

Vermont Yankee

4Q/2012 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: TBD Dec 31, 2012

Identified By: Self-Revealing

Item Type: AV Apparent Violation

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

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)].

Inspection Report# : [2012005](#) (*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*)

Significance: G Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure of the “B” UPS Tachometer Coupling Due to Age and Inadequate Corrective Actions

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” uninterruptible power system (UPS) motor generator (MG) set direct current (DC) tachometer coupling. Specifically, Entergy personnel did not promptly replace or verify the physical condition of the “B” tachometer coupling when it was known that it was aged and susceptible to age-related failure. Entergy’s corrective actions included replacing the “B” tachometer coupling, establishing a 12 year preventive maintenance replacement frequency, and initiating CR-VTY-2011-03686, CR-VTY-2011-03744, CR-VTY-2011-05335, CR-VTY-2011-05337, and CR-VTY-2012-01096.

The inspectors determined that Entergy personnel’s decision to not replace the “B” UPS MG set tachometer coupling prior to its failure in service without an interim check of its physical condition was a performance deficiency that was reasonably within Entergy’s ability to foresee and correct and should have been prevented. This finding is more than minor because there is no sufficiently similar example in IMC 0612, Appendix E, “Examples of Minor Issues,” and it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affects 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” UPS MG set failed in service affecting the overall system redundancy and reliability and resulted in 22 hours of unavailability. 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 did not represent a loss of system safety function, a loss of safety function of a single train for greater than its technical specification allowed outage time (MG-UPS-1B), and did not screen as potentially risk significant due to external initiating events. The inspectors determined that this finding had a cross-cutting aspect in the Human Performance cross-cutting area, within the Decision-Making component, because Entergy personnel did not use conservative assumptions in decision making and did not adopt a requirement to demonstrate that the proposed action to delay the coupling replacement until June 2012 was safe rather than a requirement to demonstrate that it was unsafe in order to disapprove the action [H.1(b)].

Inspection Report# : [2012002](#) (pdf)**Significance:** G Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure of the “D” Service Water Pump Due to Low Oil and Inadequate Corrective Actions

A self-revealing, NCV of 10 CFR 50 Appendix B, Criterion XVI, “Corrective Action,” was identified because Entergy personnel did not promptly correct an adverse condition resulting in the unplanned unavailability of the “D” service water pump. Specifically, Entergy personnel did not maintain a clear oil sight glass and did not identify a low oil level for the upper motor bearing prior to damage to the bearing. Entergy’s corrective actions included initiating a condition report, CR-VTY-2012-00483, performing an apparent cause evaluation, and replacing the motor and sight glass.

The inspectors determined that Entergy’s failure to maintain a proper oil level for the upper motor bearing of the “D” service water pump was a performance deficiency that was reasonably within Entergy’s ability to foresee and correct and should have been prevented. This finding is more than minor because no sufficiently similar example is present in IMC 0612, Appendix E, “Examples of Minor Issues,” and it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affects 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 “D” service water pump failed in service affecting overall safety system redundancy and reliability and resulted in three days of unavailability. The inspectors determined the significance of the finding using IMC 0609.04, “Phase 1 – Initial Screening and Characterization of Findings.” The finding was screened to be of very low safety significance (Green) because it did not represent a loss of system safety function, a loss of safety function of a single train for greater than its technical specification allowed outage time, and did not screen as potentially risk significant due to external initiating events. The inspectors determined that this finding had a cross-cutting aspect in the Problem Identification

area, within the Corrective Action Program component, because Entergy personnel did not implement a corrective action program with a low threshold for identifying issues and as a result, the stained sight glass was not recognized as an adverse condition [P.1(a)].

Inspection Report# : [2012002](#) (*pdf*)

Barrier Integrity

Significance:  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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