UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4125

November 12, 2008

Randall K. Edington,
Executive Vice President, Nuclear
and Chief Nuclear Officer
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Arizona Public Service Company
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SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000528/2008004, 05000529/2008004, AND 05000530/2008004

Dear Mr. Edington:

On September 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at Palo Verde Nuclear Generating Station. The enclosed integrated report documents the inspection findings, which were discussed on October 15, 2008, with you and other members of your staff.

Additionally, on September 18, 2008, the U.S. NRC also completed a team Confirmatory Action Letter inspection at your Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility. The inspections examined activities related to the NRC Confirmatory Action Letter, dated February 15, 2008, and the Site Integrated Improvement Plan, dated December 31, 2007. The enclosed inspection report documents the inspection results associated with the Confirmatory Action Letter inspection, which were discussed on September 18, 2008, with you and other members of your staff during an exit meeting and on September 30, 2008 during a public meeting.

The inspections examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

During this inspection period the NRC completed assessing your actions associated with a White finding opened in the fourth quarter of 2006 involving the failure of the Unit 3, Train A Emergency Diesel Generator K-1 relay. Detailed observations, assessments, and conclusions of the inspection are presented in the enclosed inspection report. These inspections concluded that the root causes of the finding were adequately defined and understood, and the corrective actions resulting from the evaluations appropriately addressed the identified causes and extent of condition. Based on our inspection results the NRC considers the White finding closed. Additionally, the NRC completed reviewing all associated tasks for two of the twelve Confirmatory Action Letter key performance areas documented in the February 15, 2008 "Revised Palo Verde Nuclear Generating Station Confirmatory Action Letter,"

(ADAMS ML080460653). Specifically, reviews were completed for Key Performance Areas 2 and 11. Area 2 pertained to the root and contributing causes and associated corrective actions related to the emergency diesel generator White finding. Area 11 involved actions related to address potential latent and longstanding issues associated with equipment deficiencies. Based on our inspection results we consider these two key performance areas closed. The closure of these two Confirmatory Action Letter key performance areas and the White finding are discussed in more detail in Section 4OA5 of this report.

As discussed during the September 30, 2008, public meeting the NRC has noted that Palo Verde Nuclear Generating Station has made progress in addressing the performance areas that contributed to the placement of Palo Verde Nuclear Generating Station, Unit 3, into the multiple repetitive degraded cornerstone column of the Inspection Manual Chapter (IMC) 0305 Action Matrix. Performance improvement at the facility has been observed in the areas of operations, engineering, and the processes to improve equipment reliability. It is important these improvements are sustained. The NRC plans to perform team inspections in December of 2008 and February of 2009 to complete the review of the remainder of the Confirmatory Action Letter Key Performance Areas. Pending the completion of NRC inspections and closure of all twelve Confirmatory Action Letter Key Performance Areas, Palo Verde Nuclear Generating Station will remain in Column IV of the NRC Action Matrix.

This report documents four NRC identified findings of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. Due to the very low safety significance of these violations and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these noncited violations, you should a provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission Region IV, 612 E. Lamar Boulevard, Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility.

The NRC recognizes that performance at Palo Verde Nuclear Generating Station has improved, based on the results of our inspections and our continued close observation of daily plant activities. However, as reflected in the four findings of very low safety significance described in this report, challenges remain in the implementation of processes and procedures to ensure that deficiencies and non-conforming conditions are consistently identified and thoroughly evaluated by your staff.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection

in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Anton Vegel, Deputy Director
Division of Reactor Projects

Docket Nos. 50-528
50-529
50-530

License Nos. NPF-41
NPF-51
NPF-74

Enclosure: NRC Inspection Report 05000528/2008004, 05000529/2008004, and 05000530/2008004

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SUNSI Review Completed:___MCH____ADAMS: ☑ Yes □ No Initials: __MCH__
☑ Publicly Available □ Non-Publicly Available □ Sensitive ☑ Non-Sensitive

R:_REACTORS_PV\2008\PV2008-004RP-RIT.doc ML 083171027

RIV:RI:DRP/D	RI:DRP/D	RI:DRP/D	SRI:DRP/D	SPE:DRP/D	SPE:DRP/D
JBashore	MCatts	JFMelfi	RITreadway	DAllen	DProulx
/RA/-T	**/RA/-T**	**/RA/-T**	**/RA/-T**	**/RA/-T**	**/RA/**
11/05/08	11/05/08	11/05/08	11/05/08	11/05/08	10/30/08
C:DRS/EB1	C:DRS/PSB2	C:DRS/PSB1	C:DRS/EB2	C:DRS/OB	C:DRP/D
WSifre	GWerner	MShannon	NOKeefe	RLantz	MHay
/RA/	**/RA/**	**/RA/**	**/RA/**	**/RA/**	**/RA/**
10/30/08	11/04/08	11/04/08	10/31/08	11/04/08	11/12/08

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets: 50-528, 50-529, 50-530

Licenses: NPF-41, NPF-51, NPF-74

Report: 05000528/2008004, 05000529/2008004, 05000530/2008004

Licensee: Arizona Public Service Company

Facility: Palo Verde Nuclear Generating Station, Units 1, 2, and 3

Location: 5951 S. Wintersburg Road
Tonopah, Arizona

Dates: July 1 through September 30, 2008

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M. Catts, Resident Inspector
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Approved By: Michael C. Hay, Chief, Project Branch D
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000528/2008004, 05000529/2008004, 05000530/2008004; 07/01/08 - 09/30/08; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Integrated Resident and Regional Report; Equip. Align.; Maint. Risk Assess. & Emerg. Work Control; Operability Evals.

This report covered a 3-month period of inspection by resident inspectors and regional inspectors. Four Green findings, all of which were noncited violations (NCV) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of engineering personnel to establish adequate procedures to ensure evaluation and approval of transient missile structure hazards that have an effect on the operability of the essential spray ponds. Specifically, since January 15, 1997, civil engineering personnel failed to develop an adequate procedure to verify missile density criteria are not exceeded to ensure operability of the essential spray ponds during severe weather. This resulted in approximately 40 transient missile hazards being placed around Unit 1 spray Pond A without an approval or evaluation to ensure continued operability of the essential spray ponds. The licensee determined the spray pond was operable following a walkdown and evaluation of the missile hazards. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3224028.

  The finding is greater than minor because it is associated with the external factors attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because appropriate corrective actions were not taken to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)] (Section 1R13).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations and chemistry personnel to follow the corrective action program to ensure that potentially nonconforming conditions associated with the essential spray pond system were reviewed for operability. Specifically, between July 10, 2008, and July 11, 2008, operations and chemistry personnel failed to ensure all relevant information was reviewed for operability when the Unit 2 essential spray Pond A hypochlorite addition Valve 2-SPN-V494 was found open. This resulted in the essential spray pond chemistry pH and chlorine samples being delayed to the extent that the sample results were not reliable to assess operability. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3206115.

  The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with decision-making because safety-significant decisions were not verified to validate underlying assumptions and identify unintended consequences [H.1(b)] (Section 1R15).

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

  The performance deficiency associated with this finding involved the failure of maintenance personnel to correct a condition adverse to quality in a timely manner. The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding required a Phase 3 analysis by a senior reactor analyst, since the finding is potentially risk significant due to external initiating event core damage sequences. Based on the analysis performed, the analyst concluded that the finding had very low safety significance (Green) because of the very small probability of a large rainfall event and a loss of coolant accident occurring at the same time. This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance (Section 1R15).

Cornerstone: Barrier Integrity

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

  The performance deficiency associated with this finding was the failure of engineering and maintenance personnel to implement a program to verify integrated leak test requirements for abandoned valves still connected to an active system. The finding is greater than minor because it is associated with the design control and procedural quality attribute associated with maintaining radiological barrier functionality for the auxiliary building of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that the physical design barriers protect the public from radio nuclide releases caused by accidents or events. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it only represented a degradation of the radiological barrier function of the auxiliary building. This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance (Section 1R04).

B. Licensee-Identified Violations

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at full power until September 27, 2008, when the unit commenced a downpower to 53 percent power, and then stabilized at 60 percent power, to repair main feedwater Pump A. The unit was returned to full power on September 28, 2008, and remained at full power for the duration of the inspection period.

Unit 2 operated at essentially full power for the entire inspection period.

Unit 3 operated at full power until September 16, 2008, when the unit was shutdown to repair the control element assembly mechanism motor generator sets. The unit was returned to full power on September 22, 2008. On September 27, 2008, a downpower to less than 5 percent was commenced due to high sulfates in both steam generators. During the downpower, high vibrations on the main turbine caused an automatic main turbine trip, and subsequent reactor shutdown. The sulfates were removed and chemistry was restored to normal for both steam generators. The unit commenced a reactor startup on September 29, 2008, and returned to full power on October 2, 2008.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On August 7, 2008, the inspectors completed a review of the licensee's readiness for impending adverse weather involving severe thunderstorm and high wind conditions. Following the observation of severe weather approaching the site, the inspectors proceeded to the Unit 1 control room. Inspectors verified operations personnel appropriately reviewed the abnormal operating procedure entry conditions and compared actual weather conditions to the entry requirements. The inspectors also verified that all maintenance activities were reviewed for emergent plant risk and restoration, and appropriate protected area announcements were made to advise site personnel to take shelter.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one adverse weather protection sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdowns

a. Inspection Scope

The inspectors: (1) walked down portions of the four below listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's Updated Final Safety Analysis Report (UFSAR) and corrective action program to ensure problems were being identified and corrected.

- July 20, 2008, Unit 3, Low pressure safety injection system Train B and containment spray system Train B
- July 21, 2008, Unit 2, Containment spray system Train B
- July 24, 2008, Unit 1, Low pressure safety injection system Train B
- July 24, 2008, Unit 2, 480 Vac electrical distribution system

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of four partial system walkdown samples as defined by Inspection Procedure 71111.04-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation (NCV) of Technical Specification 5.5.2.b, "Primary Coolant Sources Outside Containment," for the failure of engineering and maintenance personnel to implement a program to verify integrated leak test requirements. Specifically, between January 8, 1993, and September 30, 2008, the licensee did not include abandoned valves and associated piping, which could be in contact with radioactive fluids outside containment, into an integrated leak test required for the containment spray system.

Description. During a routine walkdown of the containment spray pumps, the inspectors noticed several valves associated with an abandoned spray chemical addition system that were still connected to the suction piping of the containment spray pumps. The spray chemical addition system was originally part of the iodine removal system, and was used in conjunction with the containment spray pumps to remove iodine from containment following an accident. On October 23, 1992, this system was removed from Technical Specifications by Amendments 64, 50, and 37 for Units 1, 2, and 3, respectively. The licensee now uses trisodium phosphate baskets located in containment to scavenge for iodine following an accident.

The licensee initiated limited design change Package 13LE-SI-202 to remove the spray chemical supply lines from the containment spray system for all three units. Once the licensee implemented this design change and removed the spray chemical system from service, the spray chemical supply line was cut and cap welded on both ends. The spray chemical portion of the system that remained connected to the suction of the containment spray system contained several valves and piping. From the containment

spray suction line, these valves were check Valves SIA-V130 and SIB-V140, de-energized and closed solenoid operated globe Valves SIA-V681 and SIB-V680, and vent Valves SIA-V253 and SIB-V254. The licensee's review of this design change did not consider the valve leak test requirements of Technical Specification 5.5.2.b.

During their review, the inspectors noted that Technical Specification 5.5.2 implemented the Three Mile Island Action Item 18.III.D.1.1, which required keeping leakage from systems outside containment that could contain highly radioactive fluids to as low as practical. Technical Specification 5.5.2.b required Palo Verde Nuclear Generating Station to have a program to perform integrated leak testing of each system, including containment spray, at refueling cycle intervals, or less. The licensee credited Procedure 40ST-9SI09, "ECCS Systems Leak Test," Revision 36, to meet Technical Specifications.

The inspectors questioned how the requirements of Technical Specification 5.5.2.b were being met for the spray chemical valves. The inspectors questioned the current requirements for these spray chemical valves, including ASME code for operation and maintenance testing requirements. The inspectors determined that check Valves SIA-V130 and SIB-V140 were an interface between the containment spray system and the abandoned spray chemical addition system. The licensee determined that these check valves did not have a required safety function to be closed, since the downstream lines were welded shut. The inspectors also noted that the licensee did not perform an ASME code in-service test on these check valves to verify that these valves were closed and not leaking through.

The inspectors concluded that, since the check valves were not being tested for leakage, a leakage path through these check valves could exist, and other valves connected to the containment spray suction could be in contact with radioactive fluids. The inspectors determined Procedure 40ST-9SI09 did not contain requirements to monitor leakage from Valves SIA-V681, SIB-V680, SIA-V253, and SIB-V254, in accordance with Technical Specification 5.5.2.b. The licensee wrote Condition Report/Disposition Request (CRDR) 214680 and revised Procedure 40ST-9SI09 to verify integrated leak test requirements for these valves.

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

Enforcement. Palo Verde Nuclear Generating Station Technical Specification 5.5.2 states, in part, that the licensee have controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious

transient or accident to as low as practicable. Palo Verde Nuclear Generating Station Technical Specification 5.5.2.b states, in part, that the licensee have a program that includes integrated leak test requirements for each system at refueling cycle intervals or less. The licensee credited Procedure 40ST-9SI09, "ECCS Systems Leak Test," Revision 36, to meet these Technical Specifications. Contrary to the above, between January 8, 1993, and September 30, 2008, Procedure 40ST-9SI09 did not include Valves SIA-V681, SIB-V680, SIA-V253, and SIB-V254 into an integrated leak test requirement. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as CRDR 3214680, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2008004-01, Inadequate Procedural Requirements to Implement Technical Specification 5.5.2.b.

.2 Complete Walkdown

a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, Technical Specifications, and vendor manuals to determine the correct alignment of the of the 4160 Vac electrical distribution system for Unit 1; (2) reviewed outstanding design issues, operator work arounds, and corrective action program documents to determine if open issues affected the functionality of the 4160 Vac electrical distribution system; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

- August 8, 2008, Unit 1, class 1E 4160 Vac electrical distribution Train B

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one complete system walkdown samples as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors walked down the six below listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors,

fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the UFSAR to determine if the licensee identified and corrected fire protection problems.

- July 9, 2008, Unit 2, fuel building, 100 foot, 120 foot, and 140 foot elevations
- July 15, 2008, Unit 1, control building, 74 foot, 100 foot, 120 foot, 140 foot, and 160 foot elevations
- July 31, 2008, Unit 1, fire pump house
- July 31, 2008, Unit 1, auxiliary building, 40 foot, 52 foot, 70 foot, and 88 foot elevations
- August 1, 2008, Unit 1, fuel building, 100 foot, 120 foot, and 140 foot elevations
- August 5, 2008, Unit 2, emergency diesel generator building, 100 foot, 115 foot, and 131 foot elevations

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of six quarterly fire-protection inspection samples as defined by Inspection Procedure 71111.05-05.

b. Findings

Introduction. The inspectors identified an unresolved item (URI) associated with License NPF-51, Condition 2.C. (7) for the failure of engineering and maintenance personnel to periodically inspect or test fire penetration seals at regular intervals.

Description. The licensee performed inspections of all penetrations and barriers in response to Information Notice 2007-01, "Recent Operating Experience Concerning Hydrostatic Barriers," to verify adequate internal flood protection for safety-related equipment. The inspectors reviewed Information Notice 2007-01 in February 2007, and determined that engineering personnel credited fire protection inspection Procedure 14FT-9FP70, "Appendix R & Former Technical Specification Penetration Seal Surveillance," Revision 7, for flood inspections even though the acceptance criteria for fire protection allows small gaps in seals while flood protection does not. During the penetration and barrier inspections, the licensee found 19 seals that were nonfunctional for both flood and fire functions. The inspectors reviewed Technical Requirements Manual, Section 3.11.107, which stated, in part, required fire-related assemblies and penetration seals will be inspected every 15 years. Procedure 14FT-9FP70 stated the Appendix R and Former Technical Specification penetration seals shall be sampled such that all of the seals are tested every 15 years. Inspectors questioned why the licensee was finding nonfunctional fire seals when they currently had a program and procedure in place to periodically inspect the fire seals. The licensee could not verify that these seals had been inspected within the past 15 years and wrote Palo Verde Action Request (PVAR) 3221773 to determine the date they were last inspected. The licensee has inspected 96 percent of seals in Units 1 and 2, to ensure the fire and flood protection

functions can be met. The licensee plans to inspect the additional seals in Units 1 and 2, and all of the seals in Unit 3 by the end of October 2008. This URI is being opened to determine the extent of nonfunctional fire penetration seals at Palo Verde Nuclear Generating Station and the potential aggregate effect of more than one seal penetration failure: URI 05000528;529;530/2008004-02, Potentially Degraded Fire Penetration Seals.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors: (1) reviewed the UFSAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; (2) reviewed the UFSAR and corrective action program to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and (d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the below listed areas to verify the adequacy of: (a) equipment seals located below the floodline, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers; and (6) incorporated NRC Operating Experience Smart Sample, FY 2007-02, "Flooding Vulnerabilities Due to Inadequate Design and Conduit/Hydrostatic Seal Barrier Concerns."

- July 10, 2008, Units 1, 2, and 3, auxiliary buildings, 70 foot, 100 foot, 120 foot, and 140 foot elevations;

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one flood protection measures inspection sample as defined by Inspection Procedure 71111.06-05.

b. Findings

Introduction. The inspectors identified a URI associated with 10 CFR Part 50, Criterion XVI, "Corrective Action," for failure of operations and engineering personnel to promptly identify and correct a condition adverse to quality involving internal flood protection for safety-related equipment.

Description. The inspectors reviewed Information Notice 2007-01, "Recent Operating Experience Concerning Hydrostatic Barriers," and its applicability to Palo Verde. The review was performed to verify that recent operating experience involving degraded foam penetration seals was evaluated to ensure adequate internal flood protection for safety-related equipment. The licensee's review of Information Notice 2007-01, in February 2007, determined that the penetration seal material discussed in Information Notice 2007-01 was similar to the material used at Palo Verde, that the seals are not periodically inspected for degradation, and that Palo Verde has previously had unsealed conduits allow flooding into safety-related areas. Inspectors determined that the licensee credited their fire protection inspection Procedure 14FT-9FP70, "Appendix R and Former Technical Specification Penetration Seal Surveillance," Revision 7, for flood

inspections even though the acceptance criteria for fire protection allowed small gaps in seals while flood protection did not. In December 2007, when the inspectors reviewed Information Notice 2007-01, the inspectors questioned what actions had been taken to ensure there were no degraded or nonconforming hydrostatic seals in the plant. The inspectors determined that maintenance and engineering personnel had not taken corrective action to inspect the penetration seals and to monitor the seals in accordance with the maintenance rule program, even after reviewing Information Notice 2007-01 in February 2007. After reviewing the fire inspection Procedure 14FT-9FP70, flood design calculations, and the maintenance rule scoping document Procedure 81DP-0ZZ01, "Civil System, Structure, and Component Monitoring Program," Revision 13, the inspectors determined that the licensee was not verifying the adequacy of design of their hydrostatic seals in accordance with these documents. After discussion with the inspectors, the licensee developed acceptance criteria to inspect the barriers, and began inspecting all of the approximately 1,500 seals located in Units 1, 2, and 3 in July 2008. The licensee has inspected 96 percent of seals in Units 1 and 2, and has declared 19 hydrostatic seals nonfunctional. The licensee plans to inspect the additional seals in Units 1 and 2, and all of the seals in Unit 3 by the end of October 2008. This unresolved issue is being opened to determine the extent of degraded flood penetration seals at Palo Verde and the potential aggregate effect of more than one seal penetration failure: URI 05000528;529;530/2008004-03, Potentially Degraded Flood Penetration Seals.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

.1 Quarterly Inspection

On July 11, 2008, the inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training Scenario NLR08-S0402 00 involved four events including: (1) loss of a main feed water pump; (2) failure of a steam generator differential pressure transmitter; (3) loss of Class 1E Inverter PNB-D26; and (4) loss of Class 1E 4160 Vac Bus PBA-S03.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

.2 Biennial Inspection

The licensed operator requalification program involved two training cycles that were conducted over a 2-year period. In the first cycle, the annual cycle, the operators were administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators were administered an operating test and a comprehensive written examination. The biennial testing cycle ended on September 26, 2008. The inspectors reviewed the results of the biennial cycle for Units 1, 2, and 3.

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors interviewed six licensee personnel, consisting of three senior reactor operators, two reactor operators and a training supervisor, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included six job performance measures and four scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content. The inspectors also reviewed medical records of six licensed operators for conformance to license conditions, and the licensee's system for tracking qualifications and records of license reactivation for 17 operators.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors", Revision 9, Supplement 1, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity, and existing logs of simulator deficiencies.

On September 29, 2008, the licensee informed the lead inspector that 86 of 91 reactor operators and senior reactor operators passed the biennial written examination. The individuals that failed were remediated, retested, and passed their retake examinations. On the simulator portion of the examination, 18 out of 19 crews examined on the simulator passed.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute one biennial licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the four below listed maintenance activities to: (1) verify the appropriate handling of structures, systems, and components performance or condition problems; (2) verify the appropriate handling of degraded structures, systems, and components functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of structures, systems, and components issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and the Technical Specifications.

- July 20, 2008, Unit 2, Safety injection Tank 1B nitrogen leak as documented in PVAR 3200624
- July 24, 2008, Unit 2, Containment spray pump Train A upper motor sight glass had black particulates as documented in PVAR 3202733
- August 1, 2008, Unit 1, Flood penetration seals 1AZYD379*007*SEALXX nonfunctional as documented in PVAR 3206120
- August 21, 2008, Unit 3, Emergency diesel generator Train A fuel transfer pump inoperable as documented in PVAR 3192088

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of four quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

Risk Assessment and Management of Risk

The inspectors reviewed the two below listed assessment activities to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) the licensee-identified and corrected problems related to maintenance risk assessments.

- July 17, 2008, Unit 2, Containment spray pump Train B out of service due to planned maintenance
- August 4, 2008, Unit 1, Control element assembly operability checks

Documents reviewed by the inspectors are listed in the attachment.

Emergent Work Control

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the UFSAR to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- August 3-4, 2008, Unit 2, High pressure safety injection long-term cooling Valve SIC-UV-321 declared inoperable
- August 13, 2008, Unit 1, Effect of sidewalk maintenance barriers on the essential spray pond missile risk analysis
- August 15, 2008, Unit 1, Main generator bushing stator cooling water low flow

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of five maintenance risk assessments and emergent work control inspection samples as defined by Inspection Procedure 71111.13-05.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to establish adequate procedures to ensure evaluation and approval of transient missile structure hazards that have an effect on the operability of the essential spray ponds.

Description. On July 11, 2008, inspectors were performing walkdowns of the Unit 1 essential spray ponds and observed construction on the sidewalks around the essential spray ponds. Approximately 40 orange flashing stanchions were placed within 400 feet of the essential spray ponds to warn personnel of the sidewalk construction.

To protect the essential spray ponds from missile hazards during severe weather, the number of missile hazards was limited and tracked to ensure operability of the essential spray ponds. The inspectors questioned civil engineering personnel to determine if these stanchions had been evaluated as transient missile hazards in accordance with Procedure 81DP-0ZY01, "Control of Potential Tornado Borne Missiles in the Outside Areas," Revision 3, Section 3.4.3. Civil engineering personnel were not aware of the sidewalk work and had not evaluated or approved the transient missile hazards associated with the sidewalk work.

During their review, the inspectors noted that UFSAR, Section 3.5.1.4, "Missiles Generated by Natural Phenomena (Tornados)," stated, in part, that tornado missile

protection was not provided for the essential spray pond nozzles because the probability of loss of the ultimate heat sink safety function had been demonstrated by probabilistic risk assessment to be less than a median value of 10^{-7} per reactor year or a mean value of 10^{-6} per reactor year without missile protection. The licensee ensured the probabilistic risk assessment numbers provided in UFSAR Section 3.5.1.4 were satisfied by giving recommended missile densities in Calculation 13-NC-SP-201, "Spray Pond Tornado Missile Damage Frequency," Revision 3. To ensure the missile densities given in Calculation 13-NC-SP-201 were not exceeded, civil engineering personnel implemented quarterly walkdowns of essential spray ponds, and relied on Procedure 81DP-0ZY01 to control transient missile hazards.

The inspectors reviewed Procedure 81DP-0ZY01, which had been in effect since January 15, 1997, and determined it did not give adequate guidance to ensure transient missiles were controlled, evaluated, and approved for use around the essential spray ponds. Procedure 81DP-0ZY01, Step 3.4.3, required work groups to control transient missile hazards. Appendix E stated, in part, that the missile density criteria shall be applied by the appropriate work groups who need to stage equipment and materials around the essential spray ponds. However, the procedure did not give instruction on how many transient missiles could be used, or required evaluation and approval of transient missiles to ensure the probabilistic risk assessment from Calculation 13-NC-SP-201 was not exceeded. Also, Procedure 30DP-9WP02, "Maintenance Work Order Process and Control," Revision 55, did not address potential missile hazards when developing maintenance work packages. Maintenance personnel did not address the missile hazards in the sidewalk work package, Work Order 3144878, and civil engineering did not walkdown the area to ensure the criteria given in Calculation 13-NC-SP-201 were met.

After these questions from the inspectors, the licensee walked down the Unit 1 essential spray Pond A, recalculated the missile hazard density, and determined essential spray Pond A was operable since it met the missile density criteria of Calculation 13-NC-SP-201. The licensee also wrote PVAR 3220653 to address the inadequate procedural guidance for evaluating and approving transient essential spray pond missile hazards.

During the 95003 inspection conducted in October of 2007, the inspectors noted the licensee received an NCV for the failure to perform an operability determination for a similar unanalyzed condition associated with the spray pond. The corrective actions identified by the licensee for this NCV were to enhance Procedure 81DP-0ZY01 to include guidance for engineering personnel to ensure the spray pond was evaluated when maintenance activities involving potential missile hazards occurs. For additional information on this previously identified NCV, please reference Inspection Report 2007012 (ADAMS ML080320562).

Analysis. The performance deficiency associated with this finding was the failure of engineering personnel to establish adequate maintenance procedures to ensure evaluation and approval of transient missile structure hazards that have an effect on the operability of the essential spray ponds. The finding is greater than minor because it is associated with the external factors attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance because the finding did not result in a

loss of system safety function, an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because appropriate corrective actions were not taken to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1(d)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, and shall be accomplished in accordance with those instructions, procedures, and drawings. UFSAR, Section 3.5.1.4, "Missiles Generated by Natural Phenomena (Tornados)," provided probabilistic risk assessment criteria to ensure essential spray pond operability. Calculation 13-NC-SP-201 provided missile density requirements to ensure the probabilistic risk assessment numbers in UFSAR, Section 3.5.1.4 are met. Procedure 81DP-0ZY01 implemented the control of transient missile hazards to ensure the missile density requirements of Calculation 13-NC-SP-201 are met. Procedure 81DP-0ZY01, Section 3.4.3, also required work groups to control missile hazards. Contrary to the above, since January 15, 1997, engineering personnel failed to establish adequate procedures to ensure evaluation and approval of transient missile structure hazards that have an effect on the operability of the essential spray ponds. Specifically, civil engineering personnel failed to develop an adequate procedure to verify missile density criteria were not exceeded to ensure operability of the essential spray ponds during severe weather. This resulted in approximately 40 transient missile hazards being placed around the Unit 1 essential spray Pond A without an approval or evaluation to ensure continued operability of the essential spray ponds. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PVAR 3220653, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000528/2008004-04, Failure to Provide an Adequate Procedure to Control Essential Spray Pond Missile Hazards.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and night orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- July 7, 2008, Unit 1, 2, and 3, Refueling water tank recirculation actuation system instruments operability determination for common mode failure during heavy rain conditions

- July 10, 2008, Unit 2, essential spray Pond A operability determination when hypochlorite Valve SPN-V494 was found open
- July 16, 2008, Unit 3, Emergency diesel generator Train A declared inoperable due to failure of the fuel oil transfer pump
- July 17, 2008, Units 1, 2, and 3, Emergency diesel generator Trains A and B operability determination for seismic qualification of field flash relays
- July 29, 2008, Unit 1, Main steam isolation Valve SGE-UV-180 operability determination for intermittent operation in the open direction
- July 31, 2008, Unit 2, Shutdown cooling suction Valve SIA-UV-651 Train A operability determination for cycling position indicator
- August 4, 2008, Unit 2, High pressure safety injection long-term cooling Valve IC-UV-321 Train C operability determination for open limit switch not set at proper position

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of seven operability evaluation inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

1. Failure to Properly Implement Corrective Action Process for Potential Operability Issues with the Essential Spray Pond System

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of operations and chemistry personnel to follow the corrective action program to ensure that potentially nonconforming conditions associated with the essential spray pond system were reviewed for operability.

Description. On July 10, 2008, at 8:30 p.m., operations personnel found Unit 2 essential spray Pond A hypochlorite addition manual Valve 2-SPN-V494 had been left open. Valve 2-SPN-V494 had been providing 10 gpm of sodium hypochlorite to essential spray Pond A for an indeterminate period of time since July 9, 2008. On July 11, 2008, at 12:36 a.m., chemistry personnel obtained local essential spray pond samples and found chlorine indicated approximately 30 ppm. Operations personnel determined the sample results may not be representative of actual chlorine levels since an essential spray pond pump was not running and the essential spray pond water was not being circulated. Previous readings, on July 10, gave chlorine levels of 1.5 ppm. Chemistry personnel recommended that operations personnel not run the essential spray pond pump to allow for maximum hypochlorite decay. Also, chemistry personnel did not take the actions to lower chlorine levels as recommended by Chlorine Action Level 4 for chlorine greater than 3 ppm as described in Procedure 74DP-9CY04, "Systems Chemistry Specification," Revision 55. Operations personnel documented these decisions in PVAR 3197571.

On July 11, 2008, the inspectors reviewed PVAR 3197571. The inspectors questioned the shift manager's decision that the operability determination process as described in Procedure 40DP-9OP26, "Operability Determination and Functional Assessment," Revision 21, was not applicable to essential spray Pond A. Since operations personnel did not run essential spray pond Pump A, and chemistry personnel did not take chemistry samples, operations did not know if the essential spray pond chemistry met the requirements of Procedure 74DP-9CY04, and if essential spray Pond A was still operable. Operations personnel did not fully understand that elevated chlorine causes elevated pH in the essential spray ponds. The essential spray ponds are required to have a pH between 7.4 and 8.0 to prevent a critical pH occurring, which causes short-term calcium phosphate precipitants. In 2006, calcium phosphate precipitants caused clogging of the safety-related emergency diesel generator heat exchangers as described in NRC Inspection Report 05000528; 05000529; 05000530/2006011. Inspectors expressed concern that a degraded or nonconforming condition to Procedure 74DP-9CY04 may exist since essential spray pond operability had not been assessed.

Procedure 01DP-0AP12, "Palo Verde Action Request Processing," Revision 8, Step 3.5, states, in part, that an evaluation shall be performed for PVARs that have been screened at the operations review step and determined that a control room review is warranted. During the inspectors review, it was noted that the condition described in the PVAR met this criteria, therefore, this issue was required to be evaluated by the shift manager for the assessment of a potential operability concerns for the essential spray pond.

After discussion with the inspectors, on July 11, 2008, operations and chemistry personnel assessed operability of essential spray Pond A in accordance with Procedure 40DP-9OP26; however, the chemistry pH and chlorine samples were delayed to the extent that the sample results were not reliable to assess operability. By the time operations personnel assessed operability, the chlorine levels had dropped back to within the 3 ppm specification. Due to changing essential spray pond conditions, chemistry personnel could not accurately calculate the pH and chlorine levels at the time the valve was left open, and could not definitively determine if essential spray Pond A was operable during that time.

Chemistry personnel wrote CRDR 3206115 to evaluate and correct the failure to perform an operability determination. To ensure essential spray pond chemistry control parameters remain within specification for essential spray pond operability, chemistry personnel were providing specific guidance for: (1) the potential operability impacts of increased chlorine levels, and (2) running the essential spray pond pumps so a representative sample is taken promptly in the event of any future abnormal chemistry occurrences.

Analysis. The performance deficiency associated with this finding was the failure of operations and chemistry personnel to follow the corrective action program to ensure that potentially nonconforming conditions associated with the essential spray pond system were reviewed for operability. The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did

not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with decision making because safety-significant decisions were not verified to validate underlying assumptions and identify possible unintended consequences [H.1(b)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, and shall be accomplished in accordance with those instructions, procedures, and drawings. Procedure 01DP-0AP12, "Palo Verde Action Request Processing," Revision 8, Step 3.5 stated, in part, that an evaluation shall be performed for PVARs that have been screened at the operations review step and determined that a control room review is warranted. Procedure 01DP-0AP12 also stated that the condition described in the PVAR shall be evaluated by the shift manager for the assessment of potential operability concerns. Contrary to the above, between July 10 and 11, 2008, operations and chemistry personnel failed to follow the corrective action program to ensure that potentially nonconforming conditions associated with the essential spray pond system were reviewed for operability. Specifically, operations and chemistry personnel failed to ensure all relevant information was reviewed for operability when the Unit 2 essential spray Pond A hypochlorite addition Valve 2-SPN-V494 was found open. This resulted in the essential spray pond chemistry pH and chlorine samples being delayed to the extent that the sample results were not reliable to assess operability. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as CRDR 3206115, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000529/2008004-05, Failure to Perform an Operability Determination for High Chlorine in the Essential Spray Pond.

2. Failure to Correct a Condition Adverse to Quality with the Refueling Water Tank Instruments in a Timely Manner

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of maintenance personnel to correct a deficiency associated with the refueling water tank instrument pit in a timely manner.

Description. While reviewing corrective action documents related to flood protection measures, the licensee noted that CRDR 2838845, dated October 19, 2005, which documented the licensee's corrective actions for an apparent cause evaluation, was closed but some corrective actions were not yet complete. The licensee documented this observation in PVAR 3156143 and assigned Condition Report Action Items (CRAI) 3174470 to track completion of the corrective actions.

The inspectors reviewed this issue and noted that CRDR 2838845 was initiated for an NRC violation that occurred in October 2005, and corrective actions were identified and detailed in several CRAIs. The NRC violation, in 2005, was for the failure of the licensee to correct a condition adverse to quality in a timely manner. Specifically, CRDR 2548036 was developed to correct a deficiency for the refueling water tank instrument pits for all three units in November 2002, but due to a personnel error, was inappropriately closed in August 2003, without performing any work. During their review, the inspectors also noted that CRDR 2838845 assigned an activity for an apparent

cause evaluation to identify the appropriate corrective actions necessary to correct the cause. One of the corrective actions identified was to ensure completion of the original work orders which were planned to modify the concrete berms surrounding the instrument pits and seal the openings of the pit covers.

The inspectors further reviewed the corrective action documents associated with the NRC violation in 2005 and observed that CRAI 2903631 was assigned to track completion of the work orders for the refueling water tank instrument pit associated with CRDR 2838845. CRAI 2903631 was developed and closed on June 16, 2006, the same day that CRDR 2838845 was closed. The inspectors also noted that while CRAI 2903631 was assigned to track completion of the work orders assigned to the refueling water tank instrument pit, the work orders were not complete at the time that CRAI 2903631 and subsequently CRDR 2838845 were closed. While the licensee identified in PVAR 3156143 that it had been 2 years since CRDR 2838845 was closed, with work still left to be complete, the inspectors noted that the licensee did not request an assignment to identify what deficiency caused this to occur.

Additionally, the inspectors noted that the initial NRC violation occurred because a CRDR was inappropriately closed without any work to correct the deficiency being performed. CRDR 2838845 assigned CRAI 2841041 to establish an action to prevent recurrence of this issue. Specifically, CRAI 2841041 implemented a change to Procedure 900DP-0IP10, "Condition Reporting," to ensure assignments for CRDRs could not be closed without first verifying work orders were appropriately closed out and work was completed first. The licensee also implemented a means within the Site Work Management System to ensure that the software program would not allow an individual to close a CRDR within the computer program when a work order assigned as a corrective action to the CRDR was still open. The inspectors identified that while this corrective action was established to prevent recurrence, this action was not complete for the work orders associated with CRDR 2838845 when it was closed on June 16, 2006.

The licensee completed the modification for the refueling water tank instrument pits for Unit 1 on July 2, 2008, and Unit 3 on June 18, 2008, and entered this issue into their corrective action program as PVAR 3194909.

Analysis. The performance deficiency associated with this finding involved the failure of maintenance personnel to correct a condition adverse to quality in a timely manner. The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability of systems that respond to initiating events. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding required a Phase 3 analysis by a senior reactor analyst since the finding is potentially risk significant due to external initiating event core damage sequences. A senior reactor analyst reviewed the finding for significance, and identified two sequences that could contribute to a change in the baseline core damage frequency:

(1) A large rainfall floods the instrument pit and renders all instruments nonfunctional. Then, during a potential 8-24 hour period before plant operators would detect and correct this situation, a loss of coolant accident occurs requiring the refueling water tank for injection. After depletion of the refueling water tank, a recirculation actuation signal would not be processed, requiring manual actions by operators to restore suction (from

the containment sump) to the emergency core cooling system pumps. If the manual actions failed, a core damage event could occur.

(2) A seismic event causes a breach of the nonseismic hold up tank as well as a stuck open power operated relief valve or safety relief valve, resulting in a loss of coolant accident. The water from the hold up tank floods the refueling water tank instrument pit and disables the instrumentation. The remainder of the sequence is as in (1) above.

The analyst considered the sequence described in paragraph (1) to be very unlikely because of the infrequency of large rainfall events at the plant site combined with a very small probability of an unrelated loss of coolant accident occurring at the same time. Likewise, the sequence described in paragraph (2) was considered to be very unlikely because of the low seismicity of the region and the fact that the ground contours would cause the water from the hold up tank to drain in the opposite direction of the refueling water tank instrument pit.

Based on this qualitative assessment, the analyst concluded that the finding had very low safety significance (Green). This finding was evaluated as not having a crosscutting aspect because the performance deficiency is not indicative of current performance.

Enforcement. Title 10 of the Code of Federal Regulation, Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Palo Verde Procedure 01DP-OAP10, "Corrective Action Program," Revision 32, stated, in part, that measures will be established to assure that conditions adverse to quality, such as failures, malfunctions, and deficiencies are promptly identified and corrected. Procedure 90DP-OIP10, Step 3.9, required, in part, that prior to closing a corrective action program document, the following conditions are met; no further actions are required and no owner's closure review is required, no restraining work mechanisms are assigned to it, and all restraining work mechanisms are closed. Contrary to this, on June 16, 2006, engineering personnel inadvertently closed a CRDR that assigned work orders to be completed to correct deficiencies associated with flooding of the refueling water tank instrument pit, which left these deficiencies uncorrected for Unit 1 and Unit 3 until June 2008. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as PVAR 3194909, this violation is being treated as an NCV consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000528;530/2008004-06, Failure to Correct a Condition Adverse to Quality with the Refueling Water Tank Instruments in a Timely Manner.

1R18 Plant Modifications (71111.18)

Temporary Modifications

a. Inspection Scope

On July 25, 2008, the inspectors reviewed a temporary modification for Unit 1 to install a silicone repair to the one inch diameter hole in hydrostatic penetration Seal 1AZYD312*029*SEALXX. The inspectors reviewed the UFSAR, plant drawings, procedure requirements, operator logs, and Technical Specifications to ensure that the temporary modification was properly implemented. The inspectors verified that: (1) the modification did not have an effect on system operability/availability; (2) the installation

was consistent with modification documents; (3) the postinstallation test results were satisfactory and that the impact of the temporary modification on permanently installed structures, systems, and components were supported by the test; (4) the licensee evaluated the combined effects of temporary modifications; and (5) there were no temporary modifications installed that have not been evaluated. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one sample for temporary plant modifications as defined by Inspection Procedure 71111.18-05.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five below listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR to determine if the licensee identified and corrected problems related to post-maintenance testing.

- July 24, 2008, Unit 2, Troubleshoot and repair of the 120 Vac Inverter B due to a failed fuse
- July 26, 2008, Unit 2, Troubleshoot and repair plant annunciator system Inverter 2JRKNC01 due to control room Annunciator Bay 2 trouble alarm locked in
- July 29-30, 2008, Unit 3, Troubleshoot and repair of control element assembly shutdown Group B, Subgroup 7, failure to insert as expected
- August 13, 2008, Unit 2, Troubleshoot and repair plant protection system Channel B low trip setpoint indications
- September 15, 2008, Unit 3, Troubleshoot and repair essential cooling water Pump A due to mechanical seal leakage

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of five postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and Technical Specifications to ensure that the six below listed surveillance activities demonstrated that the structures, systems, and components tested were capable of performing their intended safety functions. The inspectors either witnessed or revised test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method to demonstrate Technical Specification operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested structures, systems, and components not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- July 2, 2008, Unit 2, 92-day surveillance test of station batteries
- July 7, 2008, Unit 1, moderator temperature coefficient testing at two thirds core life
- July 20, 2008, Unit 2, atmospheric dump Valve 179 nitrogen accumulator drop test
- July 29, 2008, Unit 1, main steam isolation valve partial stroke exercise
- July 31, 2008, Unit 2, emergency response facility data acquisition and display system calculation of reactor coolant system water inventory
- August 4, 2008, Unit 1, control element assembly operability checks

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of six samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On August 12, 2008, for the emergency response organization exercise scenario Guide 08-D-FAC-08007 simulator-based training evolution, contributing to drill/exercise performance and emergency response organization performance indicators, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and protective action recommendations development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," acceptance criteria.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Barrier Integrity

The inspectors sampled licensee submittals for the two performance indicators listed below for the period from September 1, 2007, to July 31, 2008, for Units 1, 2, and 3. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period. The inspectors reviewed licensee event reports (LERs), monthly operating reports, and operating logs as part of the assessment. Licensee performance indicator data was also reviewed against the requirements of Procedures 93DP-0LC09, "Data Collection and Submittal Using Institute of Nuclear Power Operations (INPO's) Consolidated Data Entry System," Revision 7, and 70DP-0PI01, "Performance Indicator Data Mitigating Systems Cornerstone," Revision 3.

- Reactor coolant system specific activity
- Reactor coolant system leakage

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of six samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Reviews of Identification and Resolution of Problems

The inspectors performed a daily screening of items entered into the licensee's corrective action program. This assessment was accomplished by reviews of daily summary reports for CRDRs and work mechanisms, and attending corrective action review and work control meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the corrective action program; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional follow-up through other baseline inspection procedures.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the below listed issue for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- July 2, 2008, Unit 2, Review of senior reactor operator and reactor operator overtime records and overtime controls for Refueling Outage 2R14.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

.3 Annual Sample: Review of Operator Workaround Program

a. Inspection Scope

The inspectors conducted a cumulative review of operator work arounds for Units 1, 2, and 3 and assessed the effectiveness of the operator work around program to verify that the licensee is: (1) identifying operator work around problems at an appropriate threshold; (2) entering them into the corrective action program; and (3) identifying and

implementing appropriate corrective actions. The review included walkdowns of the control room panels, interviews with licensed operators and reviews of the control room discrepancies log, the lit annunciators log, the operator work around list, the operator burdens list, operations concerns list, the operator challenges tracking system, and site performance metrics for operator burdens, lit annunciators, control room discrepancies, and long-term tagouts.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 Event Follow Up

a. Inspection Scope

The inspectors reviewed the seven below listed events and degraded conditions for plant status and mitigating actions to: (1) provide input in determining the appropriate agency response in accordance with Management Directive 8.3, "NRC Incident Investigation Program;" (2) evaluate performance of mitigating systems and licensee actions; and (3) confirm that the licensee properly classified the event in accordance with emergency action level procedures and made timely notifications to NRC and state/governments, as required.

- July 28, 2008, Unit 2, Class 1E Vac Inverter B declared inoperable due to a failed fuse
- September 11, 2008, Unit 3, Essential cooling water Pump A declared inoperable due to elevated seal package leakage
- September 15, 2008, Unit 2, Class 1E Vac Inverter C declared inoperable due to a failed dc/dc converter
- September 16, 2008, Unit 3, Manual reactor trip due to undervoltage on control element assembly motor Generators A and B
- September 18, 2008, Unit 2, Class 1E Vac Inverter A declared inoperable due to a failed dc/dc converter
- September 27, 2008, Unit 1, Reactor power cutback due to a manual trip of main feedwater Pump A due to oscillating speed indication
- September 28, 2008, Unit 3, Manual reactor trip due to high turbine vibration while performing a shutdown for steam generator chemistry

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of seven samples as defined in Inspection Procedure 71153-05.

b. Findings

No findings of significance were identified.

.2 Event Report Reviews

a. Inspection Scope

The inspectors reviewed the six below listed LERs and related documents to assess: (1) the accuracy of the LER; (2) the appropriateness of corrective actions; (3) violations of requirements; and (4) generic issues.

b. Findings

1. (Closed) LER 05000529/2005006-00, Condition Prohibited by Technical Specifications Due to Partial Fouling of Diesel Generator B Fuel Oil Strainer

During the period May 15, 2005, through November 3, 2005, Unit 2 operated in Modes 1 through 5 with the emergency diesel generator Train B inoperable. Although the emergency diesel generator successfully completed required surveillance tests during the period, duplex fuel oil strainers and filters exhibited increasing differential pressures. The increase in filter and strainer differential pressure was subsequently attributed to particulates suspended in the fuel oil day tank. In addition, filter elements were found in the strainer housing instead of the required strainer elements on November 3, 2005. The event described in this LER was previously described in NRC Inspection Report 05000528; 05000529; 05000530/2007002, and documented as NCV 05000529/2007002-07, Failure to Maintain EDG Train B Operable. The LER was reviewed by the inspectors and no additional findings of significance or violation of NRC requirements were identified. The licensee documented the failed equipment in CRDR 2963482. This LER is closed.

2. (Closed) LER 05000529/2006001-01, Technical Specification Required Reactor Shutdown on Failure to Complete Repairs on an Auxiliary Feedwater Valve Within the 7-Day Completion Time

The initial version of this LER was reviewed in NRC Inspection Report 05000528; 05000529; 05000530/2006005. The inspectors reviewed this LER and no findings of significance were identified, and no violation of NRC requirements occurred. This LER is closed.

3. (Closed) LER 05000529/2008-001-00, Inoperable Boron Dilution Alarm Monitoring System

On May 21, 2008, operations personnel noted that the boron dilution alarm system had been in alarm for approximately 1 hour. When the boron dilution alarm system channel is in an alarm condition, the channel loses its function to monitor start-up channel neutron flux and detect an inadvertent boron dilution event until the channel is reset

manually. Review of the alarm logs indicated that during the period from May 8-21, 2008, when Unit 2 was in Modes 5 and 6 (the boron dilution alarm system is required during Modes 3 through 6), either a single boron dilution alarm system channel or both channels were in alarm on multiple occasions for extended periods. During these periods, required Technical Specification 3.3.12, Actions A.1, B.1 and C.1 were not performed. The cause of the Technical Specification violation was operations personnel failure to follow annunciator response procedures requiring reset of the boron dilution alarm system module. The licensee performed a root cause evaluation and attributed the operator inaction to "organization drift" due to the large number of the boron dilution alarm system alarms in Modes 5 and 6 resulting in operators treating the alarm as a nuisance alarm. The licensee documented this issue in CRDR 3178553. A licensee identified violation is documented in Section 4OA7. This LER is closed.

4. (Closed) LER 05000528/2006004-01, Technical Specification Required Shutdown on Failure of Pressurizer Heaters to be Able to Meet Their Mission Time

On September 18, 2006, operations personnel observed several failures of individual heaters due to electrical shorts or degradations in electrical insulation resistance during increased monitoring of the Unit 1 pressurizer heaters. The licensee discussed the concern with the pressurizer heater vendor (Watlow) and determined that the Class 1E pressurizer heaters may not meet their mission time. The licensee declared both banks of pressurizer heaters inoperable and shutdown the reactor to replace the heater elements. The vendor evaluation concluded that the heaters failed from stress corrosion cracking due to a manufacturing defect, and the vendor notified other affected utilities and discussed this issue within the owners group. The licensee submitted LER 05000528/2006004-00 to document the pressurizer heater failure and the inspector's review of this LER can be found in Inspection Report 2007005. The licensee submitted LER 05000528/2006-004-01 in June 2008, as a supplement to document the findings of the root cause analysis. The root cause analysis identified water intrusion past the heater sheath, which was caused by intergranular stress corrosion cracking, as the cause of the heater failure. During the inspector's review of the LER supplement and the root cause analysis, no findings of significance were identified. The licensee documented the failed pressurizer heaters in CRDR 2914478. This LER is closed.

5. (Closed) LER 05000529/2007002-00, Condition Prohibited by Technical Specifications - Control Element Assembly Insertion Limit Exceeded

The failure of the control element assemblies of shutdown Group B, Subgroup 6 to withdraw and, therefore, exceed the insertion limits of Technical Specification Limiting Condition for Operation 3.1.6 was previously discussed in Section 1R22.1 of NRC Inspection Report 05000528; 05000529; 05000530/2007002.
NCV 05000529/2007002-04 was issued for the failure to adequately evaluate a similar condition on the control element assemblies that occurred in 2004. Failure to perform an adequate evaluation led to operators not using all available indications for control element assembly position, and precluded appropriate corrective actions to prevent exceeding the Technical Specification Limiting Condition for Operations 3.1.6. The inspectors reviewed this LER and identified no additional concerns. This LER is closed.

6. (Closed) LER 05000529/2007004-00, Inoperable Main Steam Isolation Valve Actuator Train A Due to Inadequate Postmaintenance Testing

On October 26, 2007, a failure of main steam isolation Valve 181 actuator Train A occurred during surveillance test Procedure 73ST-9SG01, "MSIVs-Inservice Testing," Revision 32. Maintenance personnel failed to install an air port O-ring during maintenance on July 31, 2007, which resulted in air leakage between the four-way valve and the main steam isolation valve actuator. The root cause of the failure was inadequate postmaintenance testing instructions which did not specify a component test to check for air leakage. Main steam isolation Valve 181 actuator Train A was declared inoperable from July 31, 2007, to October 27, 2007. New O-rings were installed, the lines were leak tested for air, and maintenance personnel updated their postmaintenance test instructions to include testing for leaks and stroke closed testing of air reservoir check valves. The licensee documented the failed equipment in CRDR 3087163. A licensee identified violation is documented in Section 4OA7. This LER is closed.

.3 Personnel Performance

a. Inspection Scope

On September 16, 2008, the inspectors reviewed the undervoltage condition on the control element assembly motor generator sets that resulted in a turbine trip, reactor power cutback, and manual reactor trip. The inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts to evaluate operator performance in coping with nonroutine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolution sampled.

Documents reviewed by the inspectors are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71153-05.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

.2 Multiple/Repetitive Degraded Cornerstone Column and Crosscutting Issues Follow-up Activities

Quarterly Confirmatory Action Letter (CAL) Inspection (92702)

This inspection was the third in a series of inspections to be performed by the NRC to assess the progress that Palo Verde Nuclear Generating Station made with respect to the implementation of their Site Integrated Improvement Plan (SIIP) and to independently verify their progress in addressing the specific actions in the NRC CAL dated February 15, 2008, (ADAMS ML080460653).

The revised CAL, dated February 15, 2008, superseded the CAL dated June 21, 2007, (ADAMS ML071720526). The revised CAL contains a subset of actions delineated in the SIIP that the NRC determined were necessary to address the performance insights identified by Palo Verde Nuclear Generating Station assessment activities and the Inspection Procedure 95003 supplemental inspection. The key performance areas that Palo Verde Nuclear Generating Station has committed to address are as follows: Yellow and White findings as documented in NRC Inspection Reports 05000528; 05000529; 05000530/2004014 and 2006012, problem identification and resolution issues, human performance issues, engineering programs, review of current equipment evaluations, safety culture, accountability, change management, emergency preparedness, longstanding equipment deficiencies, and backlog.

The licensee submitted a list of the specific tasks, including due dates, associated with the action plans and strategies for each of the CAL items on March 31, 2008. The items selected for this quarterly CAL inspection were based on the completion due dates provided by the licensee from their submittal dated December 31, 2007.

a. Inspection Scope

The inspectors selected the SIIP tasks listed below for an in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) SIIP task matches the CRAI description; (2) corrective actions address and correct the SIIP task; (3) corrective actions address the action plan problem statement and primary causes; (4) verification of SIIP task completion; (5) timely completion of corrective actions in accordance with the SIIP schedule; (6) review of metrics and measures for improved performance; (7) independent verification of improved performance; and (8) closure of SIIP task in accordance with procedures. The inspectors also: (1) walked down portions of the associated risk important systems; (2) attended closure review board panels; (3) interviewed CAL task personnel; and (4) reviewed root and apparent causes to verify effectiveness of task closures.

- Task 1.2.E.15 (CAL Item 5 and SIIP Action Plan 5, Strategy 10) (CRAI 3065675) - Improve the effectiveness of engineering and component program.

- Task 1.2.E.28 (CAL Item 5 and SIIP Action Plan 5, Strategy 9) (CRAI 3109541) - Review the equipment qualification self-assessment and enter improvement actions in corrective action program.

- Task 1.4.2 (CAL Item 5 and SIIP Action Plan 2, Strategy 6) (CRAI 3060907) - Implement a minor modifications process procedure.

- Task 1.4.6 (CAL Item 5, and SIIP Action Plan 2, Strategy 6) (CRAI 3060911) - Dedicate resources to implement the minor modifications process.

- Task 3.2.5.f (CAL Item 1 and SIIP Action Plan 15, Focus Area Strategy 4, Strategy 4; and CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 6) (CRAI 3047261) - Implement a process for periodic review of corrective action review board scorecard results and provision of roll-up score card results to the management team, training department, performance improvement department, root and apparent cause investigators, oversight groups, and advocates.

- Task 3.3.3.b (CAL Item 1 and SIIP Action Plan 15, Focus Area 5, Strategy 2) (CRAI 3033591) - Develop and implement qualification requirements for members of the action request review committee.

- Tasks 3.3.3.j (CAL Item 1 and SIIP Action Plan 15, Focus Area 5, Strategy 5; and CAL Item 8 and SIIP Action Plan 6, Strategy 1) (CRAI 3038014) -Develop and communicate corrective action program fundamentals for station personnel and for managers and supervisors.

- Tasks 3.4.2.b (CAL Item 1 and SIIP Action Plan 15, Focus Area 5; and CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3065994) – Re-incorporate the adverse evaluation process into 90DP-0IP10.

- Task 3.7.3.a (CAL Item 1 and SIIP Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2833594) - Track the need for further evaluation of combustion engineering control system interim design review Volume II based on the completed results of the other interim design reviews.

- Tasks 3.7.3.o (CAL Item 1 and SIIP Action Plan 15, Focus Area 10, Strategy 1; and CAL Item 1 and SIIP Action Plan 15, Focus Area 2, Strategy 2) (CRAI 3082354) - Revise NGT-91 to communicate the design bases manual usage limitations to future engineering staff.

- Tasks 3.7.5.k (CAL Item 1 and SIIP Action Plan 15, Focus Area 4, Strategy 5) (CRAI 2856541) - Improve engineering involvement in the operability determination process by developing guidance for engineering personnel on when to communicate potential nonconforming and degraded conditions to operations, the type of information to be provided to operations to support immediate operability determinations, the type of information to provide in engineering evaluations to support prompt operability determinations. This

guidance will include a checklist to guide engineering personnel through a process to provide input to operability determinations.

- Task 3.7.7.o (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 4) (CRAI 2841205) - Establish a method of checks and balances that verify operating experience high-tiered documents are appropriately processed per program requirements.

- Task 3.7.7.p (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 1) (CRAI 2987496) - Develop and provide briefing to selected leaders for communication of Procedure 65DP-0QQ01 program definition, responsibilities and process flow.

- Task 3.7.8.u (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 6) (CRAI 31458730) - Develop a short computer based training course to describe how to identify each interfacing system design basis as part of the system engineer work assignment authorization.

- Tasks 3.7.8.w (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 6) (CRAI 3082354) - Primary systems – Each system engineer will complete the computer based training Course ECT01 – Impact of supporting systems.

- Tasks 3.7.8.x (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 6) (CRAI 3082356) – balance of plant systems – Each system engineer will complete the computer based training Course ECT01 - Impact of supporting systems.

- Tasks 3.7.8.y (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 6) (CRAI 3082358) –Electrical /Instrumentation and control – Each system engineer will complete the computer based training Course ECT01 - Impact of supporting systems.

- Task 11.3.1 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062243) - Develop an action plan to resolve the long-standing issues associated with the auxiliary feedwater steam admission solenoid valve (SG-UV-l34A and SG-UV-138A).

- Task 11.8.8 (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 4) (CRAI 3033591) - Perform an incumbent analysis for the component performance engineering department to identify training/knowledge weaknesses and identify backups.

- Task 11.8.7 (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 4) (CRAI 3062370) - Perform an incumbent analysis for the design engineering department to identify training/knowledge weaknesses.

- Task 11.8.22 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 2, Strategy 6) (CRAI 2938372) - Implement the site training on the case study developed for the essential spray pond CRAI 2937340.

- Task 14.2.21 (CAL Item 12 and SIIP Action Plan 7, Strategy 8) (CRAI 3132913) - Identify Palo Verde Nuclear Generating Station work inventory tracking systems.

- Task 14.2.22 (CAL Item 12 and SIIP Action Plan 7, Strategy 8) (CRAI 3132916) - Screen tracking systems identified in Task 14.2.21 to identify tracking systems likely to contain potential: activities adverse to quality but not in corrective action program, issues affecting performance of safety-significant structures, systems, and components, impact on corrective actions to prevent recurrence, or challenge to plant safety or operations.

- Task 11.9.A.18 (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3152560) - Present the results and recommendations of the significance review conducted in Task 11.9.A.5 of engineering backlog categories identified in Task 11.9.A.4 and contained in Table 2 of Revision 1 of the plan for backlog significance review to senior management.

- Task 1.2.D.3 (CAL Item 5 and SIIP Action Plan 2, Strategy 3) (CRAI 3065261) - Notify or brief personnel performing Equipment Root Cause of Failure Analysis (ERCFA) 1 evaluations on corrective action to prevent recurrence (corrective action Program R-04-CRAI 3065256) and corrective actions CA-10-CRAI 3065259 from the root cause investigation. ERCFA 1 evaluations will require documentation of the considerations of actions to minimize the likelihood of recurrence. The ERCFA program owner will provide oversight to ensure that ERCFA 1 evaluations contain this documentation until the ERCFA program/procedure is revised. This is an interim action taken prior to ERCFA program revision.

- Task 3.2.9.a (CAL Item 6 and SIIP Action Plan 3, Strategy 13) (CRAI 3132246) - Equipment failure causal evaluations performed via CRDRs (excluding "adverse" and "review" CRDRs). The reviews will be performed on the risk-significant safety systems. The plan will include review of equipment-related causes, extent of condition, extent of cause (where applicable), and corrective actions.

- Task 3.2.9.b (CAL Item 6 and SIIP Action Plan 3, Strategy 13) (CRAI 3132248) - Preventive maintenance items currently planned to be performed past their due date plus grace period. The reviews will be performed on the risk-significant safety systems.

- Task 9.1.A.22 (CAL Item 10 and SIIP Action Plan 8, Strategy 3) (CRAI 3076225) - Emergency planning instituted alignment meetings between emergency response organization team emergency coordinators and emergency operations directors. This CRAI is initiated to provide closure documentation in support of the Initiative 9.1.A actions in accordance with Procedure 01DP-0AC06.

- Task 11.9.A.5.a (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062576) - Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.b (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062579) - Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.c (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062580) - Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.d (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062583) - Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.e (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062576) - Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.f (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062576) – Complete significance review of engineering backlog working with ImPACT team.

- Task 11.9.A.5.g (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062576) - Complete significance review of engineering backlog working with ImPACT team.

- Task 3.7.5.ll (CAL Item 1 and SIIP Action Plan 15, Focus Area 4, Strategy 6) (CRAI 3146379) - Include within the second quarter 2008 engineering quarterly events, generic topic training instruction on the process used to receive vendor documentation. The instruction should include expectations for personnel who receive vendor documentation, outside formal process, to ensure that potentially impacted groups receive the information (ref. CRDR 2903206).

- Task 4.4.16 (CAL Item 7 and SIIP Action Plan 12, Strategy 4) (CRAI 3082462) - Establish and implement a more formal process for periodic evaluation of Palo Verde safety culture and safety conscious work environment by the safety culture team, human resources, legal, regulatory affairs and mechanisms for reporting results to senior management and taking responsive actions.

- Task 4.4.19 (CAL Item 7 and SIIP Action Plan 12, Strategy 10) (CRAI 3082472) - Establish an organizational structure to focus on control and improvement of site processes with particular focus on corrective action program and work management.

- Task 4.4.20 (CAL Item 7 and SIIP Action Plan 12, Strategy 10) (CRAI 3082475) - Complete an apparent cause evaluation investigation to determine weakness and complexity in site processes and implement corrective actions to improve those processes and prevent recurrence of weaknesses. Priority should be placed on actions to improve corrective action program and work management.

- Task 11.3.11 (CAL Item 12 and SIIP Action Plan 4, Strategy 6) (CRAI 3064839) - Identify and inventory the following items: 1) temporary modifications, 2) temporary jumpers (mechanical and electrical), 3) scaffolding, 4) permits,

5) imbedded operator work arounds, 6) apparent defacto changes (i.e., non-approved design or configuration changes) and provide to engineering for input into CRAI 3064842.

- Task 11.8.4 (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 7) (CRAI 3062956) - Conduct needs analysis with engineering management to determine the frequency and content of design and licensing basis training for specific engineering positions. This analysis will also determine the content and method for initial training.

- Task 3.7.8.b (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 2) (CRAI 2952746) - Complete remediation in areas identified from incumbent and section leader analysis performed under CRAI 2950481 by June 30, 2007.

- Task 3.7.8.i (CAL Item 1 and SIIP Action Plan 15, Focus Area 7, Strategy 2) (CRAI 2950481) - Review completed system engineer incumbent and section leader analysis. Develop plan for remediation for areas identified by January 30, 2007, with completion of remediation by June 30, 2007.

- Task 3.7.4.n (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1, Strategy 10) (CRAI 2938063) - Provide plant walkdown training/briefing to licensed operators, shift technical advisor, engineering staff and nuclear assurance department. Separate action request may be used for engineering staff and nuclear assurance department.

- Task 6.7.29 (CAL Item 6 and SIIP Action Plan 6, Part 2, Strategy 3) (CRAI 3133820) - Perform validation and effectiveness reviews of INPO designated "select" significant operating event reports. Update master significant operating event reports spread sheet to document site actions taken for each recommendation to each significant operating event reports.

- Task 1.2.E.19 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1, Strategy 4) (CRAI 3065747) - Design/develop training for use of engineering department Guide EDG-01 and EDG-02 covering use on a graded approach based on risk significance of task.

- Task 6.1.15 (CAL Item 1, and SIIP Action Plan 15, Focus Area 6, Strategy 1) (CRAI 3081488) - Evaluate and implement a method to institutionalize outage preparation for human performance and inspection activities, to include programs and tools such as team PRIDE, and operating experience booklets.

- Task 3.4.7.k (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3073027) - Provide training and engage advocates in the trending process.

- Task 12.2.7 (CAL Item 4 and SIIP Action Plan 9, Strategy 5) (CRAI 3028938) - Identify the major programs/processes at Palo Verde Nuclear Generating Station.

- Task 12.3.2 (CAL Item 4 and SIIP Action Plan 9, Strategy 7) (CRAI 3062736) - Map and understand Palo Verde's current integrated process infrastructure.

- Task 16.2.A.4.b (CAL Item 4 and SIIP Action Plan 9, Strategy 10) (CRAI 3062227) - Present the proposed process improvement plan to provide site work management system usability improvements to senior management for review and approval.

- Task 5.3.A.7 (CAL Item 4 and SIIP Action Plan 13, Strategy 3) (CRAI 3038835) - Increase training involvement in line activities as a tool to drive station performance.

- Task 5.3.A.8 (CAL Item 4 and SIIP Action Plan 13, Strategy 3) (CRAI 3038838) - Provide training on established guidance for analysis of performance data such as field observations, corrective actions, human performance clock resets and line performance indicators for possible training solutions.

- Task 3.7.8.l (CAL Item 1 and SIIP Action Plan 15, recirculation actuation system Focus Area 7, Strategy 1) (CRAI 2895670) – Revise the system engineering handbook to include the system engineering work authorization checklist.

- Task 1.2.D.2 (CAL Item 5 and SIIP Action Plan 2, Strategy 3) (CRAI 3065256) - Revise the ERCFA program to require that ERCFA Level 1 evaluations include consideration and documentation of corrective actions to minimize the likelihood of recurrence.

- Task 6.1.2.b (CAL Item 4 and SIIP Action Plan 11 Part 1, Strategy 1) (CRAI 3032688) - Incorporate engineering principles and expectations into conduct of engineering procedure for enhancing engineering staff and leader behavior.

- Task 4.1.F.30 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 2, Strategy 5) (CRAI 3095374) - Develop an operability determination improvement plan and metrics that more accurately measure the quality of operability determinations.

- Task 3.7.7.c (CAL Item 1 and SIIP Action Plan 15, Focus Area 4; and CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 4) (CRAI 3102784) - Develop checklists for high-tiered operating experience evaluations for use during disposition and analysis.

- Task 3.7.4.i (CAL Item 1 and SIIP Action Plan 15, Recirculation actuation system focus Area 3, Part 2, Strategy 4) (CRAI 2937019) - Implement changes to 40DP-9OP26, operability determination and functional assessment, to support the new PVAR process for CRDRs/work orders.

- Task 3.7.4.f (CAL Item 1 and SIIP Action Plan 15, Recirculation actuation system focus Area 3 Part 1, Strategy 11; and CAL Item 1 and SIIP Action Plan 15, Recirculation actuation system focus Area 6, Strategy 4) (CRAI 2825654) - Revise the industry operating experience program (65DP-0QQ01) to require performance of an independent or back-end technical review of all high-tiered industry operating experience evaluations (for evaluations performed by other than a team or with multiple technical reviews).

- Task 3.7.3.k (CAL Item 1 and SIIP Action Plan 15, Focus Area 2, Strategy 1) (CRAI 2785286) - Revise UFSAR, Section 6.3.2.6, to change reference to safety injection piping to emergency core cooling system piping and add new paragraph to indicate need to have emergency core cooling system lines filled to insure proper operation of the containment spray and high pressure safety injection pumps.

- Task 3.7.4.x (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1) (CRAI 3143353) - Revise Procedure 40DP-9ZZ03, "Weekly Material Condition Inspection of Safety-Significant Equipment," Appendix C, to designate the required participants and change guidance to require full complement of participants or reschedule the inspection.

- Task 3.4.10.e (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3038040) - Incorporate specific, measurable, achievable, relevant, timely corrective action development criteria into Procedure 90DP-0IP10, “Condition Reporting,” and into the Palo Verde Nuclear Generating Station root cause evaluation manual.

- Task 3.7.3.m (CAL Item 1 and SIIP Action Plan 15, Focus Area 2, Strategy 1) (CRAI 2785321) - Revise the technical requirement manual to include requirement to periodically verify that the essential core cooling system sump lines are filled.

- Task 11.1.1 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1, Strategy 5) (CRAI 3062206) - Develop engineering principles and expectation handbook.

- Task 11.6.11 (CAL Item 1 and SIIP Action Plan 15, Focus Area 10, Strategy 2) (CRAI 2825642) - Revise Procedure 81DP-0CC05, “Design and Technical Document Control, and 81TD-0EE10, “Plant Design and Modification,” as appropriate to specify for any changes to the design basis manuals, any new reference or source documents used for the revision needs to be reviewed in its entirety.

- Task 4.4.36 (CAL item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3102539) - Obtain feedback, review findings, and determine if there are any adjustments to be made to the drivers action plan.

- Tasks 3.7.3.h and 3.7.11.a (CAL Item 1 and SIIP Action Plan 15, Focus Area 2, Strategies 2; and CAL Item 1 and SIIP Action Plan 15, Focus Area 10, Strategies 1) (CRAI 3098178) - Add a note to the cover page of each design bases manual to require personnel to refer to source documents when developing engineering work products or performing quality activities.

- Task 8.4.1, and Task 8.4.14 (CAL Item 8 and SIIP Action Plan 10, Strategy 1) (CRAI 3063852 and 3088998) - Implement a management review meeting process. The process should include the utilization of site/department indicators which will create visible intrusive reviews of site-wide performance.

- Task 8.10.1 (CAL Item 8 and SIIP Action Plan 10, Strategy 9) (CRAI 3076268) - Establish a recovery team to support and monitor the integration, implementation, and closure of actions in the site integrated business plan/site integrated improvement plan.

- Task 8.4.6 and 8.4.15 (CAL Item 8 and SIIP Action Plan 10, Strategy 1) (CRAI 3063857 and CRAI 3089059) - Develop and implement plan for external senior industry representation on management review meetings. Establish Task 8.4.6 as a Priority 2 action and provide closure documentation.

- Task 9.1.A.1 (CAL Item 10 and SIIP Action Plan 8, Strategy 1) (CRAI 3063144) - Implement Policy and Policy Guide 1503-1 to require emergency response organization team members to respond and fill emergency plan positions within required timeframes.

- Task 1.2.D.4 (CAL Item 5 and SIIP Action Plan 2, Strategy 3) (CRAI 3065259) - Revise the ERCFA program to require that equipment failure analysis will consider the preventive maintenance program as a barrier to failure. Evaluations shall determine if changes to the preventive maintenance program are needed, i.e., revision to the preventive maintenance template scope of tasks or their interval, and document the determination.

- Task 1.2.E.16 (CAL Item 5 and SIIP Action Plan 5, Strategy 6) (CRAI 3065082) - Revise Procedure 73DP-OAP05, "Engineering Programs Management and Health Reporting," to specify self-assessment expectations, revise required program metrics based on industry review (as necessary), maintain program documents current, and to use change management when modifying engineering programs.

- Task 1.2.F.1 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 2, Strategy 1; and CAL Item 1 and SIIP Action Plan 15, Focus Area 8) (CRAI 3060766) - Issue revised expectations for system engineering for monitoring and trending system performance.

- Task 3.4.2.b (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10; and CAL Item 1 and SIIP Action Plan 15, Focus Area 5) (CRAI 3065994) - Re-incorporate the "adverse" evaluation process into Procedure 90DP-OIP10.

- Task 3.4.10.j (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3038057) - Proceduralize the station quality issues reporting mechanism and ensure that it contains a graded, pre-determined sequence of actions for escalation if quality issues are not being resolved by the organization.

- Task 3.4.10.d (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3038037) - Develop and establish procedural advocate duties and responsibilities to support the Site Integrated Business Plan.

- Task 3.4.10.g (CAL Item 3 and SIIP Action Plan 6 Part 1, Strategy 10) (CRAI 3038045) - Develop and implement in station corrective action program procedures an evaluation category for simple evaluations that do not require the level of rigor of an apparent cause evaluation but will ensure that minor issues

are evaluated and corrective actions are determined using a logical and consistent method (Reference Task 3.4.2.b).

- Task 3.7.5.kk (CAL Item 1 and SIIP Action Plan 15, Focus Area 4, Strategy 3) (CRAI 2912292) - Establish additional procedural guidance for addressing vendor correspondence to assure that appropriate, cognizant personnel determine distribution of this correspondence.

- Task 11.4.1 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1, Strategy 8; and CAL Item 5 and SIIP Action Plan 3, Strategy 7) (CRAI 3062286) - Establish an engineering leader observation program that is incorporated within the site observation program as a tool for monitoring and adjusting engineering products practices, and human performance standards and tools.

- Task 11.4.17 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 1, Strategy 9; and CAL Item 5 and SIIP Action Plan 3, Strategy 11) (CRAI 3065697) - Develop a procedure that describes the purpose, conduct, membership, criteria, and requirements for using an engineering quality product review board.

- Task 15.2.1.c (CAL Item 3 and SIIP Action Plan 6 Part 2, Strategy 7) (CRAI 3059777/3063702) - Develop guidelines delineating station benchmarking expectations including identifying metrics to track benchmarking activities by department and by employee.

- Task 15.2.1.d (CAL Item 3 and SIIP Action Plan 6 Part 2, Strategy 7) (CRAI 3059777/3063703) - Develop guidelines delineating station benchmarking expectations including identifying a process to schedule/track employee participation in INPO/WANO activities by department.

- Task 19.1.1.h (CAL Item 5 and SIIP Action Plan 2, Strategy 2) (CRAI 3062071) - Develop metrics used to monitor the long-range planning process.

- Task 11.3.6 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062279) - Develop an action plan to resolve long-standing issues associated with the emergency diesel generator.

- Task 3.2.3 (CAL Item 1 and SIIP Action Plan 15, Focus Area 5, Strategy 4) (CRAI 3047253) – Require the corrective action review board to review root cause and apparent cause evaluations and provide performance feedback for continuous learning to station staff and leadership.

- Task 6.1.11 (CAL Item 4 and SIIP Action Plan 11 Part 1, Strategy 1) (CRAI 2938720) – Revise and implement standards and expectation including fundamentals and graded approach to human performance tools.

- Task 3.7.7.f (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 4) (CRAI 2825634) – Engineering will apply an independent verification process for the technical quality of high-tiered industry operating experience evaluations for use by all of engineering.

- Task 3.7.7.k (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 7) (CRAI 2830094) - Review the guidance in Procedure 93DP-OK05 (regulatory interaction and correspondence control) to ensure that adequate technical reviews are performed for responses to generic letters, bulletins, and other NRC correspondence.

- Task 6.5.2.c (CAL Item 4 and SIIP Action Plan 11 Part 1, Strategy 2) (CRAI 3022272) – For the fourth quarter 2008, review and determine if additional analysis is required for declining human performance, including organizational and programmatic trends.

- Task 2.4.A.8 (CAL Item 7 and SIIP Action Plan 12, Strategy 7) (CRAI 2938720) – Revise and implement standards and expectation including fundamentals and graded approach to human performance tools.

- Task 4.4.10 (CAL Item 7 and SIIP Action Plan 12, Strategy 4; and CAL Item 8 and SIIP Action Plan 10, Strategy 9) (CRAI 3075654) – Establish a safety culture organization to better focus the site on safety culture.

- Task 6.11.1.d (CAL Item 8 and SIIP Action Plan 1, Strategy 11) (CRAI 3105771) – The operations director will redefine the roles and responsibilities of the operations leadership team.

- Task 6.7.8 (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 2) (CRAI 2988520) – Develop and implement training for investigators of significant events and apparent cause evaluators on the use and evaluation methods associated with operating experience.

- Task 11.1.6 (CAL Item 5 and SIIP Action Plan 3, Strategy 2) (CRAI 3076314) – Implement the conduct of engineering procedure and provide training to the engineering staff.

- Task 11.3.7 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062281) - Develop an action plan to resolve the long-standing issues associated with the spray pond flow.

- Task 4.1.F.14 (CAL Item 8 and SIIP Action Plan 1, Strategy 12; and CAL Item 1 and SIIP Action Plan 15, Focus Area 3, Part 2, Strategy 2) (CRAI 3105757) – Train all senior reactor operators and shift technical advisors on the immediate operability determination process and recent changes to Procedure 40DP-9OP26, ”Operability Determination and Functional Assessment.”

- Task 11.9.A.1 (CAL Item 5 and SIIP Action Plan 3, Strategy 2; and CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062540) – Implement an engineering work management and scheduling department.

- Task 3.7.9.e (CAL Item 1 and SIIP Action Plan 15, Focus Area 8) (CRAI 2961658) – Validate and resolve general engineering product review board comments on emergent issues impacting preventive activities.

- Task 11.3.15 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3153020) - Develop an action plan to address program requirements for control of manholes vaults.

- Task 11.3.3 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062274) - Develop an action plan to resolve the long-standing issues associated with the Unit 2 main feedwater pump oil seal.

- Task 11.9.A.6.a (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062630) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (mechanical/civil design).

- Task 11.9.A.6.b (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062632) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (electrical/instrumentation and control design).

- Task 11.9.A.6.c (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062634) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (system engineering).

- Task 11.9.A.6.d (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062641) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (maintenance engineering).

- Task 11.9.A.6.e (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062643) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (fuel management).

- Task 11.9.A.6.f (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062645) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (modifications).

- Task 11.9.A.6.g (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062648) - Ensure that significant latent issues identified are scheduled for completion in the site work management process (procurement engineering).

- Task 1.2.E.8 (CAL Item 5 and SIIP Action Plan 5, Strategy 6) (CRAI 3065055) - Revise Procedure 73DP-0AP05, Engineering programs and health reporting, to establish oversight of engineering program health utilizing the management review meeting.

- Task 1.2.E.31 (CAL Item 5 and SIIP Action Plan 5, Strategy 9) (CRAI 3109545) - Complete benchmarking of the equipment qualification program to the INPO program guide and enter an action plan in the corrective action program to address identified improvements.

- Task 3.3.3.i (CAL Item 1 and SIIP Action Plan 15, Focus Area 5, Strategy 5) (CRAI 3038031) - Revise the station access training materials and ensure that station personnel receive the training through site access training.

- Task 3.7.7.d (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 4) (CRAI 2825676) - Performance improvement department will either perform or coordinate all reviews on high-tiered industry operating experience CRDR evaluation in accordance with the requirements of Procedure 65DP-0QQ01, industry operating experience review.

- Task 4.1.F.9 (CAL Items 1 and 8, SIIP Action Plan 1, Strategy 12; and SIIP Action Plan 15, Focus Area 3, Part 2, Strategy 1) (CRAI 3105745) - Dedicate a current or previously licensed senior reactor operator and an alternate to the corrective action program/operability determination process (interim action).

- Task 4.1.F.34 (CAL Items 1 and 8, SIIP Action Plan 1, Strategy 12, and SIIP Action Plan 15, Focus Area 3, Part 2) (CRAI 3151643) - Establish a daily challenge board sponsored by the plant manager for immediate operability determinations and prompt operability determinations generated in the previous 24 hours/weekend/holiday (interim action).

- Task 6.11.1.a (CAL Item 8 and SIIP Action Plan 1, Strategy 11) (CRAI 3112398) - Senior management will communicate station expectations and industry standards for operations ownership of equipment problems at Palo Verde.

- Task 11.3.4 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062275) - Develop an action plan to resolve the long-standing issues associated with the secondary chemical system hydrazine pumps.

- Task 11.7.1 (CAL Item 5 and SIIP Action Plan 4, Strategy 2) (CRAI 3062323) - Revise the design control process to implement INPO AP-929 model and EPRI based guidance to give simplified configuration change options.

- Task 11.9.A.4.a (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062554) - Identify/inventory engineering backlogs working with ImPACT team for mechanical/civil design.

- Task 11.9.A.4.b (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062560) - Identify/inventory engineering backlogs working with ImPACT team for electrical/instrumentation and control design.

- Task 11.9.A.4.c (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062568) - Identify/inventory engineering backlogs working with ImPACT team for system engineering.

- Task 11.9.A.4.d (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062569) - Identify/inventory engineering backlogs working with ImPACT team for maintenance engineering.

- Task 11.9.A.4.e (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062570) - Identify/inventory engineering backlogs working with ImPACT team for fuel management.

- Task 11.9.A.4.f (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062571) - Identify/inventory engineering backlogs working with ImPACT team for modifications.

- Task 11.9.A.4.g (CAL Item 12 and SIIP Action Plan 4, Strategy 3) (CRAI 3062574) - Identify/inventory engineering backlogs working with ImPACT team for procurement engineering.

- Task 14.2.23 (CAL Item 12 and SIIP Action Plan 7, Strategy 8) (CRAI 3132917) - Perform significance review of items contained in the work inventory tracking systems to identify any significant latent issues or conditions adverse to quality and enter any such conditions identified into the Palo Verde Nuclear Generating Station corrective action program.

- Task 19.1.1.c (CAL Item 5 and SIIP Action Plan 2, Strategy 2) (CRAI 3062065) - Coordinate with feeder organizations and obtain input on items which should be considered for the long-range plan (legacy action).

- Task 19.1.1.f (CAL Item 5 and SIIP Action Plan 2, Strategy 2) (CRAI 3062068) - Develop and implement a process for review and approval of items to be included into the long-range plan and establish a long-range plan committee.

- Task 3.7.5.h (CAL Item 1 and SIIP Action Plan 15, Focus Area 4) (CRAI 2785351) - Re-review the Palo Verde Nuclear Generating Station response to Information Notice 88-23, Supplement 5.

- Task 9.5.6 (CAL Item 10 and SIIP Action Plan 8, Strategy 9) (CRAI 3065613) - Provide training on procedure changes due to Task 9.5.5 to emergency coordinator qualified personnel.

- Task 3.3.3.c (CAL Item 1 and SIIP Action Plan 15, Focus Area 5, Strategy 4) (CRAI 3038066) - Develop and implement a "Job Familiarization Guidance," document for members of the corrective action review board.

- Task 4.4.18 (CAL Item 9 and SIIP Action Plan 12, Strategy 9) (CRAI 3082469) - Verify that the formal process for change management being established under operating experience corrective Action 29 (CRAI 3076290) requires solicitation of employee input in appropriate cases.

- Task 3.7.9.h (CAL Item 1 and SIIP Action Plan 15, Focus Area 8, Strategy 1) (CRAI 2825665) - Engineering will define the roles, responsibilities, and expectations of the various departments of the engineering organization at Palo Verde.

- Task 6.2.1.a (CAL Item 4 and SIIP Action Plan 11 Part 1, Strategy 2) (CRAI 2938723) - Implement observation program to observe, correct, monitor and trend behaviors at a site-wide basis.

- Task 3.7.7.i (CAL Item 1 and SIIP Action Plan 15, Focus Area 6, Strategy 3) (CRAI 2825659) - Perform an assessment of the technical adequacy of past high-tiered industry operating experience evaluations.

- Task 3.7.3.w (CAL Item 1 and SIIP Action Plan 15, Focus Area 2, Strategy 2; and CAL Item 1 and SIIP Action Plan 15, Focus Area 10, Strategy 1) (CRAI 3168076) - Update 81TD-0DC14, System design basis manual writers guide, to provide guidance for the inclusion of the interface requirements and method of compliance, the high risk component listing, and an enhanced Industry operating experience section.

- Task 4.1.F.20 (CAL Item 8 and SIIP Action Plan 1, Strategy 12; and CAL Item 8 and SIIP Action Plan 1, Strategy 15, Focus Area 3 Part 2) (CRAI 3105765) - Perform a "Needs Analysis" using the systematic approach training process to determine the training needs for engineering Fix-It-Now for prompt operability determination preparation.

- Task 1.2.E.30 (CAL Item 5 and SIIP Action Plan 5, Strategy 8) (CRAI 3109572) - Complete benchmarking and provide recommendations to senior management to improve the organization of personnel needed to support implementation of the fire protection program.

- Task 4.1.F.33 (CAL Item 1 and SIIP Action Plan 15, Focus Area 3 Part 2, Strategy 7; and CAL Item 6 and SIIP Action Plan 3, Strategy 5) (CRAI 3132237) - Review prompt operability determinations approved prior to April 1, 2008, and currently in effect and initiate necessary corrective actions to bring those determinations into compliance with current standards.

- Task 1.2.E.24 (CAL Item 5 and SIIP Action Plan 5, Strategy 7) (CRAI 3104091) - Perform a self-assessment of the maintenance rule program using industry experts per Policy Guide PG-120. From the assessment results, develop the actions necessary to ensure effective program implementation at Palo Verde Nuclear Generating Station.

- Task 1.2.E.27 (CAL Item 5 and SIIP Action Plan 5, Strategy 7) (CRAI 3109550) - Realign engineering to consolidate the system engineer responsibilities for maintenance rule program implementation, and establish a dedicated section leader responsible for management oversight of the program.

- Task 1.2.E.29 (CAL Item 5 and SIIP Action Plan 5, Strategy 8) (CRAI 3109570) - Complete benchmarking of industry processes for the control of transient combustibles and enter an action plan in the corrective action program to address identified improvements.

- Task 11.3.5 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3061137) - Develop action plan to resolve long-standing issues associated with the safety injection system.

- Task 4.1.G.1 (CAL Item 12 and SIIP Action Plan 4, Strategy 6) (CRAI 3090233, 3064336) - Complete an aggregate review, utilizing a risk informed process such as the Exelon process, of installed temporary modifications, degraded-nonconforming work orders, control room deficiency logs, installed jumpers, operability determinations, number of work orders on safety systems,

longstanding permits, and operator work arounds that have been proceduralized, to determine overall impact to operational nuclear safety of plant for Unit 1.

- Task 4.1.G.2 (CAL Item 12 and SIIP Action Plan 4, Strategy 6) (CRAI 3090242, 3064337) - Complete an aggregate review, utilizing a risk informed process such as the Exelon process, of installed temporary modifications, degraded-nonconforming work orders, control room deficiency lists, installed jumpers, operability determinations, number of work orders on safety systems, long-standing permits, and operator work arounds that have been proceduralized, to determine overall impact to operational nuclear safety of plant for Unit 2.

- Task 4.1.G.3 (CAL Item 12 and SIIP Action Plan 4, Strategy 6) (CRAI 3090247, 3064338) - Complete an aggregate review, utilizing a risk informed process such as the Exelon process, of installed temporary modifications, degraded-nonconforming work orders, control room deficiency logs, installed jumpers, operability determinations, number of work orders on safety systems, long-standing permits, and operator work arounds that have been proceduralized, to determine overall impact to operational nuclear safety of plant for Unit 3.

- Task 11.3.2 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3062273) - Develop an action plan to resolve the long-standing issues associated with the Unit 1 balance of plant/engineered safety features actuation system sequencer.

- Task 11.8.21 (CAL Item 2 and SIIP Action Plan 14, Strategy 5) (CRAI 3066109) - Provide training on the systematic problem solving and decision-making methodologies/techniques.

- Task 6.10.5 (CAL Item 9 and SIIP Action Plan 12, Strategy 9) (CRAI 3109238) - Working with the Chief of Nuclear Operations, issue interim guidance on implementation of the change management process to assure that changes being implemented prior to completion of CRAI 3076290 are adequately communicated.

- Task 1.2.A.3 (CAL Item 11 and SIIP Action Plan 2, Strategy 7) (CRAI 3060736) - Develop necessary program documents to support the Top 10 technical issues process including site personnel roles and responsibilities.

- Task 3.6.11 (CAL Item 2 and SIIP Action Plan 14, Strategy 7) (CRAI 3074615) - K-1 relay replacement in the emergency diesel generator control cabinet xJDGA(B)B02 (x = 1, 2, and 3) for all six onsite Class 1E emergency diesel generators.

- Task 3.6.7 (CAL Item 2 and SIIP Action Plan 14, Strategy 6) (CRAI 2958748) - Develop and provide training to ERCFA qualified personnel that will include: (1) the need to consider all failure modes as part of initial troubleshooting and root cause activities; (2) reviewing any applicable operating experience as part of the initial troubleshooting and root cause activities; (3) a discussion of establishing appropriate priority to ensure a quality analysis; and (4) a discussion of accountability and expectations for both quality and timeliness.

The inspectors considered all of the above tasks closed.

b. Findings

1. Task Closure

Each task within the SIIP requires a closure package along with varying levels of management review for closure based on the priority of the corrective action. The inspectors reviewed tasks associated with the licensee's SIIP and the CAL. These tasks were in various stages of the closure process, including some items that were still open. The SIIP task closure packages that were completed were reviewed in accordance with Procedure 01DP-0AC06, "SIBP/SIIP Process," to determine if Palo Verde Nuclear Generating Station personnel were following the closure process. The process has three closure categories:

- Category A – included significant conditions adverse to quality and CAL items
- Category B – included adverse conditions and improvement plan Priority 3 CRAIs
- Category C – included improvement plan Priority 4 CRAIs

Category A tasks get the most reviews including: the standard CRDR/CRAI closure process; initiative lead concurrence that the action is ready for closure; reviewed and approved by the closure review board; and, independent reviews from senior management led boards.

During the review of the SIIP tasks, the inspectors identified numerous quality issues, including closure packages for 3.4.10.e, 3.7.5.a, 3.7.3.a, 11.9.A.4.a-g, 6.11.1.a,11.3.1 – 11.3.7, and 11.3.15 as follows:

- Closure package for Task 3.4.10.e, incorporate specific, measurable, achievable, relevant, timely corrective action development criteria into Procedure 90DP-0IP10, “Condition Reporting,” and into the Palo Verde Nuclear Generating Station root cause evaluation manual did not include the product review team signoff as required by Procedure 01DP-0AC06, "Site Integrated Business Plan/Site Integrated Improvement Plan," Revision 3. To address this issue, PVAR 3227726 was written.

- Closure packages for Tasks 11.9.A.4.a-g, Identify/inventory engineering backlogs working with ImPACT team, and 6.11.1.a, senior management will communicate station expectations and industry standards for operations ownership of equipment problems at Palo Verde Station," did not include sufficient information to be reviewed as "stand-alone" packages. Specifically, Tasks 11.9.A.4.a-g did not include the attached media referenced in the CRAI’s, and Task 6.11.1.a included a powerpoint presentation as evidence that the training was performed, but the powerpoint did not provide sufficient detail to be able to conclude that the specific training had taken place. To address these issues the licensee initiated PVAR 3228853.

- The inspectors were made aware of Tasks 3.7.5.a and 3.7.3.a where closure packages had gone through and been approved for closure by the closure review board, and subsequently reviewed and considered closed by the NRC, had been changed and sent back through closure review board for another review. While the changes in these two closure packages did not change the overall intent or purpose of the packages, the inspectors identified a programmatic concern with this, in that, the station conducted this action in the absence of procedural guidance and control of this evolution to ensure that all potentially affected parties where made aware of any changes made to closed packages. To address this issue, PVAR 3225051 was written.

- The inspectors noted an instance where key performance Area 11 action plan Items 11.3.1–11.3.7 and 11.3.15 sustainability were linked to items in the Site Integrated Business Plan and not directly tied to anything that would ensure schedule adherence and be subject to scrutiny by nuclear regulatory assurance, or any other organization, if action plan dates were changed to something that could have an over all affect on the action plan. To address this issue, PVAR 3224315 was written.

Task 3.6.5, revise procedure to provide cleaning/maintenance instruction was not closed during the last CAL inspection due to outstanding questions on cleaning and maintenance requirements. Inspectors reviewed the additional documents the licensee provided and consider this task closed.

2. Metrics and Measures to Monitor Improvement

The inspectors also reviewed the SIIP quality performance indicators, interviewed numerous personnel, and reviewed several effectiveness reviews related to CAL SIIP actions. The inspectors noted that the licensee had developed 12 performance indicators to track the quality and schedule completion of SIIP and CAL tasks. The performance indicators included schedule adherence burn curves, SIIP original schedule adherence, document quality, 2008 closure packages that are closure review board closed, 2007 closure package backlog, 2008 closure package cycle time, and a status of core performance indicators. The inspectors reviewed these performance indicators and determined that the indicators were appropriate and provided useful information.

The inspectors determined that the licensee is continuing to make progress in closing out the task closure packages. However, the inspectors noted that the licensee was not always adhering to their proposed timeline for completion of all closure packages. During their review of the CAL closure package quality performance indicators, the inspectors noted that it appeared overall package quality continued to improve.

3. CAL Item Closure

The inspectors reviewed all of the tasks associated with the following key performance areas:

- CAL Item 2, to address root and contributing causes identified in Palo Verde Nuclear Generating Station evaluations in response to the White finding associated with the Unit 3, Train A emergency diesel generator electrical relay failures.

- CAL Item 11, to address the potential for latent and longstanding issues associated with equipment deficiencies (e.g., water instruction into the underground vaults, check valve degradation, and emergency diesel generator fluid leaks).

During this CAL inspection, the inspectors reviewed and closed the three remaining open tasks associated with CAL Item 2 and the 9 open tasks associated with CAL Item 11. During the previous two CAL inspections, all other tasks associated with CAL Item 2 were reviewed and closed. Because all the tasks have been reviewed and closed, CAL Items 2 and 11 are considered completed and closed.

4. (Closed) Violation (VIO) 05000530/2006012-1, Failure to Establish Appropriate Instructions, VIO 05000530/2006012-2, Failure to Identify and Correct a Condition Adverse to Quality

Consistent with the guidance provided in NRC Inspection Procedure 95001, "Inspection For One or Two White Inputs in a Strategic Performance Area," the inspectors reviewed the root cause and extent of condition evaluations associated with the Unit 3, Train A emergency diesel generator K-1 relay failure. Upon completion of their review, the inspectors determined that the evaluation appropriately identified the root and contributing causes for the K-1 relay, identified appropriate corrective actions, and included a thorough extent of condition and extent of cause review. The inspectors noted that the K-1 failure was evaluated using a systematic method to identify the root and contributing causes, and the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem. The inspectors reviewed the completed corrective actions for the K-1 relay failure to verify that qualitative measures had been developed for the corrective actions, and implementation of these actions were sufficient to prevent recurrence. Also, the inspectors reviewed the root cause evaluation to ensure it included consideration of prior occurrences of the problem and knowledge of any applicable operating experience. Because the root cause evaluation has been reviewed in its entirety, and all the completed corrective actions associated with the White finding have been reviewed, the White finding is also considered closed.

4OA6 Meetings, Including Exit

On August 29, 2008, the inspectors briefed Mr. Joe Waid, Training Manager, and other members of the licensee's staff, on the results of the licensed operator requalification program inspection. The licensee acknowledged the findings presented. On September 29, 2008, after review of the complete biennial requalification cycle examination results, the inspectors conducted a telephonic exit with Mr. John Wood, Operations Training Supervisor. The licensee acknowledged the results as presented.

On September 18, 2008, the inspectors presented the inspection results of the CAL inspection to Mr. R. Bement, Vice President, Nuclear Operations, and other members of the licensee's management staff. The licensee acknowledged the presented findings.

On September 30, 2008, the results of the CAL inspection were presented to Mr. R. Edington, Executive Vice President and Chief Nuclear Officer, and other members of the licensee's management staff at a public meeting held in Tonopah, Arizona.

On October 15, 2008, the resident inspectors presented the inspection results to Mr. R. Bement, Vice President, Nuclear Operations, and other members of the licensee's management staff. The licensee acknowledged the presented findings.

The inspectors noted that while proprietary information was reviewed, none would be included in this report.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements that meet the criteria of Section VI.A.1 of the NRC Enforcement Policy, NUREG-1600, to be dispositioned as NCVs.

- Technical Specification 3.3.12 requires that two channels of boron dilution alarm system shall be operable. Technical Specification 3.3.12 required Actions A.1, B.1, and C.1 are to be performed upon meeting the requirements of the limiting condition for operation. Contrary to the above, between May 8 and May 21, 2008, on multiple occasions, operations personnel did not follow Procedure 40AL-9RK3A, "Panel B03A Alarm Response Procedure," Revision 20, when they failed to reset the boron dilution alarm system alarms and rendered both boron dilution alarm system channels inoperable. The boron dilution alarm system alarms were allowed to remain in fast flash for extended periods and the Technical Specification required actions were not completed. The issue has been entered into the licensee's corrective action program as significant CRDR 3178553. The finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

- Technical Specification 3.7.2 requires that four main steam isolation valves and their associated actuator trains shall be operable. Technical Specification 3.7.2, Limiting Condition for Operation, Condition A, requires that with one main steam isolation valve with a single actuator train inoperable, that the main steam isolation valve actuator train be restored to operable status within 7 days. Contrary to the above, between July 31, and October 27, 2007, main steam isolation Valve 181 actuator Train A was found to be inoperable during surveillance test Procedure 73ST-9SG01, "MSIVs – Inservice Testing," Revision 32. The licensee identified air leakage between the four-way valve and the main steam isolation valve actuator due to maintenance personnel failing to install an air port O-ring. This issue has been entered into the licensee's corrective action program as PVAR 3083549, and significant CRDR 3087163. The finding is of very low safety significance because it did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time since actuator Train B was available, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
J. Allison, Section Leader LOCT, Operations Training
G. Andrews, Director, Performance Improvement
S. Bauer, Department Leader, Regulatory Affairs
J. Bayless, Senior Engineer
K. Battaglia, Registered Nurse
R. Bement, Vice President, Nuclear Operations
P. Borchert, Unit 1 Assistant Plant Manager
P. Brandjes, Department Leader, Maintenance
F. Burdick, Consultant, Regulatory Affairs Compliance
R. Buzard, Section Leader, Compliance
D. Carnes, Unit 2 Assistant Plant Manager
K. Chavet, Senior Consultant, Regulatory Affairs
L. Cortopossi, Plant Manager, Nuclear Operations
D. Coxon, Unit Department Leader, Operations
E. Dutton, (Acting) Director of Nuclear Assurance
R. Edington, Executive Vice President and Chief Nuclear Officer
D. Elkington, Consultant, Regulatory Affairs
M. Grigsby, Unit Department Leader, Operations
D. Hautala, Senior Engineer, Regulatory Affairs
J. Hesser, Vice President, Engineering
G. Hettel, Director, Operations
M. Karbasian, Director, Design Engineering
W. Lehman, Senior Engineer
S. McKinney, Department Leader, Operations Support
D. Mims, Vice President, Regulatory Affairs and Plant Improvement
E. O'Neil, Department leader, Emergency Preparedness
F. Poteet, Senior ISI Engineer
M. Radspinner, Section Leader, Systems Engineering
T. Radtke, General Manager, Emergency Services and Support
M. Ray, Director, Emergency Services
H. Ridenour, Director, Maintenance
F. Riedel, Technical Management Assistant, Nuclear Operations
S. Sawtschenko, Department Leader, Emergency Preparedness
J. Scott, Section Leader, Nuclear Assurance
M. Shea, Director, ImPACT
J. Summy, Director, Plant Engineering
D Vogt, Section Leader, Operations Shift Technical Advisor
J. Waid, Director, Nuclear Training
T. Weber, Section Leader, Regulatory Affairs

Nuclear Regulatory Commission
M. Runyan, Senior Reactor Analyst, Region IV

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000528;529;530/2008004-02	URI	Potentially Degraded Fire Penetration Seals (Section 1R05)
05000528;529;530/2008004-03	URI	Potentially Degraded Flood Penetration Seals (Section 1R06)

Opened and Closed

05000528;05000529; 05000530/2008004-01	NCV	Inadequate Procedural Requirements to Implement Technical Specification 5.5.2.b (Section 1R04)
05000528/2008004-04	NCV	Failure to Provide an Adequate Procedure to Control Essential Spray Pond Missile Hazards (Section 1R13)
05000529/2008004-05	NCV	Failure to Perform an Operability Determination for High Chlorine in the Essential Spray Pond (Section 1R15.1)
05000528;05000530/ 2008004-06	NCV	Failure to Correct a Condition Adverse to Quality with the Refueling Water Tank Instruments in a Timely Manner (Section 1R15.2)

Closed

05000529/2005006-00	LER	Condition Prohibited by Technical Specifications Due to Partial Fouling of Diesel Generator B Fuel Oil Strainer (Section 4OA3)
05000529/2006001-01	LER	Technical Specification Required Reactor Shutdown on Failure to Complete Repairs on an Auxiliary Feedwater Water Valve Within the 7 Day Completion Time (Section 4OA3)
05000529/2008001-00	LER	Inoperable Boron Dilution Alarm Monitoring System (Section 4OA3)
05000528/2006004-01	LER	Technical Specification Required Shutdown on Failure of Pressurizer Heaters to be Able to Meet Their Mission Time (Section 4OA3)
05000529/2007002-00	LER	Condition Prohibited by Technical Specification – Control Element Assembly Insertion Limit Exceeded (Section 4OA3)

05000529/2007004-00	LER	Inoperable Main Steam Isolation Valve Actuator Train A Due to Inadequate Post Maintenance Testing (Section 4OA3)
05000530/2006012-01	VIO	Failure to Establish Appropriate Instructions (Section 4OA5)
05000530/2006012-02	VIO	Failure to Correct a Condition Adverse to Quality (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

In addition to the documents called out in the inspection report, the following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

Section 1R01: Adverse Weather Protection

Procedures
40AO-9ZZ21, Acts of Nature, Revision 25

Miscellaneous
Control Room Logs for August 7 and August 8, 2008
National Weather Service forecast for western Maricopa County, evening hours, August 7, 2008

Section 1R04: Equipment Alignment

Procedures
40OP-9SI02, Recovery from Shutdown Cooling to Normal Operating Lineup, Revision 81
73ST-9SI06, Containment Spray Pumps and Check Valves – Inservice Test, Revision 23
40OP-9PB01, 4.16 KV Class 1E Power (PB), Revision 23
74ST-9SS02, "Post Accident Sampling System Leakage Monitoring," Revision 16
41ST-9SI09, "Emergency Core Cooling Systems Leak Test," Revision 36

Drawings
01-M-SIP-001, P&ID Safety Injection and Shutdown Cooling System, Revision 41
01-M-SIP-002, P&ID Safety Injection and Shutdown Cooling System, Revision 32
03-M-SIP-001, P&ID Safety Injection and Shutdown Cooling System, Revision 35
03-M-SIP-002, P&ID Safety Injection and Shutdown Cooling System, Revision 31

PVARs
3163386 3173933 3213444

CRDRs
2859384

CRAIs
3083483 3094182 3101698

Work Orders

3056861 3069573 3069836 3188837

Miscellaneous
Technical Specification 3.6.6, Containment Spray System
Safety Injection System Health Report, July 1 through December 31, 2007
PB-Class 1E 4.16 KV Power System Health Report, July 1 through December 31, 2007
Palo Verde Equipment ID Label Request 0807201606
10 CFR 50.59 Evaluation 93-00002

Section 1R05: Fire Protection

Procedures
14DP-0FP33, Control of Transient Combustibles, Revision 18

14DP-0FP33, Control of Transient Combustibles, Revision 19

14DP-0FP36, Hot Work Permit, Revision 16

40DP-9ZZ19, Operational Considerations Due to Plant Fire, Revision 23

14DP-0FP32, Emergency Notification and Response, Revision 27

14DP-0FP02, Fire System Impairments and Notifications, Revision 14

14DP-0FP31, Fire System Impairment, Revision 13

14FT-9FP70, Appendix R and Former Technical Specification Penetration Seal Surveillance, Revision 7

31MT-9ZZ12, Replacement/Rework of Penetration and Internal Conduit Seals, Revision 7

Drawings
AO-A-ZYD-911, Fire Pump House, Revision 6

PVARs
3209413 3206120 3207816 3203134 3206120 3207581
3207816 3209413 3212087 3212378 3213332

CRDRs
3204240 3206882 3208056 3208383 3210823 3213322
3214045 3214254

Calculations
13-MC-FP-0803, Combustible Loads – Control BLDG, Revision 14

Miscellaneous
UFSAR Section 9.5, Other Auxiliary Systems, Revision 13
Pre-Fire Strategies Manual, Revision 21
UFSAR Section 9.5.1.4, Inspection and Testing Requirements, Revision 11

Section 1R06: Flood Protection

Procedures
14FT-9FP70, Appendix R and Former Technical Specification Penetration Seal Surveillance, Revision 7

31MT-9ZZ12, Replacement/Rework of Penetration and Internal Conduit Seals, Revision 7

81DP-0ZZ01 Civil System, Structure, and Component Monitoring Program, Revision 7

PVARs
2968359 3112224

CRDRs
2846647 2882166 2970134 3112895

CRAIs
2970135 3007692 3007697 3007702 3007708 3007710
3045868

Work Orders
3056337 3056342 3056345

Calculations
13-MC-ZA-0805, Auxiliary Building Flooding, Revision 6
13-MC-ZA-0809, As Built Auxiliary Building Flooding Calculation, Revision 4

Miscellaneous
NRC Information Notice 2005-30, Safe Shutdown Potentially Challenged by Unanalyzed Internal Flooding Events and Inadequate Design, November 7, 2005

NRC Information Notice 2007-01, Recent Operating Experience Concerning Hydrostatic Barriers, January 31, 2007

NRC Operating Experience Smart Sample, FY 2007-02, Flooding Vulnerabilities Due to Inadequate Design and Conduit/Hydrostatic Seal Barrier Concerns

UFSAR Section 3.4 - Water Level (Flood) Design

UFSAR Section 9.3.3 - Equipment and Floor Drainage Systems

Section 1R11: Licensed Operator Requalification Program

Miscellaneous
Simulator Scenario NLR08 S0402 00

SM / Crew Critique Form, Session 2, scenario NLR08 S0402, July 11, 2008

Dynamic Exam Scenario, SES-0-09-AQ-02; ECC directed turbine unloading/inadvertent MSIS/FRP (MVAC-3)

Dynamic Exam Scenario, SES-0-03-Q-04; Loss of MFP/RCS Leak/LOCA

Dynamic Exam Scenario, SES-0-05-E-02; RU-145 fails/Slipped Control Element Assembly/Economizer valve closure/ESD/HPSI A start failure

Dynamic Exam Scenario, SES-0-09-E-05; RCS Leak/Loss of NC to containment/loss of PW/LOCA with no HPSI/FRP (MVAC-2)

Job Performance Measure, AO0002-CR-002; Respond to a loss of nuclear cooling water

Job Performance Measure, EP014-CR-006; Direct the emergency response as the emergency Coordinator

Job Performance Measure, AD021-CR-001; Perform a technical review of a work permit

Job Performance Measure, AL007-CR-002; Operate the feedwater control system

Job Performance Measure, AO024-CR-001; Respond to an inadvertent PPS-EFSAS actuation

Job Performance Measure, EO014-PL-001; Energize PKA-M41 from the "A" battery

Job Performance Measure, EO029-PL-001; Direct alignment of auxiliary feedwater pump suction to RMWT

Job Performance Measure, AD004-CR-002; Review surveillance tests

Job Performance Measure, EP002-CR-005; Direct emergency response as the emergency coordinator

Job Performance Measure, AL001-CR-001; Perform alarm response first priority actions for containment sump trouble (40AL-9RK7B)

Job Performance Measure, AL003-CR-002; Operate the pressurizer pressure control system

Job Performance Measure, AO001-CR-002; Respond to a condition requiring emergency boration and contingencies

Job Performance Measure, AO041-PL-001; Respond to a control room fire

Job Performance Measure, EO016-PL-001; Perform NLO actions per Appendix 57 to align the GTG to vital electrical bus

Written Exam RO Week 1, NUA 0800208

Written Exam SRO Week 1, NUA 0800108

Simulator to plant differences list

Open simulator discrepancy (DR) report

Open simulator work order report

Closed DRs, 2006 & 2007 list

Closed work orders, 2006 & 2007 list

Section 1R12: Maintenance Effectiveness

Procedures
01DP-0AP12, Palo Verde Action Request Processing, Revision 6

14FT-9FP70, Appendix R and Former Technical Specification Penetration Seal Surveillance, Revision 7

40DP-9OP26, Operability Determination and Functional Assessment, Revision 20

73ST-9SI06, Containment Spray Pumps and Check Valves – Inservice Test, Revision 23

81DP-0ZZ01, Civil System, Structure, and Component Monitoring Program, Revision 13

81DP-0ZY01, Control of Potential Tornado Borne Missiles in the Outside Areas, Revision 3

PVARs

3200624	3206353	3202733	3176417	3035938	3060629
3074573	3192088	3203134	3206120	3207581	3207816
3209413	3212087	3212378	3213332	3112224	3194397

CRDRs

3177329	3036890	3204240	3206882	3208056	3208383
3210823	3213322	3214045	3214254	3112895	

CRAIs

3177333	3206883	3210824	3204241	3208384	3208057

Work Orders

3201919	3201916	3174134	3060669	3192727	3192336
3192389					

Drawings
02-M-SIP-001, Safety Injection and Shutdown Cooling System, Revision 41
SKH-A-A245, Sample Tornado Shielding Arrangements, Sheet 1, Revision B
SKH-A-A246, Sample Tornado Shielding Arrangements, Sheet 2, Revision B
SKH-A-A247, Sample Tornado Shielding Arrangements, Sheet 3, Revision B
SKH-A-A248, Sample Tornado Shielding Arrangements, Sheet 4, Revision B

Miscellaneous
10 CFR 50.65, Requirements for monitoring the effectiveness of maintenance at nuclear power plants

13-VTD-W120-00302, Westinghouse drawings and supplemental information for the low pressure safety injection and containment spray pump motors, Revision 2

Maintenance Rule Annunciator Report, July 2008

Maintenance Rule Basis, Containment Spray, Revision 7

Maintenance Rule Basis, Safety Injection Tanks, Revision 7

Maintenance Rule Performance Criteria, containment spray

Maintenance Rule Performance Criteria, safety injection tanks

System Health Report, safety injection, July – December, 2007

13-VTM-C676-0001-1, Vendor Technical Manual for Crane Chempump Seal-Less Leakproof Canned Motor Pumps, Revision 0

13-VTD-C676-0002-1, Crane Chempump Instruction Manual for Installation, Operation, and Maintenance of Seal-Less Leakproof Canned Motor Pumps, Revision 0

13-VTD-C676-0003-1, Crane Chempump Across the Line Starter Wiring Diagram, Revision 0

13-VTD-A391-00010, Anchor/Darling Instruction Manual for Main Steam Isolation Valves and Feedwater Isolation Valves , Revision 8

Troubleshooting Game Plan for Emergency Diesel Generator 3A Fuel Transfer Pump 3MDFAP01 SEIS Alarm, Revision 1, June 25, 2008

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
70DP-0RA05, Assessment and Management of Risk When Performing Maintenance in Modes 1 and 2, Revision 9

70DP-0RA05, Assessment and Management of Risk When Performing Maintenance in Modes 1 and 2, Revision 10

40ST-9SF01, Control Element Assembly Operability Checks, Revision 24

Operations Department Practices ODP-1, Reactivity Management, Revision 9

01DP-9ZZ01, Systematic Troubleshooting, Revision 1

30DP-9WP02, Maintenance Work Order Process and Control, Revision 55

81DP-0ZY01, Control of Potential Tornado Borne Missiles in the Outside Areas, Revision 3

30DP-0WM12, Housekeeping, Revision 18

PVARs
3209639 3210813 3220653 3143841 3194397

CRDRs
3224023

Drawings
01-M-SIP-001, P&ID Safety Injection and Shutdown Cooling System, Revision 41
01-M-SIP-002, P&ID Safety Injection and Shutdown Cooling System, Revision 32
01-M-CEP-001, P&ID Stator Cooling System, Revision 14

Work Orders
3024914 3210848 3144878

Calculations
13-NC-SP-201, Spray Pond Tornado Missile Damage Frequency, Revision 2

Miscellaneous
Containment Spray Train B online outage schedule, July 17, 2008
Report of December 5, 2007, Walk down of control of potential tornado borne missiles
Report of April 9, 2008, Walk down for control of potential tornado borne missiles
Schedulers evaluation for PV Unit 2, July 14 – July 20, 2008
Schedulers evaluation for PV Unit 1, August 4, 2008
System health report – safety injection and shutdown cooling, July 1 – December 31, 2007
Spray pond annual damage frequency report, July 2008
Technical Specification 3.6.6, containment spray system
Tailboard briefing sheet, control element assembly operability checks, August 4, 2008
Unit 1 High Voltage Bushing Low Flow Alarm Troubleshooting Game Plan, Revision 0
Schedulers evaluation for PV Unit 1, August 15, 2008
UFSAR Section 3.5.1.4, Missiles Generated by Natural Phenomena (Tornado)

Section 1R15: Operability Evaluations

Procedures
30DP-9MP02, Fastener Tightening / Preload, Revision 7
73ST-9SG01, Main Steam Isolation Valves - Inservice Test, Revision 32
40DP-9OP26, Operability Determination and Functional Assessment, Revision 20
40OP-9SP03, Spray Pond Chemical Addition System Train A, Revision 22
01DP-0AP12, Palo Verde Action Request Processing, Revision 8
74DP-9CY04, Systems Chemistry Specifications, Revision 55

PVARs
3192713 3203493 3190075 3035938 3060629 3074573
3192088 3197571 3204630

CRDRs
3190562 3036890 3206115 3197983

CRAIs
3197984 3216987

Drawings
8000654-01, Voltage Regulator Chassis, Revision D
D72 12200 001, Chassis, Revision A
D72 12200 100, Final Assembly – Regulator Chassis, Revision B
13-M324A-00045, Main Steam Isolation Valve with A/DV Hydraulic Actuator, Revision 16

Work Orders
2935385 3012358 3190563 3192098 3060669 3192727
3192336 3192389

Miscellaneous
13-10407-M018-424, Seismic Simulation Test Program on a Unit and Generator Control Panel, Revision 2

13-M-018-01252, Seismic Qualification of Voltage Regulator 'K1" Contactor, Revision 0

EDC 2007-00048, Add Instructions to M018 Vendor Supplied Documents for Cleaning/Inspecting the Emergency Diesel Generator Field Shorting (K1) Contactor DC Coil Auxiliary Contact Module

ESI-SR-07-125, Seismic Qualification Report of Voltage Regulator 'K1' Contactor, Revision 0

Unit 1 Shutdown Cooling Suction Line Pressure and Vibration Amplitude Graphs, May 2006

Spray Pond A Chemistry Trends, July 2008

Calculation of Scaling Probability for Unit 2 essential spray Pond B July 11, 2008

Chemistry Control Instruction, Unit 2, Spray Pond A, July 10, 2008

Control Room Logs, Unit 2, July 8 – 10, 2008

Section 1R18: Plant Modifications

Procedures
31MT-9ZZ12, Replacement/Rework of Penetration and Internal Conduit Seals, Revision 7

81DP-0DC13, Deficiency Work Order, Revision 21

81DP-0DC17, Temporary Modification Control, Revision 21

73TI-9ZZ86, Visual Assessment of Hydrostatic/Flood, HELB, EDP, and RAD Barriers and Penetrations, Revision 1

PVARs
3203134

CRDRs
3204240

Drawings
13-A-ZZD-002, Type Penetration Seal Details Conduits, Revision 27
13-A-ZJD-503, Control Building Control Plan & Interior Elevations, Revision 21

Work Orders
3207866 3200747 3203218

Miscellaneous
Specification 13-AN-0340, Technical Specification for the Installation of Penetration Seals, Revision 9

Section 1R19: Post-Maintenance Testing

Procedures
36ST-9SB02, PPS Bistable Trip Units Functional Test, Revision 37
40ST-9ZZM1, Operations Mode 1 Surveillance Logs, Revision 47
01DP-9ZZ01, Systematic Troubleshooting, Revision 1
42AL-2RK1C, Annunciator Bay 2 Power or Ground Trouble, Revision 32
31MT-9EW01, Essential Cooling Water Pump Disassembly and Assembly, Revision 8
30DP-9MP03, System Cleanliness and Foreign Material Exclusion Controls, Revision 13

PVARs
3208774 3203291 3203227

Drawings
13-J108-579-1, Schematic Diagram, DC-1K12-AS Inverter, December 14, 1992

Work Orders
3208792 3176379 3203273 3221601

Miscellaneous
Technical Specification 3.3.1, Reactor Protection System (RPS) Instrumentation – Operating

Technical Specification 3.3.5, Engineered Safety Features Actuation System (ESFAS) Instrumentation

Troubleshooting Plan for Low PPS Trip Setpoint Indications Unit 2 Channel B, Revision 0

Statement of Work Activity for the 2JRKNC01 Inverter Replacement, July 26, 2008

Section 1R22: Surveillance Testing

Procedures
32ST-9PK02, 92-Day Surveillance Test of Station Batteries, Revision 29
72ST-RX02, Moderator Temperature Coefficient Testing at Power, Revision 23
73ST-9SG01, Main Steam Isolation Valves - Inservice Test, Revision 32
40ST-9FS01, Control Element Assembly Operability Checks, Revision 24
36MT-9SF15, CEDMCS Control Element Assembly Coil Traces at Power Operation, Revision 10
40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory, Revision 47
73ST-9SG05, ADV Nitrogen Accumulator Drop Test, Revision 26
73DP-9XI01, Pump and Valve Inservice Testing Program – Component Tables, Revision 23
40OP-9ZZ05, Appendix T, "MTC Test Setup and Recovery," Revision 124

PVARs
3203493 3200618 3200617

Work Orders
2924813 3013195 3024914 3012531 3208036 3200642

Miscellaneous
Open Trend Data for Atmospheric Dump Valve 2JSGAHV0179, August 2005 – July 2008
Operator Logs, Unit 2, August 8, 2008
Technical Specification 3.8.6, Battery Cell Parameters
Technical Specification 3.1.5 and Technical Specification Surveillance Requirement 3.1.5.3
Technical Specification 3.7.4, Atmospheric Dump Valves
Technical Requirements Manual 3.7.200, Atmospheric Dump Valves

Section 1EP6: Drill Evaluation

Procedures
EPIP-02, Operation Support Center Actions, Revision 31

EPIP-03, Technical Support Center Actions, Revision 48

EPIP-04, Emergency Operations Facility Actions," Revision 43

EPIP-14, Dose Assessment, Revision 7

EPIP-99, Emergency Plan Implementing Procedure Standard Appendices, Appendix B, Protective Action Recommendations, Revision 23

EPIP-99, Emergency Plan Implementing Procedure Standard Appendices, Appendix D, Notifications, Revision 23

40AO-9ZZ22, Fuel Damage, Revision 9

Miscellaneous
Technical Specification Section 5.5.1, Offsite Dose Calculation Manual

Section 4OA1: Performance Indicator Verification

Procedures
74DP-1LC01, Reactor Coolant System Activity Performance Indicator, Revision 4

74OP-9SS01, Primary Sampling Instructions, Revision 32

74ST-9RC02, Reactor Coolant System Specific Activity Surveillance Test, Revision 11

74CH-9ZZ15, Reactor Coolant System Gross Activity and Dose Equivalent I-131 Determinations, Revision 4

40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory, Revision 47

Miscellaneous
Technical Specification 3.4.16, Reactor Coolant System Leak Detection Instrumentation

Technical Specification 3.4.17, Reactor Coolant System Specific Activity

Nuclear Energy Institute 99-02, Regulatory Assessment Performance Guideline, Revision 5

40ST-9RC02, ERFDADS (Preferred) Calculation of Reactor Coolant System Water Inventory, Revision 47, July 31, 2008

74CH-9ZZ66, Determination of Primary-to-Secondary Leak Rate, Revision 21, July 31, 2008

Drawings
01-M-RCP-001, P & I Diagram – RCS

Section 4OA2: Identification and Resolution of Problems

Procedures
73DP-OAP05, Engineering Programs Management and Health Reporting, Revision 5

01DP-0CCO1, Design Control Process, Revision 1

81DP-0EE10, Design Change Process, Revision 13

73TD-0ZZ03, System Engineering Handbook, Revision 6

65DP-0QQ01, Industry Operating Experience Review, Revision 11

65DP-0QQ01, Industry Operating Experience Review, Revision 17

01DP-0AC06, Site Integrated Business Plan/Site Integrated Improvement Plan Process, Revision 3

01DP-0AC06, Site Integrated Business Plan/Site Integrated Improvement Plan Process, Revision 4

01DP-0AP12, Palo Verde Action Request Processing, Revision 5

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15TD-0TR11, Analysis, Revision 11

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<u>PVARs</u>

3205069	3069890	3130794	3178104	3178140	3182238
3188988	3196652	3196370	3196354	3196320	3193975
3193937	3193867	3193824	3191763	3200970	3200761
3199545	3198851	3198474	3197291	3196892	3196803
3196787	3206796	3203631	3203375	3040083	3063840
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3052300	3053532	3062478	3050191	3048866	3079753
2974586	2975911	2978726	2994589	3019401	3032910
3120006	3158956	3178664	3180182	3181618	3210951
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3054520	3059389	3060927	3090824	3159133	3159165
3203066	3219186	3224387	3224387	3014410	3048198
3054520	3059389	3060927	3090824	3159133	3159165
3219186	3203066				

CRDRs

2883052	2544262	2883283	2995264	3064675	3075907
3078032	3086232	3061137	2898120	3079100	3070886
3048834	2903206	2726509	2937018	3086433	3064818
3062473	3095373	2928806	2854099	3048834	3131320
2726509	2512627	2599869	2645321	2654236	2835218
2883283	2903216	2982117	2990739	2993470	3048865
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3161482	3165478	3172542	3178664	3183924	3184980
3015327	3059636	3059800	3060148	3061135	3061142
3061144	3062473	3069068	3095373	3204928	3220601

Work Orders

2578794	3055965	3081101	3081038	3081039	3195879
3201881	3120619	2934367	3013842	3202911	3054091
3022678	2803364	2803386	2803388	3176275	3183813
3115288	3102534	3090020	3045976	3145399	3169984
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3058970	2579794	2768030			

CRAIs

3068373	3068380	3068389	3068402	3068583	3068592
3191047	3060911	3062243	2987496	2912548	3198868
3017467	3172395	2856541	2894710	3173771	3065994
3038014	3082358	3082356	3082354	3038068	3062370
3033591	2833594	3038039	3047261	2950481	2952746
2825669	3082462	3082472	3090757	3082475	3089034
3094438	3145453	3065261	3065256	3065259	3133820
3199288	3199237	3132248	3152560	3062576	3062579
3062580	3062583	3062618	3062619	3062623	3132246
3079867	3073186	3073213	3073215	3083432	3079998
3079909	3073193	3073214	3080003	3083438	3083429
3065747	3062956	2938063	3012824	3182442	3076225
3064842	3064839	3081488	2938854	3146379	3073027
3028938	3062736	3062227	3038835	3038838	2895670

3065256	3032688	3095374	3102784	3197848	2937019
2825654	3143353	2785286	2808185	3063857	3089059
3098178	3063852	3063857	3088998	3089059	3076268
3102539	3106479	3063144	3038040	2785321	3062206
2825642	3065259	3060766	3038057	3038045	3062286
3065697	3062071	3065082	3065994	3038037	2912292
3062293	3063703	3063702	2990741	3081624	3102455
3102575	3154416	3156292	3174727	3181618	3185710
3195169	3203822	3145947	3065079		

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Engineering GAMEPLAN Level C for 3MSFNM01A and 3MSFNM01B

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3.7.8.x	3.7.8.y	3.3.3.j	3.4.2.b	3.7.3.o	3.7.5.k
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6.7.29	3.2.9.a	3.2.9.b	11.9.A.5.a	11.9.A.5.b	11.9.A.5.c
11.9.A.5.d	11.9.A.5.e	11.9.A.5.f	11.9.A.5.g	11.9.A.18	1.2.E.19
11.8.4	3.7.4.n	9.1.A.22	3.7.8.b	11.3.11	3.7.5.ll
3.4.7.k	12.2.7	12.3.2	16.2.A.4.b	5.3.A.7	5.3.A.8
3.7.8.l	1.2.D.2	6.1.2.b	4.1.F.30	3.7.7.c	3.7.4.i
3.7.4.f	3.7.3.k	3.7.4.x	3.4.10.e	3.7.3.m	11.1.1
11.6.11	4.4.36	3.7.3.h	3.7.11.a	8.4.1	8.10.1
8.4.6	8.4.15	9.1.A.1	1.2.D.4	1.2.F.1	3.4.10.j
3.4.10.g	11.4.1	11.4.17	15.2.1.d	1.2.E.16	3.4.2.b
3.4.10.d	3.7.5.kk	11.4.2	15.2.1.c	19.1.1.h	3.7.5.h
6.2.1.a	4.1.F.33	4.1.G.1	4.1.G.2	4.1.G.3	6.10.5
9.5.6	3.7.7.i	1.2.E.24	1.2.A.3	3.3.3.c	3.7.3.w
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6.5.2.c	6.7.8	3.7.9.e	11.9.A.6.c	3.2.3	2.4.A.8
11.1.6	11.3.15	11.9.A.6.d	6.1.11	4.4.10	11.3.7
11.3.3	11.9.A.6.e	3.7.7.f	11.9.A.6.g	4.1.F.14	11.9.A.6.a
11.9.A.6.f	3.7.7.k	6.11.1.d	11.9.A.1	11.9.A.6.b	14.2.23
11.7.1	3.3.3.i	19.1.1.c	19.1.1.f	11.9.A.4.d	3.7.7.d
4.1.F.34	11.3.4	1.2.E.31	6.11.1.a	1.2.E.8	11.9.A.4.a
11.9.A.4.b	11.9.A.4.c	11.9.A.4.d	11.9.A.4.e	11.9.A.4.f	11.9.A.4.g

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Task 3.7.8.l Closure Document, March 15, 2008
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Task 3.7.7.c Closure Document, July 30, 2008
Task 3.7.4.i Closure Document, July 31, 2008
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Task 9.1.A.1 Closure Document, March 3, 2008
Task 8.4.6 & 8.4.15 Closure Document, April 10, 2008
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Task 11.3.4 Closure Document, September 15, 2008
Task 11.7.1 Closure Document, September 4, 2008
Tasks 11.9.A.4.a-g Closure Document, August 7, 2008
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Task 4.1.F.20 Closure Document, August 14, 2008
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Task 1.2.E.24 Closure Document, September 3, 2008
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Task 3.7.7.f Closure Document, July 14, 2008
Task 3.7.7.k Closure Document, September 8, 2008
Task 6.5.2.c Closure Document, July 24, 2008
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Task 6.7.8 Closure Document, August 26, 2008
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Task 4.1.F.14 Closure Document, August 27, 2008
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Task 3.7.9.e Closure Document, September 8, 2008
Task 11.3.15 Closure Document, September 15, 2008
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Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

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93DP-0LC05, Regulatory Interaction and Correspondence Control, Revision 13
31MT-9EW01, Essential Cooling Water Pump Disassembly and Assembly, Revision 8
90DP-0IP06, Reactor Trip Investigation, Revision 15

PVARs

3083549	2964838	2965008	3221258	2954758	3222784
3223918	3224002	3223117	3164931		

CRDRs

3087163	2963482	2844023	3202468	3165478	3178553
69799					

CRAIs

3090689	3087164	3104664	3104670	3104674	2963490
2981405	2981408				

Work Orders

3083554	2844010	2843481	2834838	2845525	2977425
3221613	3221601	3223158	3222874	216560	

Miscellaneous
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PVARs

3205069	3069890	3130794	3178104	3178140	3182238
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3048834	2903206	2726509	2937018	3086433	3064818
3062473	3095373	2928806	2854099	3048834	3131320
2726509	2512627	2599869	2645321	2654236	2835218
2883283	2903216	2982117	2990739	2993470	3048865
3053363	3061144	3098824	3102454	3145678	3153862
3161482	3165478	3172542	3178664	3183924	3184980
3015327	3059636	3059800	3060148	3061135	3061142
3061144	3062473	3069068	3095373	3204928	3220601

CRAIs

3068373	3068380	3068389	3068402	3068583	3068592
3191047	3060911	3062243	2987496	2912548	3198868
3017467	3172395	2856541	2894710	3173771	3065994
3038014	3082358	3082356	3082354	3038068	3062370
3033591	2833594	3038039	3047261	2950481	2952746
2825669	3082462	3082472	3090757	3082475	3089034
3094438	3145453	3065261	3065256	3065259	3133820
3199288	3199237	3132248	3152560	3062576	3062579
3062580	3062583	3062618	3062619	3062623	3132246
3079867	3073186	3073213	3073215	3083432	3079998
3079909	3073193	3073214	3080003	3083438	3083429
3065747	3062956	2938063	3012824	3182442	3076225
3064842	3064839	3081488	2938854	3146379	3073027
3028938	3062736	3062227	3038835	3038838	2895670
3065256	3032688	3095374	3102784	3197848	2937019
2825654	3143353	2785286	2808185	3063857	3089059
3098178	3063852	3063857	3088998	3089059	3076268
3102539	3106479	3063144	3038040	2785321	3062206
2825642	3065259	3060766	3038057	3038045	3062286
3065697	3062071	3065082	3065994	3038037	2912292
3062293	3063703	3063702	2990741	3081624	3102455

3102575	3154416	3156292	3174727	3181618	3185710
3195169	3203822	3145947	3065079		

Miscellaneous

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Email Request to Daniel Shutt for Additional Information, August 18, 2008

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Palo Verde Nuclear Generating Station 2008 Mid-Cycle Evaluation for Site Integrated Improvement Plan Status

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3.7.8.x	3.7.8.y	3.3.3.j	3.4.2.b	3.7.3.o	3.7.5.k
6.1.15	3.7.8.1	4.4.16	4.4.19	4.4.20	1.2.D.3
6.7.29	3.2.9.a	3.2.9.b	11.9.A.5.a	11.9.A.5.b	11.9.A.5.c
11.9.A.5.d	11.9.A.5.e	11.9.A.5.f	11.9.A.5.g	11.9.A.18	1.2.E.19
11.8.4	3.7.4.n	9.1.A.22	3.7.8.b	11.3.11	3.7.5.ll
3.4.7.k	12.2.7	12.3.2	16.2.A.4.b	5.3.A.7	5.3.A.8
3.7.8.l	1.2.D.2	6.1.2.b	4.1.F.30	3.7.7.c	3.7.4.i
3.7.4.f	3.7.3.k	3.7.4.x	3.4.10.e	3.7.3.m	11.1.1
11.6.11	4.4.36	3.7.3.h	3.7.11.a	8.4.1	8.10.1
8.4.6	8.4.15	9.1.A.1	1.2.D.4	1.2.F.1	3.4.10.j
3.4.10.g	11.4.1	11.4.17	15.2.1.d	1.2.E.16	3.4.2.b
3.4.10.d	3.7.5.kk	11.4.2	15.2.1.c	19.1.1.h	3.7.5.h
6.2.1.a	4.1.F.33	4.1.G.1	4.1.G.2	4.1.G.3	6.10.5
9.5.6	3.7.7.i	1.2.E.24	1.2.A.3	3.3.3.c	3.7.3.w
1.2.E.27	3.6.11	4.4.18	4.1.F.20	1.2.E.29	11.3.2
3.6.7	3.7.9.h	1.2.E.30	11.3.5	11.8.1	11.3.6
6.5.2.c	6.7.8	3.7.9.e	11.9.A.6.c	3.2.3	2.4.A.8
11.1.6	11.3.15	11.9.A.6.d	6.1.11	4.4.10	11.3.7
11.3.3	11.9.A.6.e	3.7.7.f	11.9.A.6.g	4.1.F.14	11.9.A.6.a
11.9.A.6.f	3.7.7.k	6.11.1.d	11.9.A.1	11.9.A.6.b	14.2.23
11.7.1	3.3.3.i	19.1.1.c	19.1.1.f	11.9.A.4.d	3.7.7.d
4.1.F.34	11.3.4	1.2.E.31	6.11.1.a	1.2.E.8	11.9.A.4.a
11.9.A.4.b	11.9.A.4.c	11.9.A.4.d	11.9.A.4.e	11.9.A.4.f	11.9.A.4.g
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Task 11.8.30, June 5, 2008
Task 1.2.E.8, July 8, 2008
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Task 3.7.7.d, September 13, 2008
Task 4.1.F.9, July 23, 2008
Task 11.7.1, September 12, 2008
Task 11.9.A.4.a-g, September 11, 2008
Task 19.1.1.c, September 12, 2008
Task 19.1.1.f, July 23, 2008
Task 6.1.11, July 24, 2008
Task 3.7.7.f, July 30, 2008
Task 6.5.2.c, July 30, 2008
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Task 11.9.A.1, September 11, 2008
Task 11.9.A.6.a-f, September 11, 2008
Task 3.7.5.h, September 12, 2008
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Task 1.2.E.27, September 11, 2008
Task 1.2.A.3, September 11, 2008

SIBP/SIIP Closure Documents
Task 3.2.5.f Closure Document, June 22, 2008
Task 3.7.3.a Closure Document, May 30, 2008
Task 11.8.8 Closure Document, June 26, 2008
Task 11.8.7 Closure Document, June 26, 2008
Task 3.3.3.b Closure Document, June 26, 2008
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Task 3.3.3.j Closure Document, June 26, 2008
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Task 3.7.2.p Closure Document, June 6, 2008
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Task 12.2.7 Closure Document, May 23, 2008
Task 12.3.2 Closure Document, July 11, 2008
Task 16.2.A.4b Closure Document, May 20, 2008
Task 5.3.A.7 Closure Document, May 12, 2008
Task 5.3.A.8 Closure Document, April 30, 2008
Task 3.7.3.k Closure Document, August 13, 2008
Task 3.7.4.x Closure Document, June 19, 2008
Task 3.4.10.e Closure Document, July 28, 2008
Task 3.7.3.m Closure Document, August 7, 2008
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Task 6.1.2.b Closure Document, July 10, 2008
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Task 6.11.1.a Closure Document, August 7, 2008
Task 11.3.4 Closure Document, September 15, 2008
Task 11.7.1 Closure Document, September 4, 2008
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Task 19.1.1.f Closure Document, July 7, 2008
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Task 6.11.1.a Closure Document, August 7, 2008
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Task 1.2.A.3 Closure Document, September 4, 2008
Task 11.3.6 Closure Document, September 12, 2008

Task 3.2.3 Closure Document, August 14, 2008
Task 6.1.11 Closure Document, July 24, 2008
Task 3.7.7.f Closure Document, July 14, 2008
Task 3.7.7.k Closure Document, September 8, 2008
Task 6.5.2.c Closure Document, July 24, 2008
Task 2.4.A.8 Closure Document, July 25, 2008
Task 4.4.10 Closure Document, August 4, 2008
Task 6.11.1.d Closure Document, August 7, 2008
Task 6.7.8 Closure Document, August 26, 2008
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Task 4.1.F.14 Closure Document, August 27, 2008
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Task 11.3.15 Closure Document, September 15, 2008
Task 11.3.3 Closure Document, September 4, 2008
Task 11.9.A.6.a-f Closure Document, August 25, 2008

Section 4OA7: Licensee-Identified Violations

Procedures
73ST-9SG01, Main Steam Isolation Valves – Inservice Test, Revision 32

PVARs
3083549

CRDRs
3087163 3178553 69799

CRAIs
3090689 3087164 3104664 3104670 3104674

Work Orders
3083554 216560

Miscellaneous
LER 05000529/2007-004-00, Inoperable Main Steam Isolation Valve Actuator Train B due to Inadequate Pos-Maintenance Testing

Technical Specification 3.7.2, Main Steam Isolation Valves

Troubleshooting Game Plan, Main Steam Line Isolation Valve 2JSGEUV0181 Actuator Train A, October 26, 2007

Licensee Event Report 05000529/2008-001-00, Inoperable Boron Dilution Alarm Monitoring System

Engineering Evaluation Request 89-SE-016, Boron Dilution Alarm System Software Modification

Plant Change Request 89-13-SE-006, Boron Dilution Alarm System Software Modification

Technical Specification 3.3.13, Boron Dilution Alarm System

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40AL-9RK3A, Panel B03A Alarm Response Procedure, Revision 20

LER 05000529/2007004-00, Inoperable Main Steam Isolation Valve Actuator Train A due to Inadequate Post-Maintenance Testing