Palo Verde 3
2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2014
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Verify the Adequacy of the Design of the Diesel Fuel Oil Cooler
Green. The inspectors reviewed a self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" for the station's failure to adequately review the suitability of materials of the diesel fuel oil cooler. Specifically, the Unit 2 "A" diesel generator fuel oil cooler design allowed for the interface of two dissimilar metals which promoted galvanic corrosion. This corrosion ultimately affected the structural integrity of the cooler which rendered the "A" essential spray pond inoperable. In response to this, the licensee has replaced all six of the fuel oil cooler covers and initiated a design change to remove the fuel oil cooler from service. The licensee has entered the issue into the corrective action program as Condition Report Disposition Request 4543394.

The failure to verify the adequacy of the design of the diesel fuel oil cooler was a performance deficiency. The performance deficiency is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone to ensure the availability, reliability, capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the Unit 2 "A" diesel fuel oil cooler design allowed for the interface of two dissimilar metals which promoted galvanic corrosion. The corrosion ultimately affected the structural integrity of the cooler which rendered the Unit 2 "A" spray pond inoperable. In accordance with NRC Inspection Manual 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding screened to a detailed risk evaluation because it involved a potential loss of one train of safety related equipment for longer than the technical specification allowed outage time. A Region IV senior reactor analyst performed the detailed risk evaluation. The change to the core damage frequency was 1.5E-7/year (Green). The dominant core damage sequences included loss of offsite power events that lead to station blackout conditions. The gas turbine generators and the auxiliary feedwater system helped to minimize the risk. The inspectors determined this finding has no cross-cutting aspect because it is not indicative of current performance.
Inspection Report# : 2014005 *(pdf)*

Significance: G Sep 30, 2014
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Provide Adequate Technical Justification for Operability
Green. The inspectors identified a Green non-cited violation of 10 CFR Part 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations and engineering personnel to follow station procedures to provide an adequate technical justification for continued operation of a degraded structure, system, or component. Specifically, after discovering that the turbine driven auxiliary feedwater pump exhaust line did not have any tornado missile protection, operators performed an immediate operability determination and declared the system

operable. The inspectors challenged this evaluation and determined the licensee did not provide adequate technical justification for continued operation with this condition because: (1) the evaluation relied on a probabilistic risk assessment that assumed the turbine driven auxiliary feedwater pump fails due to impact from a tornado-born missile, and (2) the evaluation assumed that the results of a future analysis would provide satisfactory results. In response to the inspector's operability concerns, plant personnel subsequently completed an analysis that provided a reasonable expectation that the turbine driven auxiliary feedwater pump would be able to perform its safety function if impacted by a tornado-born missile. The licensee entered this issue into the corrective action program as Palo Verde Action Request 4255816.

The inspectors concluded that the failure of plant personnel to adequately evaluate the operability of a safety-related structure, system, or component was a performance deficiency. The inspectors concluded the performance deficiency is more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed the initial significance determination for the performance deficiency using NRC Inspection Manual 0609, Appendix A, Exhibit 4, "External Events Screening Questions," dated July 1, 2012. The finding required a detailed risk evaluation because the turbine driven auxiliary feedwater pump is one train of a system that supports a risk significant function. Therefore, a Region IV senior reactor analyst performed a bounding detailed risk evaluation. The change to the core damage frequency was 7E-10/year (Green). The dominant core damage sequences included a tornado induced loss of offsite power initiating event, failure of the turbine driven auxiliary feedwater pump, and random failures of the motor driven auxiliary feedwater pumps. The low frequency for the tornado induced loss of offsite power initiating event helped to minimize the risk significance. The inspectors determined this finding has a cross-cutting aspect in the area of human because the licensee failed to utilize a conservative bias in its evaluation of the missing tornado missile protection, considering the risk significance of the turbine driven auxiliary feedwater pump and lack of any technical evaluation [H.14] (Section 1R15).

Inspection Report# : 2014004 *(pdf)*

Significance: G Sep 30, 2014
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Translate Design Basis Requirements for Establishing Operability of Spray Pond System
Green. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to correctly translate the mission time of the essential spray pond system into a procedure used to determine operability. In response to the inspectors' concerns, the licensee re-evaluated essential spray pond operability determinations that had used the erroneous 26-day mission time and concluded that acceptable margin was available to ensure the system would remain operable for the 30-day mission time. The licensee entered this issue into the corrective action program as Palo Verde Action Request 4550539.

The failure to ensure that design basis information associated with the mission time of the essential spray pond system was correctly translated into a procedure used to determine operability was a performance deficiency. This performance deficiency was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the failure to use the correct mission time when determining operability could establish nonconservative results that could lead to the essential spray pond system not being able to meet its design safety function. In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions," the issue screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather. This finding has a cross-cutting aspect in the area of human performance because the licensee failed to create and maintain complete, accurate, and

up-to-date documentation. Specifically, after initially recognizing the adverse condition, the licensee did not document a standing order or temporary procedure change to prevent operability evaluations from using the incorrect essential spray pond mission time [H.7]. (Section 1R15).

Inspection Report# : 2014004 *(pdf)*

Significance: G Sep 30, 2014
Identified By: NRC
Item Type: NCV Non-Cited Violation
Component Design Basis Inspection
Green. The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure the adequacy of degraded voltage relay setpoints. Specifically, the team identified that the licensee failed to perform calculations to demonstrate the voltage setpoints for the installed degraded voltage relays would afford adequate voltage to safety-related loads during worst case accident loading.

The failure to assure the adequacy of degraded voltage relay setpoints for voltage and the time delay by performing adequate voltage drop calculations was a performance deficiency. This finding is more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and it adversely impacted to the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Specifically, the failure to properly ensure that safety-related electrical devices had adequate voltage could impact their safety function. The basis for this conclusion was that despite the non-conservative voltage inputs to voltage calculations and, therefore, loss of design margin for available voltage, there was still adequate voltage for the circuits to perform their safety function based on worst case voltage as demonstrated in the updated calculations. The licensee developed design basis calculations for its DVR voltage setpoints and committed to addressing the technical basis and interim actions in a commitment letter for their corrective actions. There is no cross-cutting aspect associated with this finding because it is a historical condition and not indicative of current performance. (Section 1R21)
Inspection Report# : 2014004 *(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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