Palo Verde 2
1Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Jan 15, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Loop Flow Test Procedure
The team identified a Green non-cited violation of License Conditions 2.C.7, 2.C.6, and 2.F for Units 1, 2, and 3, respectively, because the licensee had not established criteria for determining when a fire main loop had degraded and had not properly tested all portions of the fire main loop. Specifically, the licensee had not established a differential pressure that would initiate actions to evaluate the cause for a degradation and the licensee had not determined the flow through individual flow paths in their auxiliary and control buildings. The licensee documented these issues in Condition Reports 15 00513 and 16 00686 and initiated actions to correct the procedure and perform the flow test of the individual loops.

The team identified a performance deficiency related to the procedure used to test their fire main loop. Specifically, the licensee had not established criteria for determining a degraded fire main loop and had not properly tested all portions of the fire main loop. This performance deficiency was more than minor because it was associated with the protection against external factors attribute (fire) and adversely affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to test the fire main loops inside the control/auxiliary building separately and failure to establish appropriate acceptance criteria affected the ability to demonstrate the continued capability to deliver adequate flow and pressure to the fire suppression systems.

The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609, “Significance Determination Process,” Attachment 4, “Initial Characterization of Findings,” dated June 19, 2012. The inspectors determined that an IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” dated September 20, 2013, review was required as the finding affected the ability to reach and maintain safe shutdown conditions in case of a fire. Using IMC 0609, Appendix F, Attachment 1, “Fire Protection Significance Determination Process Worksheet,” dated September 20, 2013, the finding was screened as a Green finding of very low safety significance in accordance with Task 1.4.7, “Fire Water Supply,” Question A. The inspectors determined that although the licensee failed to test portions of the fire main system in accordance with code requirements, the inspectors determined that at least 50 percent of required fire water capacity would be available based on the testing is done with only one fire pump in service and there are three available fire pumps. Since these fire main loops inside the control/auxiliary building had not been monitored for pressure changes when flow tested since initial testing and nothing caused the licensee to reevaluate the test, the team determined that this failure did not reflect current performance.

Inspection Report# : 2015008 *(pdf)*

Significance: G Jun 30, 2015
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Take Timely Corrective Actions to Prevent Charging Pump Discharge Bladder Failure

The inspectors documented a finding for the failure to take timely corrective actions associated with failure of the discharge pulsation dampener poppet valves in the positive displacement pump charging system. Specifically, following the investigation of a failing discharge dampener bladder on the Unit 2 charging pump E and the discovery that the poppet valve stem was galled and stuck in the poppet valve seat, the licensee determined that routine monthly monitoring and the 5 year bladder replacement maintenance would identify further failures in the other charging system trains. The licensee entered this issue into the corrective action program as Condition Report 15 4230.

Failure to take timely corrective actions to replace the charging pump discharge dampener poppet valve assembly for susceptible charging trains, specifically the Unit 2 charging pump B, was a performance deficiency. The performance deficiency was more than minor because it is associated with the equipment performance attribute and directly affected the Initiating Event 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 correct this condition adverse to quality did result in a reactor coolant system transient and challenged normal plant operations. Using Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At Power," the performance deficiency was determined to be of low safety significance (Green) because the finding did not result in a reactor trip and the loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors also identified a cross-cutting aspect in the area of human performance associated with training: the organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, system engineers were not taught that the station's positive displacement pumps do not have internal check valves, but actually have plate valves that do not prevent gas or fluid from flowing back through the pump. This knowledge gap gave the system engineering staff a false sense of security in that a failure of the discharge pulsation dampener would not affect the other charging pumps. The system engineers failed to recommend a more prompt replacement schedule for the poppet valve and assembly [H.9].
Inspection Report# : 2015002 *(pdf)*

Significance: G Jun 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Establish Adequate Procedures to Respond to a Total Loss of Charging Event
The inspectors documented a non-cited violation of Technical Specification 5.4.1.a, Regulatory Guide 1.33, Revision 2, Appendix A, Section 6.t, February 1978. Specifically, the licensee failed to establish adequate procedures for combating emergencies and other significant events regarding a total loss of charging pumps due to gas binding that affected reactor coolant system pressure and level control. On March 20, 2015, Unit 2 experienced a total loss of charging and had to rely on a normal operating procedure, which was not written to combat a total loss of charging flow due to gas binding from a failed discharge pulsation dampener. The licensee entered this issue into the corrective action program as Condition Report 15 4230.

The failure to provide adequate procedures for combating emergencies and other significant events regarding a total loss of charging pumps due to gas binding that affected reactor coolant system pressure control was a performance deficiency. The performance deficiency was more than minor because it is associated with the procedure quality attribute and directly affected the Initiating Event 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 lack of adequate procedural guidance unduly challenged reactor operators during the loss of charging event. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," the performance deficiency was determined to be of very low safety significance (Green) because the finding did not result in a reactor trip and the loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding did not have a cross-cutting aspect because the most significant contributor did not reflect current licensee performance because the decision to eliminate the abnormal operating procedure and not to train reactor operators was made in

1997.

Inspection Report# : 2015002 *(pdf)*

Mitigating Systems

Significance: G Mar 24, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Operations Department Failure to Document Conditions Adverse to Quality in Condition Reports
DRAFT-The inspection activities described in this report were performed between March 8 and March 24, 2016, by three inspectors from the NRC's Region IV offices, the senior resident inspector at Palisades Nuclear Generating Station, and the resident inspector at the Palo Verde Nuclear Generating Station. The report documents one finding of very low safety significance (Green). This finding involved a violation of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects Within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Assessment of Problem Identification and Resolution

Based on its inspection sample, the team concluded that the licensee maintained a corrective action program in which individuals generally identified issues at an appropriately low threshold. Once entered into the corrective action program, the licensee generally evaluated and addressed these issues appropriately and timely, commensurate with their safety significance. The licensee's corrective actions were generally effective, addressing the causes and extents of condition of problems.

The licensee appropriately evaluated industry operating experience for relevance to the facility and entered applicable items in the corrective action program. The licensee incorporated industry and internal operating experience in its root cause and apparent cause evaluations. The licensee performed effective and self-critical nuclear oversight audits and self-assessments. The licensee maintained an effective process to ensure significant findings from these audits and self-assessments were addressed.

The licensee maintained a safety-conscious work environment in which personnel were willing to raise nuclear safety concerns without fear of retaliation.
Inspection Report# : 2016008 *(pdf)*

Significance: G Jun 30, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Identify and Correct Engineered Safety Features Actuation System Steam Generator Differential Pressure Setpoint Drift
The inspectors reviewed a Green self-revealing non-cited violation of Technical Specification 5.4.1.a for failure to establish and implement procedures recommended by Regulatory Guide 1.33 Appendix A, Item 5.0, "Abnormal, Off-Normal and Alarm Conditions." Specifically, on January 11, 2015, Unit 2 received a steam generator pressure

difference setpoint alarm on channel B but failed to determine the cause of the alarm. As a result, the auxiliary feedwater actuation signal channel was inoperable for a period of 13 days, greater than the technical specification allowed outage time of 1 hour. The licensee entered this condition in their corrective action program and performed a root cause evaluation under Condition Report Disposition Request 4618033.

The inspectors concluded that the failure to provide adequate alarm procedures was a performance deficiency. The inspectors concluded that the performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the control room operators did not have an alarm response procedure for plant monitoring system (RJ) alarm on point SASB22, which resulted in the channel B auxiliary feedwater actuation signal steam generator 2 drifting out of tolerance for a period of 13 days. This exceeds the allowed outage time specified in the technical specifications. The inspectors performed the initial significance determination using NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding screened to a detailed risk evaluation because it involved the actual loss of function of at least a single train for greater than its technical specification allowed outage time. A Region IV senior reactor analyst performed a detailed risk evaluation and determined that the change in core damage frequency ?CDF < 5E 9 corresponds to very low (Green) safety significance. The inspectors determined this finding has a cross cutting aspect in the area of human performance associated with the change management component. The licensee had an opportunity to identify the lack of alarm procedures associated with this parameter along with 74 other alarms that have technical specification implications during the design modification process for the plant computer alarm system.
Inspection Report# : 2015002 *(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

Last modified : July 11, 2016