Vermont Yankee
3Q/2014 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Sep 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failures to Promptly Identify Through-Wall Leakage from Service Water Piping to Emergency Diesel Generators
The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because Entergy did not promptly identify conditions adverse to quality related to the service water system. Specifically, observable through-wall leaks that were reasonably able to be identified existed in service water piping supplying the emergency diesel generators' (EDGs') cooling system for an extended period of time without being identified. In addition, the affected service water piping was not appropriately scheduled for treatment and replacement given known conditions favorable to microbiologically induced corrosion (MIC). Entergy's corrective actions to restore compliance consisted of performing complete walkdowns of all accessible safety-related service water piping, performing ultrasonic inspections of the three leak locations and fifteen extent of condition locations, conducting structural analyses to determine structural integrity of the piping with the measured thinning, and performing daily leak rate monitoring and frequent periodic ultrasonic inspections of no more than 30 day intervals.

This finding is more than minor because if left uncorrected it has the potential to lead to a more significant safety concern. Specifically, the through-wall leaks were unmonitored degraded conditions with reasonable doubt on the operability of the service water and alternate cooling systems before the results of ultrasonic inspections and new structural analyses were obtained. The inspectors determined the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The finding was determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design and qualification of the service water and alternate cooling systems and the systems maintained their operability.

The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources, because Entergy did not ensure that the combination of piping replacements, chemical treatments, guidance and procedures for walkdowns, and camera coverage were adequate to support nuclear safety.

Inspection Report# : 2014004 *(pdf)*

Significance: G Apr 03, 2014
Identified By: NRC
Item Type: FIN Finding
Inadequate Design Control of SBO Loading Calculation
The team identified a finding of very low safety significance (Green), in that Entergy did not ensure correct implementation of their design control process when establishing the capacity requirement for the new Station

Blackout (SBO) alternate alternating current (AAC) power source. Specifically, Entergy did not use the latest revision of the SBO load capacity analysis as a design input to the load capacity requirement when verifying the adequacy of the sizing of the new SBO diesel generator (DG). Entergy entered the issue into their corrective action system to evaluate the capability of the SBO DG to support the expected SBO loads and initiated actions to ensure the design analysis assumptions for loading are consistent with the established operational procedures for SBO response.
The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. In addition, inspectors reviewed IMC 0612, Appendix E, "Examples of Minor Issues," and found that example 3.j was similar, in that, the team had reasonable doubt of the capability of the SBO DG to operate within its analyzed load rating. Specifically, the most limiting condition with residual heat removal service water (RHRSW) pumps in service had not been accounted for in the SBO DG load rating evaluation. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality," the team concluded that this finding was a design deficiency that did not result in the SBO DG losing its functionality. Specifically, the team evaluated decay heat level requirements and determined there was reasonable assurance the SBO DG load would have remained within its design rating. The team determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because the design control engineering change process procedure was not adequately followed, in that, the increased SBO load associated with a second RHRSW pump was not evaluated and resolved through the design review process.
Inspection Report# : 2014007 *(pdf)*

Significance: G Mar 31, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Monitor the Unavailability of the Fire Water to Service Water Crosstie
The inspectors identified an NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph a(1), because Entergy did not evaluate the fire protection system for (a)(1) classification even though the unavailability performance criterion had been exceeded. Specifically, Entergy did not recognize that the fire water system to service water system crosstie function was risk-significant and that its unavailability (nine days in 2013 and 34 days in 2014) was required to be monitored. Entergy entered this issue into their corrective action program as condition report CR-VTY-2014-01064.

The inspectors determined that the failure to recognize that the fire water system to service water system crosstie function was risk-significant, to monitor the crosstie function's unavailability (nine days in 2013 and 34 days in 2014), and to evaluate the fire protection system for 10 CFR 50.65 (a)(1) classification 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 it is associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, since Entergy personnel did not recognize that the risk-significant function was not being tracked against the unavailability performance criterion no actions were taken to address exceeding that criterion and no changes were made to the temporary pump design to reduce additional unavailability.

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 represent an actual loss of function of a non-technical-specifications train of equipment designated as high safety-significant for greater than 24 hours. Specifically, the performance deficiency was not the underlying cause of the unavailability in 2013 or 2014. This finding has a cross-cutting aspect in the area of Human Performance because Entergy did not challenge the unknown reason why no system was accruing maintenance rule unavailability while the station was in an elevated risk condition, i.e. "Yellow," with the fire water pumps out of service

Inspection Report# : 2014002 *(pdf)*

Significance: G Dec 31, 2013
Identified By: Self-Revealing
Item Type: VIO Violation
Inadequate Corrective Actions to Restore Switchgear Room Flood Boundary
A self-revealing, cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified because Entergy did not promptly correct two separate conditions adverse to quality related to flood protection of the switchgear rooms. Specifically, within one conduit a mechanical screw-type flood seal that rotated in place was removed and not promptly replaced with a reliable foam seal and within a second conduit a mechanical screw-type flood seal was left installed and not promptly replaced with a reliable foam seal, allowing for two flooding pathways into the switchgear rooms. The inadequate seals were identified on March 23, 2013 following water intrusion into the switchgear room manholes, and the NRC documented a Green NCV in inspection report 05000271/2013003, ML13224A068; however, the intended corrective actions were not implemented. This violation is cited because Entergy failed to restore compliance within a reasonable period of time after the initial non-cited violation was identified. On November 7, 2013 Entergy restored compliance by installing a SYLGARD foam seal in both the MH-S2 Spare-4 conduit and MH-S2 40805B conduit.

This finding is more than minor because it is associated with the protection against external events attribute of the Mitigating Systems cornerstone and affected the objective to ensure the availability and reliability of systems that respond to external events to prevent undesirable consequences. Specifically, the failed flood barriers provided an external flooding pathway that could impact the reliability and availability of both electrical switchgear rooms during a design basis flood event. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 4 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding was of very low safety significance (Green) because, in spite of the failed flood barriers, sufficient water removal capability was available to ensure there was no loss of electrical switchgear safety function. The switchgear would still have been able to perform its function because the water level would have been maintained below floor level using the additional sump pump capacity available on site.

The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources component, because Entergy did not have complete, accurate and up-to-date design documentation, drawings and procedures for the switchgear room manhole conduit seals. Specifically, Entergy did not establish a flood seals program and program document, procedure, or drawing that tracked which conduits had mechanical screw-type flood seals and which had SYLGARD foam seals

Inspection Report# : 2013005 *(pdf)*
Inspection Report# : 2014003 *(pdf)*

Significance: G Dec 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Risk Assessment for Isolating All Nitrogen Supply to the Containment Instrument Air System
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 isolating the nitrogen supply to the containment instrument air system. Specifically, the inspectors identified that Entergy personnel had not correctly analyzed the impact to plant risk with the liquid nitrogen supply, containment air compressor, and safety relief valve (SRV) nitrogen bottle backup supply removed from service. Entergy's corrective actions included establishing a contingency to restore nitrogen supply, protecting further equipment, initiating a

condition report, and revising the procedures for drywell entry to maintain the SRV nitrogen backup bottle supply in service until the reactor is shutdown.

This finding is more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors reviewed NRC IMC 0612, Appendix E, "Examples of Minor Issues," and found that example 7.e was similar to the issue. Specifically, 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 nitrogen supply system was unavailable was less than 1E-6 (approximately 1E-7). The inspectors determined that the finding had a cross-cutting aspect in the Human Performance cross-cutting area, Decision-Making component, because Entergy failed to use a systematic process using available risk assessment guidance and did not obtain interdisciplinary input to make a risk-significant decision

Inspection Report# : 2013005 *(pdf)*

Barrier Integrity

Significance:  Sep 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Submit Reactor Building Crane Digital Control System Modification for Approval
The inspectors identified a finding of very low safety significance (Green) and an associated Severity Level IV NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.59, "Changes, Tests and Experiments," when Entergy made changes to the reactor building crane that resulted in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). Specifically, Entergy did not recognize that they had removed redundancy from the control system needed to qualify the crane as single-failure proof. Entergy entered this issue into their corrective action program as condition report (CR)-VTY-2014-03028 and completed modifications to the crane that restored the independence of the redundant upper travel limits.

The inspectors determined that the finding was more than minor because the change would have required NRC review and approval in order to qualify the crane as single-failure proof. Additionally, this finding was associated with the design control attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (e.g. fuel cladding) protect the public from radionuclide releases caused by accidents or events. Specifically, the design change increased the likelihood of a heavy load drop, which could have impacted the fuel in the spent fuel pool.

This issue impeded the ability of the NRC to perform its regulatory oversight function because the failure to follow the requirements in 10 CFR 50.59 resulted in Entergy not submitting the change to the NRC for approval. Therefore, the enforcement aspects of this finding were processed using the Traditional Enforcement process.

This violation is associated with a finding that has been evaluated by the SDP and communicated with an SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider the regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the

violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding.

The inspectors evaluated this finding using IMC 0609, Attachment 4, "Initial Characterization of Findings." The inspectors determined that the finding affected the Barrier Integrity cornerstone and evaluated the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3, "Barrier Integrity Screening Questions." The inspectors determined the finding was of very low safety significance (Green) because the crane was not operated over the spent fuel pool, nor was there an actual load drop.

Per Subsection d.2 of Section 6.1, "Reactor Operations," of the NRC Enforcement Policy, this is a Severity Level IV violation, because it is a 10 CFR 50.59 violation that results in conditions evaluated as having very low safety significance by the SDP.

This finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because Entergy did not avoid complacency on the review of this design by recognizing and planning for the possibility of latent issues. The 50.59 screening was not reviewed to ensure it fully captured the final design from the vendor, and as a result, the vulnerability introduced by the digital controller was not considered.

Inspection Report# : 2014004 *(pdf)*

Significance:  Sep 30, 2014
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Procedure Results in Inoperable Containment Isolation Valve
The inspectors identified a self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy staff did not implement the prescribed maintenance instructions during the refurbishment of the air-operated valve (AOV) actuator for a drywell floor drain containment isolation valve. Specifically, Entergy staff used a lubricant other than the type specified per the equipment manual, which was incompatible with the seals in the valve. Entergy's immediate corrective actions included entering the issue into their corrective action program as CR-VTY-2013-05763, performing a rebuild of the valve, and troubleshooting the as-found condition.

This finding is more than minor because it is associated with the SSC and barrier performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (e.g., containment) protect the public from radionuclide releases caused by accidents or events. Specifically, when tested, the valve exceeded the maximum allowable stroke time for closure and was declared inoperable. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because it was associated with the functionality of the reactor containment but did not represent an actual open pathway in the physical integrity of containment, containment isolation system, and heat removal components.

This finding has a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because Entergy personnel did not properly implement the requirements prescribed in the maintenance instructions. Specifically, during the refurbishment of the valve's actuator, Entergy staff did not use the lubricant specified in the equipment manual referenced in the work order.

Inspection Report# : 2014004 *(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

Significance: **N/A** Dec 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Failure for Armed Responders to be Equipped with Contingency Weapons
SL IV NCV against the VY Security Plan which, in part, requires armed responders to be equipped with their contingency weapons.

on April 10, 2013, an SO designated as a primary armed responder took deliberate actions that caused him to fail to be equipped with his required weapon. Specifically, the SO, while assigned to conduct Vital Area door checks (required by the VY Security Plan to ensure, at a prescribed frequency, that certain doors were locked), performed some of the door checks too early, which could have resulted in the next door check being performed outside of the required timeframe.

Inspection Report# : 2013005 *(pdf)*

Last modified : November 26, 2014