

Vermont Yankee

1Q/2010 Plant Inspection Findings

Initiating Events

Significance:  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:  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:  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)

Significance:  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Entergy did not assess and manage the increase in risk that resulted from maintenance activities that impacted the availability of the low pressure coolant injection (LPCI) subsystem

On December 4, 2009, Entergy conducted a test of the high pressure coolant injection (HPCI) system as a retest following maintenance activities. Operations personnel placed both trains of the residual heat removal (RHR) system in the torus cooling mode to maintain the torus within limits contained within the emergency operation procedures. Because this alignment made the LPCI mode inoperable, Operations personnel entered the appropriate Limiting Condition of Operation in the Technical Specifications for this condition. However, the inspectors noted that the LPCI subsystem was not included as part of the risk assessment, and questioned its accuracy. The condition of concern was a loss of coolant accident followed by a loss of normal power and the failure of one emergency diesel to start. This would result in a loop drain condition to the torus for one train of LPCI, and that train would not be fully available to perform its coolant injection function. The inspectors noted that there was no dedicated operator, and the recovery actions were not proceduralized as required by EN-WM-104, "On Line Risk Assessment," to maintain availability. Entergy entered this issue into the CAP (CR 2009-4234), and initiated a preliminary investigation to review the effectiveness of Maintenance Rule accounting for LPCI unavailability while in the torus cooling mode.

Analysis: The performance deficiency is that Entergy did not conduct an adequate risk assessment for maintenance

activities that impacted the availability of the LPCI subsystem. This issue was within Entergy's ability to foresee and correct, and should have been prevented. Traditional Enforcement did not apply, as the issue did not have actual or potential safety consequence, had no willful aspects, nor did it impact the NRC's ability to perform its regulatory function. A review of NRC Inspection Manual Chapter (IMC) 0612, Appendix E, "Minor Examples," revealed that the finding is similar to Example 7.f, in that, the elevated overall plant risk when correctly assessed would put the plant into a higher risk category. The LPCI subsystem is considered risk significant because it is identified as such in Table 2 of the NRC's Phase 2 Significance Determination Process notebook for Vermont Yankee.

Using IMC 0612, "Power Reactor Inspection Reports," Appendix B, Section 3, Item 5(a), the finding is more than minor because Entergy's risk assessment did not consider risk significant SSCs (i.e., LPCI subsystem) that were unavailable during the maintenance activity. The finding is associated with the Configuration Control attribute of the Mitigating Systems cornerstone, and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Because this finding involves the licensee's assessment and management of risk associated with performing maintenance activities under all plant operating or shutdown conditions, the inspectors used IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," to evaluate this finding. The inspectors determined that the finding is of very low safety significance (Green) because the incremental core damage probability deficit was less than 1.0E-6. This finding has a cross-cutting aspect in the Human Performance cross-cutting area, Work Control component, because Entergy did not appropriately plan and incorporate risk insights in work activities that impacted the availability of the LPCI subsystem. [H.3(a)]

Inspection Report# : [2009005](#) (pdf)

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to initiate corrective action condition reports for all deficient items identified during cooling tower inspections.

The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that Entergy did not initiate corrective action condition reports (CRs) for all deficient items identified during Cooling Tower (CT) inspections. Entergy entered this issue into their corrective action program (CAP) and performed an operability assessment which determined that the safety related function of the CTs was always available.

The inspectors determined that the finding was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, deficiencies might not be tracked to resolution, management attention or other independent reviews would not be appropriately applied, and the need for operability determinations may be missed. The finding was determined to be of very low safety significance (Green) because the finding did not involve a design or qualification deficiency resulting in loss of operability or functionality, did not result in a loss of system safety function, and did not screen as potentially risk significant due to external initiating events. This finding had a cross-cutting aspect in the "Work Practices" component of the Human Performance cross-cutting area because Entergy did not follow procedures and initiate CRs to identify cooling tower deficiencies as required by operating procedure (OP) 52114.

Inspection Report# : [2009004](#) (pdf)

Significance:  Jun 03, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Take Adequate Corrective Actions for a HPCI System Functional Failure

The team identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Entergy's failure to take adequate corrective actions for a condition adverse to quality involving an issue that had the potential to negatively impact the high pressure coolant injection (HPCI) system. Specifically, Entergy failed to take timely and appropriate corrective actions commensurate with the safety significance (potential repeat functional failure of the HPCI system due to degraded direct current (DC) contactors) of the issue. Entergy's short-term corrective actions included a visual inspection of several affected DC breaker cubicles, a HPCI system

operability evaluation, and interim guidance to plant operators. Entergy entered the condition into their CAP (CR 2009-1489) and performed a root cause evaluation. The finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the adverse condition represented a challenge to the reliability of the HPCI system due to the system's vulnerability to a repeat

functional failure. The finding was determined to be of very low safety significance (Green) because it: was not a design or qualification deficiency confirmed not to result in loss of operability; did not represent a loss of system safety function; did not represent actual loss of safety function of a single train for greater than its technical specification allowed outage time; did not represent an actual loss of safety function of one or more non-technical specification trains for equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hours; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Entergy failed to take appropriate corrective actions to address a safety issue in a timely manner, commensurate with the safety significance and complexity [P.1.d]. Specifically, Entergy did not take appropriate corrective actions to adequately address the extent of condition for a HPCI functional failure in June 2007 due to degraded DC contactors prior to April 2009.

Inspection Report# : [2009006](#) (*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

Last modified : May 26, 2010