



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I**
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 30, 2013

Mr. Christopher Wamser
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 05000271/2012005**

Dear Mr. Wamser:

On December 31, 2012 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 January 23, 2013 with you 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.

The enclosed inspection report discusses a finding whose significance has not been determined. As described in Section 1R19, a self-revealing apparent violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," was identified because you did not promptly correct an adverse condition which later resulted in the failure of the "B" emergency diesel generator. Specifically, a degraded jacket water flange gasket was not promptly replaced and subsequently failed. The finding does not present an immediate safety concern because the failed component was replaced and no similar degradation is present on related components. The final resolution of this finding will be conveyed in separate correspondence.

Since the NRC has not made a final determination in this matter, no violation is being issued for this inspection finding at this time. In addition, please be advised that the characterization may change as a result of further NRC review.

Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating this finding as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the violations or significance of the 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, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Vermont Yankee.

If you disagree with the cross-cutting aspect assignment 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.

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 Agencywide Document Access and Management 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/

Ronald R. Bellamy, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000271/2012005
w/ Attachment: Supplementary Information

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket No.: 50-271

License No.: DPR-28

Report No.: 05000271/2012005

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

Location: Vernon, Vermont 05354-9766

Dates: October 1, 2012 through December 31, 2012

Inspectors: S. Rutenkroger, PhD, Senior Resident Inspector, Division of Reactor
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S. Rich, Resident Inspector, DRP
J. DeBoer, Acting Resident Inspector, DRP
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E. Keighley, Project Engineer, DRP
J. Laughlin, Emergency Preparedness Inspector, Office of Nuclear
Security and Incident Response

Approved by: Ronald R. Bellamy, PhD, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000271/2012005; 10/01/2012 – 12/31/2012; Vermont Yankee Nuclear Power Station; Post-Maintenance Testing.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. One finding whose significance has not yet been determined was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" dated June 2, 2011. The cross-cutting aspect for the finding was determined using IMC 0310, "Components Within Cross-Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated June 7, 2012. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Mitigating Systems

- TBD. A self-revealing apparent violation (AV) of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," was identified because Entergy did not promptly correct an adverse condition resulting in the failure of the "B" emergency diesel generator. Specifically, Entergy personnel did not promptly replace a degraded jacket water flange gasket prior to its subsequent failure. Entergy's corrective actions included replacing the gasket, visually inspecting the other jacket water connections, and initiating condition report CR-VTY-2012-05044.

The finding is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the "B" emergency diesel generator failed in service due to a known degraded condition that affected the overall system redundancy and reliability and resulted in 37 days of unplanned unavailability. The significance of the finding is designated as To Be Determined (TBD) until a Phase 3 analysis can be completed. The finding had a cross-cutting aspect in the Human Performance, Decision-Making because Entergy personnel did not use conservative assumptions in decision making in that the chosen action was to monitor the leak for a prolonged period of time [H.1(b)]. (Section 1R19)

REPORT DETAILS

Summary of Plant Status

Vermont Yankee Nuclear Power Station (VY) began the inspection period operating at 100 percent power. On November 5, operators reduced power to 31 percent to support single-loop operation and replace brushes on the “B” recirculation pump motor-generator set and install a temporary clamp to address a steam leak at the orifice flange gasket for the high pressure turbine inlet drain line. Operators returned VY to 100 percent power on November 7. On November 8, operators reduced power to 69 percent for a control rod pattern adjustment and returned VY to 100 percent power the following day. On December 7, operators reduced power to 70 percent for a control rod pattern adjustment and returned VY to 100 percent power the same day. On December 30, operators reduced power to 79 percent for a control rod pattern adjustment and returned VY to 100 percent power the same day. The plant remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Entergy’s readiness for the onset of seasonal cold temperatures. The review focused on the intake structure, reactor building, and turbine building. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications (TS), control room logs, and the corrective action program to determine what temperatures or other seasonal weather could challenge these systems, and to ensure Entergy personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Entergy’s seasonal weather preparation procedure. The inspectors performed walkdowns of the selected areas to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial System Walkdowns (71111.04Q – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Reactor core isolation cooling system during “A” emergency diesel generator (EDG) surveillance testing on October 4
- “1A” uninterruptible power supply during “1B” uninterruptible power supply maintenance on October 22
- “B” standby gas treatment during “A” standby gas treatment planned maintenance on November 29
- “B” EDG during planned maintenance on the “B” service water strainer on December 4

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TS, condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Entergy staff had properly identified equipment issues and entered them into the corrective action program for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Entergy controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, in accordance with procedures.

- Reactor building northwest corner room 213’ and 232’ elevations, on October 26
- Emergency diesel generator room “A,” on November 2
- Emergency diesel generator room “B,” on November 2
- Reactor building southwest corner room 213’ and 232’ elevations, on November 27
- Reactor building 280’ elevation, on November 30

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)Annual Review of Cables Located in Underground Bunkers/Manholesa. Inspection Scope

The inspectors conducted an inspection of underground manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manholes MH-12, MH-16, MH-OG2, and MH-32(SII), to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to observe the condition of cable support structures. The inspectors also reviewed the results of Entergy's manhole pump out efforts to verify pump out frequency was sufficient to maintain water levels below the cables, and if not, that appropriate corrective actions were taken.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11 – 2 samples).1 Quarterly Review of Licensed Operators' Requalification Testing and Traininga. Inspection Scope

The inspectors observed licensed operator simulator training on November 19, which included a loss of a safety-related electrical bus, a stuck open safety relief valve, and a failure of the reactor trip system. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and shift technical advisor and the TS action statements entered. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Rooma. Inspection Scope

The inspectors observed control room operators during a power reduction on November 5, which included removing the "B" recirculation pump motor generator set from service and single-loop operation. The inspectors observed pre-shift briefings and reactivity control briefings to verify that roles and responsibilities, critical steps, expected results and hold points were discussed. The inspectors verified that procedure use, crew communications, and response to alarms met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system and component (SSC) performance and reliability. The inspectors reviewed system health reports, corrective action program documents, maintenance work orders, and maintenance rule basis documents to ensure that Entergy was identifying and properly evaluating performance problems within the scope of the Maintenance Rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the Maintenance Rule in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and verified that the paragraph (a)(2) performance criteria established by Entergy staff were reasonable. Additionally, the inspectors ensured that Entergy staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Standby liquid control
- Automatic depressurization
- Demineralized water

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Entergy performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. The inspectors verified that Entergy personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Entergy performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's work week manager to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems to verify risk analysis assumptions were valid and applicable requirements were met.

- Alternate shutdown battery “AS-2” service test and “A” EDG monthly surveillance – workweek (WW)1240
- “B” EDG emergent maintenance, diesel fire pump maintenance, and feedwater system high pressure heater bypass valve packing leak – WW 1242
- Reactor core isolation cooling system emergent maintenance and “B” EDG monthly surveillance – WW 1246
- “B” service water strainer replacement and “B” EDG monthly surveillance – WW 1249
- High pressure coolant injection system maintenance – WW 1250

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Residual heat removal vent isolation valve considered part of the primary containment pressure boundary was found to contain nonconforming parts, CR initiated on May 31
- Standby liquid control pump “B” oil level was found high out of the required range, CR initiated on October 2
- Residual heat removal service water pump “D” bearing oil cooler three-way discharge valve was found blocked by a new stainless steel chemical treatment line, CR initiated on October 26
- “B” standby gas treatment decay heat cooling valve’s opening time exceeded the in-service testing limit, CR initiated on November 4
- Standby gas treatment system isolation valves were found to contain nonconforming parts, CR initiated on November 29
- Cable tray support structure was found to be damaged during operation of an electric hoist installing the high pressure coolant injection equipment hatch, CR initiated on December 11

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to Entergy’s evaluations to determine whether the components or systems were operable. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 2 samples)a. Inspection Scope

The inspectors evaluated a leak repair on the feedwater system high pressure heater bypass valve. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the repair. In addition, the inspectors reviewed documents associated with the leak repair, the implementing work order, and the post repair monitoring to verify the work was performed without impact to plant safety and reactor coolant chemistry. The inspectors also interviewed engineering and chemistry personnel involved with the repair.

The inspectors evaluated a modification that approved the use of a single cell battery charger used to charge cells of safety related batteries. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed documents associated with the construction, approval, and procedural control of portable single cell battery chargers. The inspectors also interviewed engineering, operations, and maintenance personnel regarding the design, control, and maintenance of the chargers.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 samples)a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- “B” EDG jacket water gasket replacement on October 16
- “1B” uninterruptible power supply maintenance on October 22 and 23
- Cooling tower fan “CT-2-1” maintenance on October 31
- Reactor core isolation cooling pump maintenance on November 15
- High pressure coolant injection pump maintenance and over-speed trip testing on December 12

b. Findings

Introduction. A self-revealing AV of 10 CFR 50 Appendix B, Criterion XVI, “Corrective Action,” was identified because Entergy did not promptly correct an adverse condition resulting in the failure of the “B” EDG. Specifically, Entergy personnel did not promptly replace a degraded jacket water flange gasket prior to its subsequent failure.

Description. On April 16, Entergy personnel identified a small jacket water leak on the “B” EDG during a monthly surveillance run. Once the diesel was running, Entergy personnel identified six drops per minute leaking from the number five opposite control side jacket water outlet jumper to header flanged gasket connection and initiated CR-VTY-2012-01772. The leak stopped after 30 minutes of operation, and the diesel was operated for about three hours.

Jacket water cools the diesel engine by circulating jacket water in a closed system with a capacity that is maintained via an expansion tank. The expansion tank is maintained at least one-half full, representing over 28 gallons of additional jacket water available for the system. However, during a design basis event, the demineralized water system does not provide additional makeup water to the expansion tank. Entergy staff declared the “B” EDG operable based on the small rate of the leak relative to the available jacket water contained within the expansion tank. Entergy closed CR-VTY-2012-01722 to the work management process stating that the issue did not represent an adverse condition that is required to be corrected within the corrective action process. Entergy personnel monitored the leak during subsequent monthly surveillances, and the characterization remained unchanged.

On October 15, during a monthly surveillance run that started at 9:36 am, the leak commenced upon diesel start as usual, but appeared to be larger and variable in rate during the initial loading process and did not stop once the system was heated. Subsequently, the gasket failed, resulting in a steady, pressurized stream of jacket water. The operators promptly unloaded and secured the “B” EDG at 10:05 am. The inspectors interviewed auxiliary operators who estimated the final leak rate at one gallon of water every ten minutes. After replacing the gasket, Entergy restored the “B” EDG to operable status on October 16 at 6:55 pm.

The inspectors reviewed the apparent cause evaluation and concluded the gasket connection had failed once the jacket water system cooled during the last successful surveillance on September 10, representing 37 days of unavailability. The inspectors did not find specific operating experience for sudden failures of these gasketed connections. However, the inspectors concluded that sudden failure of a leaking gasketed connection that was not designed or expected to leak is a generally reasonable outcome to foresee given sufficient time and/or system perturbations, and the time from April 16 to September 10 exceeded a reasonable time for prompt corrective action.

The inspectors determined that the original leak was a condition that could credibly impact nuclear safety, and therefore was a condition adverse to quality, in accordance with EN-LI-102, “Corrective Action Process.” EN-LI-102 requires conditions adverse to quality to be addressed in a manner that ensures timely correction of the originally identified condition. The inspectors also noted that EN-OP-104, “Operability Determination Process,” provides permissible classifications for operability with the closest example referring to oil leakage, a closed system with a limited reservoir capacity, from safety-related equipment that is assumed to require extended operation per the UFSAR. The inspectors determined that Entergy’s operability classification of “Operable” rather than “Operable-Op Eval” was not in accordance with EN-OP-104 and Entergy’s closure of the condition report citing no adverse condition and a work request was not in accordance with EN-LI-102.

Entergy's corrective actions included replacing the gasket, visually inspecting the other jacket water connections, confirming no other similar leaks were present on either the "A" or "B" EDG, and initiating CR-VTY-2012-05044.

Analysis. The inspectors determined that Entergy personnel's decision not to repair the leaking jacket water outlet jumper to header flanged gasket connection prior to its failure in service was a performance deficiency that was reasonably within Entergy's ability to foresee and correct and should have been prevented. The finding is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the "B" EDG failed in service due to a known degraded condition that affected the overall system redundancy and reliability and resulted in 37 days of unplanned unavailability.

In accordance with IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," this finding required a phase 3 analysis because the issue resulted in an actual loss of function of the "B" EDG for longer than its Technical Specification allowed outage time. The finding does not present an immediate safety concern because the failed gasket was replaced on the "B" EDG. The significance of this finding is To Be Determined (TBD) because the phase 3 analysis was not completed at the time of inspection report issuance.

The inspectors determined that the finding had a cross-cutting aspect in the Human Performance, Decision-Making because Entergy personnel did not use conservative assumptions in decision making in that the chosen action was to monitor the leak for a prolonged period of time instead of replacing the gasket [H.1(b)].

Enforcement. 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, from September 10, 2012, to October 15, 2012, Entergy failed to promptly correct the deficient number five opposite control side jacket water outlet jumper to header flanged gasket connection. Entergy's corrective action to restore compliance consisted of replacing the gasketed connection on October 15. Entergy entered the issue into the corrective action program (CR-VTY-2012-05044). The significance of this finding is TBD until completion of the Phase 3 analysis. **(AV 05000271/2012005-01, Failure of the "B" Emergency Diesel Generator from Jacket Water Leakage Due to Inadequate Corrective Action)**

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and reviewed test data of selected risk-significant SSCs to assess whether test results satisfied the TS, the UFSAR, and Entergy's procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and

the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- “A” residual heat removal service water pump and valve quarterly surveillance on October 10 (in-service test)
- “A” residual heat removal pump quarterly surveillance on October 10 (in-service test)
- “C” service water pump quarterly surveillance on November 7 (in-service test)
- Reactor core isolation cooling pump quarterly surveillance on November 8 (in-service test)
- Reactivity anomalies equivalent full-power monthly surveillance on December 20

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (IP 71114.04 – 1 sample)

a. Inspection Scope

The Office of Nuclear Security and Incident Response headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures and the Emergency Plan located under ADAMS accession numbers ML12188A101, ML12193A233, ML12152A053, and ML12311A113.

Entergy determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational/Public Radiation Safety (PS)

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 1 sample)

a. Inspection Scope

During the week of November 12 to 16, the inspectors reviewed and assessed Entergy’s performance in assessing and implementing controls associated with radiological hazards in the workplace. The inspectors used the requirements in 10 CFR 20,

“Standards for Protection Against Radiation,” Regulatory Guide 8.38, “Control of Access to High and Very High Radiation Areas for Nuclear Plants,” the TS, and Entergy’s procedures as criteria for determining compliance.

The inspectors reviewed the Occupational Exposure Control Effectiveness performance indicator (PI), the results of radiation protection program audits, and reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed and observed plant operations to determine whether plant changes may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors verified that Entergy assessed the potential impact of changes and implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors conducted walk downs of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and potential radiological conditions.

The inspectors reviewed radiation work permits (RWPs) used to access high radiation areas (HRAs) and reviewed the work control instructions or control barriers that were specified. The inspectors verified that allowable stay time or permissible dose for radiologically significant work under each RWP was clearly identified. The inspectors verified that electronic personal dosimeter (EPD) alarm set points were in conformance with survey indications and Entergy policy.

During tours of the facility and review of ongoing work the inspectors evaluated ambient radiological conditions. The inspectors verified that existing conditions were consistent with posted surveys, RWPs, and worker briefings, as applicable.

During job performance observations, the inspectors verified the adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination controls. The inspectors evaluated Entergy’s means of using EPDs in high noise areas as HRA monitoring devices.

b. Findings

No findings were identified.

2RS2 Occupational As Low As is Reasonably Achievable Planning and Controls (71124.02)

a. Inspection Scope

During the week of November 12 to 16, the inspectors assessed Entergy’s performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR 20, Regulatory Guide 8.8, “Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will be As Low As Reasonably Achievable,” Regulatory Guide 8.10, “Operating Philosophy for Maintaining Occupational Radiation Exposure As Low as Reasonably Achievable,” TS, and Entergy’s procedures as criteria for determining compliance.

The inspectors reviewed pertinent information regarding VY's collective dose history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed VY's three year rolling average collective exposure. The inspectors evaluated the site-specific trends in collective exposures and source term measurements.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities. The inspectors selected ALARA work packages and evaluated the assumptions and basis for the current annual collective exposure estimate for reasonable accuracy. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and department and station dose goals.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

During the week of November 12 to 16, the inspectors verified that Entergy was ensuring the accuracy and operability of radiation monitoring instruments used to monitor areas, materials, and workers to ensure a radiologically safe work environment and detect and quantify radioactive process streams and effluent releases to protect members of the public. The inspectors used the requirements in 10 CFR 20; 10 CFR 50, Appendix A, Criterion 60, "Control of Releases of Radioactive Materials to the Environment;" 10 CFR 50, Appendix A, Criterion 64, "Monitoring Radioactivity Releases;" 10 CFR 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water – Cooled Nuclear Power Reactor Effluents;" 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations;" NUREG-0737, "Clarification of TMI Action Plan Requirements;" TS; VY's Offsite Dose Calculation Manual; and Entergy's procedures as criteria for determining compliance.

The inspectors selected portable survey instruments in use or available for issuance. The inspectors verified calibration and source check stickers for currency and assessed material condition and operability. The inspectors walked down area radiation monitors and continuous air monitors and verified that they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. The inspectors selected personnel contamination monitors (PCMs) and small article monitors and verified that the periodic source checks were performed in accordance with the manufacturer's recommendations and Entergy's procedures.

The inspectors verified that problems associated with radiation monitoring instrumentation were being identified by Entergy at an appropriate threshold and were properly addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**4OA1 Performance Indicator (PI) Verification (71151).1 Mitigating Systems Performance Index (3 samples)a. Inspection Scope

The inspectors reviewed Entergy's submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2011 through June 30, 2012:

- Emergency AC Power
- Residual Heat Removal System
- Cooling Water System

b. Findings

No findings were identified.

.2 Occupational Radiation Safety Cornerstone (1 sample)a. Inspection Scope

The inspectors reviewed a listing of condition reports for issues related to the Occupational Exposure Control Effectiveness performance indicator, which measures non-conformances with high radiation areas greater than 1 Roentgen/hour (R/hr) and unplanned personnel exposures greater than 100 millirem (mrem) total effective dose equivalent, 5 rem skin dose equivalent, 1.5 rem lens dose equivalent, or 100 mrem to the unborn child. The inspectors determined that no PI events for Occupational Exposure Control Effectiveness had occurred during the assessment period.

b. Findings

No findings were identified.

.3 Public Radiation Safety Cornerstone (1 sample)a. Inspection Scope

The inspectors reviewed a listing of condition reports for issues related to the RETS/ODCM Radiological Effluents performance indicator, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/quarter (qtr) whole body or 5 mrem/qtr organ dose for liquid effluents, or 5 millirads (mrads)/qtr gamma air dose, 10 mrads/qtr beta air dose, or 7.5 mrem/qtr organ doses from Iodine-131 (I-131), I-133, Hydrogen-3 (H-3) and particulates for gaseous effluents. The inspectors determined that no PI events for RETS/ODCM Radiological Effluents had occurred during the assessment period.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Entergy entered issues into their corrective action program at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the corrective action program and periodically attended condition report review group meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, to identify trends that might indicate the existence of more significant safety issues, as required by Inspection Procedure 71152, "Identification and Resolution of Problems." The inspectors reviewed the VY corrective action program database for the third and fourth quarters of 2012, to assess CRs written in various subject areas (equipment problems, human performance issues), as well as individual issues identified during the NRC's daily CR review (Section 4OA2.1).

b. Findings and Observations

No findings were identified.

In the second quarter 2012, NRC integrated inspection report 05000271/2012003, ML12208A067, the inspectors documented an emerging trend due to an increased number of instances in which potentially adverse conditions were documented and/or recognized by Entergy staff without initiating a CR in accordance with EN-LI-102, "Corrective Action Process." Entergy initiated CR-VTY-2012-03585, performed an apparent cause evaluation, and completed corrective actions related to personnel initiating condition reports. The inspectors determined that there was a significant reduction in the number of such instances and that this emerging trend was appropriately resolved during the third and fourth quarters of 2012.

The inspectors noted that Entergy personnel had appropriately identified an adverse trend with component mispositioning in the Operations department documented in

CR-VTY-2012-05493. The inspectors reviewed related CRs during 2012 and concurred that an adverse trend existed in human performance errors causing mispositioned components. The inspectors confirmed that the individual errors represented minor safety significance and verified that ongoing corrective actions were established to resolve the issue.

.3 Annual Sample: Review of Human Error Prevention Corrective Actions

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's evaluation and corrective actions associated with three human performance events that involved a loss of shutdown cooling on November 11, 2011, a protective tagging removal associated with the "B" EDG resulting in unprotected personnel and unprotected plant equipment on December 2, 2011, and a trip of the "A" EDG fuel rack on December 2, 2011.

To determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these issues, the inspectors assessed Entergy's: problem identification threshold; root cause analysis for each of the three events; extent of condition reviews; and the prioritization, timeliness, and adequacy of corrective actions. The inspectors reviewed Entergy's root cause evaluation for each of the events, interviewed operations and maintenance personnel, conducted walkdowns of selected systems and equipment, conducted a trend review for human performance events occurring subsequent to the initial human performance events, and reviewed Entergy's corrective action process procedures and close-out documentation.

b. Findings and Observations

No findings were identified.

On November 11, 2011, during the planned maintenance outage, plant personnel inadvertently isolated power to the shutdown cooling pumps while hanging an unrelated tagout. The plant subsequently lost the primary means of shutdown cooling for approximately 12 minutes. Entergy's root cause evaluation (CR-VTY-2011-04203) determined that the primary cause of the event was a combination of lack of clarity in plant equipment nomenclature and human error.

On December 12, 2011, while clearing a tagout during a planned maintenance outage of the "B" EDG, plant personnel inadvertently placed the "B" EDG in a condition allowing the engine to potentially auto start while work was still ongoing. Additionally, during the restoration of the "B" EDG to a safe condition, plant personnel inadvertently tripped the "A" EDG fuel rack, causing the unavailability of both EDGs for approximately 2 minutes. Entergy's root cause evaluations for the two events (CR-VTY-2011-05646 and CR-VTY-2011-05483) determined the cause to be a combination of inadequate procedural guidance and human error.

The inspectors determined that Entergy's evaluation of the events appropriately identified the root and contributing causes. Additionally, the inspectors determined that the immediate and long term corrective actions developed as a result of the root cause evaluations were effective and adequate to correct the root and contributing causes

and reasonably prevent recurrence. The inspectors conducted a review of related CRs generated in the ten months subsequent to the event, performed walkdowns of plant equipment, and interviewed personnel from the operations and maintenance departments and concluded that the corrective actions were being effectively implemented.

.4 Annual Sample: Review of Corrective Actions Related to a 10 CFR Part 21 Issued by GE Hitachi that Identified Inadequate Circuit breaker Shoulder Bolts and Lock Washers

a. Inspection Scope

The inspectors performed an in-depth review of the adequacy of Entergy's response to a 10 CFR 21, "Reporting of Defects and Noncompliance," report on a potential deficiency on identified circuit breaker shoulder bolts and lock washers for GE Hitachi medium voltage circuit breakers (CR-VTY-2011-04793). Specifically, GE identified the potential for the medium voltage breakers to fail to trip when called upon in the plant. Entergy had seven of the kits identified in GE's report, five of which were already installed. One of these five was on a safety-related breaker. The inspectors evaluated whether Entergy had taken appropriate corrective actions to prevent a failure of these breakers as a result of the deficiency. Additionally, the inspectors reviewed the operability determination performed by Entergy that determined all breakers with the identified kits remained operable.

The inspectors interviewed plant personnel and reviewed test procedure results, CRs, engineering evaluations, and manufacturer data to assess Entergy's problem identification, evaluation, and corrective action effectiveness with respect to the affected medium voltage breaker's ability to close when necessary. Additionally, the inspectors reviewed the TS, the UFSAR, and VY licensing documents to determine the uses of the medium voltage breakers that had the potentially deficient kits installed. Finally, the inspectors evaluated whether the conclusions made by Entergy following identification of the potentially degraded condition provided reasonable assurance of the ability of the breakers to close and perform their safety related actions such that the system remained operable.

b. Findings and Observations

No findings were identified.

Entergy installed the washer and bolt kits in 2010 and 2011. During installation of one kit in 2011, Entergy personnel identified that the bolt could not be torqued to the required amount in accordance with the procedure. As a result, Entergy identified that the bolt was not threaded per specifications and notified GE Hitachi of the potential for a required 10 CFR 21 notification. When the report was issued, Entergy identified five kits that were installed on in-service breakers. Entergy reviewed the procedure for breaker overhauls and determined that the included torque requirement would have identified an unacceptable condition on any other kits. In addition, Entergy personnel cycle breakers after overhauls several times such that an unacceptable condition would also be identified from the cycling. In addition, the safety related breaker had been successfully cycled after installation in the plant. Therefore, Entergy concluded that there was reasonable assurance that the installed kits were not affected by this deficiency. The inspectors reviewed the evaluations performed by Entergy that assessed past operability

of the breakers and concurred with the assessment and corrective actions to install conforming kits at the next scheduled breaker overhauls.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

.1 (Closed) LER 05000271/2012-001-00 and 05000271/2012-001-01, Potential to Flood Switchgear Room Due to Missing Conduit Flood Seal

On May 16, Entergy personnel performed a periodic manhole flood seal inspection and discovered a spare four inch conduit that was missing a flood seal. The personnel installed a new seal on the same day. On May 24, Entergy personnel performed a follow-up inspection at the other end of the spare conduit in the manhole located in the switchgear rooms and confirmed that a flood seal was not installed on that end of the conduit.

The missing flood seal was previously inspected on November 2, 2010 and was found to be in place at that time. Entergy personnel determined that the flood seal specified for use in the conduit did not provide an adequate seal to prevent the flood seal from loosening and becoming dislodged. However, the UFSAR describes that the maximum flood level at VY would reach a maximum elevation of 252.5 feet, at a time of 96 hours into the precipitation event. VY's procedures require the operators to shutdown the plant if river elevation exceeds 230 feet with deteriorating conditions. In addition, the procedures require monitoring of the switchgear manholes and staging of portable pumps in the switchgear room which are tested and maintained available.

Entergy replaced the mechanical seal with a silicone elastomer seal. The enforcement aspects of this issue are discussed in Section 4OA7. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/187 – Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

The inspectors verified that Entergy's walkdown packages for the east and west switchgear rooms, the simulations of temporary flood protection feature installation, and the "B" emergency diesel generator room contained the elements as specified in Nuclear Energy Institute (NEI) 12-07, "Walkdown Guidance document."

The inspectors accompanied Entergy personnel on their walkdown of the east and west switchgear rooms and verified that Entergy confirmed the following flood protection features:

- External visual inspections for indications of degradation of the flood protection features were performed of the flood seals in the walls
- For the flood seals on the electrical conduits, past inspections were appropriately credited
- Critical SSC dimensions were measured, including openings above the design basis flood level

- Available physical margin, where applicable, was determined
- Temporary flood protection feature functionality was determined using either visual observation or by review of other documents
- A reasonable simulation of temporary flood protection feature installation was performed

The inspectors independently performed their walkdown of the “B” emergency diesel generator room and verified that the flood seals on floor penetrations were in place and showed no signs of degradation. The inspectors also verified that all penetrations appeared on the design drawings.

The inspectors verified that non-compliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into Entergy’s corrective action program. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and Entergy’s ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

No findings were identified.

.2 (Closed) Temporary Instruction 2515/188 – Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

a. Inspection Scope

The inspectors accompanied Entergy personnel on their seismic walkdowns on October 1, 2, and 11, in the “A” emergency diesel generator room and associated day tank room and the reactor building, 252 foot elevation, and verified that Entergy confirmed that the following seismic features associated with the “A” emergency diesel generator neutral transformer cabinet, the 480 volt alternating current motor control center MCC-9C, the 125 volt direct current station battery on bus DC-2AS, and the nitrogen bottles for backup safety relief valve supply, were free of potential adverse seismic conditions:

- Anchorage was free of bent, broken, missing or loose hardware
- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation
- SSCs will not be damaged from impact by nearby equipment or structures
- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment
- Attached lines have adequate flexibility to avoid damage
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding).

The inspectors independently performed their walkdowns on November 16, 21, and 22 and verified that the “C” service water pump in the intake structure service water pump room, the “B” containment air dilution panel in the control room, and the fuel oil storage tank in the yard and fuel oil storage tank enclosure, were free of potential adverse seismic conditions listed above.

The inspectors verified that Entergy entered adverse conditions into the corrective action program for evaluation. Additionally, the inspectors verified that items that could allow the spent fuel pool to drain down rapidly were added to the seismic walkdown equipment list and these items were walked down by Entergy.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

On November 16, the inspector presented the radiation safety inspection results to Mr. Scott Dorval, Acting Radiation Protection Manager, and other members of the Entergy staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

On January 23, the inspectors presented the inspection results to Mr. Christopher Wamser, Site Vice President, and other members of the Entergy staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by Entergy and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- 10 CFR 50, Appendix B, Criterion III, “Design Control,” requires, in part, that the design basis is correctly translated into specifications. Contrary to the above, the design basis was not correctly translated into specifications in that the specification for the mechanical flood seal used in spare four inch conduit was not adequate such that a design basis flood could have penetrated the conduit and allowed water intrusion into the switchgear rooms. Entergy entered this issue into the corrective action program as CR-VTY-2012-02391. The inspectors determined that the finding was of very low safety significance (Green) because the missing conduit seal would not cause a plant trip or an initiating event, degrade two or more trains of a multi-train system, degrade one or more trains of a system that supports a risk significant system, or involve the total loss of any safety function. Specifically, Entergy procedures direct a plant shutdown and staging of portable pumps to remove water from the manholes within the switchgear rooms during a design basis flood. The calculated flow rate of water through the conduit was bounded by the capacity of the two portable pumps.

ATTACHMENT: SUPPLEMENTARY INFORMATION

Enclosure

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Vermont Yankee Personnel

C. Wamser, Site Vice President
 M. Richey, General Acting Manager of Plant Operations
 V. Fallacara, General Manager of Plant Operations
 M. Romeo, Director of Nuclear Safety
 J. Boyle, Engineering Director
 J. Bengtson, CA&A Manager
 W. Bliss, Auxiliary Operator
 R. Busick, Asst. Operations Manager
 P. Corbett, Quality Assurance Manager
 S. Dorval, Acting Radiation Protection Manager
 J. Hardy, Chemistry Manager
 E. Harms, Asst. Operations Manager
 D. Hensel, Work Week Manager
 D. Jones, Operations Manager
 T. Marstaller, Shift Manager
 M. McKenney, Emergency Preparedness Manager
 J. Mully, System Engineer
 J. Rogers, Design Engineering Manager
 G. Ruczko, Auxiliary Operator
 P. Ryan, Security Manager
 K. Stupak, Manager, Training and Development
 D. Tkatch, Radiation Protection Manager
 R. Wanczyk, Licensing Manager
 A. Zander, Shift Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000271/2012005-01	AV	Failure of the "B" Emergency Diesel Generator from Jacket Water Leakage Due to Inadequate Corrective Action (Section 1R19)
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Closed

05000271/2012-001-00&01	LER	Potential to Flood Switchgear Room Due to Missing Conduit Flood Seal (Section 4OA3)
05000271/2515/187	TI	Inspections of Near-Term Task Force Recommendation 2.3 - Flooding Walkdowns (Section 4OA5)
05000271/2515/188	TI	Inspections of Near-Term Task Force Recommendation 2.3 - Seismic Walkdowns (Section 4OA5)

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

OPOP-PREP-2196, "Seasonal Preparedness," Revision 2

Condition Reports

CR-VTY-2012-05222

CR-VTY-2012-05437

Section 1R04: Equipment Alignment

Procedures

OP 2143, "480 and Lower Voltage AC System (Except Vital Inst. AC, and Lighting Panels),"
Revision 127

OP 4116, "Secondary Containment Surveillance," Revision 56

OP 2126, "Diesel Generators," Revision 60

OPST-SGT-4117-01B, "Standby Gas Treatment "B" Ten hour run"

OPOP- SGT-2117, "Standby Gas Treatment," Revision 1

OPST-EDG-4126-02B, "Monthly "B" EDG Slow Start Operability Test," Revision 2

Condition Reports

CR-VTY-2012-04893

CR-VTY-2012-04894

CR-VTY-2012-05120

Miscellaneous

480 AC, "Design Basis Document for Safety Related 4.16kV/480 Volt System," Revision 25

Section 1R05: Fire Protection

Procedures

OP 2186, "Fire Suppression Systems," Revision 62

OP 3020, "Fire Emergency Response Procedure," Revision 54

OP 4103, "Fire Protection Equipment Surveillance," Revision 58

OP 4800, "General Safety Surveillance," Revision 40

Condition Reports

CR-VTY-2012-05260

Pre-Fire Plans

PFP-TB-5, "Elevation 252'- 6" EDG Rooms," Revision 3

PFP-RB-8, "Elevation 232'-6" Torus (South)," Revision 3

PFP-RB-12, "Elevation 213'-9" HPCI Pump Room," Revision 3

PFP-RB-4 "Elevation 280'-0", Reactor Building (South)" Revision 3

Miscellaneous

Fire Hazards Analysis, Appendix B, Revision 12

Section 1R06: Flood Protection MeasuresProcedures

EN-DC-346, "Cable Reliability Program," Revision 4

EN-DC-346, "Cable Reliability Program," Revision 3

Condition Reports

CR-VTY-2009-04142	CR-VTY-2012-04718	CR-VTY-2012-05068
CR-VTY-2012-03235	CR-VTY-2012-04822	CR-VTY-2012-05088
CR-VTY-2012-03497	CR-VTY-2012-04825	CR-VTY-2012-05186
CR-VTY-2012-03506	CR-VTY-2012-04861	CR-VTY-2012-05218
CR-VTY-2012-03374	CR-VTY-2012-04909	CR-VTY-2012-05305
CR-VTY-2012-04608	CR-VTY-2012-04972	CR-VTY-2012-05335

Section 1R11: Licensed Operator Regualification ProgramProcedures

EN-RE-215, Reactivity Maneuver Plan," Revision 1

OP 0105, "Reactor Operations," Revision 94

Miscellaneous

Timeline for Downpower Starting 11/05/12

Section 1R12: Maintenance EffectivenessProcedures

EN-DC-205, "Maintenance Rule Monitoring," Revision 4

EN-DC-204, "Maintenance Rule Scope and Basis," Revision 2

OE 3107, "EOP/SAG Appendices," Revision 28

ON 3164, "ECCS Suction Strainer Plugging," Revision 3

ON 3157, "Loss of TBCCW," Revision 7

OP 4343, "ADS System Logic Test," Revision 31

RP 2185, Condensate/Demineralized Water Transfer System," Revision 38

Condition Reports

CR-VTY-2007-00815	CR-VTY-2009-01110	CR-VTY-2011-05146
CR-VTY-2007-01264	CR-VTY-2010-00083	CR-VTY-2012-01227
CR-VTY-2007-03637	CR-VTY-2010-03435	CR-VTY-2012-03362
CR-VTY-2009-01011	CR-VTY-2011-01354	CR-VTY-2012-05250

Data Sheets4343.01, "Automatic Depressurization A System Logic Test," 11/13/2005, 06/28/2007,
11/14/2008, 09/24/2010, 01/19/20124343.02, "Automatic Depressurization B System Logic Test," 11/13/2005, 06/28/2007,
11/17/2008, 09/24/2010, 01/19/20124343.03, "Refueling Outage – ADS Trip Logic System A Functional," 06/04/2007, 11/05/2008,
05/13/2010, 10/31/20114343.04, "Refueling Outage – ADS Trip Logic System B Functional," 06/04/2007, 11/05/2008,
05/13/2010, 10/31/2011

Work Orders

WO 00108024, "P-63-1A Labyrinth Seal Oil Leak"
WO 00149561, "Check Calibration of PI-107-7A"

Miscellaneous

ADS, "10 CFR 50.65 Maintenance Rule Scoping Basis Document Automatic Depressurization System (ADS)," Revision 3
ADS, "Design Basis Document for Automatic Depressurization System," Revision 0
System Health Report, ADS, Q2-2012
System Health Report, Demineralized Water, Q2-2012
System Health Report, Standby Liquid Control, Q2-2012
DW, "10CFR50.65 Maintenance Rule Scoping Basis Document Demineralized Water (DW)," Revision 2
"Maintenance Rule Monthly Report for September 2012," 10/04/2012
SLC, "Design Basis Document for Standby Liquid Control System," Revision 9
VYEM 0035, "Peerless Centerline Process Pumps," Revision 3
SLC, "10 CFR 50.65 Maintenance Rule Scoping Basis Document Standby Liquid Control," Revision 2

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

AP 0172, "Work Schedule Risk Management – On Line," Revision 25
AP 0172, "Work Schedule Risk Management – On-Line," Revision 26
EN-OP-119, "Protected Equipment Postings," Revision 5
EN-WM-104, "On-Line Risk Assessment," Revision 7
OPOP-RHR-2124, "Residual Heat Removal System," Revision 06

Condition Reports

CR-VTY-2012-05063

Miscellaneous

WW 1240 Schedule
WW 1246 schedule
WW 1249 Schedule
WW1250 Schedule
NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2
VY-NE-11-00001, "Vermont Yankee Probabilistic Safety Assessment (PSA)," Revision 2
VY-RPT-12-00013, "VY EOOS Model for On-Line Risk Assessment," Revision 0
ER-97-0473

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

EN-OP-104, "Operability Determinations," Revision 6
OE 3107, "EOP/SAG Appendices," Revision 28
OPST-4124-11B, "RHRSW Loop B Valve Operability Test (Once Per Cycle)," Revision 0

Condition Reports

CR-VTY-2005-02123	CR-VTY-2011-01501	CR-VTY-2012-00582
CR-VTY-2006-03112	CR-VTY-2012-05893	CR-VTY-2012-02183

CR-VTY-2012-02506
CR-VTY-2012-03596
CR-VTY-2012-04847

CR-VTY-2012-05272
CR-VTY-2012-05407
CR-VTY-2012-05523

CR-VTY-2012-05893
CR-VTY-2012-05980

Work Orders

WO 00102084, "Galling of Threads for RHR 201B Prevents Normal Closing"
WO 51097345, "10-Year Actuator Refurbishment/Seal Kit Replacement"

Miscellaneous

SLC, "Design Basis Document for Standby Liquid Control System," Revision 9
"10 CFR 50.65 Maintenance Rule Scoping Basis Document Standby Liquid Control (SLC),"
Revision 2
EC 37775, "Safety Classification of RHR-201B," Revision 0
System Health Report, RHR, Q3-2012
SGT, "Design Basis Document for Standby Gas Treatment System/Secondary Containment,"
Revision 11

Section 1R18: Plant Modifications

Procedures

EMMP-BATT-4210-21, "Equalize Charges and General Battery Maintenance," Revision 0

Condition Reports

Event Report 2000-0870
CR-VTY-2005-01168
CR-VTY-2012-05063

Data Sheets

EMMP-BATT-4210-21, Attachment 1, B-UPS-1A, cell 168, 11/20/2012
EMMP-BATT-4210-21, Attachment 1, B-UPS-1A, cell 61, 11/21/2012
EMMP-BATT-4210-21, Attachment 1, B-UPS-1A, cell 167, 11/21/2012
EMMP-BATT-4210-21, Attachment 1, B-UPS-1A, cell 168, 11/21/2012

Work Orders

WO 295893, "V63-5: Repair of Packing Leak on 10" Walworth Globe Valve"
WO 00320764, "Cell #36 Requires Single Cell Charge per EMMP-BATT-4210-21"
WO 95-009179, "Construct Two Portable Single Cell Battery Charger Units"
WO 00146711, "B-UPS-1A Cell #91 Single Cell Charge Required"
WO 00272420, "Secure Single Cell Charge on Cell 37"

Miscellaneous

EC 40470, "Team Inc Leak Repair of Packing on Valve FDW-5"

Section 1R19: Post-Maintenance Testing

Procedures

EN-LI-102, "Corrective Action Process," Revision 20
EN-OP-104, "Operability Determination Process," Revision 6
EN-WM-102, "Work Implementation and Closeout," Revision 7
EN-HU-102, "Human Performance Traps and Tools," Revision 11
OPST-RCIC-4121, "Reactor Core Isolation Cooling system Surveillance," Revision 2

Condition Reports

CR-VTY-2012-01772	CR-VTY-2012-05062	CR-VTY-2012-05535
CR-VTY-2012-05044	CR-VTY-2012-05198	CR-VTY-2012-05536
CR-VTY-2012-05045	CR-VTY-2012-05344	CR-VTY-2012-05625

Work Orders

WO 00291877, "CP-UPS-1B, Replace Control Panel FCAPS C1, C2, C3"
WO 52375058, "Complete Fall Mechanical Cooling Tower CT-2-1 PM's"
WO 00313162, "Replace Gasket on #5 Jacket Water Riser OCS; DG-1-1B"
WO 305812, "Repair Turbine Casing Leak, Pump End, Near Seal Area"

Miscellaneous

EGNE-8064, "Non-Code Visual Examination Methods as Good Maintenance Practice,"
Revision 0
WW 1246 Schedule
MMMP-HPCI-52107-01, "HPCI Overspeed Trip Testing using the Turbine Control Test Device,"
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Section 1R22: Surveillance Testing

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OP 4181, "Service Water/Alternate Cooling System Surveillance," Revision 77
OP 4430, "Reactivity Anomalies/Shutdown Margin Check," Revision 30
OPST-RCIC-4121, "Reactor Core Isolation Cooling System Surveillance," Revision 02
OPST-RHR-4124-12A, "RHR SW Pump/Valve "A" Operability and Full Flow Test," Revision 1
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CR-VTY-2012-04976
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Work Orders

WO 52416723, "OPST-RHR-4124 (Q) 'A' Loop RHR/RSW Pump & Valve Oper Tests"
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WO 52416720, "Station Service Water Pump Operability Test"
WO 52419104, "RCIC Pump and Valve Operability Testing"
WO 52426412, "Perform Reactivity Anomalies Check"

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WW 1241 Schedule
Core Follow Summary Sheet, 12/12/12
VY Reactivity Anomalies Worksheet, 12/20/12

Section 1EP4.1: Emergency Action Level and Emergency Plan Changes

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OP 3540, "Control Room Actions During an Emergency," Revision 29
OP 3546, "Operation of the Emergency Operations Facility/Recovery Center (EOF/RC),"
Revision 38

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Emergency Action Level Technical Bases, Revision 11
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Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

EN-RP-102, "Radiological Controls," Revision 3

Miscellaneous

Oversight Observation Checklist, 8/15/12, Observation Pre-Job Brief
Snapshot Assessment LO-VTYLO-2012-00087

Section 2RS2: Occupational As Low As is Reasonably Achievable Planning and Controls

Miscellaneous

Snapshot Assessment LO_VTYLO_2012-00030

Section 2RS5: Radiation Monitoring Instrumentation

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Snapshot Assessment LO-VTYLO-2012-00162

Section 4OA1: Performance Indicator (PI) Verification

Procedures

OPST-EDG-4126-02A, "Monthly "A" EDG Slow Start Operability Test," Revision 2

Condition Reports

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Miscellaneous

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Section 4OA2: Problem Identification and Resolution

Procedures

AP 0140, "VY Local Control Switching Rules," Revision 66
EN-OP-102, "Protective and Caution Tagging," Revision 15
EN-OP-102-01, "Protective and Caution Tagging Forms and Checklists," Revision 8
EN-WM-101, "On-Line Work Management Process," Revision 9
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CR-VTY-2011-03035	CR-VTY-2012-00154	CR-VTY-2012-01681
CR-VTY-2011-04203	CR-VTY-2012-00433	CR-VTY-2012-01693
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CR-VTY-2011-05483	CR-VTY-2012-00635	CR-VTY-2012-02018
CR-VTY-2011-05588	CR-VTY-2012-00964	CR-VTY-2012-02064
CR-VTY-2011-05646	CR-VTY-2012-00995	CR-VTY-2012-02614
CR-VTY-2012-00102	CR-VTY-2012-01589	CR-VTY-2012-02745

CR-VTY-2012-02863	CR-VTY-2012-05118	CR-VTY-2012-05843
CR-VTY-2012-03173	CR-VTY-2012-05120	CR-VTY-2012-05862
CR-VTY-2012-03487	CR-VTY-2012-05122	CR-VTY-2012-05893
CR-VTY-2012-03490	CR-VTY-2012-05126	CR-VTY-2012-05961
CR-VTY-2012-03558	CR-VTY-2012-05134	CR-VTY-2012-05966
CR-VTY-2012-03880	CR-VTY-2012-05137	CR-VTY-2012-05980
CR-VTY-2012-04297	CR-VTY-2012-05157	CR-VTY-2012-05991
CR-VTY-2012-04551	CR-VTY-2012-05176	CR-VTY-2012-05996
CR-VTY-2012-04600	CR-VTY-2012-05186	CR-VTY-2012-06018
CR-VTY-2012-04774	CR-VTY-2012-05187	CR-VTY-2012-06055
CR-VTY-2012-04811	CR-VTY-2012-05198	CR-VTY-2012-06060
CR-VTY-2012-04816	CR-VTY-2012-05218	CR-VTY-2012-06062
CR-VTY-2012-04822	CR-VTY-2012-05250	CR-VTY-2012-06076
CR-VTY-2012-04825	CR-VTY-2012-05260	CR-VTY-2012-06082
CR-VTY-2012-04847	CR-VTY-2012-05265	CR-VTY-2012-06092
CR-VTY-2012-04850	CR-VTY-2012-05272	CR-VTY-2012-06100
CR-VTY-2012-04858	CR-VTY-2012-05287	CR-VTY-2012-06106
CR-VTY-2012-04860	CR-VTY-2012-05296	CR-VTY-2012-06107
CR-VTY-2012-04861	CR-VTY-2012-05305	CR-VTY-2012-06109
CR-VTY-2012-04870	CR-VTY-2012-05317	CR-VTY-2012-06110
CR-VTY-2012-04875	CR-VTY-2012-05335	CR-VTY-2012-06111
CR-VTY-2012-04880	CR-VTY-2012-05340	CR-VTY-2012-06113
CR-VTY-2012-04904	CR-VTY-2012-05342	CR-VTY-2012-06123
CR-VTY-2012-04905	CR-VTY-2012-05345	CR-VTY-2012-06126
CR-VTY-2012-04909	CR-VTY-2012-05349	CR-VTY-2012-06127
CR-VTY-2012-04912	CR-VTY-2012-05350	CR-VTY-2012-06131
CR-VTY-2012-04913	CR-VTY-2012-05369	CR-VTY-2012-06132
CR-VTY-2012-04963	CR-VTY-2012-05371	CR-VTY-2012-06137
CR-VTY-2012-04972	CR-VTY-2012-05407	CR-VTY-2012-06138
CR-VTY-2012-04977	CR-VTY-2012-05467	CR-VTY-2012-06139
CR-VTY-2012-04979	CR-VTY-2012-05493	CR-VTY-2012-06141
CR-VTY-2012-04990	CR-VTY-2012-05523	CR-VTY-2012-06142
CR-VTY-2012-05006	CR-VTY-2012-05525	CR-VTY-2012-06149
CR-VTY-2012-05007	CR-VTY-2012-05526	CR-VTY-2012-06155
CR-VTY-2012-05008	CR-VTY-2012-05531	CR-VTY-2012-06159
CR-VTY-2012-05021	CR-VTY-2012-05535	CR-VTY-2012-06165
CR-VTY-2012-05026	CR-VTY-2012-05536	CR-VTY-2012-06171
CR-VTY-2012-05037	CR-VTY-2012-05538	CR-VTY-2012-06175
CR-VTY-2012-05044	CR-VTY-2012-05624	CR-VTY-2012-06194
CR-VTY-2012-05045	CR-VTY-2012-05645	CR-VTY-2012-06210
CR-VTY-2012-05062	CR-VTY-2012-05683	CR-VTY-2012-06211
CR-VTY-2012-05063	CR-VTY-2012-05752	CR-VTY-2012-06216
CR-VTY-2012-05068	CR-VTY-2012-05764	CR-VTY-2012-06223
CR-VTY-2012-05088	CR-VTY-2012-05777	CR-VTY-2012-06231
CR-VTY-2012-05091	CR-VTY-2012-05791	CR-VTY-2012-06254
CR-VTY-2012-05097	CR-VTY-2012-05815	CR-VTY-2012-06270
CR-VTY-2012-05098	CR-VTY-2012-05832	CR-VTY-2012-06273
CR-VTY-2012-05099	CR-VTY-2012-05835	CR-VTY-2012-06290
CR-VTY-2012-05115	CR-VTY-2012-05838	CR-VTY-2012-06296

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CR-VTY-2010-05093

CR-VTY-2012-03133

CR-VTY-2012-02355

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Drawings

G-191368, "Switchgear Room Conduit Sections," Revision 12

Work Orders

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WO 52328580, "(OC) Manhole, Handhole Conduit Flood Seals Inspection"

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Section 40A5: Other ActivitiesProcedures

EN-DC-168, "Fukushima Near-Term Task Force Recommendation 2.3 Seismic Walkdown Procedure," Revision 0

EN-DC-170, "Fukushima Near Term Task Force Recommendation 2.3 Flooding Walkdown Procedure," Revision 0

OPOP-SW-2181, "Service Water/Alternate Cooling Operating Procedure," Revision 5

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CR-VTY-2012-05006

CR-VTY-2012-05118

CR-VTY-2012-04816

CR-VTY-2012-05007

CR-VTY-2012-05126

CR-VTY-2012-04850

CR-VTY-2012-05008

CR-VTY-2012-05369

CR-VTY-2012-04870

CR-VTY-2012-05021

CR-VTY-2012-05371

CR-VTY-2012-04905

CR-VTY-2012-05091

CR-VTY-2012-05777

CR-VTY-2012-04912

CR-VTY-2012-05097

CR-VTY-2012-04979

CR-VTY-2012-05099

Area Walk-By Checklist Forms

AWC-001, Turbine Building, Elevation 252 feet, "EDGR A – West Side of Room," 10/18/2012

AWC-002, Turbine Building, Elevation 252 feet, "EDGR A – East Side of Room," 10/18/2012

AWC-005, Intake Structure, Elevation 237 feet, "Whole Room," 10/18/2012

AWC-006, Turbine Building, Elevation 252 feet, "EDGR B – East Side of Room," 10/18/2012
AWC-007, Turbine Building, Elevation 252 feet, "EDGR B – West Side of Room," 10/18/2012
AWC-009, Yard, Elevation 252 feet, "Outside Fuel Oil Storage Tank (FOST)," 10/18/2012
AWC-010, Fuel Oil, Elevation 241 feet, "Fuel Oil Pump, Outside in the Yard Near FOS, Ref
DWG G 191142," 10/18/2012
AWC-012, Reactor Building, Elevation 252 feet, "Northwest Area of Room – West of CRD Hyd
Control Units," 10/18/2012
AWC-015, Reactor Building, Elevation 252 feet, "N.E. Corner, Elevation 252'-6", Col Line 12 Y
to AZ=0 and AZ=270 Degree, Dwg Ref G 191148 Sht 1," 10/18/2012
AWC-029, Reactor Building, Elevation 252 feet, "AZ=270 Degree, Col Line Up to M to Hx, Near
CRD Control Unit P3-13, Ref Dwg. G191148 Fl. Elev. 252'-6", 10/18/2012
AWC-036, Control Building, Elevation 272 feet, "North Half of Room," 10/18/2012
AWC-038, Control Building, Elevation 272 feet, "South Half of Room," 10/18/2012

Calculations

VYC-163, "Qualification of Battery Rack AS-2 Anchor Bolt Realignment," Revision 0
VYC-1469, "Fuel Oil & Condensate Water Storage Tanks Seismic Verification," Revision 0
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EDCR 98-405," Revision 1

Drawings

G-191368, "Switchgear Room Conduit Sections," Revision 12
G-191662, "Turbine Building Ground Floor Plan SHH Plumbing and Drainage," Revision 18
B-191500, Sheet 247 "Fire Barrier Seal Drawing, Fire Barrier No. 25," Revision 2
5920-3947, "Service Water Pump P-7-1A Thru 1D Outline," Revision 2
5920-4593, Sheet 2, "DG-1-1B General Arrangement Neutral Xfmr Cubicle," Revision 0
5920-4602, "Service Water Pump Motor Outline," Revision 4
5920-11085, "Battery Arrangement 1 Step EP Cat III Racks w/Grounding Pad 59-KC-9 Cells for
AS-2 Battery," Revision 0
5920-12740, "Main Steam Relief Valve Nitrogen Bottle Storage Rack," Revision 0
5920-12750, "Pressure Indicator Support Detail," Revision 0
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SSEL 65, "125 VDC Battery/Bus DC-2AS," 09/19/1995
SSEL 85, "480 VAC MCC – Diesel 1A (SII)," 09/07/1995
SSEL 320, "SW/C SW Pump," 12/04/1995
SSEL 1243, "DG Rm A Neutral Transformer Cab," 09/08/1995

Seismic Walkdown Checklist Forms

AWC-005, 10/18/2012
SWEL1-010, "Fuel Oil/Fuel Oil Storage Tank (FOST)," 10/18/2012
SWEL1-014, "125V DC Station Battery on Bus DC-2AS," 10/18/2012

SWEL1-019, "480V ESS AC MCC-9C – Diesel 1A Room (SII)," 10/18/2012
 SWEL1-064, "Intake SW Pump," 10/18/2012
 SWEL1-085, "DG Rm A Neutral Transformer Cab," 10/18/2012
 SWEL1-102, "Nitrogen Bottle for Backup SRV Supply," 10/18/2012
 SWEL2-010, "CAD Panel B," 10/18/2012

LIST OF ACRONYMS

AC	alternating current
ADAMS	Agencywide Documents Access and Management System
ALARA	as low as is reasonably achievable
AV	apparent violation
CFR	Code of Federal Regulations
CR	condition report
DRP	[NRC] Division of Reactor Projects
DRS	[NRC] Division of Reactor Safety
EDG	emergency diesel generator
EPD	electronic personal dosimeter
HRA	high radiation areas
IMC	inspection manual chapter
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	performance indicator
ROP	Reactor Oversight Process
RWP	radiation work permit
SDP	significance determination process
SSC	structure, system and component
TBD	to be determined
TS	technical specifications
UFSAR	Updated Final Safety Analysis Report
VY	Vermont Yankee Nuclear Power Station
WW	workweek