Palo Verde 2
1Q/2010 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Inadequate Procedures to Diagnose and Mitigate a Loss of Instrument Air to the Containment
A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the failure of operations personnel to adequately establish and implement procedures associated with a loss of instrument air to containment. Specifically, on December 3, 2009, the alarm response and abnormal operating procedures available to the Unit 3 control room operating staff were inadequate to consistently diagnose and mitigate a loss of instrument air to containment. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request (CRDR) 3411457.

The performance deficiency associated with this finding involved the failure of operations personnel to adequately establish and implement alarm response and abnormal operating procedures associated with a loss of instrument air to containment. The finding is more than minor because it is associated with the procedure quality attribute of the Initiating Events Cornerstone and affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee failed to implement the corrective action program with a low threshold for identifying issues.
Inspection Report# : 2009005 *(pdf)*

Mitigating Systems

Significance: G Mar 31, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Mispositioning of Valve Renders Essential Chiller Inoperable
A self-revealing noncited violation of Technical Specification 5.4.1, "Procedures," was identified for the failure of operations personnel to adequately implement Procedure 40DP-9OP19, "Locked Valve, Breaker, and Component Tracking." Specifically, between December 24, 2009 and January 26, 2010, refrigerant head pressure bypass control valve 2-EWBV-349 was in the locked open position as opposed to its required position of locked closed. This issue has been entered into the licensee's corrective action program as Palo Verde Action Request 3430116 which included corrective actions to train operations personnel on the requirements for independent verification.

The 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 reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to require a Phase 2 and Phase 3 analysis by a senior reactor analyst, because the finding resulted in an actual loss of safety function of a single train for greater than its technical specification allowed outage time. A senior reactor analyst performed a bounding Phase 3 significance determination and found the finding to be of very low safety significance (Green) because the dominant core damage sequences only included a failure of multiple auxiliary feedwater pumps and because the

chiller was only inoperable for a narrow range of initiating events. The finding has a cross-cutting aspect in the area of Human Performance associated with work practices because the licensee failed to use human error prevention techniques such as self and peer checking commensurate with the risk of the assigned task [H.4(a)].

Inspection Report# : 2010002 *(pdf)*

Significance: G Dec 31, 2009
Identified By: NRC
Item Type: VIO Violation
Failure to Establish Adequate Procedures to Control Potential Tornado Borne Missile Hazards Near the Essential Spray Ponds
The inspectors identified a cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to establish adequate procedures to ensure evaluation and approval of transient missile hazards that have an effect on the operability of the essential spray ponds. Specifically, since January 15, 1997, civil engineering personnel failed to develop an adequate procedure to verify missile density criteria are not exceeded to ensure operability of the essential spray ponds during severe weather. Due to the licensee's failure to restore compliance from the previous NCV 05000528/2008004-04 within a reasonable time, this violation is being cited in a Notice of Violation consistent with Section VI.A of the NRC Enforcement Policy. This issue was entered into the licensee's corrective action program as CRDR 3397839.

The finding is more than minor because it is associated with the external factors attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because appropriate corrective actions were not taken to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : 2009005 *(pdf)*

Significance: G Sep 30, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Correct a Condition Adverse to Quality with the Emergency Diesel Generator Train B Fuel Oil Transfer Pump in a Timely Manner
A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” was identified for the failure of maintenance personnel to promptly identify and correct a deficiency associated with the Unit 2 emergency diesel generator train B fuel oil transfer pump. Specifically, in December of 2004 Unit 3 train A diesel fuel oil transfer pump failed due to water intrusion through electrical conduit. During an extent of condition review water intrusion was also found to affect Unit 2 train B transfer pump. Due to ineffective corrective actions, on April 22, 2009 Unit 2 train B diesel fuel oil transfer pump failed due to the effects of water intrusion causing an electrical short to ground. This issue was entered into the licensee’s corrective action program as Palo Verde Action Request 3385257.

The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to require a Phase 2 and Phase 3 analysis by a senior reactor analyst, because the finding resulted in an actual loss of safety function of a single train for greater than its technical specification allowed outage time. Based on the analysis performed, the analyst concluded that the finding had very low safety significance because the fuel oil transfer pump was capable of performing a majority of its intended safety function resulting in a core damage frequency of approximately 1.7E-7. This finding was evaluated as

not having a crosscutting aspect because the performance deficiency is not indicative of current performance

Inspection Report# : 2009004 *(pdf)*

Significance: G Sep 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Ineffective Corrective Actions for Vaults Containing Station Blackout Cables
The team identified a noncited violation of very low safety significance for failure to effectively implement the corrective action requirements of Regulatory Guide 1.155, "Station Blackout," Appendix A, Criterion 8, "Corrective Action," which were adopted by the licensee in order to meet 10 CFR 50.63, "Loss of All Alternating Current." Although the licensee started a vault monitoring program for water intrusion in vaults with electrical cables in 2003, the effort to prevent exposure of medium voltage cables to submerged conditions has been ineffective for certain vaults that contain the 15kV station blackout generator output cables. Additionally, there are 27 splices in these cables which have contributed to cable test failures in previous meggar resistance tests that, in some cases, required splice replacement in order to pass resistance tests. The licensee entered this issue into their corrective action program as Palo Verde Action Requests 3350712, 3350713, 3350939, and 3352858.

This finding is more than minor because it is associated with the design control and equipment 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. The risk significance of this finding was determined using Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The finding is of very low safety significance (Green) since the finding did not result in a loss of operability, a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or an actual loss of safety function for greater than 24 hours and the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding was reviewed for crosscutting aspects and none were identified.

Inspection Report# : 2009008 *(pdf)*

Significance: G Sep 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform an Adequate Operability Evaluation for the Condensate Storage Tank
The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to perform an adequate operability evaluation for the condensate storage tank as required by site procedures. Specifically, upon discovery of the condition, the licensee performed an immediate operability determination evaluation based on concerns with the capability of the loop seal to provide protection from vacuum conditions. Subsequently, the licensee performed additional assessments of their overall program which included the specified operability evaluation in a component design bases review and closure of a confirmatory action letter and failed to identify the inadequacy. During the inspection, the team reviewed the operability determination and identified that the licensee failed to consider or identify concerns with the ability of the condensate storage tank pressure relief valves to operate after a design basis earthquake. The licensee entered this issue into their corrective action program as Palo Verde Action Request 3353683.

This finding is more than minor because it is associated with the protection against external events (seismic) 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. The risk significance of this finding was determined using Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The finding is of very low safety significance (Green) since the finding did not result in a loss of operability, a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or an actual loss of safety function for greater than 24 hours and the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated

with the corrective action program since the licensee failed to properly evaluate for operability.

Inspection Report# : 2009008 *(pdf)*

Significance: G Sep 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Incorporate Vendor Information for Reactor Trip Breakers
The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," with programmatic implications for the licensee's failure to follow site procedures and incorporate updated vendor information for the reactor trip breakers. Specifically, the licensee failed to incorporate an updated revision of the maintenance program manual and at least two technical bulletins from the reactor trip breaker vendor. The licensee entered this issue into their corrective action program as Palo Verde Action Requests 3354252 and 3355082.

This finding is more than minor because it is associated with the equipment 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. The risk significance of this finding was determined using Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." The finding is of very low safety significance (Green) since the finding did not result in a loss of operability, a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or an actual loss of safety function for greater than 24 hours and the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience since the licensee failed to implement changes to station processes, procedures, equipment, and training programs.

Inspection Report# : 2009008 *(pdf)*

Significance: G Jun 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Develop an Adequate Procedure to Ensure Operability of the Essential Cooling Water Heat Exchangers
The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations, chemistry, and engineering personnel to develop a procedure with appropriate quantitative or qualitative acceptance criteria for chloride levels to ensure operability of the essential cooling water system heat exchangers. Specifically, from plant startup until April 28, 2009, chemistry personnel's Policy CDP1-14, "Chemistry Department Policies," stated, in part, that a Palo Verde Action Request will be generated for entry into any Action Level 1, 2, 3 or 5, and did not give actions for Action Level 4. This resulted in chlorides exceeding Action Level 4 quantitative acceptance criterion in the essential cooling water system Train A without a Palo Verde Action Request being generated, or an operability determination being performed in a timely manner. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3347097.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with decision-making because decisions and the basis for decisions were not communicated to personnel who have a need to know the information in order to perform work safely, in a timely manner [H.1(c)].

Inspection Report# : 2009003 *(pdf)*

Significance: SL-IV Jun 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform Written Safety Evaluation in Accordance with 10 CFR 50.59 for Refueling Water Tank Full Flow Recirculation
The inspectors identified a non-cited Severity Level IV violation of 10 CFR 50.59 requirements for the failure of engineering personnel to perform adequate written safety evaluations prior to implementing changes to the emergency core cooling system. Specifically, between 1987 and February 2009, engineering personnel failed to obtained prior NRC approval for a change that involved two unreviewed safety questions involving emergency core cooling system operability and containment bypass leakage during an accident. The first example involved a change in an emergency core cooling system lineup that could have prevented the fulfillment of the safety functions of the safety injection system to remove residual heat and mitigate the consequences of an accident. The second example involved opening normally locked close valves, while the plant is operating, that could result in the loss of a safety function to control the release of radioactive material as a result of the containment bypass path. This issue was entered into the licensee's corrective action program as Condition Report / Disposition Request 3287805.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. This finding is also more than minor because it is associated with the configuration control attribute of the Barrier Integrity cornerstone and adversely affects the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. In accordance with Inspection Manual Chapter 0612, Appendix B, "Issue Disposition Screening," the inspectors determined that traditional enforcement applied because this issue may have impacted the NRC’s ability to perform its regulatory function, and should be evaluated using the traditional enforcement process. The issue was classified as Severity Level IV because the violation of 10 CFR 50.59 involved conditions evaluated as having very low safety significance by the Significance Determination Process. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding required a Phase 2 analysis because the finding represented a loss of safety system function of the safety injection system. The Phase 2 analysis determined that this finding was potentially greater than Green; therefore, a Phase 3 analysis was completed by a regional senior reactor analyst. The Phase 3 analysis determined that this issue was of very low safety significance based on the senior reactor analyst reviewing the licensee's risk estimate of the condition which concluded that the ICCDP was much less than 1.0E-7. The analyst checked portions of the licensee's analysis using the Palo Verde SPAR model, and found the licensee results to be acceptable. Therefore, the significance of the finding was determined to be very low (Green). This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance.
Inspection Report# : 2009003 *(pdf)*

Barrier Integrity

Significance:  Dec 31, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Maintain Containment Closure Capability
A self-revealing noncited violation of Technical Specification 5.4.1.a, “Procedures,” was identified for the failure of maintenance personnel to maintain containment closure capability as required by Procedure 70DP-0RA01, “Shutdown Risk Assessments.” Specifically, on October 8, 2009 maintenance personnel designated for emergency closure of the containment equipment hatch left containment to attend a safety briefing for more than four hours before they returned to perform their required duties. This issue was entered into the licensee's corrective action program as PVAR 3389284.

The performance deficiency associated with this finding involved the failure of maintenance personnel to follow the

requirements of Procedure 70DP-0RA01, ”Shutdown Risk Assessments”, and ensure a containment closure team was in containment and capable of closing the containment equipment hatch within 30 minutes. The finding was more than minor because it affected the configuration control attribute of the Barrier Integrity Cornerstone, and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, Appendix H, “Containment Integrity Significance Determination Process,” the finding was determined to be a type B finding because it affected only large early release frequency, not core damage frequency, at shutdown. A phase 2 analysis using Table 6.4, “Phase 2 Risk Significance-Type B Findings at Shutdown,” was performed with the following considerations: the plant was in cold shutdown with the reactor coolant system vented, steam generators not available, and within eight days of shutdown, the condition existed for less than eight hours, and there was mitigation equipment out of service. The senior reactor analyst determined that that the finding has very low safety significance (Green) based on the short time period that the condition existed, the low probability of a loss of cooling event during this period with two fully-functional trains available, and the time it would have taken to close the hatch was well less than the time until the core would have become uncovered. This finding was determined to have a cross cutting aspect in the area of human performance associated with work control because the licensee failed to appropriately coordinate work activities by incorporating actions to address plant conditions that may affect work activities.
Inspection Report# : 2009005 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G Dec 31, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Comply with High Radiation Area Entry Requirements
A self-revealing noncited violation of Technical Specification 5.7.1, “High Radiation Areas,” was identified for the failure of radiological protection personnel to perform a prejob briefing to ensure workers are aware of radiological conditions in a high radiation area as required by the radiation exposure permit. Specifically, on October 20, 2009, nine contract workers were preparing to install an anticontamination sock over the Unit 2 old reactor vessel head, signed onto a radiation exposure permit which allowed access to a high radiation area but failed to receive a brief on the local dose rates surrounding the reactor vessel head by the job coverage radiation protection technician. This issue was entered into the corrective action program as CRDR 3394172.

The finding was more than minor because it was associated with the exposure control attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to properly control access to a high radiation area and had the potential to increase personnel dose. Using Manual Chapter 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the finding was determined to have very low safety significance because it was not associated with “as low as reasonably achievable”, there was no overexposure, there was no substantial potential for an overexposure; and the ability to assess dose was not compromised. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee’s radiation protection staff failed to communicate expectations to contract personnel.
Inspection Report# : 2009005 *(pdf)*

Public Radiation Safety

Significance: SL-IV Dec 31, 2009
Identified By: NRC
Item Type: NCV NonCited Violation

Failure to Periodically Update the UFSAR
The inspectors identified a noncited violation of 10 CFR 50.71 “Maintenance of Records,” because the licensee failed to update their updated final safety analysis report with submittals that include the effects of a change made to the facility. Specifically, the licensee built the old steam generator storage facility on the owner controlled area for long-term radwaste storage of six decommissioned steam generators and three reactor vessel heads and failed to update the updated final safety analysis report to include these changes to the facility and all safety analyses and evaluations performed. This issue was entered in the licensee’s corrective action program as CRDR 3398042.

This issue was dispositioned using traditional enforcement because it had the potential for impacting the NRC’s ability to perform its regulatory function. The finding is more than minor because it has a material impact on licensed activities in that the six decommissioned steam generators and the Unit 2 reactor vessel head, with a significant radioactive source term have been relocated from the plant radiological controlled area to the owner controlled area. In addition, the radwaste management program was affected because the licensee determined that this low-level radwaste facility will store these large components until the site is decommissioned. The finding is characterized as a Severity Level IV, noncited violation in accordance with NRC Enforcement Policy, Supplement I, and was treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This finding was reviewed for crosscutting aspects and none were identified because the performance deficiency is not indicative of current performance.
Inspection Report# : 2009005 *(pdf)*

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

Last modified : May 26, 2010