

Palo Verde 1

1Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Correct Deficient Condition for the Essential Spray Pond Chemical Addition System Valves High Failure Rate

The inspectors identified a finding for the failure of engineering and maintenance personnel to adequately implement timely corrective actions for deficiencies associated with the essential spray pond sodium hypochlorite chemical addition system. Specifically, between May 2006 and March 2009, corrective actions to replace degraded sodium hypochlorite valves with a more reliable chemical addition system were not taken resulting in the Unit 2 spray pond Train A chemistry pH level being out of specification high on two occasions. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3277070.

The finding is more 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 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 the licensee did not communicate bases for decisions to personnel with a need to know such that work is performed safely in a timely manner [H.1(c)].

Inspection Report# : [2009002](#) (*pdf*)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Periodically Inspect or Test, and Repair Fire Penetration Seals

The inspectors identified 5 examples of a non-cited violation of License Condition 2.C.(7), 2.C.(6), and 2.F for Unit 1, Unit 2, and Unit 3, respectively, for the failure of engineering and maintenance personnel follow procedures to adequately inspect and repair fire penetration seals. Specifically, between 2004 and August 2008, engineering and maintenance personnel failed to inspect and repair fire penetration seals, which provide protection to safety-related equipment during fire events, resulting in the licensee declaring 4 fire penetration seals degraded and 1 non-functional. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3295124.

The finding is more than minor because it was associated with the external factors attribute (i.e. fire) of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability and 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 additional evaluation under Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." Based on the

analysis performed, the inspector concluded that the degradation of the fire barrier penetration seals represented a low degradation of the fire confinement element of the fire protection program, the degraded fire barrier penetration seals had no credible fire damage state, and that the fire ignition sources present could not damage the post fire safe shutdown equipment, and therefore determined the finding to have very low safety significance. 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 [P.1 (a)]

Inspection Report# : [2009002](#) (pdf)

Significance:  Feb 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Related Degradation of Safety-Related Inverters

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality. Specifically, the licensee failed to incorporate industry and vendor recommended preventative maintenance requirements to prevent the age related degradation of safety-related inverter components. This finding was entered into the licensee's corrective action program as Palo Verde Action Request 3291971.

The inspectors determined that the failure to identify the necessary maintenance practices and take corrective actions prior to the 2008 inverter failures was a performance deficiency. This finding is more than minor because it affects 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. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the team determined that a Phase 2 analysis was required because the finding represented a loss of system safety function. A Phase 2/Phase 3 significance determination was performed by an NRC senior reactor analyst. Based on a bounding analysis, the analyst determined that the delta core damage frequency result was less than $1.0E-7/\text{yr}$. This noncited violation was therefore determined to be of very low safety significance. This finding has a crosscutting aspect in the problem identification and resolution component of operating experience, in that the licensee failed to implement operating experience through changes to station procedures.

Inspection Report# : [2009006](#) (pdf)

Significance:  Feb 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Implement Corrective Action Process for Potential Operability Issues with the Safety Related Systems and Systems Important to Safety

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations personnel to follow the corrective action program to ensure that degraded and nonconforming conditions associated with safety related systems and systems important to safety were properly reviewed for operability. Specifically, between December 21, 2006, and January 30, 2009, operations personnel failed to perform adequate operability determinations of Palo Verde Action Requests associated with the component design basis review project and other site projects, resulting in 97 Palo Verde Action Requests that either needed an immediate operability determination or a functional assessment, or needed more information to provide reasonable assurance of operability. Of the 97 examples 20 occurred following implementation of corrective actions associated with the Confirmatory Action Letter to improve this process and therefore are reflective of current performance. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3281099.

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 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 problem identification and resolution associated with the corrective action program because 9 of the 20 examples, reflective of current performance, were not thoroughly evaluated such that the resolutions address causes and extent of conditions, as necessary, including properly evaluating for operability conditions adverse to quality.

Inspection Report# : [2009006](#) (pdf)

Significance:  Feb 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures for Performing Operability Determinations

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations personnel to follow the corrective action program to ensure that degraded and nonconforming conditions associated with safety related systems and systems important to safety were reviewed for operability. Specifically, between December 21, 2006 and January 30, 2009, operations personnel failed to perform adequate operability determinations of Palo Verde Action Requests associated with the component design basis review project and other site projects, resulting in 97 Palo Verde Action Requests that either needed an immediate operability determination or a functional assessment, or needed more information to provide reasonable assurance of operability. Of the 97 examples 20 occurred following implementation of corrective actions to improve this process and therefore are reflective of current performance. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3281099.

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 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 resources because 11 of the 20 examples, reflective of current performance, were the result of inadequate procedural guidance governing the conduct of operability determinations to ensure that conditions adverse to quality are properly evaluated for their potential operability impacts.

Inspection Report# : [2009006](#) (pdf)

Significance:  Feb 27, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct a Condition Adverse to Quality with the Emergency Core Cooling System Piping

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the failure of the licensee to promptly identify and correct a condition adverse to quality associated with the high pressure safety injection system piping. Specifically, between January 18, 1989, and October 12, 2006, the licensee failed to ensure that select sections of Unit 1 high pressure safety injection Train B piping were inspected to prevent erosion due to cavitation. This resulted in a through-wall leak in the high pressure safety injection Train B recirculation line. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2932507.

The performance deficiency associated with this finding involved the licensee's failure to promptly identify and correct a condition adverse to quality associated with the high pressure safety injection system piping. The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that

respond to initiating events. 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 was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance.

Inspection Report# : [2009006](#) (*pdf*)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: FIN Finding

Failure to Promptly Identify and Correct Degraded Hydrostatic Penetration Seals

The inspectors identified a finding of Palo Verde Nuclear Generating Station Procedure 01DP 0AP10, "Corrective Action Program," Revision 1, for the failure of operations and engineering personnel to promptly identify and correct a condition adverse to quality. Specifically, between February 13, 2007 and July 18, 2008, operations and engineering personnel failed to identify and correct degraded hydrostatic flood penetration seals which provide protection to safety-related equipment during internal flooding events. This resulted in over 100 hydrostatic penetration seals in the control, diesel, and main steam support structure buildings being left degraded for greater than 12 months. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3264501.

The finding is greater than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability and capability 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 problem identification and resolution associated with operating experience because operations and engineering personnel failed to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)].

Inspection Report# : [2008005](#) (*pdf*)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide an Adequate Procedure to Control Essential Spray Pond Missile Hazards

The inspectors identified a non-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 structure 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. This resulted in approximately 40 transient missile hazards being placed around Unit 1 spray Pond A without an approval or evaluation to ensure continued operability of the essential spray ponds. The licensee determined the spray pond was operable following a walkdown and evaluation of the missile hazards. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3224028.

The finding is greater 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 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 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 [P.1(d)].

Inspection Report# : [2008004](#) (pdf)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct a Condition Adverse to Quality with the RWT Instruments in a Timely Manner

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of the licensee to correct a deficiency associated with the refueling water tank instrument pit in a timely manner. Specifically, between June 16, 2006, and July 2, 2008, maintenance and engineering personnel failed to ensure the openings of the pit covers were adequately sealed to prevent rain water intrusion. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3194904.

The performance deficiency associated with this finding involved the failure of maintenance personnel to correct a condition adverse to quality in a timely manner. The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterizations of Findings," the finding required a Phase 3 analysis by a Senior Reactor Analyst, since the finding is potentially risk significant due to external initiating event core damage sequences. Based on the analysis performed, the analyst concluded that the finding had very low safety significance (Green) because of the very small probability of a large rainfall event and a loss of coolant accident occurring at the same time. This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance.

Inspection Report# : [2008004](#) (pdf)

Significance:  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Timely Corrective Actions for a Condition Adverse to Quality Resulting in the '1A' Safety Injection Tank being declared Inoperable

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of operations and maintenance personnel to promptly identify and correct a condition adverse to quality. Specifically, from August 2007 till June 2008, operations and maintenance personnel failed to ensure that work management process procedures were followed for a degraded condition affecting Safety Injection Tank 1A. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3185716.

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, availability and capability 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 work control because the licensee failed to plan work activities to support long-term equipment reliability by limiting operator work-arounds, safety systems unavailability, and reliance on manual actions [H.3 (b)].

Inspection Report# : [2008003](#) (pdf)

Y**Significance:** Dec 09, 2004

Identified By: NRC

Item Type: VIO Violation

FAILURE TO MAINTAIN DESIGN CONTROL OF CONTAINMENT SUMP RECIRCULATION PIPING

The team identified an apparent violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to establish measures to assure design basis information was translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to maintain the safety injection sump suction piping full of water in accordance with the Updated Final Safety Analysis Report. This nonconformance had the potential to significantly affect the available net positive suction head described in the Updated Final Safety Analysis Report for the high pressure safety injection and containment spray pumps, since the analysis assumed the piping would be maintained full of water.

{Note: Finding remains open - IP 95002 results pending 12/16/2005}

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. The NRC assessed this finding through Phase 3 of the Significance Determination Process and made a preliminary determination that the issue had substantial safety significance (Yellow). After considering the information developed during the inspection and the results of testing sponsored by the licensee, the NRC has concluded that this inspection finding is appropriately characterized as Yellow. The final Significance Determination Process letter was issued on April 8, 2005. This issue was inspected within the scope of a Supplemental 95002 Inspection in August - September 2005.

{NOTE: Yellow finding remains open because the corrective actions taken in response to the root causes and related programmatic concerns involving questioning attitude, technical rigor, and operability determinations have not been fully effective. - IP 95002 Supplemental Inspection completed December 2005, IR 05000528/20050112, 05000529/20050112 and 05000530/20050112, IP 95002 Followup Supplemental Inspection completed August 2006, IR 05000528/2006010, 05000529/2006010 and 05000530/2006010}

Inspection Report# : [2004014](#) (*pdf*)Inspection Report# : [2009006](#) (*pdf*)

Barrier Integrity

G**Significance:** Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Procedure Requirements for Refueling Machine Operation

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified for the failure of refueling services personnel to follow procedures to address refueling machine fault indications. Specifically, during the Unit 1 refueling outage core offload, refueling services personnel had overridden interlocks that protect the fuel from damage. This issue has been entered into the licensee's corrective action program as Palo Verde Action Request 3235153 and Condition Report Disposition Request 3237465.

The finding is greater than minor because it is associated with the human performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radio nuclide releases caused by accidents or events. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," does not address the potential risk significance of refueling machine operation errors. The finding is determined to have very low safety significance because there was no apparent damage done to the fuel barrier and no radioactive release occurred. This finding has a crosscutting aspect in the area of human performance associated with decision making because refueling services personnel did not use a systematic process to make a risk significant decision when faced with uncertain or unexpected plant conditions [H.1(a)].

Inspection Report# : [2008005](#) (pdf)

Significance:  Sep 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedural Requirements to Implement Technical Specification 5.5.2.b

The inspectors identified a non-cited violation of Technical Specification 5.5.2.b, "Primary Coolant Sources Outside Containment," for the failure of engineering and maintenance personnel to implement a program to verify integrated leak test requirements for abandoned valves still connected to an active system. Specifically, between January 8, 1993 and September 30, 2008, engineering personnel failed to ensure portions of the containment spray system, which could be in contact with radioactive fluids outside containment, were included in the integrated leak test requirements. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3170965.

The performance deficiency associated with this finding was the failure of engineering and maintenance personnel to implement a program to verify integrated leak test requirements for abandoned valves still connected to an active system. The finding is greater than minor because it is associated with the design control and procedural quality attribute associated with maintaining radiological barrier functionality for the auxiliary building of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that the physical design barriers protect the public from radio nuclide releases caused by accidents or events. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it only represented a degradation of the radiological barrier function of the auxiliary building. This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance.

Inspection Report# : [2008004](#) (pdf)

Significance:  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Adequately Implement Procedural Requirements for Open Doors, Hatches, and Floor Plugs

A self-revealing noncited violation of Technical Specification 5.4.1.a, "Procedures," was identified for the failure of maintenance personnel to adequately implement procedural guidance. Specifically, on May 9, 2008, maintenance personnel failed to ensure the permit requirements of Procedure 0DP-9ZZ17, "Control of Doors, Hatches, and Floor Plugs," were complete while accessing the tendon gallery access shaft, resulting in the control room determining that both trains of the pump room exhaust air cleanup system had been inoperable. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3172712 and as significant Condition Report/Disposition Request 3173930.

The finding is greater than minor because it is associated with the barrier performance attribute associated with maintaining radiological barrier functionality for the auxiliary building and affects the cornerstone objective to provide reasonable assurance that the physical design barriers protect the public from radio nuclide releases caused by accidents or events. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it only affected the barrier integrity cornerstone and only represented a degradation of the radiological barrier function of the auxiliary building. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)].

Inspection Report# : [2008003](#) (pdf)

Emergency Preparedness

Significance:  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct a Risk Significant Planning Standard

The inspectors identified a noncited violation (NCV) of 10 CFR 50.54(q) and 10 CFR Part 50, Appendix E.IV.F.2.g, for the licensee's failure to correct an identified risk significant planning standard weakness between May 2, 2007 and October 28, 2007. Specifically, the licensee failed to implement adequate corrective actions for identified weaknesses in the ability to correctly make a Site Area Emergency declaration for a steam generator tube rupture event. This issue was entered into the licensee's correction action program as Palo Verde Action Request 3083911.

The NRC determined that the inability to consistently implement an Emergency Action Level was a performance deficiency within the licensee's control. This finding is more than minor because it was associated with the Emergency Preparedness attribute of emergency response organization performance and affected the cornerstone objective to implement adequate measures to protect the health and safety of the public because the inability to properly recognize and classify an emergency condition affects the licensee's ability to implement adequate protective measures. This finding was preliminarily determined to be of low to moderate safety significance. After consideration of information provided during and after a Regulatory Conference held on March 25, 2008, the NRC has concluded that the knowledge deficiency identified among senior operators would not likely result in an incorrect emergency classification during a steam generator tube rupture event, and the NRC has concluded the significance of the inspection finding is appropriately characterized as Green (i.e., a finding of very low safety significance). This violation is being treated as an NCV, consistent with Section VI of the NRC Enforcement Policy. The cause of this finding has crosscutting aspects associated with the corrective action aspect of the problem identification and resolution area in that the licensee failed to thoroughly evaluate problems such that resolutions ensured correcting problems [P.1.(c)]. The cause of this finding was also related to the safety culture component of accountability in that the licensee failed to demonstrate a proper safety focus and reinforce safety principles [O.1.(c)].

Inspection Report# : [2008003](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

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 29, 2009