

Vermont Yankee

1Q/2013 Plant Inspection Findings

Initiating Events

Significance:  Oct 16, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Incorrect Assessment of Equipment Condition Resulted in Single Recirculation Loop Operation

A self-revealing finding was identified because Entergy failed to implement a preventive maintenance procedure. Specifically, Entergy personnel classified the discovery status code for the minor motor inspection on the “A” recirculation pump motor generator set drive motor incorrectly, as “B – satisfactory or normal wear,” instead of “D – abnormal wear,” resulting in a missed opportunity to replace degraded components that caused the “A” recirculation pump to trip and an unplanned entry into single recirculation loop operation. Entergy’s corrective actions included cleaning the motor and the junction box, replacing components that had been damaged by the arc flash, and testing the circuit to verify no other components were degraded prior to restarting the motor. In addition, Entergy initiated condition report CR-VTY-2012-02811 and issued a corrective action to reinforce the requirements of EN-DC-324 among maintenance staff. Entergy also plans to add all large motor and generator junction boxes to the predictive maintenance program and to perform thermography on them on a six month frequency.

The inspectors determined that the issue was more than minor because it resulted in a transient, i.e. an event that upset plant stability (an unplanned entry into single recirculation loop operation). In particular, the issue is associated with the Equipment Performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability during power operations. The inspectors determined the significance of the finding using IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power.” The finding was determined to be of very low safety significance (Green) because the finding was a transient initiator that did not cause a reactor trip. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance cross-cutting area, Work Practices component, because Entergy did not sufficiently define and effectively communicate expectations regarding procedural compliance for the selecting of the discovery status code and personnel did not follow procedures. [H.4(b)]. (Section 1R12)

Inspection Report# : [2012004](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Appendix R Fire Door Not Latching Closed Due to Misalignment

The inspectors identified an NCV of operating license condition 3.F, fire protection program, because Entergy did not correct a degraded latch on a three-hour rated fire door on the entrance to the “B” emergency diesel generator (EDG) room, and as a result the three-hour fire barrier was non-functional and the required compensatory measure of an hourly fire watch was not in effect. Entergy’s corrective actions included restoring vertical alignment of the latching

mechanism, further inspection by a locksmith to ensure reliable operation, planning a preventive replacement of the latch due to existing excessive wear, and initiating a condition report.

The finding is more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the fire door being degraded with unreliable latching without an assigned hourly fire watch from January 20 to January 22 resulted in a barrier to fire propagation that was less robust than required by the approved fire protection program. In accordance with IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix F, "Fire Protection Significance Determination Process," the inspectors determined that this finding is of very low safety significance (Green) per Task 1.3.2, "Task 1.3.2: Supplemental Screening for Fire Confinement Findings." The inspectors determined the degradation rating associated with the deficiency to be Moderate B since a closure mechanism held the door against the door jamb, the door swings out from the EDG room, no combustibles were stored in the adjacent hallway, and no equipment important to safety exists in the turbine building hallway. Therefore, the degraded fire door provided a minimum of 20 minutes of fire endurance protection and the fixed or in situ fire ignition sources and combustible or flammable materials were positioned such that, even considering fire spread to secondary combustibles, the degraded fire door would not have been subject to direct flame impingement since no combustible material was located near the door during the time of concern. The inspectors determined that the finding had a cross-cutting aspect in the Problem Identification and Resolution area, Corrective Action Program component, because Entergy personnel did not completely identify the issue with the alignment of the striker plate when the degradation was first identified and did not identify that the latching deficiency still existed during subsequent transits through the door.

Inspection Report# : [2013002](#) (pdf)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Compensatory Measures Associated with a Temporary Modification

The inspectors identified an NCV of Technical Specification 6.4, "Procedures," because procedure OPOP-SW-2181, "Service Water/ Alternate Cooling System," was inadequate. Specifically, the step in the procedure to identify and isolate sources of water lost from the cooling tower basin would not have been implemented in a timely manner while a temporary fire water system was drawing on the basin. Entergy's corrective actions included writing a night order describing the fire fighting strategy for a fire in the intake and directing the temporary fire pumps to be stopped if they started automatically while the alternate cooling system (ACS) was in service, implementing temporary procedure changes, and initiating a condition report.

The finding is more than minor because it impacted the design control attribute of the Mitigating Systems cornerstone. Specifically, the temporary modification added another potential path for loss of water from the cooling tower deep basin and the appropriate compensatory measures to address that loss path were not implemented, impacting the capability and reliability of ACS. Additionally, the finding is similar to IMC 0612, Appendix E, "Examples of Minor Issues," example 3.j more than minor description, because the added draw on the cooling tower basin water had the potential to affect the accident analysis calculation assumption of the amount of water available for running ACS. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not involve the total loss of a safety function that contributes to external event initiated core damage accident sequences. This condition existed for less than the technical specification allowed outage time of seven days. This finding had a cross-cutting aspect in the area of human performance, Work Control, because Entergy did not appropriately coordinate work activities by incorporating actions to address the need to keep personnel apprised of the operational impact of work activities. Specifically, Entergy identified the need for compensatory measures for the temporary modification for the fire water

system work, but the necessary actions were not coordinated to ensure operations and maintenance understood the operational impact of the work.

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Action for Maintaining Operability of the Low Pressure Coolant Injection Battery UPS-1A

The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” because Entergy did not promptly correct an adverse condition resulting in the failure of the “B-UPS-1A” low pressure coolant injection (LPCI) uninterruptible power supply (UPS) battery. Specifically, Entergy personnel did not promptly replace a degraded battery cell prior to its exceeding operability limits. Entergy’s corrective actions included replacing cell 61, replacing all cells with individual cell voltages (ICVs) less than 2.13 V, expediting complete battery bank replacements with a due date of May 30, and initiating a condition report.

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 capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, UPS-1A had unplanned inoperability and degraded capacity due to cell 61 being out of service which commenced at some unknown point between December 3 and December 9 and was restored when cell 61 was replaced on December 10. In accordance with IMC 0609.04, “Initial Characterization of Findings,” and IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” the inspectors determined that this finding is of very low safety significance (Green) because it did not represent a loss of system safety function or a loss of safety function for a single train (UPS-1A and “A” LPCI) for greater than its technical specification allowed outage time (seven days). The inspectors determined that the finding had a cross-cutting aspect in the Problem Identification and Resolution area, Operating Experience component, because Entergy personnel did not implement and institutionalize available operating experience guidance contained within IEEE-450, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications,” or alternatively, vendor recommendations, to support plant safety.

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure of the “B” Emergency Diesel Generator from Jacket Water Leakage Due to Inadequate Corrective Action

A self-revealing NCV 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. Entergy’s corrective actions included replacing the gasket, visually inspecting the other jacket water connections, and initiating a condition report.

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. The inspectors and a Region I Senior Reactor Analyst (SRA) completed the

Detailed Risk Evaluation (DRE) in accordance with IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” and determined this finding to be of very low safety significance (Green). The DRE estimated the increase in core damage frequency (?CDF) for internal initiating events in the range of 1 core damage accident in 2,000,000 years of reactor operation, in the mid-E-7 range per year. In addition, external initiating events such as fire, seismic and flooding would not have increased the total ?CDF above 1 E-6 per year, and the increase in the frequency of a large early release of radioactive material (?LERF) associated with the internal event ?CDF core damage sequences would not be above 1E-7 per year. 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.

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Risk Assessment for Isolating the Condensate Pumps’ Minimum Flow Line’s Automatic Flow Control Valve

The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” paragraph (a)(4), for Entergy’s failure to conduct an adequate risk assessment prior to isolating the condensate pumps’ minimum flow automatic control valve. Specifically, the inspectors identified that Entergy personnel had not analyzed the impact to plant risk with the condensate pumps’ minimum flow line to the main condenser isolated. Entergy’s corrective actions included declaring and announcing to site personnel the plant risk to be “Orange,” protecting further equipment, and initiating CR-VTY-2012-2074.

The inspectors determined that the issue was more than minor because the overall elevated plant risk put the plant into a higher risk category established by Entergy. 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 timeframe that the condensate pumps were unavailable was less than 1E-6 (approximately 2E-7). The inspectors determined that the finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because the equipment relied upon to perform the risk assessment, EOOS, did not include the condensate system automatic minimum flow control valve, which was not adequate to ensure nuclear safety.

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Risk Assessment for Not Considering the Increased Risk of a Plant Transient when Securing a Feedwater Pump

The inspectors identified a NCV of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” paragraph (a)(4) for Entergy’s failure to conduct an adequate risk assessment prior to securing the “C” feedwater pump. Specifically, the inspectors identified that Entergy personnel had not analyzed the impact to plant risk of securing the “C” feedwater pump. Entergy’s corrective actions included briefing operators that securing a feedwater pump was a HRE-TRAN, i.e. an activity considered to raise the likelihood of an initiating event that is likely to result in a plant trip, and initiating CR-VTY-2012-2160 and CR-VTY-2012-2894.

The inspectors determined that the issue was more than minor because the overall elevated plant risk put the plant into a higher risk category established by Entergy. 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 timeframe that the “C” feedwater pump was being secured was less than 1E-6 (approximately 4E-9). The inspectors determined that the finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because the procedure describing HRE-TRAN was not sufficiently clear and complete in its description to ensure nuclear safety.

Inspection Report# : [2012003](#) (*pdf*)

Barrier Integrity

Significance: G Oct 16, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Dedicated Operators Required for Operability under Applied Administrative Controls Left Immediate Vicinity of Open Valves

The inspectors identified an NCV of technical specification (TS) 6.4, “Procedures,” for Entergy’s failure to implement a surveillance activity in accordance with the written procedure. Specifically, the inspectors identified that during a surveillance test dedicated operators required to maintain operability of primary containment left the immediate vicinity of open manual containment isolation valves. Entergy’s corrective actions included restoring the administrative controls required to maintain primary containment operability during the subject surveillance test, initiating condition report CR-VTY-2012-03561, sending a memorandum to and discussing the issue with all operating crew shift managers explaining the error and the requirements of a dedicated operator, and issuing a temporary night order further explaining these requirements. Additional corrective actions included implementing and tracking training for all operators on these requirements, and revising licensed operator training on primary containment to specifically describe these requirements.

The inspectors determined that the issue was more than minor because it is associated with the Human Performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the dedicated operators were required to be stationed in the immediate vicinity of the valve controls to rapidly close the valves when primary containment isolation is required during accident conditions, but the operators were significantly beyond the required immediate vicinity when they left the reactor building. The inspectors determined the significance of the finding using IMC 0609, Appendix H, “Containment Integrity Significance Determination Process.” The finding was determined to be of very low safety significance (Green) using Appendix H, Table 6.2, “Phase 2 Risk Significance – Type B Findings at Full Power,” because primary containment was inoperable for 37 minutes, i.e. less than 3 days. The inspectors determined that this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because the training of personnel did not describe specific requirements of dedicated operators, including the definition of immediate vicinity. [H.2(b)]. (Section 1R22)

Inspection Report# : [2012004](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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