident in 4,000,000 years of reactor operation; in the low $1E-7$ range per year. The dominate core damage sequences included the operator failure of HPCI and reactor core isolation cooling (RCIC), and the failure of operators to depressurize the reactor following a loss of main feedwater. In accordance with IMC 0609, for a finding with an internal events Δ CDF greater than $1E-7$, the SRA assessed the impact of the finding on: 1) External events such as fire, seismic and flooding, determining, based on review of the VY Individual Plant Examination for External Events, that the total Δ CDF (internal plus external) would not be above the $1E-6$ threshold; and 2) the increase in large early release frequency (Δ LERF), determining that given the operators ability, following core damage, to depressurize and inject water to the reactor from low pressure sources and to flood the containment that the Δ LERF was in the low $E-8$ range. The Phase 3 SDP analysis determined that this issue was of very low safety significance (Green).

This issue has been entered into Vermont Yankee's corrective action program. The flange gasket for 23T-3 was immediately replaced with the correct material. Personnel involved in the event were coached on procedures for substituting material and components.

This finding had a cross-cutting aspect in the Human Performance cross-cutting area, Decision Making component, because Vermont Yankee personnel did not obtain interdisciplinary input on the decision to use a different, incorrect gasket material in a steam trap in the HPCI system. [H.1(a)]

Enforcement: Technical Specification 6.4, "Procedures," requires that written procedures be implemented for preventive and corrective maintenance operations that could have an effect on the safety of the reactor. Contrary to this requirement, on February 1, 2011, the requirements of EN-MA-101, "Fundamentals of Maintenance," as well as, EN-WM-105, "Planning," were not properly implemented. Specifically, Entergy performed corrective maintenance to replace a HPCI system gasket that was not "like for like" (contrary to EN-MA-101), and the Procurement Engineering Group was not notified for the use of a new type of item (contrary to EN-WM-105). This action led to the HPCI system being inoperable from February 1, 2011 to February 19, 2011. Immediate corrective actions included installation of the proper gasket, followed by successful completion of a proper post-installation pressure test of the gasket. Because of the very low safety significance (Green) and because it has been entered into the CAP (CR-VTY-2011-00667), the NRC is treating this finding as a NCV, consistent with the NRC Enforcement Policy. **(NCV 05000271/2011002-02: Steam Leak on High Pressure Coolant Injection (HPCI) During Surveillance Testing)**

.2 (Closed) LER 05000271/2010-002-00&01: Inoperability of Main Steam Safety Relief Valves Due to Degraded Thread Seals (71153 - 1 sample)

During the 2010 refueling outage, the pneumatic actuators for the four main steam safety relief valves (SRVs) were tested and leakage was identified through the shaft-to-piston thread seal that was in excess of the design requirement on two of the four SRVs.

Material testing determined that the apparent cause of the degraded thread seal condition was thermal degradation. The thread seals were replaced and tested on all four SRVs prior to startup from the 2010 refueling outage.

Entergy determined that this potentially affected the ability of the SRVs to perform their manual and automatic depressurization function, as required by Technical Specifications, since the leakage impacted the ability of the SRVs to satisfy design actuation requirements. Entergy determined that there was firm evidence that this condition may have existed for a period of time greater than allowed by Technical Specifications, and therefore this event was reportable.

Due to the availability of a safety-class back-up nitrogen supply with separate pressure regulators, Entergy determined that adequate capacity for the Automatic Depressurization System (ADS) existed at all times. Due to the redundancy in ADS design, the availability of the HPCI system, and the availability of a safety-class backup nitrogen supply, the ability to depressurize the reactor was maintained, and there was no potential adverse impact to public health and safety.

The inspectors reviewed the subject LER, the as-found condition during the refueling outage, the subsequent material testing and analysis, and Entergy's evaluation of the condition. A violation of very low safety significance (Green) was identified by the licensee. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

4OA6 Meetings, including Exit

Exit Meeting Summary

On April 11, 2011, the resident inspectors presented the first quarter inspection results to Mr. Michael Colomb, Site Vice President, and other members of the Vermont Yankee staff. The inspectors confirmed that any proprietary information provided or examined during the inspection had been returned to the licensee.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements, which meet the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- .1 Technical Specification 3.5.F, "Automatic Depressurization System," allows up to one of four SRVs in the automatic depressurization system to be inoperable for up to seven days at any time the reactor steam pressure is above 150 psig with irradiated fuel within the vessel, or an orderly shutdown of the reactor shall be initiated and the reactor pressure shall be reduced to less than 150 psig within 24 hours. Contrary to the above, Entergy determined that two (2) of the four (4) SRVs were inoperable for a period of time greater than allowed by Technical Specifications. This determination was based on pneumatic actuator thread seal leakage that was identified during testing of the

Enclosure

pneumatic SRV actuators in the 2010 refueling outage. Entergy determined the leakage to be in excess of design requirements. This condition has been entered in the licensee's corrective action program (CR-VTY-2010-2187) and corrective actions have been developed.

The inspectors determined that this finding was more than minor because it adversely affected the Mitigation Systems cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the function for core decay removal was affected, since the safety function of the ADS valves is to depressurize the reactor to allow for low pressure coolant injection. The inspectors determined that this finding was not greater than Green, because subsequent laboratory analysis and engineering evaluation documented in Entergy Operability Recommendation VTY 2011-0631 concluded that sufficient margin was available in the safety-class backup supply to the pneumatic actuation system. The inspectors reviewed Entergy's laboratory results and Operability Recommendation, and concluded that the ADS function would have been met under the worst case leakage for all design basis conditions.

- .2 Technical Specification 3.6.D, "Safety and Relief Valves," requires the reactor to be shut down and pressure brought below 150 psig within 24 hours with two (2) or more SRVs inoperable. Contrary to the above, Entergy determined that two (2) of the four (4) SRVs were inoperable for a period of time greater than allowed by Technical Specifications. This determination was based on pneumatic actuator thread seal leakage that was identified during testing of the pneumatic SRV actuators in the 2010 refueling outage. Entergy determined the leakage was in excess of design requirements, thereby rendering the SRV manual depressurization function inoperable. This condition has been entered in the licensee's corrective action program (CR-VTY-2010-2187) and corrective actions have been developed.

The inspectors determined that this finding was more than minor because it adversely affected the Mitigation Systems cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the function for core decay heat removal was affected, since the ability to manually discharge steam from core decay heat to the suppression pool was degraded by the thread seal leakage. The inspectors determined that this finding is not greater than Green, because subsequent laboratory analysis and engineering evaluation documented in Entergy Operability Recommendation VTY 2011-0631 concluded that sufficient margin was available in the safety-class backup supply to the pneumatic actuation system. The inspectors reviewed Entergy's laboratory results and Operability Recommendation, and concluded that the SRV manual depressurization function would have been met under the worst case leakage for all design basis conditions.

- .3 10 CFR 50.65(a)(4) requires, in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from proposed maintenance activities. Contrary to the above, on January 3, 2011, Entergy did not adequately assess and manage the increase in risk due to proposed emergent

maintenance activities. This resulted in a non-conservative risk assessment and failure to take all of the appropriate risk management actions for the actual plant conditions. Entergy identified this after the emergent maintenance activities had been completed, and entered the issue into their corrective action program (CR-VTY-2011-00028) to evaluate for appropriate corrective actions. The finding is more than minor because it is similar to IMC 0612, Appendix E, Example 7.e; in that, the overall elevated plant risk put the plant in a higher licensee-established risk category. The finding was evaluated using IMC 0609 Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," and was determined to be of very low safety significance (Green) because the Incremental Core Damage Probability Deficit between the actual plant conditions and the incorrect risk assessment for the duration of the activity was less than 1.0 E-6 (approximately 3.3 E-9).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Vermont Yankee Personnel

M. Colomb, Site Vice President
C. Wamser, General Manager of Plant Operations
M. Romeo, Director of Nuclear Safety
R. Wanczyk, Licensing Manager
N. Rademacher, Director of Engineering
M. Gosekamp, Operations Manager
J. Rogers, Design Engineering Manager
J. Merkle, System Engineering Manager
D. Jones, Asst. Operations Manager
P. Ryan, Security Manager
B. Pittman, Assistant Operations Manager
M. Tessier, Maintenance Manager
J. Hardy, Chemistry Manager
P. Corbett, Quality Assurance Manager
S. Naeck, Outage Manager
J. Bengtson, CA&A Manager
M. Castronova, Manager of Projects
J. Ward, I&C Superintendent
R. Heathwaite, Chemistry Supervisor
C. Daniels, FIN Team Superintendent
R. Current, Sr. Electrical I&C System Engineer
L. Doucette, System Engineer
J. Devincentis, Licensing Engineer
P. Couture, Licensing Specialist
J. Meyer, Licensing Specialist
M. Morgan, Technical Training Superintendent
M. Anderson, Fire Protection Engineer
M. Pletcher, Shift Technical Advisor
K. Oliver, Shift Manager
V. Ferrizzi, Shift Manager
J. Miller, Auxiliary Operator
J. Kritzer, Shift Technical Advisor
D. Hensel, Work Week Manager
F. Aldrich, Control Room Supervisor
N. Jennison, Shift Manager
G. Bacala, Control Room Supervisor
J. Clough, System Engineer
D. Macie, Facilities
S. Nelson, Fire Brigade Instructor
J. Stasolla, Mechanical Systems Engineer
B. Pelzer, Code Programs Engineer

A. Robertshaw, Mechanical Design Engineer
P. Jerz, Work Week Manager
J. Devine, Auxiliary Operator
S. Jonasch, Mechanical Systems Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000271/2011002-01	NCV	Failure to Follow Foreign Material Exclusion Procedure (Section 1R19)
05000271/2011002-02	NCV	Steam Leak on High Pressure Coolant Injection (HPCI) During Surveillance Testing (Section 4OA3)

Closed

05000271/2010-002-00&01	LER	Inoperability of Main Steam Safety Relief Valves Due to Degraded Thread Seals (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records:

Vermont Yankee Nuclear Power Station Updated Final Safety Analysis Report
Vermont Yankee Nuclear Power Station Technical Specifications
Vermont Yankee Nuclear Power Station Narrative Logs, Night Orders, and Standing Orders

Section 1R01: Adverse Weather Protection

Procedures

OP 3127, "Natural Phenomena," Rev. 26

Condition Reports

CR- 2011-00946, "Drain in Stairwell of Admin Building North Exit is Plugged"
CR-2011-00948, "Water is Leaking from Cracks in the Concrete Ceiling"
CR-2005-02008, "Water Found in East SWGR Room"

Section 1R04: Equipment Alignment

Procedures

OPST-CS-4123-06a, "Core Spray Pump 'A' Comprehensive Operability Test," Rev. 2
OP 2122, "Auto Blowdown System," Rev. 23
OP 2123, "Core Spray," Rev. 43
OP 2126, "Diesel Generators," Rev. 26
OP 3122, "Loss of Normal Power," Rev. 42
OP 3126, "Shutdown Using Alternate Shutdown Methods," Rev. 42
OP 4107, "EOP/Alternate Shutdown Tools and Supplies Surveillance," Rev. 14
OP 2124, "Residual Heat Removal System," Rev. 114
OPOP-4kv-2142, "4kv Electrical System," Rev. 00

Condition Reports

CR -2010-1440, "STA Switch Assembly Screw Backing Out"
CR-2011-801, "FCV-6-12B is not Open as Much as Expected"

Drawings

5920-04150, "Schematic Lube Oil System," Rev. 9
5920-04147, "PI&D Emergency Diesel Generator DG-1-1B Air Jacket Coolant System," Rev. 0,
Sheet 2
G-191160, "Flow Diagram Diesel Generator Standing Air System," Rev. 23, Sheet 7
G-191167, "Flow Diagram Nuclear Boiler," Rev. 76
G-191299, "4kv Auxiliary One Line diagram," Rev. 31
G-191159, "Flow Diagram Service Water System," Rev. 81, Sheet 1

Miscellaneous Documents

"Design Basis Document for Safety Related 4.16 kV/480V System," Rev. 25
4k Volt AC System Health Report – 3rd Quarter 2010
EMST-RLAY-4256-01, "Calibration of Degraded Grid Area RXKE1 Timing Relays Switchgear
3," Rev. 00

Work Orders

00231773, "C' RHRSW Pump Control Switch Problems"

Section 1R05: Fire Protection

Procedures

EN-OC-127, "Control of Hot Work and Ignition Sources," Rev. 8
AP 0042, "Plant Fire Prevention and Fire Protection," Rev. 53
AP 0077, "Barrier Control Process," Rev. 20

Drawings

G-191163, "Flow Diagram Fire Protection System Inner Loop," Rev. 44, Sheet 1

Miscellaneous Documents

Fire Hazards Analysis App. B, Rev. 11
VY SSCA "Safe Shutdown Capability Analysis" Vol. 1, Rev. 9
PFP-T-TB-8 "Fire Brigade Pre-Fire Plans – Lube Oil Room," Rev. 0
PFP-CB-2 "Fire Brigade Pre-Fire Plans – Cable Vault," Rev. 0
PFP-TRAN "Fire Brigade Pre-Fire Plans – Transformers," Rev. 0

SIP-11-02 "Fire Protection System Impairment Permit," 1/10/11
BCP-2011-07, "Barrier Control Permit for HPCI Door"
BCP-2011-13 "Doors propped open for major diesel overhaul"
SIP-2010-55, "Fire Protection System Impairment Permit for Southwest Corner Room"
FCBT-SAF-Firewatch, "Hot Work Firewatch Training," Rev. 0

Work Orders

52258739, "OP 4019 (SA) Perform Door Inspection"

Condition Reports

CR-VTY-2011-00872, "Fire Watch Tour Expectations"

Section 1R06: Flood Protection Measures

Calculations

VYC-1774, "Flooding from 4" Fire Protection Pipe Break in the Reactor Building Elevation 252 feet 6 inches," Rev. 0

VYC-1787, "Flooding from Service Water Pipe Break in the Reactor Building," Rev. 1

Miscellaneous

Vermont Yankee Internal Flooding Topical Design Basis Document, Rev. 9

VY-NE-09-0001, "Internal Flooding Analysis," Rev. 0

Section 1R11: Licensed Operator Regualification Program

Procedures

OP 3511, "Off-Site Protective Action Recommendations," Rev. 27

OP 3540, "Control Room Actions during an Emergency," Rev. 25

Miscellaneous

NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 5

AFG 42, "As-found Simulator Evaluation Guide," Rev. 1

Section 1R12: Maintenance Effectiveness

Condition Reports

CR-VTY-2009-03101, "Degraded Wall Thickness on Instrument Air Dryer D-1-1B Piping"

CR-VTY-2009-03144, "Wall Thinning Identified on D-1-1B"

CR-VTY-2010-05214, "OG-208A, Offgas Inlet Valve Will Not Isolate"

CR-VTY-2010-03884, "Untimely Repair of AOV-OG-101A"

CR-VTY-2008-02006, "AOG – Equipment Train 'A' Now above Maintenance Rule Reliability Criteria"

CR-VTY-2010-03971, "Due Date Extension Approved Without Director Review"

CR-VTY-2010-01906, "'C' Station Air Compressor Tripped"

CR-VTY-2010-05425, "C-1-1B Service Air Compressor Tripped on Low Oil Pressure"

CR-VTY-2011-00477, "'B' Service Air Compressor Tripped on Oil Pressure"

Work Orders

WO 00235150, "C-1-1C, Troubleshoot Breaker Trip per EN-MA-125"

Procedures

EN-DC-206, "Maintenance Rule (a)(1) Process," Rev. 1

EN-DC-207, "Maintenance Rule Periodic Assessment," Rev. 2
EN-DC-204, "Maintenance Rule Scope and Basis," Rev. 2
EN-DC-205, "Maintenance Rule Monitoring"

Miscellaneous Documents

VYSE-MRL-2008-013, "Performance Evaluation for AOG Equipment Train A," Rev. 1
AOG, "Augmented Offgas Maintenance Rule SSC Basis Document," Rev. 3
AOG Preventive Maintenance Task List
AOG SSC Performance History 1/1/2008 – 1/14/2011
AOV-OG-101A Action Plan, updated 10/06/10
Maintenance Rule Monthly Report for December 2010
EN-LI-102, "Corrective Actions Process," Rev. 16
IA, "Instrument Air Maintenance Rule Scoping Basis Document," Rev. 3
State of the System Report – Instrument Air, 1/31/2011
VYSE-MRL-2010-030, "Performance Evaluation for Instrument Air System Train 'A'," Rev. 0
SA, "Service Air Maintenance Rule Scoping Basis Document," Rev. 5
State of the System Report – Service Air, 1/31/2011

Drawings

DWG-33600-A-207, "Engineering Flow Diagram Train 'A' Recombiner Area Offgas Modification," Rev. 27

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

AP 0172, "Work Schedule Risk Management – Online," Rev. 22
EN-OP-119, "Protected Equipment Postings," Rev. 1
EN-OP-119, "Protected Equipment Postings," Rev. 2
OP-4114, "Standby Liquid Control Surveillance," Rev. 66

Condition Reports

CR-VTY-2011-00388 Additional Plant Equipment Requiring Protection per EN-CP-119 Identified Late
CR-VTY-2011-00445 QTR OP-4181 Service Water Valve Operability Testing Was Delayed During WW1105
CR-VTY-2011-00028 Unanticipated Change in EOOS Risk Color during WW1101
CR-VTY-2011-01184, "Standby Liquid Control not Declared Unavailable during Surveillance"

Miscellaneous Documents

"VY EOOS Risk Assessment – WW1103," Rev. 2
EOOS Risk Assessment Tool
EMMP-INSP-00216-22, "Weekly Yard Reading and Brush Inspection," Rev. 3
Online Maintenance Safety Assessment Review 1/31/11 – 2/7/11
Online Maintenance Safety Assessment Review 2/2/11
VYAPF 0172.01 "Online Maintenance Safety Assessment Review 1/2/11-1/4/11
Online Maintenance Safety Assessment Review 2/16/11

NUMARC 93-01 Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities," Rev. 2

Work Week 1111 Schedule

Section 1R15: Operability Evaluations

Procedures

EN-OP-104, "Operability Determination Process," Rev. 4

CHOP-DIES-4613-01, "Sampling and Testing of Diesel Fuel Oil," Rev. 0

EN-OP-104, "Operability Determination Process," Rev. 5

VYEM 107, "Emergency Diesel Generators Service Manual," Rev. 17

Miscellaneous Documents

ASTM D-975-00, "Standard Specification for Diesel Fuel Oils"

SC 11-01, "GE Hitachi 10CFR Part 21 Communication," dated February 15, 2011

ODMI, "Crack Indications in Marathon Control Blades have Been Observed in an International BWR," Rev. 1

Section 1R18: Plant Modifications

Drawings

G 191173, "Flow Diagram Fuel Pool Cooling and Clean Up System," Sheet 2, Rev. 9

Miscellaneous Documents

EC 21288, "Replace V76-3B with New Check Valve"

EC 17444, "Chemical Treatment Connections to the Spent Fuel Pool Cooling System"

Work Orders

WO 52207081, "Service Water Check Valve Inspection for Swing Type Check Valve"

WO 00229506, "Replace Check Valve V76-3B"

Section 1R19: Post-Maintenance Testing

Procedures

OP 4124, "Residual Heat Removal and RHR Service Water System Surveillance," Rev. 117

OP 4124, "Residual Heat Removal and RHR Service Water System Surveillance," Rev. 119

EN-WM-107, "Post Maintenance Testing," Rev. 2

EN-MA-118 "Foreign Material Exclusion," Rev. 7

OP 4181, "Service Water," Rev. 73

VYOPF 4181.08, "Service Water Pump Capacity Test" completed 03/10/11 and 03/12/11

VYOPF 4181.04, "Service Water Pump Capacity Test Data Sheet" completed 03/12/11

VYOPF 4124.04A, "RHR Pump 'A' (P-10-1A) Operability Data Sheet" completed 01/07/11

VYOPF 4124.04C, "RHR Pump 'C' (P-10-1C) Operability Data Sheet" completed 01/07/11

VYOPF 4124.06A, "RHRSW Pump 'A' (P-8-1A) and Valve Operability and Full Flow Test Data Sheet" completed 01/07/11

OP 4126, "Diesel Generators Surveillance," Rev. 85

Op 2180, "Circulating Water/Cooling Tower Operation," Rev. 99

ECT 15732-01, Rev. 00

Condition Reports

CR-VTY-2011-00067, "Unexpected Annunciator "RHR Pump A Seal LKG HI" Locked In"
CR-VTY-2011-00007, "P-8-1C: Discovered 24" FME Cover Lodged in Lower Impeller during
Pump Removal"
CR-VTY-2011-01054, "Incorrect Valve Positioned during Surveillance"
CR-VTY-2011-01325, "Total Dynamic Head Anomaly when Testing RHRSW Pump P-8-1B"

Work Orders

WO 52207081, "Service Water Check Valve Inspection for Swing Type Check Valve"
WO 00229506, "Replace Check Valve V76-3B"
WO 52294475, "Replace 'B' Service Water Pump"
WO 52290650, "Drain Hydro Diesel Generator Jacket Cooling System"
WO 52290096, "Major Diesel Overhaul and Inspection"
WO 00244609, "DG-1-1B: Replace Blower Cover Gasket"
WO 52290648, "Diesel Generator Temperature Control Valve Refurbishment"
WO 52290258, "DG-1-1B: Replace or Rebuild the M2 and M5 Contactors"
WO 00253892, "DG-B: Replace Aftercooler HX Floating Channel Head"
WO 00258475, "Small Air Leak on 'B' EDG Starting Air Compressor"
WO 00252692, "ST-23-3, Replace /Repair Steam Trap"
WO 52212754, "Circ Water Pump Overhaul"
WO 00200034, "Replace 'B' RHRSW Pump with New Pump from Hayward Tyler"

Section 1R22: Surveillance Testing

Condition Reports

CR-VTY-2010-00469, "RHR System Unavailability during RHR Valve Surveillance"
CR-VTY-2010-04810, "DG-1-1A Lube Oil Leak of Approx. 30 DPM Observed"
CR-VTY-2010-05129, "Approx. 20 DPM Lube Oil Leak on 'A' EDG Lube Oil HX"
CR-VTY-2011-00097, "Minor Lube Oil Leak on 'A' EDG Lube Oil HX South End"

Procedures

OP 4113, "Main and Auxiliary Steam System Surveillance," Rev. 34
OP 4124, "Residual Heat Removal and RHR Service Water System Surveillance," Rev. 117
OP 4181, "Service Water/Alternate Cooling System Surveillance," Rev. 73
VYOPF 4184.01, "Station Service Water Pump Operability Test," completed 02/03/11
VYOPF 4126.02, "Diesel Generator Operating Data," completed 12/13/10 and 01/10/11
VYOPF 4126.13, "Diesel Generator Slow Start Operability Test," completed 12/13/10 and
01/10/11

Miscellaneous Documents

EDG "Emergency Diesel Generators and Auxiliary Systems Design Basis Document," Rev. 22
IST Component Basis – Pumps, Rev. 13
ML031780796 Safety Evaluation for Relief Requests Related to the Fourth 10-Year IST
Program Service Water Pump P-7-1A, B, C, D Test Curve, 4/13/10
ESOM Operator Rounds Logs from November 26, 2010 - February 23, 2011 Stations 15 and 16

Section 1EP6: Drill Evaluation

Procedures

AP 3125 App. A, "EAL Classification Matrix," Rev. 22

OP 3546, "Operation of the Emergency Operations Facility/Recovery Control," Rev. 30

Miscellaneous Documents

NEI 04-02, "Regulatory Assessment Performance Hot Conditions Indicator Guideline," Rev. 5

"January 19, 2011 Emergency Preparedness Drill Sequence of Events," Rev. 0

Section 40A1: Performance Indicator (PI) Verification

Condition Reports

CR-VTY-2010-03036, "Automatic reactor scram"

CR-VTY-2010-05128, "Feedwater header leak"

Miscellaneous Documents

ESOM-Control Room Narrative Logs January 1, 2010 to December 31, 2010

Section 40A2: Problem Identification and Resolution

Miscellaneous Documents

Passport Reports for current Operator Workarounds, Operator Burdens, and Control Room Deficiencies

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ADS	Automatic Depression System
AP	Administrative Procedure
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CS	Core Spray
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
FME	Foreign Material Exclusion
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Examination for External Events
IST	In-Service Testing
LOR	Licensed Operator Requalification
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RHRHX	Residual Heat Removal Heat Exchanger
RHRSW	Residual Heat Removal Service Water
SFPC	Spent Fuel Cooling
SRA	Senior Reactor Analyst
SRVs	Steam Safety System Relief Valves
SSCs	Structures, Systems and Components
TPCS	Power Conversion System
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VY	Vermont Yankee
WO	Work Order