

# Palo Verde 3

## 1Q/2009 Plant Inspection Findings

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### Initiating Events

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### 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

### **Inadequate Operability Evaluation for Potential Emergency Diesel Generator Slow Start Issue**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when, on November 8, 2008, Palo Verde Nuclear Generating Station did not adequately test the emergency diesel generator to verify that a newly identified emergency diesel generator governor issue, would not cause the emergency diesel generators start time to exceed the Technical Specification allowable limit of 10 seconds. Palo Verde Nuclear Generating Station did not specify testing requirements and acceptance criteria to ensure continued operability of the affected emergency diesel generators. As an immediate corrective action, Palo Verde Nuclear Generating Station reevaluated the issue and specified additional testing requirements with specific acceptance criteria for the affected emergency diesel generators pending completion of a hardware modification that would eliminate the issue. The licensee documented this performance deficiency in Palo Verde Action Request 3280971.

The finding was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern; specifically, that emergency diesel generator start time in excess of the Technical Specification allowable maximum may not have been promptly identified. The finding is associated with the mitigating systems cornerstone. The finding was evaluated in accordance with Inspection Manual Chapter 0609.04, and determined to be of very low safety significance because the finding was confirmed not to result in loss of operability or functionality. The finding had a crosscutting aspect in the problem identification and resolution component of the corrective action program because Palo Verde Nuclear Generating Station did not thoroughly evaluate operability of the emergency diesel generators that remained susceptible to governor-related start time degradation.

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

**Significance:**  Feb 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Procedure for Screening Significant Condition Adverse to Quality**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the licensee's failure to follow procedures for identifying the significance of a significant condition adverse to quality. Specifically, the Action Request Review Committee screened Palo Verde Action Request 3221258 as an adverse Condition Report Disposition Request, despite the fact that the Procedure 01DP-OAP12 required it to be screened as significant. This error resulted in the failure to understand the failure mode associated with a safety related essential cooling water pump such that corrective actions would prevent recurrence. The licensee documented the failure to properly screen this issue for significance in Palo Verde Action Request 3288713.

The finding is more than minor because the finding is associated with the equipment performance attribute of the mitigating systems cornerstone, and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors utilized Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," to determine that the finding was of very low safety significance because it did not represent a design or qualification deficiency, did not result in a

loss of safety function, or screen as a risk-significant external event. The cause of this finding is related to the problem identification and resolution crosscutting component of corrective action program, in that licensee failed to properly classify and evaluate a significant condition adverse to quality.

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

**Significance:**  Feb 27, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Perform 10 CFR 50.59 Screenings on Scaffolds Installed for Greater than 90 Days**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when, on February 10, 2009, it was determined that 62 scaffolds that did not comply with the engineering installation specification had been in place in the three units in excess of 90 days, and that these scaffold installations had not been screened in accordance with 10 CFR 50.59, nor had these nonconforming conditions been evaluated for their potential impact on equipment operability. As immediate corrective action, Palo Verde Nuclear Generating Station informed the applicable control room operators of the 62 nonconforming conditions and operability assessments were performed under Palo Verde Action Requests 3283371, 3283489, and 3281680. Additionally, Palo Verde Nuclear Generating Station initiated Palo Verde Action Request 3283865 to perform 10 CFR 50.59 screenings on the 62 non-compliant scaffolds.

The finding was more than minor because it is associated with the mitigating systems cornerstone attribute for protection against external factors and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding, associated with the mitigating systems cornerstone, was evaluated in accordance with Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and determined to be of very low safety significance per the Significance Determination Process because the finding was not a design or qualification deficiency, did not represent a loss of a system/train safety function, and did not screen as potentially risk significant due to external events. The finding had a crosscutting aspect in the human performance component of resources because Palo Verde Nuclear Generating Station did not ensure that adequate personnel were assigned to ensure that long term scaffold installations remained compliant with applicable procedural requirements.

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

**Significance:**  Feb 27, 2009

Identified By: NRC

Item Type: VIO Violation

### **Failure to Implement Adequate Design Controls**

The inspectors identified a cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of engineering personnel to translate the design basis maximum condensate storage tank temperature requirements into procedures to ensure the plant is operated within its design basis. This issue was entered into the licensee's corrective action program as Palo Verde Action Requests 3289578 and 3289530.

This finding is greater than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance since it only affected the mitigating systems cornerstone and did not represent a loss of system safety function. The cause of this finding had crosscutting aspects associated with corrective action component of the problem identification and resolution area in that engineering personnel failed to thoroughly evaluate problems such that resolutions ensured that the problems were resolved.

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

**G****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  $1.0E-7$ /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*)**G****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:**  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*)

**G****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)**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 05000530/2005012, 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

**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*)

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## 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*)

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **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.

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## **Miscellaneous**

Last modified : May 29, 2009