

# Palo Verde 2

## 3Q/2007 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO SCOPE CONDENSATE DEMINERALIZER VALVE INTO MAINTENANCE RULE**

A self-revealing noncited violation of 10 CFR 50.65(b) was identified for the failure of engineering personnel to place some components of the condensate demineralizer system into the scope of its program for monitoring the effectiveness of maintenance. Specifically, on October 19, 2006, Unit 3 reactor was manually tripped when condenser vacuum was degraded due to the failure of condensate demineralizer vessel waste drain Valve 3JSCNUV0232. Prior operating experience at Palo Verde demonstrated that the failure of Valve 3JSCNUV0232 could result in a reactor trip. However, the licensee did not appropriately scope Valve 3JSCNUV0232 into its program for monitoring the effectiveness of maintenance. This issue was entered into the corrective action program as Condition Report/Disposition Request 3035444.

The finding is greater than minor because it is associated with the initiating events cornerstone attribute of equipment performance and affects 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 Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance since it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available.

Inspection Report# : [2007003](#) (*pdf*)

**Significance:**  Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO APPLY INDUSTRY OPERATING EXPERIENCE TO MAINTENANCE ACTIVITIES RESULTS IN A PLANT TRANSIENT**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure of inservice inspection personnel to promptly identify and correct a condition adverse to quality. Specifically, since April 19, 2006, floor-welded spray pond pipe Supports 13-SP-030-H-007 and 13-SP-030-H-008 in the essential pipe density tunnel became degraded at the weld due to long term standing water in the tunnel. The licensee thought these supports had been previously identified and placed in the corrective action program, but that was not the case. This issue was entered into the corrective action program as Palo Verde Action Request 2989960.

The finding is greater than minor because if left uncorrected the degradation would have led to a more significant safety concern. The finding is associated with the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, 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, 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. The cause of the finding is also related to the crosscutting aspect of problem identification and resolution with a corrective action program causal factor because the threshold for identifying issues was not sufficiently low and the degraded supports were not identified completely, accurately, and in a timely manner commensurate with their safety significance (P.1. (a)).

Inspection Report# : [2007003](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **INADEQUATE PROCEDURE USED FOR MAINTENANCE RESULTS IN REACTOR TRIP**

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure of maintenance personnel to use an adequate procedure for the repairs and restoration of control Valve 2, resulting in a reactor trip during main turbine control valve restoration. Specifically, on July 26, 2006, maintenance personnel used Procedure 40OP-9MT02, "Main Turbine," Revision 53, for performing repairs and restoring control Valve 2 in a way that was beyond the scope of the procedure. The use of the inadequate procedure resulted in a plant transient and reactor trip. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2913232.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that more significant consequences would occur if inadequate procedures are used for plant maintenance. The finding affected the initiating events cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and 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 human performance associated with work control because the licensee did not appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope of the maintenance procedure  
Inspection Report# : [2006005](#) (*pdf*)

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## **Mitigating Systems**

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: FIN Finding

### **Ineffective Demonstration of Conformance to Design for the Alternate ac Power Sources**

The team identified a finding involving the implementation of Regulatory Guide 1.155, Station Blackout, Appendix A, for the demonstration of the station blackout generator design and system readiness requirements. Specifically, established preventive maintenance tasks did not demonstrate that the coping requirements for the station blackout generator would be met for the approved increase from the 4-hour to 16-hour coping duration that, at the time this finding was identified, would become effective the following month. The licensee has entered this finding into their corrective action program as Palo Verde Action Request PVAR 2982699.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected following the implementation of the 16-hour coping duration. The finding affected the mitigating systems cornerstone attributes to ensure the availability of the station blackout generators to respond to initiating events necessary to prevent undesirable consequences. Using the NRC Inspection Manual Chapter 0609, Significance Determination Process, Phase 1 Worksheet, the team determined that this finding had very low safety significance because there was not a loss of system function and it did not involve an external event. The cause of the finding was related to the crosscutting element of decision making associated with human performance for the failure to adequately evaluate the design and system readiness requirements for the station blackout generators for the approved license amendment that, at the time the finding was identified, would, increase the coping period to 16-hours.

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Control of Design Information for the Station Blackout System**

The team identified a noncited violation of very low safety significance for the failure to implement the design control requirements of Regulatory Guide 1.155, Station Blackout, Appendix A, Criterion 1, Design Control and Procurement Control, to 10 CFR 50.63, Loss of All Alternating Current. Specifically, approved Design Change DMWO 2827452 did not account for key station blackout generator performance parameters that included fuel and lubricating oil

consumption rates and required station blackout battery capacity for an increase in the station blackout coping period from 4 to 16-hours.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that the critical performance parameters for ensuring the station blackout generators would meet the 16-hour coping requirement were not established. The finding affected the mitigating systems cornerstone attributes to ensure the availability of the station blackout generators to respond to initiating events necessary to prevent undesirable consequences. Using the NRC Inspection Manual Chapter 0609, Significance Determination Process, Phase 1 Worksheet, the team determined that this finding had very low safety significance because there was not a loss of system function and it did not involve an external event. The cause of the finding was related to the crosscutting element of decision making associated with human performance for the failure to evaluate the key performance parameters for the station blackout generators for the approved license amendment that increased the coping period to 16-hours. (Section 1R21b.2.)

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Non-conservative Containment Sump Level Analysis**

The team identified a noncited violation of very low safety significance of 10 CFR Part 50, Appendix B, Criterion III, Design Control. Specifically, the design calculation that determined the minimum containment flood level following a loss-of-coolant accident was not based on the most limiting reactor coolant system break location. The calculated containment flood level was used to verify the adequacy of the available net positive suction head for the emergency core cooling pumps that would take suction from the containment sump during the recirculation phase of a postulated loss-of-coolant accident. The licensee has entered this issue into their corrective action program as Palo Verde Action Request PVAR 2981257.

This finding is greater than minor because this issue required accident analysis calculations to be re-performed to assure the accident requirements were met. The finding affected the mitigating systems cornerstone as related to the availability, reliability, and capability of the emergency core cooling system for post-loss-of-cooling accident. In accordance with Inspection Manual Chapter 0609, Significance Determination Process, Appendix A, Significance Determination of Reactor Inspection Findings for At-Power Situations, the team conducted a Phase 1 screening and determined the finding was of very low safety significance because it did not represent an actual loss of safety function. This deficiency would not have resulted in the emergency core cooling pumps becoming inoperable under the most limiting postulated accident conditions. This finding has cross-cutting aspects associated with corrective action of the problem identification and resolution area to ensure that issues potentially impacting nuclear safety are promptly identified, fully evaluated and that actions are taken to address safety issues in a timely manner.

Inspection Report# : [2007011](#) (*pdf*)

**Significance:**  May 25, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Ineffective Maintenance on Target Rock Solenoid-Operated Valves**

The team identified a noncited violation of very low safety significance of 10 CFR Part 50, Criterion XVI, Corrective Actions, for the failure to identify and correct significant conditions adverse to quality involving Target Rock valve failures. The licensee has entered this issue into their corrective action program as Palo Verde Nuclear Generating Station Action Requests PVAR 2984832 and 2985372.

The failure to identify and correct the cause(s) of turbine-driven auxiliary feedwater pump Target Rock solenoid-operated valves was a performance deficiency. This issue is more than minor because it is associated separately with the mitigating systems cornerstone and on one occasion affected the containment barrier integrity cornerstone. This finding has cross-cutting aspects associated with corrective action of the problem identification and resolution area to ensure that issues potentially impacting nuclear safety are promptly identified, fully evaluated and that actions are taken to address safety issues in a timely manner.

Inspection Report# : [2007011](#) (*pdf*)

**G****Significance:** Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Change to Emergency Diesel Generator Intake Air Oil Bath Filter Standby Oil Level Specification**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of engineering personnel to verify or check the adequacy of design for maintaining the emergency diesel generator air intake oil bath filters' oil level below the "add oil" mark. Specifically, from approximately November 1994 to January 24, 2007, engineering personnel failed to translate vendor requirements for the Air Maze oil bath air filter oil level into an appropriate operating band. This issue was entered into the corrective action program as Condition Report/Disposition Request 2963525.

The finding is greater than minor because it is associated with the design control attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to be of very low safety significance because it did not represent an actual loss of system safety function, did not represent an actual loss of a single train for greater than its technical specification allowed outage time, and the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

Inspection Report# : [2007002](#) (*pdf*)**G****Significance:** Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Identify Misalignment of Spring Cans**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of inservice inspection personnel to promptly identify misalignment of spring cans on safety-related piping. Specifically, between April 2005 and May 2006, inservice inspection personnel failed to identify misalignment of spring cans associated with the auxiliary feedwater system and the emergency diesel generators. Section 8.3.5 of Procedure 73TI-9ZZ18 required that the examination of piping systems should be directed to detect any relevant conditions, including misalignment of supports. This issue was entered into the corrective action program as Palo Verde Action Request 2980767.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that the failure to identify degraded and non-conforming equipment conditions could impact the availability of mitigating equipment. The finding affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance since it did not represent 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. The finding has a crosscutting aspect in the area of problem identification and resolution, associated with corrective action program, since inservice inspection personnel had an inappropriately high threshold for recognizing the misalignment of spring cans on safety-related piping.

Inspection Report# : [2007002](#) (*pdf*)**G****Significance:** Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Monitoring of CEA Position Results in Technical Specification Violation**

A self-revealing noncited violation of Technical Specification 3.1.6 was identified during the performance of surveillance testing of the control element assemblies when more than one shutdown control element assembly was less than 144.75 inches withdrawn. Specifically, on February 3, 2007, while performing surveillance Procedure 40ST-9SF01, "CEA Operability Checks," Revision 21, more than one control element assembly was less than 144.75 inches withdrawn. Operations personnel did not use all available control element assembly position indications while verifying movement of the four control element assemblies in shutdown Subgroup 6 to ensure that each control element assembly was withdrawn greater than 144.75 prior to movement of the next control element assembly. This issue was entered into the corrective action program as Condition Report/Disposition Request 2967976.

The finding is greater than minor because it is associated with the mitigating systems cornerstone attribute of procedure quality and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding is also associated with the barrier integrity cornerstone attribute of configuration control and affects the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radio nuclide releases caused by accidents or events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, a Phase 2 analysis is required since two cornerstones are degraded. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since the Significance Determination Process methods and tools were not adequate to determine the significance of the finding. The finding is determined to have very low safety significance through management review since it did not represent a loss of system safety function, in that the control element assemblies were still capable of shutting down the reactor in response to any postulated accident. This finding has a crosscutting aspect in the area of a problem identification and resolution associated with corrective action program, because the licensee failed to thoroughly evaluate the problem described in Condition Report/Disposition Request 2760855 such that the issue was resolved. This finding also has a crosscutting aspect in the area of human performance associated with work practices because operations personnel did not appropriately self and peer check all available control element assembly position indications to ensure proper system response.

Inspection Report# : [2007002](#) (*pdf*)



**Significance:** Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain EDG Train B Operable**

The inspectors identified a noncited violation of Technical Specification 3.8.1 for exceeding the allowed outage time for the Unit 2 emergency diesel generator, Train B. Specifically, for the period between May 14, 2005 and November 3, 2005, the licensee failed to maintain the emergency diesel generator Train B operable. The licensee did not identify a condition in which the associated fuel oil suction strainers and discharge filters were fouling, resulting in the emergency diesel generator Train B being unable to supply Train B of the onsite Class 1E AC Electrical Power Distribution System without significant operations and maintenance personnel actions. The licensee entered this into their corrective action program as Condition Report/Disposition Request 2963482.

This finding is more than minor because the failure to identify and correct this deficiency would become a more significant safety concern in that the performance of emergency diesel generator Train B could be reduced, due to fuel starvation to the engine, to the point that the unit would not be able to carry essential electrical loads in the event of a loss of off-site electrical power. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because it did not result in an actual loss of safety function for greater than its technical specification allowed outage time. The finding has a crosscutting aspect in the area of problem identification and resolution, associated with corrective action program, since the licensee failed to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : [2007002](#) (*pdf*)



**Significance:** Feb 09, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Technical Evaluation of HPSI Pump Bearing Oil Leaks**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," with two examples was identified for two inadequate operability evaluations. Prompt operability determinations in CRDRs 2941494 and 2303499 incorrectly concluded that High Pressure Safety Injection Pumps 2A and 3A, respectively, could meet their mission time with existing oil leakage from the bearings. The team concluded that these evaluations relied upon unverified and incorrect assumptions and non-conservative volumes. The apparent cause evaluation for the leakage identified contributing causes that were common to all pumps, but the operability of the other pumps was not assessed. The team identified a history of small oil leaks in high pressure safety injection pumps since 2000, but the licensee was unaware of this trend. Subsequent testing confirmed that five of the six high pressure safety injection pumps had oil leakage which would not allow running those pumps for the full mission time, but sufficient oil was available to run for at least 94 days. This finding was determined to have cross-cutting aspects in the human

performance area of decision-making, because the licensee did not use conservative assumptions and demonstrate that the proposed course of action was safe.

Failure to adequately evaluate and correct oil leakage in High Pressure Safety Injection Pumps 2A and 3A, and failure to assess the extent of condition for similar pumps, was a performance deficiency. The finding was more than minor because it affected the equipment performance attribute of the mitigating systems cornerstone objective of ensuring the availability and reliability of a system that responds to initiating events. This finding screened as Green during Phase 1 of the significance determination process because it did not involve a loss of safety function. This issue was entered into the corrective action program under Condition Report/Disposition Report 2973682.

Inspection Report# : [2007007](#) (*pdf*)

**Significance:**  Feb 09, 2007

Identified By: NRC

Item Type: FIN Finding

### **Preventive Maintenance Change Backlog Was Not Tracking Due Dates**

A finding was identified for failure to schedule and perform preventive maintenance tasks that were in the preventive maintenance change process. The team identified that a backlog of over 2500 preventive maintenance changes existed which resulted in these preventive maintenance tasks not being scheduled or performed, potentially challenging completion within the specified frequency. The team found 438 examples of preventive maintenance tasks that were overdue, and an additional 2113 that had no due date assigned yet. This program was used to revise both safety-related and non-safety preventive maintenance tasks. Because these preventive maintenance tasks were in the change process, the tasks were not scheduled or tracked in a way that would show when they became overdue. This was contrary to Procedure 30DP-9MP08, "Preventive Maintenance Program," Revision 17, which required that "no preventive maintenance on operational equipment shall pass that late date without an approved deferral which will address a technical justification for the identified issue." This finding had human performance cross-cutting aspects associated with resources because the large backlog of preventive maintenance tasks was contrary to maintaining long-term equipment reliability.

Failure to track, schedule, and perform preventive maintenance activities within their specified frequencies in accordance with their preventive maintenance program was a performance deficiency. This finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern in that the lack of preventive maintenance would affect the reliability of plant equipment which could impact the initiating events or mitigating systems cornerstones. Because of the large number of preventive maintenance tasks (over 2500) in this category, the team reviewed a sample of 79 tasks associated with safety-related or quality-class components to assess the significance. The team did not identify any examples of overdue safety-related tasks. Based on the lack of risk significant examples and the fact that this finding is not suitable for significance determination process evaluation, this issue was reviewed by NRC management and was determined to be a finding of very low safety significance. This issue was entered into the corrective action program under Palo Verde Action Request 2970076.

Inspection Report# : [2007007](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **SCAFFOLDING ERECTED WITH INADEQUATE CLEARANCES AND NO ENGINEERING EVALUATION**

The inspectors identified a noncited violation of Technical Specification 5.4.1.a for the failure of maintenance and engineering personnel to follow Procedure 30DP-9WP11, "Scaffolding Instructions," Revision 13, and associated engineering specifications governing scaffold erection near safety-related components. Specifically, on September 13, 2006, inspectors identified three scaffolds that were within 2 inches of safety-related components. The scaffolding did not have an engineering evaluation in place, nor were there any documented records of engineering evaluations for any other scaffolding on site. Again on October 3, 2006, the inspectors identified two scaffolds that were directly attached to the fuel and auxiliary building essential air handling units, without the required evaluations. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2924707 and 2929770.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that

improperly installed scaffolding could impact the availability of mitigating equipment. The finding affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and all subsequent engineering evaluations determined that there was no adverse effect to mitigating equipment. This finding has a crosscutting aspect in the area of human performance associated with work control because the licensee did not appropriately coordinate work activities to keep personnel apprised of the operational impact of work activities. Additionally, this finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective actions in that the licensee did not take appropriate corrective actions to address safety issues in a timely manner

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO MAINTAIN SEISMIC QUALIFICATION OF POST ACCIDENT MONITORING INSTRUMENTATION**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the improper control of design parameters for post accident monitoring instrumentation by operations personnel. Specifically, prior to November 22, 2006, operations personnel did not maintain the seismic qualification of post accident monitoring instrumentation, by pulling recorders out from the fully inserted position for extended periods. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2945259.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that safety-related equipment that is not maintained in a seismically qualified condition may not be available to perform its safety function under certain accident conditions. The finding affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it did not affect the loss or degradation of equipment specifically designed to mitigate a seismic event, and it did not involve the total loss of any safety function that contributes to external event initiated core damage accident sequences

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO PERFORM AN ADEQUATE ROOT CAUSE ANALYSIS FOR VALVE SI-225**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of the licensee to adequately evaluate and identify the cause for a degraded material condition associated with Unit 2 Valve SI-225 following a failure of the valve to fully close on November 30, 2000. Specifically, the licensee did not have any data to support their root cause evaluation and could not validate the failure mechanism that prevented Valve SI-225 from fully closing. The failure to identify the cause and implement corrective actions resulted in the failure of Valve SI-134 in October 2006 and the continued degradation of additional safety injection system check valves. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2942970.

The finding is more 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 availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not result in the actual loss of safety function to any component, train, or system. This finding has a crosscutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate a problem that was known to exist since November 2000

Inspection Report# : [2006005](#) (*pdf*)

**G****Significance:** Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO MAINTAIN PROCEDURES AND INSTRUCTIONS**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to promptly identify and correct a condition adverse to quality. Specifically, since 1992, the licensee failed to maintain procedures and written instructions in accordance with quality assurance program requirements, including, periodic procedural reviews and implementation of the procedure feedback process. These issues resulted in a significant number of deficient procedures and instructions not being corrected in a timely manner and not receiving adequate reviews. One example involved the failure to provide adequate instructions for mounting temperature element housings adversely affecting seismic qualifications required to protect the functionality of safety related equipment. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2952142.

This finding is greater than minor because the failure to identify and correct deficient procedures, if left uncorrected, would become a more significant safety concern in that quality related systems, structures, and components could be adversely affected by implementing inadequate instructions. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it did not result in loss of operability per, "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment." This finding involved problem identification and resolution crosscutting aspects associated with the failure to promptly identify and correct deficient procedures/instructions resulting in the potential to adversely affect quality related systems, structures, and components  
Inspection Report# : [2006005](#) (*pdf*)

**G****Significance:** Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**FAILURE TO FOLLOW PROCEDURES RESULTS IN LOSS OF PLANT CONFIGURATION CONTROL**

Two examples of a self-revealing noncited violation of Technical Specification 5.4.1.a were identified for the failure of operations personnel to properly implement procedures to ensure the correct configuration of equipment during plant evolutions. Specifically, twice on November 4, 2006, operations personnel failed to restore the containment spray system to standby operations for shutdown cooling per Procedures 73ST-9XI33, "HPSI Pump and Check Valve Full Flow Test," and 40ST-9SI09, "ECCS System leak Test," following surveillance testing to satisfy the entry conditions for Procedure 40OP-9SI01, "Shutdown Cooling Initiation." This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2939686.

The finding is greater than minor because it is associated with the configuration control cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Checklist 3, and is determined to have very low safety significance because the finding did not result in an increase of the likelihood of a loss of decay heat removal due to failure of the system, nor did it degrade the ability of containment to remain intact following an accident. Additionally, the finding did not degrade the licensee's ability to terminate a leak path, add reactor coolant system inventory, recover decay heat removal once it is lost, or establish an alternate core cooling path. Lastly, the finding did not increase the likelihood of a loss of reactor coolant system inventory, or offsite power. This finding has a crosscutting aspect in the area of human performance associated with work control because the licensee did not appropriately coordinate work activities by communicating, coordinating, and cooperating with each other during surveillance testing activities  
Inspection Report# : [2006005](#) (*pdf*)

**G****Significance:** Nov 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT THE OPERABILITY DETERMINATION PROCESS**

The team identified two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions,

Procedures, and Drawings,” for the failure to perform operability determinations. In both examples, the licensee failed to perform an operability determination following identification of a degraded condition that had the potential to adversely affect the safety function of all emergency diesel generators. Specifically, an operability determination was not performed after identifying the failure of the Unit 3 Train A emergency diesel generator on July 25, 2006, was potentially the result of plastic debris affecting proper auxiliary contact operation of a K-1 relay. The licensee determined the debris most likely originated from a modification performed on all emergency diesel generator K-1 relays during initial plant startup. Following another failure of the Unit 3 Train A emergency diesel generator on September 22, 2006, an operability determination was not performed after identifying the failure was the result of the K-1 relay actuating arm not providing adequate compression of the auxiliary contacts. The licensee determined this degraded condition most likely originated during implementation a modification done to all emergency diesel generator K-1 relays during initial plant startup.

This finding is greater than minor because the failure to follow the operability determination process, if left uncorrected, would become a more significant safety concern in that degraded or nonconforming conditions would not be properly evaluated. Using the Phase 1 worksheet in NRC Inspection Manual Chapter 0609, “Significance Determination Process,” the finding was determined to have very low safety significance because unreliable K-1 relay operation resulted in no actual loss of safety function of the other five emergency diesel generators prior to corrective actions being implemented, and the finding did not represent a potential risk significant condition because of a seismic, flooding, or severe weather event. This issue is documented in the licensee’s corrective action program as Condition Report/Disposition Requests 2928389 and 2940558. The cause of this finding is related to the crosscutting element of problem identification and resolution in that engineering personnel failed to properly evaluate and perform operability determinations for identified degraded conditions affecting the emergency diesel generators.

Inspection Report# : [2006012](#) (*pdf*)

**Significance:**  Nov 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE CORRECTIVE ACTIONS TO PRECLUDE WATER INTRUSION AND CORROSION OF UNDERGROUND PIPING AT THE FACILITY**

The inspectors identified multiple examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failing to promptly correct water intrusion problems in multiple areas in the facility, that were identified and examined from January 1991 to April 2006. Specifically, the licensee failed to promptly correct the water intrusion problems in the facility piping vaults and manholes. This finding also had aspects of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failing to maintain a vault in its watertight design condition and to coat exposed piping with its specified coating to ensure corrosion protection. This issue was entered into the licensee’s corrective action program as Condition Report/Disposition Requests 2885972, 2880283, and 2902572.

The finding is greater than minor because it is associated with the equipment performance cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and there was no actual loss of piping material that exceeded the minimum allowable wall thickness or a loss of safety function that exceeded Technical Specification allowed outage times. This finding has a crosscutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate a problem that existed from 1992 to April 2006. The failure to promptly correct this condition resulted in the degradation of the wall thickness of the spray pond piping and the Unit 3 emergency diesel generator Train A being declared inoperable after the fuel transfer pump did not meet the acceptance criteria during a surveillance

Inspection Report# : [2006004](#) (*pdf*)

**Significance:**  Nov 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO IDENTIFY CONDITIONS ADVERSE TO QUALITY FOR THE EMERGENCY DIESEL GENERATORS**

The inspectors identified multiple examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI,

"Corrective Action," for failing to identify degraded material conditions on the emergency diesel generators. Between July and September 2006, operations and engineering personnel did not promptly identify and correct material conditions adverse to quality. Specifically, operations and engineering personnel did not identify numerous fluid leaks, and loose and missing fasteners on the emergency diesel generator skid, and did not enter them in the corrective action program. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2914886.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that unidentified conditions adverse to quality could challenge the operability of equipment important to safety. The finding affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not result in the actual loss of safety function to any component, train, or system. This finding has a crosscutting aspect in the area of problem identification and resolution because failing to implement the corrective action program with a low threshold for identifying adverse material conditions resulted in degradation of the emergency diesel generators which was not being tracked and evaluated

Inspection Report# : [2006004](#) (*pdf*)

**Significance:** N/A Nov 03, 2006

Identified By: NRC

Item Type: FIN Finding

### **FAILURE TO SUBMIT COMPLETE REVISIONS TO THE UPDATED FINAL SAFETY ANALYSIS REPORT FOR PERMANENT MODIFICATIONS**

The inspectors identified a violation of 10 CFR 50.71(e)(4), for which enforcement discretion was exercised, that involved the failure to file revisions to the Updated Final Safety Analysis Report. Specifically, for the reporting period between January 2003 and December 2005, licensing personnel failed to submit a revision to the Updated Final Safety Analysis Report reflecting core protection calculator system modifications. The issued was entered into the licensee's corrective action program as Condition Report/Disposition Request 2894635.

The performance deficiency associated with this finding involved the failure of licensee personnel to submit revisions to the Updated Final Safety Analysis Report reflecting modifications installed in Unit 2 for more than 24 months. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to revise the Updated Final Safety Analysis Report in a timely manner. Normally, the violation would be categorized at Severity Level IV in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. However, in accordance with Section VII.B.6 of the NRC Enforcement Policy, the NRC is refraining from taking enforcement action because of the NRC action taken in 1993 to issue and then retract a similar occurrence and the low safety significance of the finding (EA-06-267). The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance.

Inspection Report# : [2006004](#) (*pdf*)

**Significance:** N/A Sep 30, 2006

Identified By: NRC

Item Type: FIN Finding

### **SUMMARY FINDING. 95002 TEAMS ASSESSMENT OF IR 2004-14 (YELLOW) 10 CFR PART 50, APPENDIX B, CRITERION III, VIOLATION**

The NRC performed a followup supplemental inspection to assess the licensee's corrective actions associated with a Yellow design control finding involving the potential for air entrainment into the emergency core cooling system. The team concluded that the technical issues specifically associated with the voided emergency core cooling system piping have been addressed. However, the Yellow finding will remain open because the licensee did not implement effective corrective actions for all of the causes associated with the Yellow finding. Specifically, the licensee's actions to improve questioning attitude, technical rigor, and technical review were not fully effective. Also, the implementation of performance measures and metrics to monitor the effectiveness of corrective actions associated with the Yellow finding were not adequate to assess effectiveness. This performance issue was previously characterized as a 10 CFR Part 50, Appendix B, Criterion III, violation having substantial safety significance (Yellow), and was originally identified in NRC Inspection Report 05000528; 05000529; 05000530/2004014.

The licensee's corrective actions taken in response to the root causes and related programmatic concerns involving

questioning attitude, technical rigor, and technical review have not been completely effective. Specifically, following implementation of corrective actions between September 2005 and March 2006, the licensee: (1) continued to conduct inadequate technical reviews of emerging issues; (2) did not routinely question the validity of engineering assumptions used to support operability decisions; (3) did not consistently implement a qualify, validate, and verify process; and (4) did not consistently notify operations personnel of immediate operability concerns.

The team concluded that adequate qualitative or quantitative measures for determining the effectiveness of the corrective actions to prevent recurrence have not been established. For example, not all relevant performance data was considered when performance monitoring measures were developed to assess the effectiveness of corrective actions. When the pertinent data was considered, or otherwise clarified, the performance measures suggested declining rather than improving performance in some areas.

The team also concluded that the licensee had not completed adequate reviews of the effectiveness of corrective actions prior to their notifying the NRC of their readiness for inspection of the Yellow finding. Specifically, several assessments were completed after the requested date of the inspection (June 2006). Several of the assessments noted that insufficient progress in resolving some of the root and contributing causes had been made. Additionally, a standard guideline for metrics was not issued and implemented until July 2006.

Inspection Report# : [2006010](#) (*pdf*)

**Significance:**  Mar 16, 2005

Identified By: NRC

Item Type: FIN Finding

#### **FAILURE TO TRACK CONTROL ROOM DISCREPANCIES**

The inspectors identified a finding for the failure to follow administrative guidelines provided to operations personnel for identifying, documenting, and tracking main control room deficiencies. Specifically, approximately 75 control room instrument and control room meter face plates in Units 1, 2, and 3 were degraded and were not individually tracked in the control room discrepancy log. Furthermore, discrepancy labels containing the control room discrepancy log number and description of the discrepancy were not placed adjacent to or as close as possible to each affected device. This issue was entered into the corrective action program as Condition Report/Disposition Request 2782501.

The finding is determined to be greater than minor because if left uncorrected, it could become a more significant safety concern in that the condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with multiple human performance actions. Based on management review, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and there was no adverse impact to plant equipment.

Inspection Report# : [2005002](#) (*pdf*)

**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*)

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## Barrier Integrity

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE ACCEPTANCE TESTING FOR THE UPGRADED REFUELING EQUIPMENT**

The inspectors identified a noncited violation of 10 CFR Part 50, Criterion III, "Design Control," for the failure of engineering personnel to implement an adequate procedure for acceptance testing of the upgraded refueling equipment resulting in several malfunctions, including one that resulted in a fuel assembly contacting one of the storage baskets in the spent fuel pool at a higher than designed speed. Specifically, between October 8 and October 13, 2006, the site acceptance test procedures were not adequate to identify and prevent several malfunctions of the refueling equipment due to design and installation inadequacies of Design Modification Work Order 2778582. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2931991 and 2937420.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that refueling equipment malfunctions could result in damaged fuel. The finding affected the barrier integrity cornerstone. This finding cannot be evaluated by the significance determination process because Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and Appendix G, "Shutdown Operations Significance Determination Process," do not apply to the spent fuel pool or the refueling pool. This finding is determined to be of very low safety significance by NRC management review because it was a deficiency that did not result in the actual degradation of spent fuel  
Inspection Report# : [2006005](#) (*pdf*)

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## Emergency Preparedness

**Significance:**  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO IDENTIFY AND CRITIQUE AN EVENT CLASSIFICATION WEAKNESS**

The inspectors identified a noncited violation of 10 CFR 50.54(q) for failure of the emergency planning organization's emergency exercise critique process to identify for correction an emergency plan weakness associated with a risk significant planning standard. Specifically, during the critique of the Emergency Preparedness portion of the August 22, 2007, Force-On-Force exercise, the licensee failed to identify for correction an event classification weakness. The weakness occurred during the exercise when the shift manager did not recognize a credible security threat notification was made to the facility. As a result, the shift manager did not declare a Notice of Unusual Event as required by EPIP-99, Appendix A, "Emergency Actions Levels - EAL 7-1." This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3056153.

This finding is greater than minor because it is associated with the Emergency Response Organization Performance attribute of the Emergency Preparedness Cornerstone and affects the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. In accordance with Manual Chapter 0609, "Significance Determination Process," Appendix B, Emergency Preparedness Significance Determination Process, this finding is determined to have very low safety significance because, although it was a failure to comply with NRC requirements, it did not involve the risk-significant aspects of a planning standard as defined in Manual Chapter 0609, Appendix B, Section 2.0; and was not a planning standard functional failure because the critique failure occurred in a small scale drill with limited emergency response organization participation and evaluation. This finding has a crosscutting aspect in the area of problem identification and resolution associated with corrective action program because the threshold for identifying issues was not sufficiently low. Specifically, the emergency planning evaluator did not recognize the shift manager's failure to make the Notice of Unusual Event classification during the Force-On-Force exercise. Therefore, the exercise critique did not identify and correct the event classification deficiency as required (P.1(a)).

Inspection Report# : [2007004](#) (*pdf*)

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## Occupational Radiation Safety

**Significance:** N/A Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to follow a radiation exposure permit requirement**

A self-revealing noncited violation of Technical Specification 5.7.1 was identified for the failure to follow a radiation exposure permit requirement. Specifically, on October 3, 2006, a mechanic entered a high radiation area without direct authorization and a specific briefing from radiation protection personnel. As a corrective action for this isolated case, the mechanic and his coworker were restricted from the radiologically controlled area until re-authorized by the director of radiation protection and appropriate disciplinary actions were taken. The licensee entered this into their corrective action program as Condition Report/Disposition Request 2929853.

The finding was greater than minor because it is associated with the occupational radiation safety exposure control attribute and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation. The failure to follow a radiation exposure permit requirement for a high radiation area led to unintended and additional personnel dose. The finding was determined to be of very low safety significance because it did not involve: (1) as low as reasonably achievable (ALARA) planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding had a crosscutting aspect in human performance associated with work practices because the mechanics did not use human error prevention techniques such as self and peer checking so that work activities were performed safely.

Inspection Report# : [2007002](#) (*pdf*)

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## Public Radiation Safety

**Significance:**  Feb 22, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to control the release of radioactive material**

A self-revealing, noncited violation of Technical Specification 5.4.1 was reviewed regarding the failure to control the release of radioactive material. On February 2, 2006, the licensee was notified by another site that equipment received was labeled as radioactive material. Specifically, five items, with a maximum activity of 280 counts per minute, were inappropriately released from the radiologically controlled area and subsequently the protected area. The licensee's corrective actions include evaluating and implementing changes to the material release program and processes.

The finding is greater than minor because it was associated with the Public Radiation Safety cornerstone attribute of

human performance and affected the associated cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Using the Public Radiation Safety Significance Determination Process, the team determined that the finding had very low safety significance because: (1) it was a radioactive material control finding, (2) it was not a transportation finding, (3) it did not result in public dose greater than 0.005 rem, and (4) the number of occurrences was not greater than five. In addition, this finding had a human performance cross-cutting aspect associated with work practices because the licensee failed to ensure supervisory and management oversight of work activities, including contractors

Inspection Report# : [2007010](#) (*pdf*)

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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

**Significance:** N/A Feb 09, 2007

Identified By: NRC

Item Type: FIN Finding

### **Summary Finding. Biennial PI&R Assessment**

The team concluded that the thresholds for identifying and classifying issues were appropriately low, although several instances were identified where new aspects to complex problems were identified but not broken out and addressed properly. Numerous changes were made to the corrective action program and some improvement was evident, but some of the changes were not yet fully effective. The new Palo Verde Action Request was introduced, and senior managers were assigned to determine which actions were required in order to improve the consistency of problem treatment. Problems involving operability questions were getting to control room operators more consistently, but NRC inspectors continued to identify operability concerns that were missed by the licensee. However, having the Action Request Review Committee review all problem reports created a bottleneck in the process, creating delays in getting problems from the identification to a working stage. Problems continue to exist in the quality of problem description and significance determination. The timeliness of problem cause evaluations were improving due to management attention, but were still several times longer than station goals and industry standards.

Palo Verde Nuclear Generating Station continued to have a large number of latent equipment issues. Numerous longstanding material conditions exist which have received limited assessments and get added to the backlog with routine priority. The NRC continued to identify examples where the significance was underestimated by the licensee and were not being addressed with the timeliness commensurate with the actual safety significance until the NRC gets involved.

The team noted that significant challenges have been created because there are large backlogs of work affecting work control, maintenance support, and a variety of engineering activities. These backlogs are affecting the site's ability to address problems in a timely manner. It is apparent that these backlogs have built up over a period of years with the knowledge of management.

The Nuclear Assurance Department was active in the internal oversight role and focused on current performance problems, issuing reports that provided useful assessments. Other self-assessments reviewed were frequently narrow in scope and of limited depth. Interviews with site workers indicated that a safety-conscious work environment exists at Palo Verde Nuclear Generating Station, and that workers had an improved confidence in the strength of the safety culture. However, there was less confidence that routine priority issues will get addressed in a timely manner.

Inspection Report# : [2007007](#) (*pdf*)

Last modified : December 07, 2007