

# Palo Verde 3

## 4Q/2011 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure of 13.8kV Splice due to Inadequate Maintenance**

Inspectors reviewed a Green self-revealing finding for failure to properly repair a 13.8kV cable associated with the AENANX02 startup transformer. Specifically, the work performed failed to achieve an acceptable level of quality as required by Procedure 30DP-9MP01 "Conduct of Maintenance," and as a result the splice failed causing valid actuations of the emergency diesel generators due to a partial loss of offsite power to both Unit 1 and Unit 3. The licensee plans to revise Specification 13-EN-306, "Installation Specification for Cable Splicing and Terminations for PVNGS," to remove the use of taped splices for 13.8kV cable. The licensee entered this issue into the corrective action program as Condition Report / Disposition Requests 3616634.

The failure of the licensee to perform work with an acceptable level of quality for 13.8kV cable splicing was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely affected the equipment reliability attribute of the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Screening and Characterization of Findings," the inspectors concluded that the finding is of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to provide complete, accurate and up-to-date procedures and work packages for splicing of 13.8kV electrical cable.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Mar 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Work Instructions for Condenser Coating**

The inspectors identified a self-revealing finding after Palo Verde Nuclear Generating Station failed to adequately perform maintenance activities associated with main condenser tube sheet coatings in Unit 3. As a result, a degraded tube was not replugged following coating and failed on January 15, 2011, resulting in high sodium levels in the condensate system. Operators entered the abnormal operating procedures for condenser tube rupture and reduced power to 40 percent power to facilitate troubleshooting and repairs. The licensee concluded that Work Order 3384533 and Procedure 31MT-9ZZ19, "Tube Plugging of Secondary Heat Transfer Components," did not provide adequate instructions for the removal, accountability, and reinstallation of permanent plugs during maintenance. The licensee also concluded that engineering verification inspection practices were inadequate and no procedural guidance existed for the verification. The licensee completed repairs to the main condenser and returned Unit 3 to full power. The licensee entered the performance deficiency into the corrective action program as Palo Verde Action Request 3580739 and implemented immediate corrective actions to revise the pre-job brief checklist and maintenance work instructions for condenser tube plugging. The licensee has not completed all corrective actions for this issue.

The inspectors determined that the performance deficiency is more than minor because it affected the equipment reliability attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the inspectors concluded that the finding is of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a crosscutting aspect in the area of human performance associated with the resources

component because the licensee failed to provide complete, accurate and up-to-date procedures and work packages for tube sheet coating, replugging and verification.

Inspection Report# : [2011002](#) (*pdf*)

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## Mitigating Systems

**Significance:**  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Complete an Immediate Operability Determination for Code System Leakage Test**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which states “Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.” Contrary to the above, from March 11 through April 19, 2011, the licensee failed to complete an immediate operability determination in accordance with Procedure 01PR-0AP04, “Corrective Action Program,” when the licensee discovered the system leakage test methodology for the diesel fuel oil transfer system did not conform to ASME Code, Section XI testing requirements. This condition was placed in the corrective action program as Palo Verde Action Requests 3704003.

The inspectors determined that the failure to complete an immediate operability determination in accordance with paragraph 3.2.1.5 of Procedure 01PR-0AP04 was a performance deficiency. The performance deficiency is more than minor because the nonconforming condition created a reasonable doubt on the operability of the diesel fuel oil transfer system. Using Phase 1 of NRC Manual Chapter 0609, “Significance Determination Process,” the finding screens as having very low safety significance (Green) because the finding is a design or qualification deficiency confirmed not to result in the loss of operability or functionality of the system. The finding has a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program component, because the licensee failed to identify issues completely, accurately, and in a timely manner commensurate with their safety significance. Specifically, the licensee failed to accurately document the nonconforming condition identified in Palo Verde Action Requests 3654452 which led to a failure to complete an immediate operability determination as required.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Corrective Action Program Procedure**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria V, “Instructions, Procedures, and Drawings,” after the licensee failed to promptly evaluate a nonconforming condition for operability as required by Procedure 01PR-0AP04, “Corrective Action Program.” Procedure 01PR-0AP04, “Corrective Action Program,” step 3.2.1.5, stated “Operability shall be determined immediately upon discovery that an SSC subject to technical specification or that supports SSCs subject to technical specification is in a degraded or nonconforming condition.” Operators failed to perform an operability determination immediately following the licensee’s discovery of a potentially degraded and nonconforming condition associated with a manufacturing defect in K-600S 480 VAC Class 1E circuit breakers. On December 7, 2010, an extent of condition review identified 76 breakers installed in the three units that could be susceptible to the same failure mechanism. However, operators did not perform an immediate operability determination until January 28, 2011. Operators subsequently concluded the affected breakers remained capable of performing their safety functions. The licensee entered the performance deficiency into the corrective action program as Palo Verde Action Request 3587124 and has not completed corrective actions for this issue.

The inspectors concluded the finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using NRC Manual Chapter 0609, Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the inspectors determined

the finding had a very low safety significance (Green) because it did not represent a loss of system safety function, represent actual loss of safety function of a single train for greater than its technical specification allowed outage time, represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hours, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to implement a corrective action program with a low threshold for identifying issues. In this case, the licensee failed to initiate a Palo Verde Action Request that would have required a review for operability when the extent of condition review identified that safety-related components were affected.

Inspection Report# : [2011002](#) (*pdf*)

**Significance: SL-IV** Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform a 10 CFR Part 21 Evaluation**

The inspectors identified a Severity Level IV noncited violation of 10 CFR Part 21 after Palo Verde Nuclear Generating Station failed to evaluate an identified deviation within 60 days of discovery to determine if there was a substantial safety hazard. On November 23, 2010, the licensee completed an apparent cause evaluation for a failure of the Unit 3 train B spent fuel pool cooling pump and concluded the cause of the failure was a misalignment by the vendor of the bell alarm bracket within the K-600S 480 VAC Class 1E circuit breaker. Additionally, the apparent cause evaluation identified similar failures of the same type of breaker dating back to April 29, 2009. On December 7, 2010, the extent of condition review identified seventy six breakers, including some in safety related applications, installed in the three units that could be impacted by the same failure mechanism. The inspectors questioned whether the licensee should have performed an evaluation in accordance with 10 CFR Part 21 to determine if a defect existed. On February 15, 2011, the licensee completed an evaluation of prior deviations related to the alignment of bell alarm switches and concluded the deviations were defects that were reportable per 10 CFR Part 21. The licensee subsequently submitted Part 21 Report 2011-07-00 on February 24, 2011. The licensee entered the performance deficiency into the corrective action program as Palo Verde Action Request 3593672 and has not completed corrective actions for this issue.

The inspectors concluded that the failure to perform the substantial safety hazard evaluation within 60 days as required by 10 CFR 21.21(a)(1) was a violation of NRC requirements. The inspectors evaluated this violation using the traditional enforcement process because the failure to submit a required report affected the NRC's ability to perform its regulatory function. Consistent with the guidance in Section 2.2.2 and Section 6.9.d of the NRC Enforcement Policy, the inspectors concluded the violation was a Severity Level IV because the licensee failed to make a timely written report that resulted in no or relatively inappreciable potential safety consequences.

Inspection Report# : [2011002](#) (*pdf*)

**Significance: SL-IV** Feb 08, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure All License Conditions Are Met for Licensed Operators**

The inspectors identified a Severity Level IV violation of 10 CFR 55.3, "License Requirements," for the failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators was not met for three licensed operators. Two of these licensed operators performed licensed operator duties 42 times between February 8 and March 25, 2010, after the deadline for their biennial examinations had passed. Upon discovery, the licensee removed these individuals from watchstanding duties pending follow-up medical evaluations. This issue was entered into the licensee's corrective action program as Condition Report Disposition Request 3526981.

The failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3 is a performance deficiency. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators (as required in 10 CFR 55.21) was not met for three licensed operators, two of

which were standing watch with expired medical examinations. The finding was evaluated using the traditional enforcement process because the failure to determine an operator's medical condition and general health has the potential to impact the NRC's ability to perform its regulatory function; the NRC was not notified nor allowed an opportunity to review the specific medical conditions of the two operators whose medical qualifications had expired while they were standing watch or eligible to stand watch. Using the NRC's Enforcement Policy, section 6.4.d, Severity Level IV violation examples, this finding is similar to example 1 which states, in part that "an unqualified individual performing the functions of an operator or senior operator." Two licensed operators stood watch without a certified medical examination within the two year period that the medical examination is required to be completed and certified by the physician. Because: (1) the medical conditions of the two licensed operators did not change when they received their medical examinations in recent weeks; (2) the finding did not cause any plant events or transients while the individuals were on watch; (3) it was not repetitive or willful; and (4) it was entered into the corrective action program, the finding was determined to be of very low safety significance and is being treated as a Severity Level IV noncited violation consistent with the NRC Enforcement Policy. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because medical staff supervisors did not oversee the biennial physical examination due dates such that nuclear safety was supported.

Inspection Report# : [2010005](#) (pdf)

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## Barrier Integrity

**Significance:**  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Include Screening Criteria in the Boric Acid Corrosion Control Program**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," which states, in part, that "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Specifically, Procedure 70TI-9ZC01, "Boric Acid Walkdown Leak Detection," Revision 11 did not include appropriate screening criteria to satisfactorily evaluate boric acid leaks and deposits that may cause degradation of risk significant system barriers. The condition was placed in the corrective action program as Palo Verde Action Request 3691351.

The inspectors determined the failure to include appropriate screening criteria into Procedure 70TI-9ZC01 was a performance deficiency. The performance deficiency is more than minor because it is associated with the procedure quality attribute of the Barrier Integrity Cornerstone and adversely affects the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Phase 1 of NRC Manual Chapter 0609, "Significance Determination Process," the finding screens as having very low safety significance (Green) because the finding does not represent a degradation of a radiological barrier, does not represent a degradation of the control room toxic barrier functions, does not represent an actual open pathway of reactor containment, and does not involve an actual degradation of hydrogen igniters in the reactor containment. The finding includes a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program component, because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, the licensee identified similar deficiencies in the self assessment of the boric acid program in September 2010 however, failed to take appropriate corrective actions to fully correct the identified deficiencies.

Inspection Report# : [2011003](#) (pdf)

**Significance:** **SL-IV** Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Submit an LER for a Condition Prohibited by the Plant's Technical Specifications**

The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.73(a)(1) for failure to submit a Licensee Event Report within 60 days following discovery of a condition prohibited by Technical Specifications. The licensee made a procedure change in 1986 to Procedure 41OP-1HJ01, "Control Room Handswitch/Valve Checklist,"

to maintain control room outside air dampers normally closed instead of the normally open position stipulated in the final safety analysis report. The inspectors concluded that the incorrect alignment of the dampers was a condition prohibited by Technical Specification 3.3.9, "Control Room Essential Filtration Actuation Signal" and that the licensee failed to adequately evaluate the issue for reportability. The licensee entered the issue into the corrective action program as Palo Verde Action Request 3791486.

The inspectors concluded the failure of Arizona Public Service to report a condition prohibited by Technical Specifications was a performance deficiency. The inspectors evaluated this performance deficiency using the traditional enforcement process because the failure to submit a required report affected the NRC's ability to perform its regulatory function. Consistent with the guidance in Section 2.2.2 and Section 6.9.d of the NRC Enforcement Policy, the inspectors concluded the finding was a Severity Level IV violation because the licensee failed to make a timely written report that resulted in no or relatively inappreciable potential safety consequences.

Inspection Report# : [2011003](#) (*pdf*)

**Significance:**  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Have Adequate Documentation for Verification of ASME Code Compliance**

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion VII "Control of Purchased Material, Equipment, And Services" for the failure of licensee personnel to maintain radiographs onsite for the verification of ASME Code, Section III compliance. Specifically, radiographs for welds associated with the reactor head vent line were neither received nor reviewed as required. When the radiographs were obtained, reviews identified that welds for Units 1 and 2 did not meet the standards of Section III of the ASME Boiler and Pressure Vessel Code. The licensee corrected the non-conforming weld in Unit 2 during refueling outage 2R16 and Unit 1 welds will be restored to Section III standards during the next refueling outage beginning October 1, 2011. The licensee entered the issue into the corrective action program as Condition Report / Disposition Requests 3540575.

Inspectors determined that the failure to maintain radiographs onsite for review was a performance deficiency. The performance deficiency was more than minor because it adversely affected the RCS equipment and barrier performance attribute of the Barrier Integrity Cornerstone's objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Screening and Characterization of Findings," the inspectors concluded that the finding is of very low safety significance (Green) because the reactor coolant system barrier remained intact, was not associated with the fuel barrier, and did not constitute a spent fuel pool issue. This finding had a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee failed to communicate expectations regarding procedural compliance and personnel follow procedures.

Inspection Report# : [2011003](#) (*pdf*)

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## **Emergency Preparedness**

**Significance:**  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Critique a Weakness during a Biennial Exercise**

The inspectors identified a Green noncited violation for failure to critique weak performance in the Technical Support Center during a biennial exercise conducted March 1, 2011, as required by 10 CFR Part 50, Appendix E, IV(F)(2)(g). Specifically, the licensee did not identify that the Technical Support Center did not understand the radiological release path and that they had developed ineffective mitigation strategies based on their inaccurate understanding.

This performance deficiency is more than minor because it affected the emergency preparedness cornerstone and was associated with the emergency response organization performance attribute. The finding had a credible impact on the emergency preparedness cornerstone objective because a lack of understanding of the release path for radioactive material affects the licensee's ability to implement adequate measures to protect the health and safety of the public.

The finding was evaluated using the emergency preparedness significance determination process and was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was associated with Emergency Planning Standard 50.47(b)(14), was not a risk significant planning standard issue, and was not a functional failure of the planning standard. The issue was entered into the licensee's corrective action program as Condition Report / Disposition Requests 3693235. This finding was assigned a cross-cutting aspect in the area of problem identification and resolution because the licensee failed to identify a performance issue completely and accurately.

Inspection Report# : [2011003](#) (*pdf*)

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## Occupational Radiation Safety

**Significance:**  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Have Adequate Procedures to Prevent Resin Contamination into the Auxiliary Building Exhaust Ventilation System**

Inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1 for failure to have adequate procedures to prevent resin contamination of the auxiliary building exhaust ventilation system while filling and venting the pre-holdup ion exchanger. This event resulted in posting a high radiation area and unintended dose to radiation workers. Licensee immediate actions included posting the affected area as a high radiation area and decontamination of the affected area and duct. The event was placed in the licensee's corrective action program as Condition Report Disposition Requests 3554716 and 3563863.

The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and affected the objective to ensure the adequate protection of the worker health and safety from exposure to unintended radiation from radioactive material during routine civilian nuclear reactor operation. Using Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined the finding to have very low safety significance because: (1) it was not associated with ALARA planning or work controls; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. The licensee previously had similar issues in Units 1 and 2 in 1985, 1995, and 1996 and, consequently, made modifications to procedures and equipment. These changes were not implemented in Unit 3. However, these issues are not indicative of current performance and thus, resulted in no crosscutting aspect.

Inspection Report# : [2011002](#) (*pdf*)

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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

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