Vermont Yankee
4Q/2010 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Loss of RCS Inventory During Emergency Core Cooling System (ECCS) Testing Due to Inadequate Test Procedure
A self-revealing NCV of very low safety significance (Green) of TS 6.4, “Procedures,” was identified when operators inadvertently drained water from the RPV during integrated ECCS testing. Specifically, Entergy failed to establish the initial plant conditions necessary to perform integrated ECCS testing without causing an inadvertent drain down of the vessel through the main steam lines, the RCIC turbine, and into the torus. On May 17, 2010, while VY was shutdown for a refueling outage, VY experienced an inadvertent loss of reactor coolant inventory when operators initiated integrated ECCS testing. The vessel head was installed and the vessel was flooded up to the RPV flange. At the start of the integrated ECCS test, the RCIC and HPCI systems were aligned normally. When the test was initiated, the RCIC and HPCI steam supply isolation valves opened as expected. This provided a path for water to flow from the RPV, through the main steam lines, followed by the RCIC and HPCI turbines, and into the torus. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, “Phase 1 – Initial Screening and Characterization of Findings.” The inspectors concluded that the finding was a Primary System Loss of Coolant Accident initiator contributor that affected the safety of the reactor during the refueling outage. The inspectors then evaluated the significance of the finding using Inspection Manual Chapter 0609, Appendix G, “Shutdown Operations Significance Determination Process." The inspector determined this issue was of very low safety significance using Appendix G, Attachment 1, “Phase 1 Operational Checklist for Both PWRs and BWRs,” and specifically, Checklist 8, “BWR Cold Shutdown or Refueling Operation, Time to Boil > 2 Hours: RCS Level < 23' Above Top of Flange.” This determination was based on the fact that the reactor vessel water level would not decrease below the level of the main steam lines. The inadvertent draining of the water level to the level of the main steam lines would not significantly impact the shutdown safety functions of decay heat removal and maintaining water level in the reactor core. The finding had a cross-cutting aspect in the area of human performance, resources, because the test procedure was inadequate. Specifically, the procedure did not provide adequate directions for establishing plant conditions during a test that had the capability of draining RCS inventory (H.2(c)).

Inspection Report# : 2010003 *(pdf)*

Significance: G Mar 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Design Control for Continuously Submerged Underground Cables
. The inspectors identified an NCV of very low safety significance (Green) of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” because Entergy did not select and review safety-related cables suitable for application in the environment in which they were found. Specifically, Entergy allowed the continuous submergence of safety-related cables that were not qualified for continuous submergence and failed to demonstrate that the cables would remain operable. Entergy initiated CR VTY-2009-04142 and CR-VTY-2010-01422 to address the issues, commenced dewatering of the affected manholes, and initiated a preventive maintenance plan to ensure proper conditions.

This finding is more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the inspectors noted that the insulation of continuously submerged cables would degrade more than dry or periodically wetted cables which would lead to failures. The inspectors determined the significance of the finding using IMC 0609.04, “Phase 1 – Initial Screening and Characterization of

Findings.” The finding was determined to be of very low safety significance (Green) because it was a design or qualification deficiency which was confirmed to have not resulted in a loss of operability or functionality. Specifically, the continuously submerged cables were not designed or qualified for that environment but were still fully capable of performing their design functions. The inspectors determined this finding had a cross-cutting aspect in the area of problem identification and resolution within the CAP component because Entergy personnel did not thoroughly evaluate the problem when submerged cabling was identified. (P.1(c)) (Section 4OA2)

Inspection Report# : 2010002 *(pdf)*

Mitigating Systems

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform Required Quality Control Inspections
Green. Inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion X, “Inspection,” for the failure to ensure that Quality Control verification inspections were consistently included and correctly specified in quality-affecting procedures and work instructions for construction-like work activities as required by the Quality Assurance Program. The licensee performed extensive reviews, and inspectors performed independent reviews of the licensee’s conclusions as well as independent sampling, to confirm that improper or missed inspections did not actually affect the operability of plant equipment. Entergy initiated prompt fleet-wide corrective actions to ensure proper work order evaluation and proper inclusion of Quality Control verification inspections. This issue was entered into the corrective action program under Condition Reports CR-HQN 2009-01184 and CR-HQN-2010-0013.

The failure to ensure that adequate Quality Control verification inspections were included in quality-affecting procedures and work instructions as required by the Quality Assurance Program was a performance deficiency. This programmatic deficiency was more than minor because, if left uncorrected, it could lead to a more significant safety concern in that the failure to check quality attributes could involve an actual impact to plant equipment. This issue affected the Design Control attribute of the Mitigating Systems cornerstone because missed or improper quality control inspections during plant modifications could impact the availability, reliability, and capability of systems needed to respond to initiating events. This performance deficiency was determined to have very low safety significance in Phase 1 of the SDP, since it was confirmed to involve a qualification deficiency that did not result in a loss of operability or functionality. The inspectors determined that this performance deficiency involved a cross-cutting aspect related to the human performance in decision-making (H.1a), because the licensee did not have an effective systematic process for obtaining interdisciplinary reviews of proposed work instructions to determine whether Quality Control verification inspections were appropriate. (Section 4OA2.1.b.1)

Inspection Report# : 2010005 *(pdf)*

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Implement the Experience and Qualification Requirements of the Quality Assurance Program
Green. Inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion II, “Quality Assurance Program,” for the failure to implement the experience and qualification requirements of the Quality Assurance Program. As a result, the licensee failed to ensure that two individuals assigned to the position of Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program. Specifically, the individual assigned to be the responsible person for the licensee’s overall implementation of the Quality Assurance Program did not have at least 1 year of nuclear plant experience in the overall implementation of the Quality Assurance Program within the quality assurance organization prior to assuming those responsibilities. This issue was entered into the corrective action program as Condition Report CR-HQN-2010-00386.
Failure to ensure that an individual assigned to the position Quality Assurance Manager met the qualification and

experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program was a performance deficiency. This performance deficiency was determined to be more than minor because, if left uncorrected, it could create a more significant safety concern. Failure to have a fully qualified individual providing overall oversight to the Quality Assurance Program had the potential to affect all cornerstones, but this finding will be tracked under the Mitigating Systems cornerstone as the area most likely to be impacted. The issue was not suitable for quantitative assessment using existing Significance Determination Process guidance, so it was determined to be of very low safety significance using IMC 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria.” The inspectors determined that there was no cross-cutting aspect associated with this finding because this issue was not indicative of current performance because the violation occurred more than 3 years ago. (Section 4OA2.1.b.2)

Inspection Report# : 2010005 *(pdf)*

Significance: G Oct 01, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Fire Scenario Resulting in Loss of Reactor Core Isolation Cooling System
The team identified a Green, Non-Cited Violation of the Vermont Yankee Nuclear Power Station Facility Operating License, Condition 3.F, in that Entergy failed to implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Final Safety Analysis Report. Specifically, Entergy failed to assure that reactor vessel water level would remain below the reactor core isolation cooling (RCIC) system steam line for postulated alternate shutdown fire scenarios that spuriously started a reactor feedwater pump (RFP). Entergy initiated condition report CR-VTY-2010-04682 and promptly revised the alternate shutdown procedure to additionally trip all running condensate pumps. The additional action prevented a single spurious operation from restarting or precluding a trip of the RFPs.
This finding was more than minor because it was associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the availability of the RCIC system was not ensured for postulated fires in alternate shutdown areas. The team used Phase 1 of IMC 0609, Appendix F, Fire Protection Significance Determination Process, to determine that this finding was of very low safety significance (Green) because the Vermont Yankee Nuclear Power Station alternate shutdown system also includes safety relief valves and a residual heat removal train that can be utilized for reactor pressure and water level control. This finding did not have a cross-cutting aspect because the m9st significant contributor of the performance deficiency was not reflective of current licensee performance.
Inspection Report# : 2010008 *(pdf)*

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Inadvertent Isolation of Reactor Core Isolation Cooling (RCIC) During Surveillance Testing
A self-revealing, Green, non-cited violation (NCV) of Technical Specification 6.4, “Procedures,” was identified in which technicians incorrectly performed reactor core isolation cooling (RCIC) surveillance test operating procedure (OP) 4365, “RCIC Steam Line Low Pressure Functional/Calibration,” Rev. 25, resulting in the inadvertent isolation of the RCIC system. Entergy entered this issue into their corrective action program, correctly installed the test equipment, and subsequently performed the test satisfactorily.

The inspectors determined that the finding was more than minor because it adversely affected the Human Performance attribute for the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low risk significance (Green) because the finding was not a design or qualification deficiency, did not

represent a loss of system safety function or loss of a single train for greater than its allowed technical specification time, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, in that Entergy failed to appropriately self-check and peer-check the digital multimeter (DMM) setup prior to connecting it to the RCIC isolation logic.

Inspection Report# : 2010004 *(pdf)*

Significance: G Mar 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
High Pressure Coolant Injection Inoperable Due to Spurious Suction Valve Swap and Technical Specification Actions Not Performed
The inspectors identified an NCV of very low safety significance (Green) of technical specification 3.5.E, "High Pressure Coolant Injection (HPCI) System," because Entergy staff failed to identify that HPCI was inoperable, enter the required limiting condition for operation, and immediately verify that the reactor core isolation cooling (RCIC) system was operable. Entergy initiated CR-VTY-2010-01420 and CR-VTY-2010-01506 to address the issues, issued standing orders to ensure HPCI and RCIC are considered inoperable when not aligned to the condensate storage and transfer system (CST), and initiated corrective actions to ensure design basis analysis associated with power uprate is properly incorporated into various documents, including technical specifications (TS) and the updated final safety analysis report (UFSAR).

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the availability of the CST to provide water for core cooling to HPCI during transient and emergency situations was affected. The inspectors determined the significance of the finding using IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because the exposure time associated with the HPCI suction valves being not properly aligned to the CST was 45 minutes, i.e. less than three days. The inspectors determined this finding had a cross-cutting aspect in the area of problem identification and resolution within the corrective action program (CAP) component because Entergy personnel did not completely and accurately identify the issues associated with HPCI being aligned to the torus instead of to the CST. (P.1(a)) (Section 1R12)

Inspection Report# : 2010002 *(pdf)*

Significance: G Mar 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Emergency Diesel Generator Surveillance Testing Not Risk Assessed in Accordance with 10 CFR 50.65
. The inspectors identified an NCV of very low safety significance (Green) of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," because Entergy staff did not assess and manage the increase in risk due to surveillance testing activities that impacted the availability of the 'A' emergency diesel generator (EDG) in accordance with 10 CFR 50.65 (a)(4). Entergy initiated CR-VTY-2010-01019 to address the issue, issued a standing order to ensure the EDGs are properly considered unavailable during future surveillance tests, and commenced an extent of condition review to determine the staff's effectiveness at properly accounting for unavailability in accordance with 10 CFR 50.65 (a)(4) for the EDGs and other risk significant systems.

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the availability of the 'A' EDG was affected and Entergy's risk assessment did not consider risk significant structures, systems and components (SSCs) (i.e., EDGs) that were unavailable during the maintenance activity and did not take risk management actions. The inspectors determined the significance of the finding using IMC 0609 Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The finding was determined to be of very low safety

significance (Green) because the incremental core damage probability deficit for the time the ‘A’ EDG was unavailable was less than 1.0E-6. The inspectors determined this finding had a cross-cutting aspect in the area of human performance within the work control component because Entergy did not appropriately plan and incorporate risk insights in work activities that impacted the availability of the ‘A’ EDG. (H.3(a)) (Section 1R13)

Inspection Report# : 2010002 *(pdf)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

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