

## Vermont Yankee 2Q/2014 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  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:**  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:**  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:**  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*)

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Monitor the Unavailability of the "B" Control Rod Drive Equipment Train**

The inspectors identified a NCV of Title 10 Code of Federal Regulations (10 CFR) 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," because Entergy did not monitor the performance of the "B" control rod drive (CRD) equipment train. Specifically, Entergy did not include seven days of unavailability for the "B" CRD flow control valve in the tracking database, and therefore did not initiate corrective actions when the train exceeded its unavailability criterion. Entergy initiated a condition report to document exceeding the performance criterion, entered the unavailability into the tracking database, and initiated a condition report to document the oversight in unavailability tracking.

This finding is more than minor because it is associated with the human performance 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 this unavailability put the plant into a higher integrated risk category and did not recognize the plant risk impact of the flow control valve's extended unavailability, no corrective actions were taken to address the maintenance practices which caused the unavailability performance criterion to be exceeded unnecessarily. 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 a loss of system safety function or a loss of safety function of a single train for greater than its Technical Specification allowed outage time. In addition, the failure to recognize and manage the plant risk associated with the 169 hours of unavailability of the "B" CRD flow control valve resulted in an incremental core damage probability of approximately  $2E-10$ , which is less than  $1E-6$ , and therefore also of very low safety significance. The inspectors determined that this finding has a cross-cutting aspect in the Human Performance area, Work Practices component, because Entergy personnel did

not follow the maintenance rule program procedures. Specifically, operations did not log the unavailability in the maintenance rule out-of-service log and the system engineer did not review the scoping document to verify which components counted toward the train unavailability.

Inspection Report# : [2013004](#) (pdf)

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Operator Error Results in Diesel Generator Overload**

A self-revealing NCV of Technical Specification 6.4, "Procedures," was identified because Entergy overloaded the "B" emergency diesel generator to 130 percent of its sustained load rating. Specifically, an auxiliary operator (AO) took the speed droop switch to zero before the output breaker was opened, contrary to procedure, which resulted in the overload condition. Entergy's immediate corrective actions included initiating a condition report, conducting a root cause evaluation, and performing management assessment of control room communications.

This finding is more than minor because it is associated with the Human Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the "B" emergency diesel generator was unavailable for an additional 24 hours in order to perform required inspections and testing to verify it was not damaged by the overload condition. 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 a loss of system safety function or a loss of safety function of a single train for greater than its Technical Specification allowed outage time. The inspectors determined that this finding has a cross-cutting aspect in the Human Performance area, Work Practices component, because Entergy personnel did not use human performance error prevention techniques commensurate with the risk of the assigned task such that work activities were performed safely. Specifically, self-checking, peer checking, and three-part communications were not used effectively to prevent performing procedure steps out of order.

Inspection Report# : [2013004](#) (pdf)

## Barrier Integrity

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Sep 30, 2013

Identified By: NRC

Item Type: FIN Finding

### **Failure to Maintain Radiation Exposure ALARA During Refueling Activities**

A self-revealing finding was identified because Entergy inadequately planned and controlled work while performing reactor reassembly and reactor cavity decontamination activities during refueling outage (RFO) 30 resulting in excessive unintended occupational collective exposure that exceeded the planned dose exposure established by Radiation Work Permit (RWP) 2013-702. Inadequate work planning and control resulted in unplanned, unintended collective exposure due to conditions that were reasonably within Entergy's ability to control. The work activity performance deficiencies resulted in the collective exposure for these activities increasing from the original estimate of 9.950 person-rem to an actual dose of 18.940 person-rem. Entergy entered the issues into their corrective action program.

This finding is more than minor because it is associated with the program and process attribute of the Occupational Radiation Safety cornerstone and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Additionally, the performance deficiency was determined to be more than minor based on a similar example (6.i) in Appendix E of IMC 0612, in that the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. In accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that this finding is of very low safety significance (Green) because the plant's current three year rolling average collective dose (142.6 person-rem/reactor years for 2010 through 2012) is less than the criteria of 240 person-rem per boiling water reactor unit. The inspectors determined that this finding has a cross-cutting aspect in the Human Performance area, Work Control component, because Entergy did not implement the planned work as intended, which involved job site activities, and impacted radiological safety.

Inspection Report# : [2013004](#) (*pdf*)

---

## 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 : August 29, 2014