

Turkey Point 4 3Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate General Operating Procedure to Prevent Inadvertent AFAS While Performing a Reactor Plant Planned Shutdown

A self-revealing non-cited violation (NCV) of Technical Specification (TS) 6.8.1, "Procedures," was identified for the licensee's failure to maintain adequate guidance in procedure 4-GOP-103, "Power Operation to Hot Standby." Specifically, 4-GOP-103 did not contain adequate instructions to control reactor power prior to opening the reactor trip breakers in order to minimize steam generator inventory loss to prevent an auxiliary feed water (AFW) system actuation. As a result, the AFW actuation system (AFAS) actuated unexpectedly during a planned unit shutdown resulting in an excessive reactor coolant system cool down and the operators closing the main steam isolation valves. Corrective actions included entering this issue into their corrective action program (CAP) and revising the procedure to reduce reactor power to at least 20 percent to prevent steam generator inventory loss due to shrinkage following a manual reactor trip during a planned reactor plant shutdown from power operations to hot standby.

The performance deficiency was more than minor because it is 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 shutdown as well as power operations. Specifically, the failure to have specific guidance in procedure 4-GOP-103 to ensure reactor power is lowered to at least 20 percent prior to initiating a manual reactor trip during a planned shutdown resulted in an inadvertent AFAS actuation, reactor coolant system cool down, closing of the main steam isolation valves, and a reduced safe shutdown margin. The inspectors screened the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 1, "Initiating Events Screening Questions."

The inspectors determined that this finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding was associated with a cross-cutting aspect in the resources component of the human performance area because the licensee failed to ensure an adequate general operating procedure was available to support nuclear safety (H.1)

Inspection Report# : [2015002](#) (*pdf*)

Significance: G May 12, 2015

Identified By: NRC

Item Type: FIN Finding

Inadequate Work Instructions for Replacing Main Generator Current Transformers (Section 40A3)

A self-revealing finding was identified for the licensee's failure to provide adequate instructions for performing work on the Unit 4 main generator protection control circuitry. As a result, the lugged connections on an installed current transformer lacked the appropriate tightness causing increased electrical resistance and ultimately catastrophic failure of a lug connection. The lug failure produced an open circuit condition on the current transformer causing the generator protection circuit to actuate. This resulted in a turbine trip and reactor trip. Corrective actions included replacing the damaged lug and torquing all the current transformer lug connections to the vendor recommended

value. A root cause evaluation was performed and a revision made to maintenance procedure 0-PME-090.03, “Maintenance of Isophase Neutral Bus and Grounding Transformer Connection Assemblies,” to include additional instructions on torquing the lug assemblies. The licensee entered this performance deficiency in their corrective action program (CAP) as action request 02047137.

The performance deficiency was more than minor because it 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 work package associated with engineering modification package EC 246904 and work order 40063905 directed the technician to connect the CT lugs hand tight and did not require torquing per the vendor specified torque value. The inspectors screened the significance of the finding using Manual Chapter 0609, Appendix A, 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 resources component of the human performance area because the licensee failed to ensure an adequate work instruction document was available to support nuclear safety (H.1) (Section 40A3).

Inspection Report# : [2015003](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Inadequate Procedure to Realign Steam Supply to the Gland Sealing Steam System

Green. A self-revealing non-cited violation (NCV) of Technical Specification (TS) 6.8.1, “Procedures”, was identified for the licensee’s failure to maintain an adequate procedure for gland sealing steam supply realignment. Specifically, the licensee failed to have initial conditions in place in the procedure that provided specific direction that steam supply to the gland sealing system cannot be transferred from the main steam system to the auxiliary steam system with a unit in Mode 1 or 2. The licensee took corrective action to add initial conditions to procedure 4-GOP-103 that would not allow gland seal system steam supply realignment while in Modes 1 or 2. The licensee entered this issue into their corrective action program (CAP) as action request (AR) 1967899.

The performance deficiency was more than minor because it 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 specific guidance in procedure 4-GOP-103 that prevented realigning the gland sealing steam supply while in Mode 1 or 2 resulted in lowering condenser vacuum and a subsequent reactor trip on low condenser vacuum when the gland sealing steam supply was being realigned with Unit 4 in Mode 1. The inspectors screened the finding using Attachment 4 to NRC Inspection Manual Chapter (IMC) 0609 and determined that the finding was a transient initiator contributor which required evaluation using Exhibit 1, “Initiating Events Screening Questions,” of IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power” (July 19, 2012). The inspectors determined that the finding was of very low safety significance (Green) because the performance deficiency did not result in a reactor trip and loss of mitigating equipment relied upon to transition the plant to a safe shutdown condition. The finding was associated with a cross-cutting aspect in the resources component of the human performance area because the licensee failed to ensure an adequate general operating procedure was available to support nuclear safety (H.1).

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Perform an Adequate Design Verification

Green: A self-revealing finding was identified for the licensee's failure to ensure an adequate design change was implemented during Unit 3 and Unit 4 instrument air compressor system upgrade modifications completed in 2013. Specifically, plant modifications EC 246991 and EC 246990 were accepted and placed in service by the licensee without verifying the control logic configuration would function properly and load under all conditions. As a result, the diesel-driven compressors would not load and pressurize the instrument air header in the event of a loss of instrument air pressure while in the standby mode of operation. Corrective actions included an immediate modification to the standby compressor loading control circuit to ensure the machine loaded automatically and revising general procedural guidance for compressor operation. The licensee entered this performance deficiency in their corrective action program as AR 01983607.

The performance deficiency was more than minor because it was associated with the design control 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 design for controlling the operation of the standby instrument air compressor resulted in a reactor trip due to the loss of instrument air pressure. The inspectors screened the issue under the initiating events cornerstone using Attachment 4 (June 19, 2012) and Exhibit 1 (June 19, 2012) of Appendix A to Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (June 2, 2011). The inspectors concluded that a detailed risk evaluation would be required because the finding was associated with the loss of a support system that resulted in a reactor trip and affected equipment that could be used by plant operators to mitigate the resulting plant transient. A senior reactor analyst (SRA) performed a detailed risk evaluation of this issue. The NRC model for Turkey Point was adjusted by: 1) increasing the initiating event frequency for a loss of instrument air (LOIA) event by one order-of-magnitude, and 2) the failure-to-run probability of the backup air compressors was set equal to 1.0. The change in core damage frequency results were below the 1E-6 threshold and the issue was determined to be of very low risk significance (Green). The finding was associated with a cross-cutting aspect in the resources component of the human performance area because the licensee failed to ensure instrument air system equipment was available and adequate to support nuclear safety (H.1).

Inspection Report# : [2014005](#) (*pdf*)

Mitigating Systems

Significance:  Feb 23, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Establish a Reasonable Maintenance Effectiveness Demonstration for Unit 3 Containment Atmospheric Temperature System

Green: The NRC identified a Green non-cited violation (NCV) of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the licensee's failure to adequately monitor the performance or condition of the Unit 3 containment atmospheric temperature system against licensee established goals or demonstrate that the performance of the containment atmospheric temperature system was being effectively controlled through preventive maintenance, such that the system remained capable of performing its intended function. Specifically, there were multiple individual component failures on both units since March 2011 and the Unit 3 containment atmospheric

temperature system was non-functional from November 5, 2014, to January 17, 2015. In response to the NRC identified issue, the licensee initiated action report (AR) 02023116, and classified the temperature elements into 10 CFR 50.65(a)(1) status on February 23, 2015, under AR 02004990.

The inspectors determined that the performance deficiency was more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone objective. The licensee did not ensure the availability, reliability, and capability of the Unit 3 containment atmospheric temperature system that was used for emergency operating procedures. The inspectors determined the finding to be of very low safety significance (Green) because it was not a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), it did not represent the loss of a system and/or function, it did not represent an actual loss of function of at least a single train or two separate safety systems out-of-service for greater than its Technical Specifications (TS) allowed outage time, and it did not represent an actual loss of a non-TS equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Evaluation, in the area of Problem Identification and Resolution. Specifically, the licensee failed to thoroughly evaluate issues that were identified in the last three years associated with containment atmospheric temperature system failures to ensure that resolutions addressed causes and extent of conditions commensurate with their safety significance.

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Inspection Report# : [2015007](#) (*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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