

Vermont Yankee 4Q/2004 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2004

Identified By: NRC

Item Type: FIN Finding

Did Not Effectively Incorporate Operating Experience into the Preventive Maintenance Strategy for the 22 Kilovolt Electrical System

A very low safety significance (Green) self-revealing finding was identified because Entergy did not effectively incorporate industry operating experience into the preventive maintenance strategy for the 22 Kilovolt (KV) electrical system as required by Entergy's preventive maintenance program. Specifically, Entergy's preventive maintenance strategy for the 22 KV electrical system did not effectively include information from industry operating experience related to inspections of isophase bus bars and flexible connections or the periodic testing of surge arresters or capacitors located in the generator potential transformer cabinets. As a result, degraded conditions on the "B" phase bus bar flexible connection and within the "A" phase surge arrester went unidentified resulting in a two-phase electrical fault-to-ground that ignited a fire on top of the main transformer and ultimately resulted in an automatic reactor scram.

The finding is greater than minor since it is associated with the Equipment Performance-Maintenance attribute of the Initiating Events Cornerstone and because it affects the associated Cornerstone objective. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Findings for At-Power Situations," the inspectors conducted a SDP Phase 1 screening and determined that an SDP Phase 3 analysis was required since the finding resulted in a reactor scram and a fire on the main transformer but did not result in exceeding Technical Specification limits for identified reactor coolant system leakage and did not result in a total loss of safety function of a mitigating system. The Region I senior reactor analyst conducted a Phase 3 analysis and determined that the finding is of very low safety significance (Green) due to the resultant small increase in both core damage and large early release frequencies. This issue has been entered into Entergy's corrective action program.

Inspection Report# : [2004005\(pdf\)](#)

Significance:  Mar 31, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Did Not Perform Adequate Extent of Condition Review Following Identification of An Improperly Installed RCIC Valve Packing

A self-revealing non-cited violation (NCV) of 10 CFR 50 Criterion XVI was identified because Entergy did not promptly identify a condition adverse to quality. Specifically, in April 2000, following the identification that packing on a reactor core isolation cooling system valve failed because the Vermont Yankee procedure, OP 5281, for installing the valve packing was inadequate, Entergy performed a limited review of other instances in which procedure OP 5281 had been used to install valve packing. As a result, Entergy did not identify that maintenance personnel had improperly installed packing on a reactor head vent isolation valve using procedure OP 5281 in November 1999. In September 2003 the valve packing failed and developed a packing leak that required the reactor to be shutdown.

The finding is greater than minor since it is associated with the Equipment Performance attribute of the Initiating Events Cornerstone and because it affects the cornerstone objective. The inspectors conducted an SDP Phase 2 evaluation of the risk significance of the performance deficiency and determined that the finding is of very low safety significance (Green). The inspectors applied the SDP worksheet for Transients (TRANS) and determined that there were no accident sequences with a risk significance less than eight as indicated on the counting rule worksheet. Additionally, all mitigating capabilities described on the SDP Phase 2 Worksheet for TRANS core damage sequences were maintained.

The inspectors determined that a contributing cause of this finding is related to the cross-cutting area of Problem Identification and Resolution. Station personnel did not perform an adequate "assessment of similar conditions," as required by Entergy's correction action procedures, following the identification that an inadequate procedure resulted in the improper installation of packing in a reactor core isolation cooling system valve in April 2000. As a result, Entergy did not identify the extent of improperly packed valves and did not identify a condition adverse to quality associated with the improperly installed packing on a reactor head vent isolation valve.

Inspection Report# : [2004002\(pdf\)](#)

Mitigating Systems

Significance: SL-IV Dec 31, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Entergy Did Not Notify the NRC of a Licensed Senior Operator's Medical Condition

The inspectors identified a Severity Level IV NCV of 10 CFR 50.74(c) because Entergy did not notify the NRC within 30 days of the identification of a medical condition that caused a licensed senior operator to fail to meet the requirements of 10 CFR 55.21. That medical condition ultimately required the NRC to issue a conditional [restricted] license. Specifically, Entergy became aware of a medical condition in March 2004 that caused a licensed senior operator to fail to meet the requirements of 10 CFR 55.21 and for which a conditional [restricted] license was required. However, Entergy did not notify the NRC of the medical condition until five months later, in August 2004.

Entergy's failure to report the medical condition to the NRC impacted the regulatory process, in that, between April and August 2004, the NRC was unaware of a medical condition that warranted issuance of a conditional [restricted] license. Because the finding impacted the regulatory process, it was dispositioned using the traditional enforcement process instead of the significance determination process. This issue has been entered into Entergy's corrective actions program.

Inspection Report# : [2004006\(pdf\)](#)

G

Significance: Dec 17, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Isolation of Normal Control Power Source for RCIC Steam Supply Line Isolation Valve

The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix R, Section III.G.3 because VYNPS did not ensure electrical isolation of the normal control power source for the reactor core isolation cooling (RCIC) steam supply line isolation valve (MOV 13-15) when it is being operated in the alternate safe shutdown mode during an evacuation of the control room fire scenario.

This finding is greater than minor because it affected the Mitigating System Cornerstone of equipment reliability, in that closure of the RCIC supply line isolation valve could result in RCIC failure during an alternate shutdown fire scenario. The finding is of low significance because the likelihood of occurrence of a fire in the control room that could damage the valve control wire to the RCIC supply line isolation valve is small, there are no significant combustibles in the area and no loss of post fire capability occurred.

Inspection Report# : [2004010\(pdf\)](#)

G

Significance: Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Availability of Power from Vernon Station

The team identified a non-cited violation of 10 CFR Part 50.63, "Loss of All Alternating Current Power," because the licensee had not completed a coping analysis for the period of time the alternate alternating current (AC) source (the Vernon Hydro-Electric Station) would be unavailable and had not demonstrated by test the time required to make the alternate source available for a station blackout involving a grid collapse. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to a station blackout. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. Specifically, the team found that the licensee's preliminary coping analysis, performed during the inspection, demonstrated a four-hour coping time which should be sufficient to envelope the time required to start and align the Vernon Station.

Inspection Report# : [2004008\(pdf\)](#)

G

Significance: Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Procedures for Assessing Off-site Power Operability

The team identified a non-cited violation of Technical Specifications 6.4.C, "Procedures," because the licensee failed to establish adequate procedures for determining the operability of the 115 kilovolt (kV) Keene line, which is designated as an alternate immediate access power source if the 345/115 kV auto transformer is lost. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Procedural Quality and affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to a loss of off-site power. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. Specifically, the team did not identify any instances where the lack of procedural guidance had resulted in an inadequate assessment of off-site power operability or the inoperability of the electrical system or any components.

Inspection Report# : [2004008\(pdf\)](#)

G

Significance: Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Degraded Relay Setpoint Calculations

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee used incorrect and non-conservative voltage values in calculations performed to assure that electrical equipment would remain operable under degraded voltage conditions. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring availability, reliability, and capability of systems needed to respond to a design

basis accident. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. Specifically, the team did not identify any instances where using the Technical Specification degraded voltage allowable setpoint values would have resulted in inoperable equipment.

Inspection Report# : [2004008\(pdf\)](#)

Significance:  Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Cooling Water Supply Portion of RCIC Not Installed per Design Basis

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee did not implement measures to ensure that the design basis for the cooling water supply to the lube oil cooler of RCIC was correctly translated into the specifications, drawings, procedures, or instructions. Specifically, the installed pressure control valve in the lube oil cooler water supply line was not independent of air systems, and the installed piping between the pressure control valve and lube oil cooler did not contain a restricting orifice. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the reliability of the RCIC system. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. This deficiency would not have resulted in the RCIC system becoming inoperable due to a loss of air to the lube oil cooler pressure control valve.

A contributing cause of this finding is related to the cross cutting area of Problem Identification and Resolution. The licensee had previously reviewed the failure positions of air-operated equipment and issued a report, "Compressed Air Systems," dated July 16, 1989. During this review, the licensee did not identify that the pressure control valve was not independent of the instrument air system.

Inspection Report# : [2004008\(pdf\)](#)

Significance:  Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct Non-Conforming RCIC Pressure Control Valve

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee failed to correct a longstanding non-conformance in the operation of pressure control valve PCV-13-23. The team determined through interviews with Vermont Yankee staff that during initial start-up testing, problems were identified with the automatic operation of this valve which affected its ability to properly supply cooling flow to the RCIC lube oil cooler. This issue was more than minor because it was associated with the Mitigating Systems attribute of Equipment Performance and affected the cornerstone objective of ensuring the reliability of the RCIC system. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. The licensee had implemented manual actions as a compensatory measure for the operation of PCV-13-23 through the addition of procedural steps.

Inspection Report# : [2004008\(pdf\)](#)

Significance:  Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Adequate Design Control for Condensate Storage Tank Temperature

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee had neither established the correct condensate storage tank (CST) temperature limit for use in the plant transient analyses nor translated the CST temperature limit into plant procedures. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the reliability of the core spray system. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. Although available net positive suction head (NPSH) margin for the core spray pumps was lowered, adequate margin remained due to the conservatism that existed in other aspects of the licensee's NPSH analysis.

A contributing cause of this finding is also related to the cross-cutting area of Problem Identification and Resolution. The licensee identified this issue in December 2002, but concluded that the non-conservative CST temperature had little to no effect on the transient analyses.

Inspection Report# : [2004008\(pdf\)](#)

Significance:  Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Revise Safe Shutdown Capability Analysis Report

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because between June 2001 to September 2004, the licensee did not adequately coordinate between the operations department and the engineering organization regarding procedure revisions that increased the length of time required to place the reactor core isolation cooling system in service from the alternate shutdown panels. This issue was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Human

Performance and affected the cornerstone objective of ensuring the availability of the RCIC system. Furthermore, this finding resulted in the use of the December 1999 value of time to place RCIC in service from the alternate shutdown panel in documents submitted to the NRC as part of the Vermont Yankee Power Uprate Safety Analysis Report. The issue screened as very low safety significance in Phase I of the SDP because it was a design deficiency that was not found to result in a loss of function. Although the available time margin was lowered, sufficient margin remained to allow operator action to manually start the RCIC system prior to reactor level reaching the top of active fuel.

Inspection Report# : [2004008\(pdf\)](#)

Significance: **G** Nov 09, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Adequate MOV Periodic Test Program

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," because the licensee had conducted motor-operated valve (MOV) diagnostic tests using procedures that did not include acceptance limits, which were correlated to and based on applicable (stem thrust and torque) design documents. Additionally, MOV diagnostic testing had been conducted solely from the motor control centers using test instrumentation that had not been validated to ensure its adequacy. The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems and components that respond to initiating events. Specifically, the unvalidated test method had the potential to affect the reliability of safety-related motor-operated valves. The issue screened as very low safety significance in Phase I of the SDP because it was a qualification deficiency that was not found to result in a loss of function. The team did not identify any examples of degraded or inoperable valves during the inspection and noted that the design basis calculations for the MOVs reviewed had available thrust margin of greater than 60 percent.

Inspection Report# : [2004008\(pdf\)](#)

Barrier Integrity

Significance: **G** Jun 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Non-cited violation (NCV) of 10 CFR 50 Criterion XVI for ineffective corrective actions following a 2001 event involving starting a RHR pump with no suction path

A very low safety significance, self-revealing, non-cited violation (NCV) of 10 CFR 50 Criterion XVI was identified in that Entergy personnel did not develop effective corrective actions to prevent recurrence following a 2001 event wherein control room operators did not verify a suction path existed prior to starting a residual heat removal (RHR) system pump to support shutdown cooling operations. As a result a nearly identical event occurred on April 10, 2004, resulting in a unplanned loss of shutdown cooling for about 15 minutes.

The finding is greater than minor since it is associated with the Fuel Cladding Configuration Control Attribute of the Barrier Integrity Cornerstone and because it affects the associated Cornerstone objective. Specifically, the April 2004 trip of the "B" RHR pump, used to support shutdown cooling operations, reduced the assurance that the fuel cladding would protect the public from radio nuclide releases caused by accidents or events. In accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process", the finding was of very low safety significance. The finding did not degrade Entergy's ability to recover shutdown cooling since the "B" RHR pump was restarted within 15 minutes of being tripped and an adequate thermal margin was maintained via a calculated reactor coolant system time-to-boil of greater than 24 hours.

This finding affects the Cross-Cutting area of Problem Identification and Resolution. Entergy personnel did not assign effective corrective actions to prevent recurrence following a May 2001 trip of the "C" RHR pump which occurred when operations did not recognize that valve V10-17 had gone closed during a swap of vital AC power. Entergy's corrective actions relied on the operator's skill to verify a suction path was open prior to restarting a RHR pump rather than proceduralize the step.

Inspection Report# : [2004003\(pdf\)](#)

Emergency Preparedness

Significance: **W** Oct 12, 2004

Identified By: NRC

Item Type: AV Apparent Violation

Failure to ensure the means to provide early notification to those in the EPZ population who had, or desired to have, a TAR for areas

lacking siren coverage.

In letter dated February 2, 2005, the NRC issued the Final Significance Determination for this Finding. The NOV in the letter indicated that as of September 23, 2004, the licensee failed to follow its emergency plan to establish the means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ. Specifically, a portion of the populace within the EPZ, who are outside of the range of sirens, did not have tone alert radios.

The inspector identified an apparent violation associated with emergency planning standard 10 CFR 50.47(b)(5) which has a low to moderate safety significance because the method of distributing tone alert radios to members of the public outside of siren coverage was not meeting the intent of the design basis for the alert and notification system.

The finding is greater than minor because this impacts the EP cornerstone attribute of facilities and equipment and it affects the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency.

Inspection Report# : [2004009\(pdf\)](#)

G

Significance: Oct 12, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to assign continuous onshift capability to read the facility seismic monitoring system for emergency classification purposes.

The inspector identified a non-cited violation associated with emergency planning standard 10 CFR 50.47(b)(2) which was of very low safety significance. Specifically, the licensee failed to assign continuous onshift responsibilities for reading the facility seismic monitoring system, thereby affecting the ability to timely classify a seismic event which exceeded the operating basis earthquake (OBE).

The finding is greater than minor because it is associated with the EP cornerstone attribute of procedure quality and affects the EP cornerstone objective to ensure the adequate protection of the public health and safety.

Inspection Report# : [2004009\(pdf\)](#)

Occupational Radiation Safety

G

Significance: Sep 30, 2004

Identified By: NRC

Item Type: FIN Finding

Entergy exceeded the original ALARA estimate for reactor reassembly by 72% due to ineffective coordination and control of radiological work activities

The inspector identified a finding of very low safety significance (Green) because Entergy exceeded the original as low as reasonably achievable (ALARA) exposure estimate for reactor reassembly during the Spring 2004 refueling outage by 72% due to ineffective coordination and control of radiological work activities which were within its ability to foresee and correct.

The finding is greater than minor since it is associated with the Program and Process (ALARA Planning) attribute of the Occupational Radiation Safety Cornerstone and because it affects the associated Cornerstone objective. The finding is of very low safety significance (Green) because although it involved ALARA planning and work controls, the 3-year rolling average collective dose was less than 240 person-rem.

This issue has been entered into Entergy's corrective action program.

Inspection Report# : [2004005\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Significance: TBD Aug 27, 2004

Identified By: NRC

Item Type: AV Apparent Violation

Did Not Keep Adequate Records, Follow Procedures, and Perform Physical Inventory of Special Nuclear Material

The inspectors identified an apparent violation of 10 CFR 74.19 because Entergy and its predecessor did not keep adequate special nuclear material inventory records of two spent fuel rod pieces, did not follow its written procedures when two spent fuel rod pieces were moved to a fuel storage liner, and did not conduct adequate periodic physical inventories of the two spent fuel rod pieces.

Because the two spent fuel rod pieces remained in the Vermont Yankee spent fuel pool, the entire time the apparent violation existed, there was no actual safety consequence of this apparent violation. Nevertheless, the NRC considers this apparent violation a potentially significant failure of Entergy's material and control accounting program. This failure could have resulted in these two spent fuel rod pieces being inappropriately included in a shipment of radioactive material to a low-level radioactive waste site.

The disposition of this apparent violation is still under review by NRC management.

Inspection Report# : [2004007\(pdf\)](#)

Last modified : March 09, 2005