

Palo Verde 1

4Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Nov 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

UNINTENTIONAL BORATION OF REACTOR COOLANT SYSTEM DUE TO INAPPROPRIATE WORK PERMIT

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure of operations personnel to have adequate work control procedures that resulted in an inadvertent boration of the Unit 1 reactor coolant system. Specifically, on July 19, 2006, Work Mechanism 2907666, and the associated work permit, were not adequately reviewed for impact on the plant and were not assessed as having the potential for a direct reactivity impact as required by work control procedures. As a result of the inadequate review, an inadvertent boration of the reactor coolant system occurred during implementation of the work permit because the technical document was not appropriate for operating plant conditions. The issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2911493.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected because unexpected impacts to structures, systems, and components could occur, resulting in inoperable equipment and plant transients, if work permits are not appropriately reviewed prior to implementation. 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 resources because the licensee did not provide accurate procedures and work instructions to plant personnel. The inaccurate procedures caused an inadvertent boration of the Unit 1 reactor coolant system

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

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PRECLUDE A SIGNIFICANT CONDITION ADVERSE TO QUALITY

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the failure of licensee personnel to preclude repetition of a significant condition adverse to quality. Specifically, on April 17, 2006, and for the second time in two years, a submersible vehicle was suctioned into a system providing cooling to nuclear fuel, rendering the system inoperable. Following the April 11, 2004, event, the licensee's corrective actions concentrated on a lack of instructions and a lack of communications with the control room. While it was recognized that the event was transportable to other systems, and that the consequences could have been more severe, the corrective actions were limited in scope and were not adequate to preclude repetition. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2885213.

The finding is greater than minor because it is associated with the configuration control and human performance cornerstone attributes of the initiating events cornerstone and affects the associated 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 the Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Checklist 4, the finding is determined to have very low safety significance because the finding did not increase the likelihood of a loss of reactor coolant system inventory. Additionally, the finding did not degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory, neither did it degrade the licensee's ability to recover decay heat removal once it is lost. The cause of the finding is related to the crosscutting element

of problem identification and resolution in that licensee personnel did not implement corrective actions to preclude repetition of a significant condition adverse to quality. Additionally, the cause of the finding is related to the crosscutting element of human performance in that licensee personnel did not stop movement of the submersible upon becoming disoriented.

Inspection Report# : [2006003 \(pdf\)](#)

Mitigating Systems

Significance: TBD 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 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:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

TWO EXAMPLES OF FAILURE TO TRANSLATE SPRAY POND DESIGN ASSUMPTIONS INTO PLANT PROCEDURES CONTROL

Two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," were identified involving the failure to adequately translate the design basis of the spray ponds into procedures. Design Calculation 13-MC-SP-0307, "SP/EW System Thermal Performance Design Basis Analysis," Revision 7, which demonstrated that the spray pond system could adequately limit spray pond temperature during a design basis accident did not account for any reduced heat capacity caused by sediment buildup. However, this fact was not translated into procedures, so approximately 400 cubic yards of sediment had built up in each of the six spray ponds when the team questioned the impact to the heat removal function. Also, the same calculation demonstrated that sufficient water was available to provide adequate cooling during a design basis accident, but did not account for any leakage from the ponds. The team determined that the licensee did not translate this into a procedure to ensure that the condition of the spray pond was maintained such that leakage did not occur. Procedure 81DP-0ZZ01, "Civil System, Structure, and Component Monitoring Program," Revision 11, was used to monitor the condition of the pond structures. The team identified that it examined only the exposed concrete surfaces, which constituted about 7 percent of the surface area and almost none of the water-containing volume. Cracks had been identified and repaired in this area, but the inspections were not expanded to the underwater surfaces. This issue was documented in Condition Report/Disposition Requests 2906671 and 2910912.

Failure to adequately translate the design basis of the spray ponds into procedures was a performance deficiency. This finding was determined to be more than minor because, if left uncorrected, the finding could become a more significant safety concern. This finding affected the Mitigating Systems Cornerstone. This performance deficiency screened as having very low safety significance in a Phase 1 significance determination process because the licensee was able to demonstrate that the sediment would not have resulted in a loss of safety function, and that significant leakage did not exist. The licensee was able to revise the calculation to take credit for heat absorption by the concrete walls, and scheduled inspections by divers of underwater portions of the ponds to follow sediment removal

Inspection Report# : [2006011](#) (*pdf*)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INADEQUATE OPERABILITY ASSESSMENTS FOR HEAT EXCHANGER DEGRADATION

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," with multiple examples was identified for failure to adequately assess the impact to operability of degraded heat exchangers in the emergency diesel generators and essential cooling water system. Specifically, the licensee failed to follow Procedure 40DP-90P26, "Operability Determination and Functional Assessment," Revision 16, in assessing indications of degraded heat exchanger performance, an activity affecting quality. Key support organizations were not always involving operations personnel with questions that had a potential to affect the operability of safety-related equipment, or were informing operators only after the support organization had fully evaluated the condition, delaying actions that were required to be prompt. Also, operations personnel did not always insist on a rigorous evaluation. This issue was documented in Condition Report/Disposition Requests 2918892, 2901815, and 2898237.

Failure to adequately implement the operability assessment process was a performance deficiency. This finding was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. This finding screened as having very low safety significance in a Phase 1 significance determination process, because the examples used for this violation were confirmed not to involve any loss of safety function. This finding had cross-cutting aspects in the area of human performance because the licensee did not follow their systematic process for operability decision making when information was not brought to the right decision makers

Inspection Report# : [2006011](#) (*pdf*)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE TEST CONTROL TO PROMPTLY IDENTIFY UNACCEPTABLE HEAT EXCHANGER PERFORMANCE TEST RESULTS - RECHARACTERIZED IN FINAL SIGNIFICANCE DETERMINATION LETTER TO BE A GREEN NCV.

Green. A noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified. Test Procedure 70TI-9EW01, "Thermal Performance Testing of Essential Cooling Water Heat Exchangers," and Procedure 73DP-9ZZ10, "Guidelines for Heat Exchanger Thermal Performance Analysis," were inadequate to ensure the timely determination that the requirements and acceptance limits contained in applicable design documents were met. Specifically, performance testing for Essential Cooling Water Heat Exchanger 2B conducted on March 19, 2002, did not meet the design basis requirements specified in Calculation 13-MC-SP-0307, "SP/EW System Performance Design Bases Analysis," Revision 007, but this was not correctly evaluated to determine whether the system would be capable of performing its design function until August 22, 2002, due to incorrect procedure guidance and lack of requirements to ensure timely evaluation. As a result, this component continued to degrade for 18 months after demonstrating unacceptable performance. This finding had cross cutting aspects in the area of Human Performance, under the Resource attribute, because the licensee failed to ensure that adequate procedures were available to ensure nuclear safety.

Failure to properly control testing and properly identify unacceptable performance was a performance deficiency. This finding was more than minor because it impacted the procedure quality attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, Essential Cooling Water Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 78 days. A Phase 3 significance determination process concluded that this finding has a very low safety significance. This issue was entered into the Corrective Action Program under CRDR 2928230. Because this violation was of very low safety significance and has been entered into the corrective action program, it is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2006011-02, Inadequate Test Control to Promptly Identify Unacceptable Performance Test Results. This issue was re-characterized from an AV to an NCV as a result of the Regulatory Conference conducted on November 20, 2006 and the final significance determination.

Inspection Report# : [2006011](#) (*pdf*)

Significance: SL-IV Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

10 CFR 50.59 REVIEWS NOT PERFORMED OR INADEQUATE FOR MULTIPLE CHANGES TO SPRAY POND CHEMISTRY CONTROL PROCEDURE - RECHARACTERIZED IN FINAL SIGNIFICANCE DETERMINATION LETTER TO BE A GREEN NCV.

SL-IV. A noncited violation of 10 CFR 50.59 was identified for making nine revisions to Procedure 74DP-9CY04, "System Chemistry Specification," a procedure described in the Updated Final Safety Analysis Report between 1998 and 2004. Specifically, the licensee failed to perform evaluations for Revisions 3, 6, 8, 10, 12, 24, 28, 32, and 36 and performed inadequate evaluations for Revisions 10 and 36, to assess the potential impact of the changes on the safety-related components in the spray pond system. Each of these changes revised spray pond chemistry parameter limits which were subsequently determined to have contributed to heat exchanger fouling.

Failure to adequately evaluate the impact of changes to the Chemistry Control Program was a performance deficiency. Because this violation had the potential to impact the NRC's regulatory function, and because the associated significance

was determined to be Green using Phase 3 of the significance determination process, this violation is being treated as a Severity Level IV violation. This issue was entered into the Corrective Action Program under CRDR 2902498. Because this violation was of very low safety significance and has been entered into the corrective action program, it is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2006011-03, 50.59 Reviews Not Performed or Inadequate for Multiple Changes to Spray Pond Chemistry Control Procedure. This issue was re-characterized from an AV to an NCV as a result of the Regulatory Conference conducted on November 20, 2006 and the final significance determination.

Inspection Report# : [2006011](#) (pdf)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE IDENTIFICATION AND CORRECTIVE ACTION FOR DEGRADED ESSENTIAL COOLING WATER HEAT EXCHANGER PERFORMANCE - RECHARACTERIZED IN FINAL SIGNIFICANCE DETERMINATION LETTER TO BE A GREEN NCV

Green. A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified. On March 19, 2002, performance testing for Essential Cooling Water Heat Exchanger 2B indicated that the system would not be capable of performing its design function, but this significant condition adverse to quality was not promptly identified, the cause determined, or corrective actions taken to restore the required heat exchanger performance. Specifically, the unacceptable performance was not promptly identified, because the test results were not correctly calculated until August 22, 2002, which was after operating mode changes and returning the unit to power following the outage. When the test results were finalized, the fact was that the design basis capability was not met, was not recognized or entered into the corrective action program. These failures to correct this degraded performance contributed to the continued degradation and eventual loss of function for a period of 78 days. The failure to correct this degraded performance contributed to the continued degradation and eventual loss of function. This finding had cross cutting aspects associated with the Corrective Action Program, for both inadequate identification of problems and inadequate evaluation of the cause, extent, and impact on operability.

Failure to properly assess the impact of scaling on safety-related heat exchangers cooled by the spray pond system was a performance deficiency. This finding was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, the heat exchangers associated with emergency diesel generators and essential cooling water systems in both trains in all units were allowed to degrade and Essential Cooling Water Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 78 days. A Phase 3 significance determination process concluded that this finding has very low safety significance. This issue was entered into the corrective action program under CRDR 2897810. Because this violation was of very low safety significance and has been entered into the corrective action program, it is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2006011-04, Inadequate Corrective Action for Degraded EW Heat Exchanger Performance. This issue was re-characterized from an AV to an NCV as a result of the Regulatory Conference conducted on November 20, 2006 and the final significance determination.

Inspection Report# : [2006011](#) (pdf)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL TO ENSURE NO ESSENTIAL COOLING WATER HEAT EXCHANGER SCALING - RECHARACTERIZED IN FINAL SIGNIFICANCE DETERMINATION LETTER TO BE A GREEN NCV.

Green. A noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for failure to correctly evaluate the scaling potential of the safety-related heat exchangers cooled by the emergency spray pond during a design basis accident. An error in how the licensee interpreted the SEQUIL calculation caused the licensee to incorrectly conclude that scaling would not occur under the conditions established in the chemistry control program.

Failure to properly assess the impact of scaling on safety related heat exchangers cooled by the spray pond system was a performance deficiency. This finding was more than minor because it impacted the design control attribute of the

Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, post accident scaling was determined to reduce heat exchanger performance by 2.3 percent of the design capability in the first 24 hours, and up to 4 percent during the design mission time. A Phase 3 significance determination process concluded that this finding has very low safety significance. This finding had cross-cutting aspects in the area of Human Performance, under the Resource attribute, because the licensee failed to ensure that adequate procedures were available to ensure nuclear safety. This issue was documented in CRDR 2913430. Because this violation was of very low safety significance and has been entered into the corrective action program, it is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2006011-05, Inadequate Design Control to Ensure No EW Heat Exchanger Scaling. This issue was re-characterized from an AV to an NCV as a result of the Regulatory Conference conducted on November 20, 2006 and the final significance determination. Inspection Report# : [2006011](#) (*pdf*)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILED UNIT 1 CS TRAIN B PUMP ROOM FLOOD LEVEL SWITCH DUE TO NONCONFORMING DRAIN HOSE MANIFOLD BOXES

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of operations personnel to verify or check the adequacy of the design of drain hose manifold boxes. Specifically, between 1997 and June 16, 2006, operations personnel failed to verify or check the adequacy of design of drain hose manifold boxes when the decision was made to leave the boxes permanently attached to the emergency core cooling system pump vents. The failure to evaluate the drain hose manifold boxes resulted in the degradation of the Unit 2 low pressure safety injection Train A pump room level switch, and the failure of the Unit 1 containment spray Train B pump room level switch. On June 16, 2006, the drain hose manifold boxes were removed from the emergency core cooling system pump rooms in all three units. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2903515.

The finding is greater than minor because it is associated with the design 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 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 using the flooding criteria, would not cause a plant trip or any of the initiating events used by Phase 2, and would not degrade two or more trains of a multi-train safety system. The cause of the finding is related to the crosscutting element of problem identification and resolution in that operations personnel failed to adequately evaluate the impact of degraded level switches on the ability to detect and respond to an emergency core cooling system pump room flooding event.

Inspection Report# : [2006003](#) (*pdf*)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE DEGRADED CONDITIONS TO ENSURE OPERABILITY

The inspectors identified two examples of a noncited violation of Technical Specification 5.4.1.a for the failure of engineering personnel to follow procedures. On April 17, 2006, engineering personnel failed to follow Procedure 81DP-0DC13, "Deficiency Work Order," resulting in shutdown cooling Train B being declared operable without fully addressing a potential degraded condition associated with the potential for missing parts from a submersible remaining in plant systems. On May 10, 2006, engineering personnel did not perform evaluations and dispositions required by Procedure 81DP-0DC13 to justify a degraded condition for continued use of a pipe support associated with shutdown cooling line Train A. These issues were entered into the licensee's corrective action program as Condition Report/Disposition Requests 2902258 and 2892737.

The finding is greater than minor because it would become a more significant concern if left uncorrected in that Technical Specification required structures, systems, and components (SSCs) may not be operable as required for applicable plant conditions. The performance deficiency associated with this finding was representative of a broader concern related to how the licensee ensures the operability of SSCs required to comply with Technical Specifications. Specifically, the licensee's

programs and processes for assessing degraded conditions have not been implemented with the rigor and thoroughness necessary to ensure compliance with regulatory requirements. 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 represent an actual loss of safety function. The cause of the finding is related to the crosscutting element of human performance in that engineering personnel did not follow procedures, resulting in the failure to perform required evaluations and dispositions for deficient conditions.

Inspection Report# : [2006003](#) (pdf)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

THREE EXAMPLES OF A TECHNICAL SPECIFICATION 3.0.4 VIOLATION

The inspectors identified three examples of a Green noncited violation of Technical Specification 3.0.4 for the failure of operations personnel to ensure the operability of required equipment prior to entry into a mode or other specified condition in the limiting condition for operations applicability. Specifically, on March 20, 2006, Mode 4 was entered with reactor coolant system pressure at 386 psia and only one operable train of containment spray. Unaware that any Technical Specification requirements were violated, operations personnel lowered reactor coolant system pressure below 385 psia and controlled pressure at this level as they proceeded towards Mode 3. A short time later, on March 20, 2006, the control room supervisor incorrectly concluded that both trains of containment spray were operable and raised reactor coolant system pressure above 385 psia. On March 20, 2006, the class pressurizer heater Train B supply circuit breaker tripped due to a grounded condition on Heater A05, rendering the equipment inoperable. This equipment condition was not recognized by operations personnel until March 22. As a result of the equipment condition, on March 21, 2006, Unit 1 changed from Mode 4 to Mode 3 without two trains of pressurizer heaters operable. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2877648, 2877591, and 2878030.

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. For the examples of this finding related to the containment spray system, a Phase 2 analysis was required since they impacted both the mitigating systems and barrier integrity cornerstones as determined by the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet. Using the Phase 2 Worksheets associated with loss of coolant accidents, the finding is determined to have very low safety significance since all remaining mitigation capability was available. The example of this finding related to pressurizer heaters 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 consider the pressurizer heaters as a risk significant function as defined in the risk informed notebook. This finding is determined to be of very low safety significance by NRC management review. The cause of the finding is related to the crosscutting element of human performance in that operations personnel did not follow procedures and apply the necessary rigor and questioning attitude to requirements and associated decisions because of self-imposed schedule pressures.

Inspection Report# : [2006003](#) (pdf)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INOPERABLE INVERTER DUE TO DEGRADED CAPACITORS

A self-revealing noncited violation of Technical Specification 3.8.7, "Inverters - Operating," was identified for the failure to maintain two operable trains of inverters. On October 20, 2005, Inverter 1EPNBN12 failed. The licensee's evaluation determined that procurement engineering personnel did not identify the lack of oil in the output filter capacitors for the inverter. The capacitors were installed in the inverter between October 1999 and October 20, 2005. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2845317.

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 did not represent an actual loss of safety function.

Inspection Report# : [2006003](#) (*pdf*)

Significance:  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DIESEL FIRE PUMP BATTERY SURVEILLANCE

The inspectors identified a noncited violation of Technical Specification 5.4.1.d for an inadequate surveillance test for the diesel fire pump batteries. Specifically, since 1995, the method described in Procedure 38FT-9FP02, "Fire Protection System Monthly Diesel Fire Battery Test," Revision 4, to verify the specific gravity of the diesel fire pump batteries was inadequate in that the specific gravity was not directly measured, but was verified by a correlation to open circuit voltage. This methodology could result in a measured battery voltage that would be higher than the true specific gravity would provide. The cause was due to an inadequate engineering evaluation to develop the correlation used in the surveillance procedure. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2875906.

The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of 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 and Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," the finding is determined to have very low safety significance because the fire pump battery performance and reliability is minimally affected since the batteries were replaced every two years, and the required capacity of the batteries is approximately 60 percent of a newly installed battery.

Inspection Report# : [2006002](#) (*pdf*)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN ADVERSE TREND OF CONTAMINATED OIL SAMPLES

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the failure to correct an adverse trend of contaminated oil samples in a timely manner. Specifically, on April 1, 2005, the licensee identified an increasing trend of incorrect lubricant oil additions and contaminated oil samples and entered the deficiency in their corrective action program. As of January 2006, the inspectors concluded that the corrective actions taken as a result of the identified oil control deficiency were untimely, in that, 9 months later the frequency of new instances of oil control problems documented in the corrective action program remained unchanged. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2785915 for resolution.

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 reliability and availability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because it only affected the mitigating systems cornerstone and did not result in the loss-of-safety function of a single train or system. The cause of the finding is related to the cross-cutting element of problem identification and resolution, in that, poor work practices resulted in multiple oil contamination events and the corrective actions taken were ineffective in promptly correcting the condition. (Section 40A2e(2)(ii))

Inspection Report# : [2006008](#) (*pdf*)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET MAINTENANCE TEST REQUIREMENTS

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified for failure to perform required testing of the Unit 3 essential cooling water system Pump EWP01 breaker in accordance with requirements and

acceptance limits. Pump EWP01 breaker test procedure established tolerances and acceptance criteria for the breaker sub-component clearances that were documented as not being met. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2865792 for resolution.

This finding was more than minor since it affected 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. The failure to meet recommended tolerances and acceptance limits specified was similar to Manual Chapter 0612, Appendix E, more than minor example 2.c., in that, the issue was repetitive and affected multiple breakers tested. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition was a qualification deficiency confirmed not to result in loss of function. The cause of the finding is related to the cross-cutting element of human performance in that maintenance personnel failed to properly implement maintenance procedures, and the deficient conditions were not identified by supervisory review of the completed procedures. (Section 40A2e(2)(iii))

Inspection Report# : [2006008](#) (*pdf*)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY AND CORRECT AN ADVERSE CONDITION ASSOCIATED WITH THE BOP-ESFAS SEQUENCER

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for failure to identify and correct the adverse impact of auto-testing on safety-related relays. Specifically, for approximately 100 days, between May 5 and July 14, 2004, and again between May 2 and June 3, 2005, the Unit 1 "A" Balance Of Plant Engineered Safety Feature Actuation System sequencer was placed in continuous auto-test, resulting in degradation of the associated relays. Approximately 3 months later, on October 10, 2005, during testing, the sequencer failed to shed one of the loads as required. The long-term continuous auto-testing was determined to be the most likely cause of the relay failure. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2865792 for resolution.

The finding is greater 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 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 loss of safety function of any component, train, or system. The cause of the finding is related to the cross-cutting element of problem identification and resolution in that the licensee failed to adequately evaluate and correct a condition adverse to quality. (Section 40A2e(2)(iv))

Inspection Report# : [2006008](#) (*pdf*)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY A MAINTENANCE RULE FUNCTIONAL FAILURE

A noncited violation of 10 CFR 50.65(a)(2) was identified for the failure to demonstrate that the performance or condition of the low pressure safety injection/shutdown cooling Pump 2A was adequate. Specifically, in May 2005, the licensee failed to accurately account for 15 hours of unavailability time for the low pressure safety injection/shutdown cooling Pump 2A, which when re-evaluated, exceeded the performance trigger to enter (a)(1) monitoring. The licensee entered this deficiency into their corrective action program as Condition Report Disposition Request 2865315 for resolution.

The finding is more than minor because it affects the equipment performance attribute of the mitigating systems cornerstone objective to maintain availability and reliability of structures systems and components needed to respond to initiating events and had a credible impact on safety. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because there was no design deficiency and the low pressure safety injection/shutdown cooling Pump 2A failure did not exceed the allowed technical specification outage time. The cause of the finding is related to the cross-cutting element of human performance in that the

initial evaluation and subsequent supervisory reviews failed to identify the need for additional monitoring of the low pressure safety injection/shutdown cooling Pump 2A. (Section 4OA2e(2)(v))

Inspection Report# : [2006008](#) (*pdf*)

Significance: N/A Feb 03, 2006

Identified By: NRC

Item Type: FIN Finding

PERFORMANCE DECLINE IN PROBLEM IDENTIFICATION AND RESOLUTION

The inspectors reviewed approximately 175 condition reports, 65 work orders, associated root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. Overall, performance declined when compared to the previous problem identification and resolution assessment. Significant delays in evaluation of the significance of an identified problem, as well as identification of appropriate corrective actions, resulted in large corrective action backlogs, some repeat events, and examples of continued noncompliance. The delays in completion of corrective actions continued to result in a significant number of self-disclosing and NRC-identified violations and findings. While the licensee initiated actions to address the substantive cross-cutting issues in human performance and problem identification and resolution, the majority of the corrective actions were not complete and some of the initial completed actions were not effective. Also, competing priorities between resources and the backlog of corrective actions created a condition where many corrective actions were significantly delayed in their completion, contributing to failures to adequately implement the corrective action process.

The team concluded that while a safety-conscious work environment exists at your facility, isolated concerns were raised by your staff during the interviews. These concerns were associated with not having sufficient personnel to accomplish long-term improvements, a loss of trust that management would not subject the staff to negative consequences for raising issues, some confusion about when to place an adverse condition into your corrective action program, and a decrease in confidence that the corrective action program will adequately address problems. (Section 4OA2).

Inspection Report# : [2006008](#) (*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)

Barrier Integrity

Emergency Preparedness

Significance:  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO TRAIN EMERGENCY RESPONSE PERSONNEL

The inspector identified a noncited violation of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, IV(F)(1), for the failure to provide requalification training during 2005 to Arizona Public Service Corporate Public Information personnel as required by Procedure EPIP 59, "Emergency Planning Training Program Description." This failure resulted in none of the Corporate Spokespersons receiving requalification training, which could have impaired their ability to effectively communicate emergency information to the public.

This finding is greater than minor because it (1) had a credible impact on the Emergency Preparedness cornerstone objective, (2) involved the ability to implement adequate measures to protect the health and safety of the public during an emergency, and (3) impacted the cornerstone attributes of Emergency Response Organization readiness and performance. The finding is of very low safety significance because the Corporate Spokesperson is not a key emergency responder as defined by NEI 99-02, "Regulatory Assessment Indicator Guideline," and the untrained personnel would be relied upon to perform their response function during an emergency. This finding is a noncited violation of 10 CFR 50.47(b)(15). The licensee has entered this issue into their corrective action system as Condition Report Disposition Request 2863948. This finding has crosscutting aspects related to problem identification and resolution because if the licensee had properly evaluated Condition Report Disposition Request 2667913 the problems with the content and documentation of annual briefings conducted by the APS Corporate Public Information Department could have been identified and resolved prior to January 2006.

Inspection Report# : [2006002](#) (pdf)

Significance: N/A Mar 28, 2006

Identified By: NRC

Item Type: FIN Finding

Emergency Preparedness Assessment

The inspectors assessed the licensee's evaluation associated with the change to radiological emergency action levels, which decreased the effectiveness of the emergency plan. This performance deficiency was previously characterized as a Severity Level III violation of 10 CFR 50.54(q) in NRC Inspection Report 05000528,529,530/2005011. The inspectors determined that the licensee satisfactorily evaluated the Severity Level-III violation. The licensee's evaluation identified two root causes of the performance deficiency: (1) failure to ensure adequate radiation protection expertise review of the emergency action levels changes that were made to Procedure EPIP-99, "Standard Appendices," Revision 2, because of inadequate radiation protection expertise within the emergency planning organization and failure to conduct a required cross-organizational review, and (2) failure of management to address knowledge and ability challenges within the emergency planning organization resulting from attrition of health physics/radiation protection experienced personnel, inadequate training on procedure change requirements, and inadequate management of workload. The inspectors concluded that the licensee's evaluation and implemented corrective actions were appropriate to reasonably prevent recurrence of the 10 CFR 50.54(q) violation.

Given the licensee's acceptable performance in addressing the performance deficiency, the Severity Level III violation is closed.

Inspection Report# : [2006008](#) (*pdf*)

Occupational Radiation Safety

Significance:  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW RADIATION EXPOSURE PERMIT INSTRUCTIONS

The inspector reviewed a self-revealing, noncited violation of Technical Specification 5.4.1.a, resulting from two radiation workers' failure to follow radiation exposure permit instructions. On November 22, 2005, two radiation workers, without notifying radiation protection staff, used a pneumatic grinder with a wire wheel inside of the Unit-1 Steam Generator No. 2 cold leg pipe. As a result of the wire wheel grinding, both workers were contaminated. Radiation protection staff members were not made aware of the contamination event until the workers alarmed the PM-7 portal monitor upon attempting egress from the 140-foot radiological controlled area. One worker received unplanned and unintended internal dose of 6 millirem. The other worker did not receive an internal dose. As corrective action, the licensee counseled the two workers and their supervision, and informed the contractor's management.

The finding was greater than minor because it was associated with one of the cornerstone attributes (exposure control) and the finding affected the occupational radiation safety cornerstone objective, in that a failure to follow radiation exposure permit instructions resulted in additional radiation dose. The inspector determined that the finding had no more than very low safety significance because: (1) it did not involve an ALARA finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise the licensee's ability to assess dose. The finding also had crosscutting aspects related to human performance, in that, radiation workers failed to follow the radiation exposure permit instructions, which directly resulted in the finding.

Inspection Report# : [2006002](#) (*pdf*)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : March 01, 2007