

Turkey Point 4 1Q/2014 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Test Precautions, Limitations, and Instructions for Performing Harmonic Testing on the Unit 4 Turbine Generator

A self-revealing Green finding was identified for the licensee's failure to provide adequate test precautions, limitations, and instructions for performing harmonic testing on the Unit 4 turbine generator control circuitry while in Mode 1 operation. As a result, 480 volt load center voltage was lowered enough to initiate a degraded voltage signal to the 4B safety related 4 kV bus sequencer which tripped reactor coolant pumps causing a reactor trip due to low reactor coolant system flow. This issue was placed in the licensee's corrective action program as action request (AR) 1867690. Corrective actions included performing a root cause evaluation and a revision to procedure WM-AA-100-1000, "Work Activity Risk Management," to include additional guidance involving online maintenance and risk insights when planning maintenance on the main generator.

The licensee's failure to provide adequate test precautions, limitations, and instructions for performing harmonic testing on the Unit 4 turbine generator control circuit was a performance deficiency. Specifically, TI-246904-01, "3rd Harmonic Relay Test," did not provide adequate instructions to prevent creating a degraded voltage condition and the test was classified in error as "low" risk rather than "high" risk per licensee procedure WM-AA-100-1000, "Work Activity Risk Management." The inspectors determined the performance deficiency was more than minor using IMC 0612, Power Reactor Inspection Reports, Appendix B, "Issue Screening," because the performance deficiency was associated with the procedure quality attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to have an adequate procedure for controlling the turbine generator harmonic testing resulted in a reactor trip due to the loss of reactor coolant pumps from 4B sequencer 4 kV bus stripping. The inspectors evaluated the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power", Exhibit 1, Transient Initiators. The inspectors determined the finding was of very low safety significance (green) because the finding did not result in a reactor trip and a loss of mitigation equipment relied upon to transition the plant to a stable shutdown condition. The finding was associated with a cross-cutting aspect in the work control component of the human performance area because the licensee failed to include the proper risk insights for work activities related to nuclear safety and prevent a subsequent reactor trip [H.3(a)].

Inspection Report# : [2013005](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Take Adequate Corrective Actions to Correct Flow Induced Vibration Leads to CCW Piping Weld Failures.

A Green self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified when the licensee failed to implement corrective actions that addressed the low stress high cycle fatigue of component cooling water (CCW) relief valve (RV) 4-747B piping caused by flow induced vibration. As a result, CCW system flow induced vibration resulted in weld cracks and system pressure boundary leakage in January 2014. This issue was placed in the licensee's corrective action program (CAP) as action request (AR) 1931761. Corrective actions included performing a root cause evaluation, implementing special instructions to minimize the time that split header operation is performed, and developing a plan to replace the existing relief valve with an orifice or alternate relief valve.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to implement adequate corrective actions to address CCW system flow induced vibration resulted in weld cracks and CCW system pressure boundary leakage in January 2014. The finding was screened using Exhibit 1, Mitigating Systems Screening Questions, found in Inspection Manual Chapter 0609, Significance Determination Process, Appendix A, Significance Determination Process (SDP) for Findings At-Power (June 19, 2012). The inspectors determined the finding was of very low safety significance (Green) because the finding did not affect design or qualification, did not represent a loss of system function, and did not represent an actual loss of function of a TS train of equipment. The finding was associated with a cross-cutting aspect in the evaluation component of the problem identification and resolution area because the licensee did not thoroughly evaluate issues and corrective actions from previous weld failures on CCW system RV-4-747B piping caused by flow induced vibration (P.2). (Section 4OA2.2) Inspection Report# : [2014002](#) (*pdf*)

Significance:  Feb 28, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Implement Time Critical Operator Action Program Procedure

The team identified a green non-cited violation of Technical Specification 6.8.1, "Procedures and Programs," for the licensee's failure to implement procedure 0-ADM-232, Time Critical Action Program, to ensure time critical actions (TCAs) important to mitigate design basis events could be performed in the required time. The failure to implement this procedure was a performance deficiency. No documentation existed to demonstrate that the TCA to restore power to the battery chargers during a station blackout could be performed within the required time (30 minutes). The team also identified a TCA to locally isolate the auxiliary feedwater for a faulted steam generator that did not have a job performance measure to demonstrate the successful completion of the action. The licensee entered this issue into the corrective action program as action requests 01944453, 01945532, 01943321, 01943425, and 01943697. For TCAs where no validation documentation could be determined, the licensee completed tabletop exercises, simulator exercises, and field walkdowns to ensure that all of the TCAs to mitigate design basis events could be completed within the required action times.

The performance deficiency was determined to be more than minor because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not implement 0-ADM-232 adequately to ensure that the TCAs listed in Attachment 1 of the procedure were properly validated; consequently, the licensee could not demonstrate that TCAs could be successfully executed in accordance with the design basis. The team determined the finding to be of very low safety significance (Green) because the finding was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; and did not represent a loss of system and/or function. The team determined this finding was associated with the cross-cutting

aspect of Procedure Adherence in the area of Human Performance because although the procedure was recently revised to include all necessary requirements to maintain the time critical action program, the licensee failed to follow procedure 0-ADM-232, which resulted in several TCAs not being properly validated. [H.8] (Section 1R21.2)
Inspection Report# : [2014007](#) (*pdf*)

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Power operated relief valve inoperable for greater than allowed outage time due to lifted heads

A self-revealing non-cited violation of the limiting condition for operation specified by Unit 4 Technical Specification (TS) 3.4.9.3, "Overpressure Mitigating System," was identified due to the inoperability of a reactor coolant system (RCS) power-operated relief valve (PORV) for longer than the TS allowed outage time (AOT) of 24 hours. Specifically, the licensee failed to control the wiring configuration of the pressure comparator circuit for PORV PCV-4-456 and, as a result, the PORV would not have automatically responded to an overpressure event. The licensee corrected the wiring configuration error upon discovery and entered this issue into the corrective action program as action request 1868533.

The inspectors determined the performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely impacted the objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to control the wiring configuration of PCV-4-456 resulted in the PORV being unable to automatically respond to an RCS overpressure event. The inspectors assessed the finding in the mitigating systems cornerstone and evaluated the significance using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that the finding required a detailed risk assessment because it was associated with a non-compliance with low temperature overpressure (LTOP) Technical Specifications. A Senior Reactor Analyst in NRC headquarters determined that the risk significance of the issue was very low (i.e., Green). The dominant accident sequence was an over-pressurization event caused by the pressurizer heaters, where the remaining PORV fails resulting in a through wall crack of the reactor coolant system. This finding was associated with a cross-cutting aspect in the work practices component of the human performance area because the licensee had not effectively communicated expectations regarding procedural compliance, and as a result, personnel did not implement procedural requirements to maintain plant configuration using wiring lift and land sheets; causing leads that affected the operability of PORV PCV-4-456 to not be re-landed [H.4(b)]. (Section 4OA3)

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

Barrier Integrity

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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