



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

February 11, 2009

Randall K. Edington,  
Executive Vice President, Nuclear  
and Chief Nuclear Officer  
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Arizona Public Service Company  
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Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED  
INSPECTION REPORT 05000528/2008005, 05000529/2008005, AND  
05000530/2008005

Dear Mr. Edington:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility. The enclosed integrated report documents the inspection findings, which were discussed on January 13, 2009, with Mr. Bement and other members of your staff.

Additionally, on December 11, 2008, the NRC completed a 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 December 16, 2008, with you and other members of your staff during an exit meeting and on December 18, 2008, during a public meeting.

The inspection 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 reviewing all associated tasks for three 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 6, 9, and 12. Key Performance Area 6 involved mitigating the potential for previous decisions to affect the quality of current evaluations associated with significant equipment problems. Key Performance Area 9 involved defining and implementing a change management process. Key Performance Area 12 involved addressing problems with backlog tracking systems and prioritization. Based on our inspection results we consider these three key performance areas closed. The closure of these three Confirmatory Action Letter key performance areas is discussed in more detail in Section 4OA5 of this report.

The NRC plans to perform a team inspection in 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. On February 5, 2009, the NRC received your letter titled, "Readiness for Closure Inspection of Key Performance Areas Included in NRC Confirmatory Action letter CAL-4-07-004," dated February 5, 2009. In this letter Arizona Public Service Company provided the NRC notification that sufficient progress has been achieved in each of the twelve key performance areas to warrant consideration for closure of the CAL. Additionally, APS stated that actions have been taken to ensure the performance achieved is sustainable for continued improvement after the CAL is closed. The NRC plans to complete a final planned team inspection in February of 2009 to review the remainder of the open Confirmatory Action Letter key performance areas. Following completion of this inspection the NRC will assess closure of the CAL. Pending the completion of this assessment, 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 one NRC identified finding and one self revealing finding of very low safety significance (Green). One of these findings was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these non-cited violations, you should 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 Blvd, 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.

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 Vogel  
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 05000528/2008005, 05000529/2008005, and 05000530/2008005  
w/Attachment: Supplemental Information

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 ROPreports

File located: R: \Reactors\ PV\2009\PV 2008-005-RIT.doc

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SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	DBA
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	DBA
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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: 05000528/2008005, 05000529/2008005, 05000530/2008005

Licensee: Arizona Public Service Company

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

Location: 5951 S. Wintersburg Road  
Tonopah, Arizona

Dates: October 1 through December 31, 2008

Inspectors: D. Allen, Senior Project Engineer  
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J. Bashore, Resident Inspector  
T. Buchanan, Reactor Engineer  
M. Catts, Resident Inspector  
J. Drake, Senior Reactor Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector  
A. Fairbanks, Project Engineer  
S. Graves, Senior Reactor Inspector  
G. Guerra, Emergency Preparedness Inspector  
S. Makor, Reactor Inspector  
J. Melfi, Resident Inspector  
D. Proulx, Senior Project Engineer  
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W. Sifre, Senior Reactor Inspector  
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M. Young, Reactor Inspector

Approved By: Anton Vogel, Deputy Director  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000528/2008005, 05000529/2008005, 05000530/2008005; 10/1/08 - 12/31/08; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Integrated Resident and Regional Report; Flood Protection Measures; and Refueling Outage Activities.

This report covered a 3-month period of inspection by resident inspectors and regional inspectors. This inspection identified two findings. 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 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 finding at Palo Verde Nuclear Generating Station Procedure 01DP-0AP10, "Corrective Action Program," Revision 1, for the failure of operations and engineering personnel to promptly identify and correct a condition adverse to quality. Specifically, between February 13, 2007 and July 18, 2008, operations and engineering personnel failed to identify and correct degraded hydrostatic flood penetration seals which provide protection to safety-related equipment during internal flooding events. This resulted in over 100 hydrostatic penetration seals in the control, diesel, and main steam support structure buildings being left degraded for greater than 12 months. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3264501.

The finding is greater than minor because it is associated with the protection against external factors (i.e. flood hazard) attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience because operations and engineering personnel failed to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)] (Section 1R06).

#### Cornerstone: Barrier Integrity

- Green. A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified for the failure



of refueling services personnel to follow procedures to address refueling machine fault indications. Specifically, during the Unit 1 refueling outage core offload, refueling services personnel had overridden interlocks that protect the fuel from damage. This issue has been entered into the licensee's corrective action program as Palo Verde Action Request 3235153 and Condition Report Disposition Request 3237465.

The finding is greater than minor because it is associated with the human performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," was used since the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," does not address the potential risk significance of refueling machine operation errors. The finding is determined to have very low safety significance because there was no apparent damage done to the fuel barrier and no radioactive release occurred. This finding has a crosscutting aspect in the area of human performance associated with decision making because refueling services personnel did not use a systematic process to make a risk significant decision when faced with uncertain or unexpected plant conditions [H.1(a)] (Section 1R20).

**B. Licensee-Identified Violations**

None.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at full power until October 4, 2008, when the unit was shutdown for Refueling Outage 1R14. The unit was restarted on November 18, 2008, returned to full power on November 22, 2008, and remained at full power for the duration of the inspection period.

Unit 2 operated at full power until November 21, 2008, for Maintenance Outage 2M15A. The unit was shutdown to make repairs on the main generator stator water cooling system. The unit was restarted on December 14, 2008, returned to full power on December 16, 2008, and remained at full power for the duration of the inspection period.

Unit 3 began the inspection period at 30 percent power and in power ascension. Unit 3 was shutdown on September 27, 2008, to restore chemistry in both steam generators following a high sulfate condition. Unit 3 achieved 100 percent power on October 2, 2008, and remained at full power for the duration of the inspection period.

### 1. REACTOR SAFETY

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

#### **1R01 Adverse Weather Protection (71111.01)**

##### Readiness to Cope with External Flooding

##### a. Inspection Scope

On October 29, 2008, the inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

##### b. Findings

No findings of significance were identified.

## **1R04 Equipment Alignment (71111.04)**

### Partial Walkdown

#### **a. Inspection Scope**

The inspectors performed partial system walkdowns of the following risk-significant systems:

- November 5, 2008, Unit 2, steam turbine driven auxiliary feedwater pump
- October 23, 2008, Unit 3, emergency diesel generator Train B, support systems

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

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

#### **b. Findings**

No findings of significance were identified.

## **1R05 Fire Protection (71111.05)**

### Quarterly Fire Inspection Tours

#### **a. Inspection Scope**

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- October 24, 2008, Unit 2, auxiliary building, 100 foot, 120 foot, and 140 foot elevations

- October 22, 2008, Unit 3, condensate storage pump house and tunnel
- October 22, 2008, Unit 3, fuel building, 100 foot, 120 foot, and 140 foot elevations
- October 23, 2008, Unit 2, spray pond pump house
- October 28, 2008, Unit 1, containment building all elevations
- December 4, 2008, Unit 1, main steam support structure 100 foot, 120 foot, and 140 foot elevations
- December 10, 2008, Units 1, 2, and 3, fire seals for equipment and room penetrations

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

**1R06 Flood Protection Measures (71111.06)**

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also walked

down the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- December 10, 2008, Units 1, 2, and 3, control buildings, 70 foot, 100 foot, 120 foot, and 140 foot elevations; and emergency diesel generator buildings

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

b. Findings

Introduction. The inspectors identified a Green finding of Palo Verde Nuclear Generating Station Procedure 01DP-0AP10, "Corrective Action Program," Revision 1, for the failure of operations and engineering personnel to promptly identify and correct a condition adverse to quality. The failure to promptly identify and correct a condition adverse to quality resulted in over 100 hydrostatic penetration seals, which provide protection to safety-related equipment during internal flooding events, being left in a degraded condition for greater than 12 months.

Description. In December 2007, 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. On February 13, 2007, the licensee wrote Condition Report/Disposition Request (CRDR) 2970134 to review Information Notice 2007-01, and 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 previously had unsealed conduits which would have allowed flooding into safety-related areas. The 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 allows small gaps in seals while flood protection does not. 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 actions to inspect the penetration seals. 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 the design of their hydrostatic seals in accordance with these documents. After discussion with the inspectors in December 2007, the licensee did not develop acceptance criteria for inspection of the hydrostatic barriers until July 17, 2008, in Procedure 73TI-9ZZ86, "Visual Assessment of Hydrostatic/Flood, High Energy Line Break, EDP, and Radiation Barriers and Penetrations," Revision 1.

The licensee did not start inspecting the hydrostatic seals until July 2008. The licensee inspected more than 1,500 seals located in Units 1, 2, and 3 between July and

November 2008. The licensee found over 100 seals that were degraded and needed repair. The worst case degradation that could have effected safety related equipment was found on Penetration Seal 2AZYD312\*094\*SEALXX in the 140 foot elevation of the Control Room in Unit 2 on August 27, 2008. The penetration seal was made of Low Density Foam-1, and had a through hole of about one inch in diameter. This seal was reworked to its original design per Drawing 13-A-ZZD-0002, "Typical Penetration Seal Details – Conduits," Revision 27, detail Low Density Foam-1; which required a minimum of nine inches over the entire seal surface. This degradation also exceeded the criteria given in Procedure 73TI-9ZZ86, Section 7.1.2, which stated that "any seal that has a gap or hole that extends through the entire seal is considered non-functional." The seal was declared nonfunctional, and a functional assessment was performed. The assessment determined the seal was functional to provide a flood protection function even though there was a reduction in penetration seal margin. The licensee wrote Palo Verde Action Request (PVAR) 3217048 to address this issue. The licensee performed functional assessments on all of the seals that did not meet the acceptance criteria in Procedure 73TI-9ZZ86, and determined all the seals were functional to provide flood protection to safety related equipment.

Procedure 01DP-0AP10, Step 3.1.1 states, in part, that conditions adverse to quality shall be completely and accurately identified in a timely manner commensurate with their significance and ease of discovery. Step 3.3.1 states, in part, that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances shall be promptly corrected. Contrary to the above, between February 13, 2007 and July 18, 2008, operations and engineering personnel failed to identify and correct degraded hydrostatic flood penetration seals which provide protection to safety-related equipment during internal flooding events. This resulted in over 100 hydrostatic penetration seals in the control, diesel, and main steam support structure buildings being left degraded for greater than 12 months. The licensee wrote PVAR 3264501 to address this issue.

Also, the inspectors determined that between July 10, 1996 and December 20, 2007, the hydrostatic function of the seals had been scoped into the maintenance rule program as described in Title 10 CFR Part 50.65, but were not being monitored in accordance with Title 10 CFR Part 50.65(b)(2)(ii), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants." None of the degraded seals were determined to be maintenance rule functional failures and the licensee wrote CRDR 3112224 to address this issue.

This issue was opened as an unresolved issue in NRC Inspection Report 05000528;529;530/2008004-03, "Potentially Degraded Flood Penetration Seals," to determine the extent of degraded flood penetration seals at Palo Verde and the potential aggregate effect of more than one seal penetration failure. This unresolved item is closed.

Analysis. The performance deficiency associated with this finding was the failure of operations and engineering personnel to promptly identify and correct a condition adverse to quality to ensure adequate internal flood protection for safety-related equipment. The finding is greater than minor because it is associated with the protection

against external factors (i.e. flood hazard) attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience because operations and engineering personnel failed to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)].

Enforcement. Enforcement action does not apply because the performance deficiency did not involve a violation of regulatory requirements. The finding is of very low safety significance and the issue was entered into the corrective action program as PVAR 3264501. FIN 05000528; 05000529; 05000530/2008005-01: "Failure to Promptly Identify and Correct Degraded Hydrostatic Penetration Seals."

## **1R08 In-service Inspection Activities (71111.08)**

### **.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control (71111.08-02.01)**

#### **a. Inspection Scope**

The inspection procedure requires review of two or three types of nondestructive examination activities and, if performed, one to three welds on the reactor coolant system pressure boundary. Also review one or two examinations with relevant indications that have been accepted by the licensee for continued service.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	Shutdown Cooling A Loop 1 Hot Leg SDC Nozzle to Safe End (6-11 & 21-20)	Phased Array – Ultrasonic Test
Reactor Coolant	Zone 6, Weld No. 14-7 (Elbow to Pipe)	Ultrasonic Test
Reactor Coolant	Zone 6, Weld No. 8-4 (Pipe to Elbow)	Ultrasonic Test
Main Steam	West Steam Generator 2, SG-045-H016, Integral Attachment Welds	Magnetic Particle Test

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	1RCEPSV0200, Zone No. 31, PSV-200 (Valve Body to Flange Weld)	Radiography Test

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	Shutdown Cooling B Loop 2 Hot Leg SDC Nozzle to Safe End (7-9 & 22-1)	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Spray Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Surge Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Hot Leg Surge Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Safety Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Safety Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Safety Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Pressurizer Safety Nozzle to Safe End	Phased Array - Ultrasonic Test
Reactor Coolant	Shutdown Cooling A Loop 1 Hot Leg SDC Nozzle to Safe End (6-11 & 21-20)	Penetrant Test
Reactor Coolant	Shutdown Cooling A Pre-weld Base Metal	Penetrant Test
Reactor Coolant	Shutdown Cooling A Butter Layer	Penetrant Test
Reactor Coolant	Shutdown Cooling A Bridge Bead	Penetrant Test
Reactor Coolant	Shutdown Cooling B Pre-weld Base Metal	Penetrant Test
Reactor Coolant	Shutdown Cooling B Butter Layer	Penetrant Test
Reactor Coolant	Shutdown Cooling B Bridge Bead	Penetrant Test



<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	Pressurizer Safety Pre-welds (5-29 & 5-32)	Penetrant Test
Reactor Coolant	Pressurizer Safety Excavated Areas (5-29 & 5-30)	Penetrant Test
Reactor Coolant	Pressurizer Safety Safe End 3 Bead (5-31 & 5-32)	Penetrant Test
Reactor Coolant	Pressurizer Surge Pre-weld (Surge to Vessel)	Penetrant Test
Reactor Coolant	Pressurizer Surge 3 Bead Removal Area	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg 3 Bead on Safe End	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg 3 Bead on Pipe	Penetrant Test
Reactor Coolant	Pressurizer Surge ER-308 Buffer Layer	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg 3 Bead on Safe End	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg Base Metal Repair (52 Removal)	Penetrant Test
Reactor Coolant	Pressurizer Surge 52 Bridge Bead	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg Safe End to Stainless	Penetrant Test
Reactor Coolant	Pressurizer Surge Safe End Indication Removal	Penetrant Test
Reactor Coolant	Pressurizer Surge 1 <sup>st</sup> 3 Beads Second Layer	Penetrant Test
Reactor Coolant	Pressurizer Surge 52 Bridge Bead after Repair	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg Deposited Area	Penetrant Test
Reactor Coolant	Pressurizer Safety Repair Areas after Weld (5-29 & 5-30)	Penetrant Test
Reactor Coolant	Pressurizer Safety 3 Bead on Safe End (5-29 & 5-30)	Penetrant Test

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	Pressurizer Surge to Hot Leg Pre-weld	Penetrant Test
Reactor Coolant	Pressurizer Surge 3 Bead on Pipe	Penetrant Test
Reactor Coolant	Pressurizer Spray Nozzle Initial	Penetrant Test
Reactor Coolant	Pressurizer Safety Final (5-31)	Penetrant Test
Reactor Coolant	Pressurizer Safety Reject Edges (5-30)	Penetrant Test
Reactor Coolant	Pressurizer Safety Reject Edges (5-32)	Penetrant Test
Reactor Coolant	Pressurizer Safety Reject Weld Edge (5-29)	Penetrant Test
Reactor Coolant	Pressurizer Surge Final Weld	Penetrant Test
Reactor Coolant	Pressurizer Safety (5-30, 5-31, 5-32)	Penetrant Test
Reactor Coolant	Pressurizer Safety Reject Weld Edge (5-29)	Penetrant Test
Reactor Coolant	Pressurizer Surge to Hot Leg Final (20-11)	Penetrant Test
Reactor Coolant	Pressurizer Spray Nozzle	Penetrant Test
Reactor Coolant	Pressurizer Spray Nozzle 3 Bead Inconel on Stainless	Penetrant Test
Reactor Coolant	Pressurizer Safety Final (5-29)	Penetrant Test
Reactor Coolant	Pressurizer Safety Final (5-30)	Penetrant Test
Reactor Coolant	Pressurizer Safety Final (5-32)	Penetrant Test
Reactor Coolant	Pressurizer Spray Nozzle Final (29-1 & 5-33)	Penetrant Test

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with American Society of Mechanical Engineers Boiler and Pressure Vessel Code requirements and applicable procedures. Indications were compared with previous examinations and dispositioned in accordance with American Society of Mechanical Engineers Code and approved procedures. The qualifications of all nondestructive examination technicians performing the inspections were verified to be current.

None of the above observed or reviewed nondestructive examinations identified any relevant indications and cognizant licensee personnel stated that no relevant indications were accepted by the licensee for continued service.

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with American Society of Mechanical Engineers Code, Section IX, requirements. The inspectors also verified, through observation and record review, that essential variables for the welding process were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined by Inspection Procedure 71111.08-05.

b. Findings

No findings of significance were identified.

.2 Vessel Upper Head Penetration Inspection Activities (71111.08-02.02)

a. Inspection Scope

The licensee performed the required visual inspection of pressure-retaining components above the reactor pressure vessel head. The results of this inspection confirmed that there was no evidence of leaks or boron deposits on the surface of the reactor pressure vessel head or related insulation. The personnel performing the visual inspection were certified as Level II and Level III Visual Examination-2 examiners. Specific documents reviewed during this inspection are listed in the attachment.

The licensee performed eddy current testing on the reactor pressure vessel head upper nozzle penetrations and observed four penetrations (15, 47, 48, and 64) that had indications. The four penetrations showed no growth when compared to historical data. Therefore, the licensee accepted the indications in the penetrations for continued service by historical data review (Cleared by History).

These activities constitute completion of one sample as defined by Inspection Procedure 71111.08-05.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control Inspection Activities (71111.08-02.03)

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion.

The inspection procedure required review of a sample of boric acid corrosion control walkdown visual examination activities through either direct observation or record review. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walkdown as specified in Procedure 73DP-9ZC01, "Boric Acid Corrosion Control Program," Revision 1 and Procedure 70TI-9ZC01, "Boric Acid

Walkdown Leak Detection," Revision 7. Visual records of the components and equipment were also reviewed by the inspectors. Additionally, the inspectors independently performed examinations of piping and components containing boric acid during a walkdown of the containment building. The inspection procedure required verification that visual inspections emphasize locations where boric acid leaks can cause degradation of safety significant components. The inspectors verified through direct observations and by program/record review that the licensee's boric acid corrosion control inspection efforts were directed towards locations where boric acid leaks can cause degradation of safety-related components. On those components where boric acid was identified, the engineering evaluations gave assurance that the American Society of Mechanical Engineers Code wall thickness limits were properly maintained. The evaluations also confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the American Society of Mechanical Engineers Code. Specific documents reviewed during this inspection are listed in the attachment.

The inspection procedure required review of one to three engineering evaluations performed for boric acid leaks found on reactor coolant system piping and components, and one to three corrective actions performed for identified boric acid leaks. The inspectors reviewed one engineering evaluation and its corrective action plan associated with the bolted connection of the High Pressure Safety Injection Pump 1MSIBP02. The evaluation appropriately addressed the causes and corrective actions, and was generally consistent with industry standards.

These activities constitute completion of one sample as defined by Inspection Procedure 71111.08-05.

b. Findings

No findings of significance were identified.

.4 Steam Generator Tube Inspection Activities (71111.08-02.04)

a. Inspection Scope

The inspection procedure specified performance of an assessment of in-situ screening criteria to assure consistency between assumed nondestructive examination flaw sizing accuracy and data from the Electric Power Research Institute examination technique specification sheets. It further specified assessment of appropriateness of tubes selected for in situ pressure testing, observation of in situ pressure testing, and review of in situ pressure test results. Specific documents reviewed during this inspection are listed in the attachment.

At the time of this inspection, no conditions had been identified that warranted in-situ pressure testing in any steam generator.

The inspectors reviewed the licensee site-validated and qualified acquisition and analysis technique sheets used during this refueling outage and the qualifying Electric Power Research Institute examination technique specification sheets to verify that the essential variables regarding flaw sizing accuracy, tubing, equipment, technique, and analysis had been identified and qualified through demonstration.

The inspection procedure specified comparing the estimated size and number of tube flaws detected during the current outage against the previous outage operational assessment predictions to assess the licensee's prediction capability. Refueling Outage 1R13 was the first steam generator in-service inspection for the Unit 1 steam generators. The inspectors compared the previous outage operational assessment predictions with the indications identified during the current steam generator tube inspection effort. Compared to the projected damage mechanisms identified by the licensee, the number of identified indications fell within the range and was consistent with predictions. For this outage, foreign object wear and anti-vibration bar related tube wear were identified as the only potential degradation mechanisms. No tube corrosion, anti-vibration bar wear, or foreign object wear was observed during the previous Refueling Outage 1R13 steam generator in-service inspection, and only preventive plugging of tubes was performed.

The inspection procedure specified that if new degradation mechanisms were identified, the licensee must verify in its analysis of extended conditions that the problem, including operating concerns was fully enveloped and appropriate corrective actions had been taken before plant startup. The eddy current examination results did not identify any new degradation mechanisms.

The inspection procedure specified confirmation that the steam generator tube eddy current test scope and expansion criteria meet technical specification requirements, Electric Power Research Institute guidelines, and commitments made to the NRC. The inspectors compared the recommended test scope to the actual test scope and found that the licensee test scope met technical specification requirements, Electric Power Research Institute guidelines, and commitments made to the NRC.

The inspection procedure requires confirmation that the eddy current test probes and equipment were qualified for the expected types of tube degradation, and an assessment of the site-specific qualification of one or more techniques. The inspectors observed portions of eddy current tests performed on the tubes in all steam generators. During these examinations, the inspectors verified that: (1) the probes appropriate for identifying the expected types of indications were being used, (2) probe position location verification was performed, (3) calibration requirements were adhered to, and (4) probe travel speed was in accordance with procedural requirements. The inspectors performed a review of site-specific qualifications of the techniques being used.

The inspection procedure requires confirmation that the licensee inspected all areas of potential degradation, especially areas that were known to represent potential eddy current test challenges (e.g., top-of-tube sheet, tube support plates, and U-bends). The inspectors confirmed that all known areas of potential degradation were included in the scope of inspection and were being inspected. The scope of the licensee's examinations of Unit 1 steam generators included:

#### Primary Side

- Full length bobbin inspection of 100 percent of the tubes
- Plus Point inspection of the short radius U-bend rows one through four

### Secondary Side

- Sludge lancing was performed in 1R13 and was not performed this outage.
- Top of tube sheet foreign object search and retrieval of periphery, tube lane, and bundle areas

The inspection procedure required confirmation of adherence to the technical specification plugging limit, unless alternate repair criteria have been approved. The inspection procedure further required determination of whether depth sizing repair criteria were being applied for indications other than wear or axial primary water stress corrosion cracking in dented tube support plate intersections. The inspectors determined that the technical specification plugging limits were being adhered to (i.e., 40 percent maximum through-wall indication). At the time of this inspection, one tube was to be plugged in Steam Generator 12 due to a wear indication that was less than 40 percent maximum through-wall indication. The inspectors verified that the plugging process to be used was an NRC-approved repair process.

If loose parts or foreign material on the secondary side were identified, the inspection procedure specified confirmation that the licensee had taken or planned appropriate repairs of affected steam generator tubes and that they inspected the secondary side to either remove the accessible foreign objects or perform an evaluation of the potential effects of inaccessible object migration and tube fretting damage. During the steam generator secondary side inspections, Steam Generator 11 had three foreign objects identified. Steam Generator 12 secondary side inspections had two foreign objects identified. All foreign objects were retrieved.

If steam generator leakage greater than three gallons per day was identified during operations or during post shutdown visual inspections of the tube sheet face, the inspection procedure requires verification that the licensee had identified a reasonable cause based on inspection results and that corrective actions were taken or planned to address the cause for the leakage. This condition did not exist during this inspection. No assessment was conducted.

Finally, the inspection procedure specified review of one to five samples of eddy current test data if questions arose regarding the adequacy of eddy current test data analyses. The inspectors did not identify any results where eddy current test data analyses adequacy was questionable.

These activities constitute completion of one sample as defined by Inspection Procedure 71111.08-05.

### b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope

The inspection procedure requires review of a sample of problems associated with in-service inspections documented by the licensee in the corrective action program for appropriateness of the corrective actions.

The inspectors reviewed 23 condition reports which dealt with in-service inspection activities and found the corrective actions were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience. Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

**1R11 Licensed Operator Requalification Program (71111.11)**

a. Inspection Scope

**Quarterly Inspection**

On November 25, 2008, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one licensed operator requalification program inspection 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 evaluated degraded performance issues involving the following risk significant systems:

- November 3, 2008, Unit 3, emergency diesel generator optical isolator card replacement following failure of the card as documented in PVAR 3174014
- December 9, 2008, Unit 1, main feed pump trip due to failure of the linear power differential transformer as documented in CRDR 3229603

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.



These activities constitute completion of two 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

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- October 9, 2008, Unit 1, refueling outage shutdown risk assessment for planned maintenance
- October 15, 2008, Unit 3, engineered safety feature actuating system Train A out of service for unplanned maintenance, troubleshooting and repair
- November 26, 2008, Unit 3, emergency diesel generator Train B out of service due to unplanned maintenance for replacement of the optical isolator card
- December 9, 2008, Unit 3, emergency chiller Train A out of service due to unplanned maintenance

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four maintenance risk assessment and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

c. Findings

No findings of significance were identified.

## **1R15 Operability Evaluations (71111.15)**

### **a. Inspection Scope**

The inspectors reviewed the following issues:

- September 10, 2008, Unit 3, essential cooling water pump A unavailability due to excessive mechanical seal leakage
- October 12, 2008, Unit 1, electronic noise resulting in count rate spikes in the excore start-up channel Train A, nuclear instrument
- October 28, 2008 – November 5, 2008, Units 1, 2, and 3, multiple component failures in class 1E instrument AC inverters

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Updated Final Safety Analysis Report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

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

### **b. Findings**

No findings of significance were identified.

## **1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17)**

### **a. Inspection Scope**

The inspectors reviewed the effectiveness of the licensee's implementation of evaluations performed in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments," and changes, tests, experiments, or methodology changes that the licensee determined did not require 10 CFR 50.59 evaluations. The inspection procedure requires the review of six to 12 licensee evaluations required by 10 CFR 50.59, 12 to 25 changes, tests, or experiments that were screened out by the licensee and five to 15 permanent plant modifications.

The inspectors reviewed eight evaluations required by 10 CFR 50.59, 34 changes, tests, and experiments that were screened out by licensee personnel and 18 permanent plant modifications. Document numbers of the evaluations, changes, and modifications reviewed are listed in the attachment.

The inspectors verified that when changes, tests, or experiments were made, evaluations were performed in accordance with 10 CFR 50.59 and licensee personnel had appropriately concluded the change, test or experiment could be accomplished without obtaining a license amendment. The inspectors also verified that safety issues related to the changes, tests, or experiments were resolved. The inspectors reviewed changes, tests, and experiments that licensee personnel determined did not require evaluations and verified the licensee personnel's conclusions were correct and consistent with 10 CFR 50.59. The inspectors verified that procedures, design, and licensing basis documentation used to support the changes were accurate after the changes had been made.

In the inspection of modifications the inspectors verified that supporting design and license basis documentation had been updated accordingly and was still consistent with the new design. The inspectors verified that procedures, training plans and other design basis features had been adequately accounted for and updated. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of 60 samples as defined in Inspection Procedure 71111.17-05

b. Findings

No findings of significance were identified.

**1R18 Plant Modifications (71111.18)**

a. Inspection Scope

The inspectors reviewed the following temporary/permanent modifications to verify that the safety functions of important safety systems were not degraded:

- October 22, 2008, Unit 1, installation of temporary pumps connected to the reactor coolant system to return borated water to the refueling canal while the temporary reactor vessel head was installed
- October, 31, 2008, Unit 1, replacement of solenoid operated valves with motor operated valves for the auxiliary feedwater steam turbine driven pump starting steam admission valves

**Temporary Modifications**

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design bases documentation, including the Updated Final Safety Analysis Report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the

modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

### **Permanent Modifications**

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the modification listed below. The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; post-modification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur, systems, structures and components' performance characteristics still meet the design basis, the appropriateness of modification design assumptions, and the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one temporary and one permanent plant modification inspection samples as defined in Inspection Procedure 71111.18-05.

#### **b. Findings**

No findings of significance were identified.

### **1R19 Post-Maintenance Testing (71111.19)**

#### **a. Inspection Scope**

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- October 20, 2008, Unit 1, emergency diesel generator Train A, 24 hour run following engine overhaul
- November 21, 2008, Unit 2, Train B inverter following replacement of the DC-to-DC converter card replacement
- November 27, 2008, Unit 3, emergency diesel generator Train B following replacement of fiber optic isolator cards
- November 26, 2008, Unit 1, auxiliary feedwater steam supply to AFA-P01 bypass steam admission valves, Trains A and B, following permanent plant modification

- December 8, 2008, Unit 2, emergency diesel generator Train A, following replacement of voltage regulating circuit linear power reactor Phase C

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the Updated Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

**1R20 Refueling and Other Outage Activities (71111.20)**

a. Inspection Scope

Unit 1 Refueling Outage 1R14

The inspectors reviewed the outage safety plan and contingency plans for the Unit 1 refueling outage, conducted between October 4, 2008 and November 18, 2008, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense-in-depth, was commensurate with the outage safety plan for key safety functions and complied with the applicable technical specifications when taking equipment out of service.
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.

- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over activities that could affect reactivity
- Maintenance of containment as required by the technical specifications
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the containment to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing
- Licensee identification and resolution of problems related to refueling outage activities

#### Unit 2 Maintenance Outage 2M15A

The inspectors reviewed the outage safety plan and contingency plans for the Unit 2 maintenance outage, conducted between November 21, 2008 and December 14, 2008, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Monitoring of decay heat removal processes, systems, and components.
- Controls over activities that could affect reactivity.
- Maintenance of containment as required by the technical specifications.
- Licensee identification and resolution of problems related to outage activities.

These activities constitute completion of two refueling and other outage inspection samples as defined in Inspection Procedure 71111.20-05.

b. Findings

Introduction. A Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified for the failure of refueling services personnel to follow procedures to address refueling machine fault indications. Specifically, during the Unit 1 refueling outage core offload, refueling services personnel had interlocks overridden that protect the fuel from damage.

Description. On October 14, 2008, during Unit 1 refueling Outage 1R14, fuels services personnel were performing core offload when a refueling machine operator inadvertently bumped the bridge joystick, causing the bridge to move 0.10 inches west. Interlocks engaged to terminate and prevent additional inadvertent bridge movement. As a result of this movement, the refueling machine console displayed an "Off Index Temp Zone Breached" fault indication. The Limited Senior Reactor Operator directed use of the keyed "Interlock Override" switch to allow bridge movement in the east direction. This key lock switch overrides all interlocks enforced by the programmable logic controller. The bridge was moved east, away from adjacent fuel assemblies, and the Interlock Override switch was returned to its normal position. Operation of this switch interrupted communication between the programmable logic controller and the refueling machine controller, precluding any additional bridge, hoist, or trolley operations.

The fuel assembly in core location R-14 had been grappled and raised to 390 inches. At this point, Off-Index moves were enabled. Off-Index allows moving the fuel towards open water, away from adjacent fuel assemblies. During Off-Index moves, the programmable logic controller uses a three inch by three inch box to establish boundaries for the bridge and trolley allowable positions. If the bridge or trolley breaches this boundary, the programmable logic controller enforces interlocks to preclude further bridge or trolley movement. This interlock engages when the bridge or trolley is 0.10 inches outside of the established boundary. This condition also results in "Off Index Temp Zone Breached" fault indication being received.

Adjacent fuel assemblies have a nominal gap of approximately 0.25 inches between assemblies. When the joy stick was inadvertently bumped, the bridge moved approximately 0.10 inches west. Programmable logic controller interlocks engaged to terminate the movement and prevent additional movement. The purpose of this interlock is to prevent bridge or trolley movement in a manner that would result in contact between adjacent fuel assemblies. The Limited Senior Reactor Operator believed that two adjacent fuel assemblies were potentially in contact due to the inadvertent bridge movement. The Limited Senior Reactor Operator directed use of the Interlock Override switch to allow moving the bridge east, and thereby relieve the pressure between the two interacting assemblies. Use of the Interlock Override switch effectively disables all programmable logic controller enforced bridge and trolley interlocks. This would allow the bridge operator to move the bridge and or trolley in any direction in the horizontal plane. Once the automatic protection features of the programmable logic controller were bypassed, operator control of the joystick became the only protection against undesirable bridge and/or trolley movement.

Refueling machine operations were conducted in accordance with Palo Verde Nuclear Generating Station Procedure 78OP-9FX01, "Refueling Machine Operations". Procedure 78OP-9FX01, Step 2.2.12, stated, "The Interlock Override key switch primary

function is to place the fuel and refueling machine in a safe condition in the event of a programmable logic controller failure. With fuel loaded, Interlock Override shall only be used at the direction of the Senior Reactor Operator/ Limited Senior Reactor Operator to place fuel in a safe condition unless direction is provided within the body of this procedure." Appendix J, Fault Response Instructions, provided operator fault response instructions to refueling machine operators in the event of a fault or error. Section 1.9, Off Index Temp Zone Breached, of this appendix provided direction when the bridge or trolley is outside the 3 inch box for off-index fuel moves. This section directed use of the "Travel Override" button to address this fault condition. Contrary to the above, when the Off-Index Temp Zone Breached fault indication was received on the operator console, the Limited Senior Reactor Operator directed manipulation of the Interlock Override switch instead of the Travel Override button. Neither the Limited Senior Reactor Operator nor the bridge operator reviewed Procedure 78OP-9FX01, "Refueling Machine Operations", prior to operating the Interlock Override switch.

Analysis. The performance deficiency associated with this finding was the failure of refueling services personnel to implement procedure requirements when the Off-Index Temp Zone Breached fault indication was received. The finding is greater than minor because it is associated with the human performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," is used since the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," does not address the potential risk significance of refueling machine operation errors. The finding is determined to have very low safety significance because there was no apparent damage done to the fuel barrier and no radioactive release occurred. This finding has a crosscutting aspect in the area of human performance associated with decision making because refueling services personnel did not use a systematic process to make a risk significant decision when faced with uncertain or unexpected plant conditions [H.1(a)].

Enforcement. 10 CFR 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, or drawings. The operation of the refueling machine equipment during the Unit 1 refueling outage core off-load was an activity affecting quality and was implemented by Procedure 78OP-9FX01, "Refueling Machine Operations." Section 1.9 of Appendix J of this procedure directed the use of the Travel Override button to address the "Off-Index Temp Zone Breached" fault indication on the refueling machine console. Contrary to the above, on October 14, 2008, the refueling services personnel failed to reference and implement the requirements of this procedure. Specifically, the Limited Senior Reactor Operator and bridge operator manipulated the Interlock Override key lock switch instead of the Travel Override button. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PVAR 3235153 and CRDR 3237465, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the Enforcement Policy: NCV 05000528/2008005-02, "Failure to Adequately Implement Procedure Requirements for Refueling Machine Operation."



## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, procedure requirements, and technical specifications to ensure that the four surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- October 31, 2008, Unit 1, local leak rate test on Penetration 42A
- November 7, 2008, Unit 3, Train B ESF pump room and fuel building operability test

- November 26, 2008, Unit 3, in-service test of Train B condensate transfer pump
- December 4, 2008, Unit 2, comprehensive pump test on Train B auxiliary feedwater pump

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

**1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)**

a. Inspection Scope

The inspector performed an in-office review of Revision 42 to the Palo Verde Nuclear Generating Station Emergency Plan, submitted November 5, 2008, and Revision 25 to Emergency Plan Implementing Procedure EPIP-99, "EPIP Standard Appendices." The Emergency Plan revision implemented emergency action level changes to the fission product barriers and radiological emergency action levels which were approved in an NRC Safety Evaluation dated June 24, 2008 (ML080170579).

The revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to the criteria of NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," Revision 2, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q). The inspector verified that the approved emergency action level changes were implemented in the current implementing procedure. However, the inspector did not evaluate any other changes that were not part of the safety evaluation; therefore, these revisions are subject to future inspection.

The inspector also performed an in-office review of Revisions 40 and 41 to the Palo Verde Nuclear Generating Station Emergency Plan, both submitted August 11, 2008. These revisions provided additional detail regarding telephone switches and lines in licensee emergency response facilities, added communication links to Table 3, "Emergency Response Facility Communications Links," deleted provisions for use of a National Weather Service mobile instrumentation unit, revised the Emergency Alerting System radio station call letters, and made other minor corrections and changes.

The revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q). These reviews were not documented in a safety evaluation report

and did not constitute an approval of the licensee's changes; therefore, these revisions are subject to future inspection.

These activities constitute completion of four samples as defined in Inspection Plan 71114.04-05.

b. Findings

No findings of significance were identified.

**1EP6 Drill Evaluation (71114.06)**

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on December 10, 2008, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the control room (simulator) and the technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents 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.

**2. RADIATION SAFETY**

**Cornerstone: Occupational and Public Radiation Safety**

**2OS1 Access Control to Radiologically Significant Areas (71121.01)**

a. Inspection Scope

This area was inspected to assess licensee personnel's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six of the required 21 samples as defined in Inspection Procedure 71121.01-05.

b. Findings

No findings of significance were identified.

## **2OS2 ALARA Planning and Controls (71121.02)**

a. Inspection Scope

The inspectors assessed licensee personnel's performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed the following:

- Current three-year rolling average collective exposure
- Site-specific trends in collective exposures, plant historical data, and source-term measurements
- Site-specific As Low As is Reasonably Achievable procedures
- Three (to five) work activities of highest exposure significance completed during the last outage
- As Low As is Reasonably Achievable work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Dose rate reduction activities in work planning

- Postjob (work activity) reviews
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Exposure tracking system
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Self-assessments, audits, and special reports related to the As Low As is Reasonably Achievable program since the last inspection
- Resolution through the corrective action process of problems identified through post-job reviews and post-outage As Low As is Reasonably Achievable report critiques
- Corrective action documents related to the As Low As is Reasonably Achievable program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of 11 of the required 15 samples and six of the optional samples as defined in Inspection Procedure 71121.02-05.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

**4OA1 Performance Indicator Verification (71151)**

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the fourth Quarter 2008 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index – Auxiliary Feedwater System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index for Units 1, 2, and 3 – Auxiliary Feedwater System performance indicator for the period from the 4<sup>th</sup> quarter 2007 through the 3<sup>rd</sup> quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2007 through September 30, 2008, to validate the accuracy of the submittals. The inspectors reviewed the Mitigating Systems Performance Index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of three mitigating systems performance index heat removal system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index for Units 1, 2, and 3 - Residual Heat Removal System performance indicator for

the period from the 4<sup>th</sup> quarter 2007 through the 3<sup>rd</sup> quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, Mitigating Systems Performance Index derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2007 through September 30, 2008, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of three mitigating systems performance index residual heat removal system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index for Units 1, 2, and 3 - Cooling Water Systems performance indicator for the period from the 4<sup>th</sup> quarter 2007 through the 3<sup>rd</sup> quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, Mitigating Systems Performance Index derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2007 through September 30, 2008, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of three mitigating systems performance index cooling water system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.5 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences performance indicator for the second quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's assessment of the performance indicator for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's performance indicator data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review, and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

These activities constitute completion of one occupational radiological occurrences sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.6 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences performance indicator for the second quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of one radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined by Inspection Procedure 71151-05.



b. Findings

No findings of significance were identified.

**4OA2 Identification and Resolution of Problems (71152)**

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection**

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of July 1, 2008 through December 31, 2008, although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

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

b. Findings

No findings of significance were identified.

**4OA3 Event Follow-up (71153)**

.1 Event Report Reviews

a. Inspection Scope

The inspectors reviewed the eleven below listed Licensee Event Reports and related documents to assess: (1) the accuracy of the Licensee Event Report; (2) the appropriateness of corrective actions; (3) violations of requirements; and (4) generic issues.

b. Findings and Observations

.1 (Closed) Licensee Event Report 05000528/2006-005-01, Technical Specification Prohibited Condition Due to Check Valve Not Seated

The failure of Safety Injection Check Valve 1PSIEV134 to fully seat was previously discussed and dispositioned in Section 4OA2.2 of NRC Inspection Report 05000528;

05000529; 05000530/2006005. A non-cited violation (NCV 05000529/2006005-05) was issued for the failure to adequately evaluate the same condition on a similar valve that had occurred in 2000. Failure to perform an adequate evaluation of the previous valve occurrence precluded appropriate corrective actions to prevent the failure of Valve 1PSIEV134. The licensee submitted Licensee Event Report 05000528/2006-005-00 to document the failure of this check valve to fully seat and the inspector's review of this Licensee Event Report can be found in Inspection Report 2007003. The licensee submitted Licensee Event Report 05000528/2006-005-01 in August 2008, as a supplement to document the findings of the root cause analysis. The root cause analysis identified frictional forces acting on the spherical bearing for the valve disc and inadequate assembly by the vendor as the cause of the valve failure. During the inspector's review of the licensee event report supplement and root cause analysis, no findings of significance were identified. This Licensee Event Report is closed.

.2 (Closed) Licensee Event Report 05000528,529,530/2007-003-00, Inadequate Surveillance Test Procedure Resulting in Failure to Meet Technical Specification Requirements

On July 13, 2007, station personnel determined that surveillance test Procedure 40ST-9AF07, "Auxiliary Feedwater Pump AFA-P01 Monthly Valve Alignment," did not meet the TS Surveillance Requirement 3.7.5.1 for position verification of the steam supply bypass valves to the steam turbine driven auxiliary feedwater Pump AFA-P01. Specifically, the surveillance test procedure did not include bypass Valves SGA-UV-134A and SGA-UV-138A. The requirement to verify the position of the steam valves in the auxiliary feedwater system was added to the station Technical Specification with the implementation of Improved Technical Specifications in 1998. The steam supply valves were added to the surveillance test procedure, but the bypass valves were not. Each bypass valve is remotely automatically operated from the control room by the control switch for the associated supply valve, with no local manual operation available. The bypass valve position indicators are located on the control board directly above the control switches. If a bypass valve had been out of position, steam would have been admitted to the turbine driven auxiliary feedwater pump, which would have been readily detected by the control room operators. The licensee's corrective actions included revising the surveillance test procedure and performing the surveillances. This condition was documented in CRDR 3041288. This failure to comply with Technical Specification Surveillance Requirement 3.7.5.1 constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's enforcement policy. This Licensee Event Report is closed.

.3 (Closed) Licensee Event Report 05000528,529,530/2007-004-00, Inadequate Surveillance Test Procedure Resulted in Failure to Meet Surveillance Requirement

On August 11, 2007, a decrease in the Unit 1 Train B containment spray header level led to discovery of a void in the header, contrary to Technical Specification Surveillance Requirement 3.6.6.2, which requires the containment spray piping to be full of water to the 113 foot level in the containment spray header. By ultrasonic testing, the void was determined to be approximately 55 gallons located downstream of the outboard containment isolation valve. The licensee's root cause was the failure to properly vent the header during a fill and vent on July 1, 2007. Corrective actions included revising surveillance test Procedure 40ST-9SI13 to require ultrasonic testing analysis to confirm

each containment spray header was full, performing the surveillance test procedure on both trains of each unit, and addressing the inadequate venting performance. The void would not have resulted in a water-hammer or a significant delay in the delivery of spray to containment. This condition was documented in CRDR 3050926. This failure to comply with Technical Specification Surveillance Requirement 3.6.6.2 constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's enforcement policy. This Licensee Event Report is closed.

.4 (Closed) Licensee Event Report 05000528, 529, 530/2007-005-00; Inadequate Surveillance Test Procedure Resulted in Failure to Meet Surveillance Requirement

On August 21, 2007, during a review performed by the licensee, station personnel determined that a surveillance test procedure was not adequately testing several safety related valves. The surveillance test is used to verify that certain emergency safety feature valves can stroke within their respective response time limits. The licensee determined that the cause of the failure to perform the required testing of these valves was inadequate testing procedures. All the affected valves were assessed and the licensee determined that after the additional response time was accounted for, the total response time did not exceed any of the technical specification limits for any of the valves. Corrective actions included calculating the additional response time for each of the valves and factoring that information into the acceptance criteria for testing of the valves and changing the testing procedure to reflect the appropriate response time limits. This condition was documented in CRDR 3053981. This failure to comply with Technical Specification Surveillance Requirement 3.3.5.4 constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's enforcement policy. This Licensee Event Report is closed.

.5 (Closed) Licensee Event Report 05000528/2008-003-00, Technical Specification Required Shutdown – Safety Injection Tank 1A Inoperable

On June 5, 2008, operations personnel declared the Unit 1 safety injection Tank A inoperable. The safety injection tank was declared inoperable because a leak was identified in a vent line nozzle weld. The unit was shutdown on June 6, 2008, to make repairs to the safety injection tank, and restored to full power operation on June 7, 2008. The leak in the vent line nozzle weld was determined to be from a flaw in the weld material. The licensee determined that the base metal for the safety injection tank was unaffected by the flaw. The licensee performed a code weld repair to the safety injection tank as a corrective action for the leak. The failure to take timely corrective actions and perform an operability determination in accordance with station procedures was previously discussed and dispositioned in Inspection Report 05000528;529;530/2008003 as Non-Cited Violation 05000528/2008003-07 and Non Cited Violation 05000528/2008003-08. This condition was documented in CRDRs 3185716, 3186791 and significant CRDR 3185716. This Licensee Event Report is closed.

.6 (Closed) Licensee Event Report 05000529/2008-002-00, Manual Reactor Trip During Low Power Physics Testing

On May 28, 2008, Palo Verde Unit 2 was manually tripped during performance of low power physics testing. The operators manually tripped the unit when a subgroup of four control element assemblies was dropped from approximately 120 inches withdrawn to fully inserted. During their inspection the licensee identified that the circuit breaker for

subgroup 3 was found open; however, a root cause for the breaker opening could never be determined. The licensee's corrective actions included replacing the faulted circuit breaker and development of a maintenance task to cycle all the control element assembly circuit breakers each refueling outage to minimize the likelihood of similar occurrences. The inspectors reviewed this Licensee Event Report and no findings of significance and no violation of NRC requirements occurred. The licensee documented the dropped control element assemblies and manual reactor trip in CRDR 3183847. This Licensee Event Report is closed.

.7 (Closed) Licensee Event Report 05000528/2007-001-00, Technical Specification Prohibited Condition Due to Check Valve Not Fully Seated

On July 5, 2007, with Unit 1 in Mode 3, containment isolation check Valve 1PSIEV123 was discovered not fully seated as indicated by surveillance testing. Containment isolation check Valve 1PSIEV123 was not in its fully seated position at the time of entry into a condition that required the valve to be operable. The licensee submitted Licensee Event Report 05000528/2007-001-00 to document the failure of this check valve to fully seat. The failure of safety injection check Valve 1PSIEV123 to fully seat was previously discussed and dispositioned in Section 5.6.1 of NRC Inspection Report 05000528; 05000529; 05000530/2007012. Noncited Violation 05000528; 05000529; 05000530/2007012-04 was issued for six examples of the failure to implement the corrective action program requirements. The failure of safety injection check Valve 1PSIEV123 to fully seat was the fifth example referenced in this non-cited violation. The inspectors reviewed this Licensee Event Report and no additional findings of significance and no additional violation of NRC requirements occurred. This Licensee Event Report is closed.

.8 (Closed) Licensee Event Report 05000529/2007-001-00, Completion of A Shutdown Required by Technical Specification 3.5.3, Condition C

On February 16, 2007, Unit 2 was in Mode 1, running the high pressure safety injection Pump 2A in support of activities to determine the leak rate of oil from the pump bearings. The oil leak rate was found to be greater than acceptable and the pump was declared inoperable. A 72 hour action statement was entered for Technical Specification Limiting Condition for Operation 3.5.3, Condition B. Corrective actions could not restore the pump to operable status within the allowed time. On February 19, 2007, Unit 2 was manually shutdown. The oil leaks were repaired on February 22, 2007 and the high pressure safety injection Pump 2A was declared operable. The licensee submitted Licensee Event Report 05000529/2007-001-00 to document the completion of a shutdown required by Technical Specification 3.5.3, Condition C. The excessive oil leakage from the high pressure safety injection Pump 2A bearings was previously discussed and dispositioned in Section 4OA2.e.1 of NRC Inspection Report 05000528; 05000529; 05000530/2007007. Noncited Violation 05000529; 05000530/2007007-01 was issued for two examples of the failure to properly assess operability for high pressure safety injection pump oil leaks. The inspectors reviewed this Licensee Event Report and no additional findings of significance and no additional violation of NRC requirements occurred. This Licensee Event Report is closed.

.9 (Closed) Licensee Event Report 05000530/2006-006-01; Failure of Emergency Diesel Generator to Attain Required Voltage Due To A Failed K1 Relay Contactor

On September 22, 2006, the emergency diesel generator Train A failed to attain its required voltage during performance of a post maintenance surveillance test. The failure was caused by the field shorting contactor K1 not dropping out as required following an engine start and preventing field excitation. The licensee documented the failed emergency diesel generator in CRDR 2963482. The inspector's review of this issue identified findings associated with the licensee's failure to identify and correct a significant condition adverse to quality and failure to establish appropriate work instructions for corrective maintenance performed on the emergency diesel generator. These violations were previously discussed and dispositioned in Special Inspection Report 05000528;529;530/2006012 as apparent violations 05000530/2006012-01 and 05000528/2006012-02, the risk of which was determined to be of low to moderate safety significance, or "White." The inspectors reviewed the licensee's corrective actions for both of these "White" findings and closed these findings in section 4OA2 of Inspection Report 05000528; 529; 530/2008004. The inspectors reviewed this Licensee Event Report and no additional findings of significance were identified. This Licensee Event Report is closed.

.10 (Closed) Licensee Event Report 05000530/2008001-00, Manual Reactor Trip when Removing a Degraded Control Element Drive Mechanism Motor Generator Set from Service

On September 16, 2008, control element drive Mechanism A motor generator showed indications of being motorized (excessive amps for parallel condition with higher amps on B motor generator). During normal operation, both control element drive mechanism motor generator sets are operated in parallel in order to support control element assembly movement in group mode, however, the operators observed that both motor generator set output voltages were higher than normal. The licensee's troubleshooting efforts eventually required the operators to remove motor Generator B from service while the motor Generator A remained in service. After removing the motor Generator B from service, an under-voltage condition occurred on the control element drive mechanism system resulting in a main turbine trip and a reactor cutback. Consistent with contingency actions discussed during the troubleshooting plan, operators initiated a manual reactor trip. The licensee performed a root cause analysis and determined the failure of the motor Generator A to control voltage was due to a failed transistor on the excitation voltage power supply circuit board. The licensee replaced the circuit board and initiated a design change to incorporate a time delay into the control element drive mechanism system under-voltage relays to ensure that only valid reactor trip signals would result in a main turbine trip and reactor cutback. The licensee's corrective actions for the motor generators are to implement design modifications to prevent failures in the future. The licensee documented this issue in CRDR 3224074. The inspectors reviewed this Licensee Event Report and no additional findings of significance were identified. This Licensee Event Report is closed.

.11 (Closed) Licensee Event Report 05000530/2008002-00, Manual Reactor Trip due to High Main Turbine Vibrations during Unit Shutdown

On September 27, 2008, operators began a planned shutdown in response to elevated sulfate levels in the steam Generators A and B. At approximately 21:49, operators

received main turbine high vibration alarms and noted that the vibrations appeared to be trending up. Due to the increasing main turbine vibrations, a decision was made to manually trip the reactor at 34% power rather than at 20% power, which is the normal power level to trip the reactor. The plant was stabilized in Mode 3 with no observed abnormalities following the reactor trip. The licensee documented the plant shutdown in CRDRs 3229988 and 3233976. The inspectors reviewed this Licensee Event Report and no additional findings of significance were identified. This Licensee Event Report is closed.

## **Personnel Performance**

### **a. Inspection Scope**

On September 16, 2008, the inspectors reviewed the under-voltage 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 non-routine 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 non-routine evolution sampled.

Documents reviewed by the inspectors are listed in the attachment.

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

### **b. Findings**

No findings of significance were identified.

## **40A5 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 Implementation of Temporary Instruction 2515/176, "Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing"

a. Inspection Scope

The objective of Temporary Instruction 2515/176 was to gather information to assess the adequacy of nuclear power plant emergency diesel generator endurance and margin testing as prescribed in plant-specific technical specifications. The inspector(s) reviewed the licensee's technical specifications, procedures, and calculations and interviewed licensee personnel to complete the temporary instruction. The information gathered while completing this temporary instruction was forwarded to the Office of Nuclear Reactor Regulation for further review.

b. Findings

No findings of significance were identified.

.3 Temporary Instruction 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds"

Temporary Instruction TI 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds" was continued at Palo Verde Nuclear Generating Station Unit 1 during Refueling Outage 1R14 in October 2008.

**Licensee's Implementation of the Material Reliability Program - 139 Baseline Inspections**

The inspectors reviewed records of examination activities associated with the Palo Verde Nuclear Generating Station Material Reliability Program-139 program. The baseline inspections of the pressurizer dissimilar metal butt welds for Unit 1 were completed during the spring 2007 Refueling Outage 1R13. Baseline inspections for the dissimilar metal butt welds that are greater than 14 inch diameter and exposed to temperatures equivalent to the hot leg were volumetrically inspected after mitigation this outage. Baseline inspections for dissimilar metal butt welds that are exposed to temperatures equivalent to the cold leg are scheduled to have a weld overlay or volumetrically inspected during the spring 2010 Refueling Outage 1R15. The licensee is currently determining whether full coverage of the weld can be obtained via volumetric inspection.

At present, the licensee has not planned any deviations from the baseline inspection requirements of Material Reliability Program-139, and all other applicable dissimilar metal butt welds were scheduled in accordance with Material Reliability Program-139 guidelines and NRC approved schedules.



## Volumetric Examinations

The inspectors did not review or observe volumetric examinations prior to mitigation of dissimilar metal butt welds, but did review surface examinations prior to mitigation of dissimilar metal butt welds in the shutdown cooling Loops 1 and 2. The examination techniques met the requirements of the MRP-139 guidelines (i.e., personnel, procedures, and equipment qualified in accordance with American Society of Mechanical Engineers Code, Section XI, Supplement VIII [Performance Demonstration Initiative] requirements).

The inspectors reviewed records of the volumetric examinations performed on Unit 1 pressurizer welds. Nondestructive examinations for the following welds were reviewed:

<u>Location</u>	<u>Category</u>	<u>Diameter (in.)</u>	<u>Weld Identification</u>
Surge Nozzle (Pressurizer Side)	H (B after FSWO*)	12	WOL-004
Surge Nozzle (Hot Leg Side)	D (B after FSWO*)	12	WOL-005
Spray Nozzle	H (B after FSWO*)	4	WOL-003
Safety Nozzle	H (B after FSWO*)	8	WOL-200
Safety Nozzle	H (B after FSWO*)	8	WOL-201
Safety Nozzle	H (B after FSWO*)	8	WOL-202
Safety Nozzle	H (B after FSWO*)	8	WOL-203
Shutdown Cooling A Loop 1	D (B after FSWO*)	16	WOL-006A
Shutdown Cooling B Loop 2	D (B after FSWO*)	16	WOL-006B

\* FSWO – Full Structural Weld Overlay

The inspection coverage met the requirements of Material Reliability Program-139.

The certification records of ultrasonic examination personnel used in the examination of the mitigated pressurizer nozzles dissimilar metal butt welds and personnel used in the examination of the shutdown cooling Loops 1 and 2 dissimilar metal butt welds were reviewed. All personnel records showed that they were qualified under the Electric Power Research Institute Performance Demonstration Initiative.

Deficiencies were identified during the nondestructive examination of the pressurizer weld overlays, and correctly dispositioned.

## Weld Overlays

The inspectors observed structural weld overlay welding on shutdown cooling Loops 1 and 2 dissimilar metal butt welds and reviewed seven records pertaining to the

pressurizer nozzles dissimilar metal butt welds. The inspectors determined that welding was performed in accordance with American Society of Mechanical Engineers Code Section IX requirements. Welding inspections are documented in section 1R08 of this inspection report.

Weld overlay records for the Unit 1 Shutdown Cooling Loops 1 and 2 dissimilar metal butt welds and pressurizer nozzles dissimilar metal butt welds were reviewed and were found to be in conformance with NRC-approved Relief Request 36, "Proposed Alternative: Use of Full-Structural Weld Overlays in the Repair of Dissimilar Metal Welds - Third Interval - Units 1 and 3," dated May 8, 2008 and Relief Request 36 was previously approved for Units 1 and 3 for the Second Interval to perform the pressurizer weld overlays.

The qualification records of welders were reviewed and all qualifications were current.

Deficiencies identified during weld overlays were correctly identified and correctly dispositioned.

### **Mechanical Stress Improvement**

No mechanical stress improvement processes were used during this outage.

### **In-service inspection program**

Palo Verde Nuclear Generating Station has prepared an Alloy 600 Management Program Plan which incorporates requirements of Material Reliability Program-139. Dissimilar metal butt weld inspections are scheduled consistent with the requirements of Tables 6-1 and 6-2 of MRP-139. In support of the Alloy 600 Management Program, the licensee maintains a tracking program for their dissimilar metal butt welds, which includes the weld location, nondestructive examination method of inspection, schedule for inspection, and status relative to their ten year in-service inspection plan.

Six welds on the Unit 1 pressurizer were originally categorized as "H" in accordance with Material Reliability Program-139, Section 6.8. Category H weldments are those that are not made of resistant materials and cannot be volumetrically inspected in accordance with Material Reliability Program-139 guidance, and are exposed to temperatures equivalent to hot leg or pressurizer temperatures. All six welds have been mitigated by full structural weld overlays and have been re-categorized as "B" welds in accordance with Section 6.2. Category B weldments are those not made of resistant materials, have no known cracks based on examination by personnel using procedures in conformance with qualified ultrasonic test techniques, and that have been reinforced by a full structural weld overlay made of primary water stress corrosion cracking-resistant material.

No Category "I" welds exist. Category I weldments are those that are not made of resistant materials and cannot be volumetrically inspected in accordance with Material Reliability Program-139 guidance and are exposed to temperatures equivalent to cold leg temperatures.

The inspectors' review determined that the hot leg and cold leg dissimilar metal butt welds are appropriately categorized in accordance with Material Reliability Program-139 requirements.

The licensee's Material Reliability Program-139 in-service inspection program will receive additional inspection effort in the future to examine the licensee's progress.

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

**Quarterly Confirmatory Action Letter Inspection**

This inspection was the fourth 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 and to verify their progress in addressing the specific actions in the NRC Confirmatory Action Letter dated February 15, 2008.

The Confirmatory Action Letter contains a subset of actions delineated in the site integrated improvement plan that the NRC determined were necessary to address the performance insights identified by Palo Verde Nuclear Generating Station assessment activities and the NRC 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 areas to be inspected are identified in the revised Confirmatory Action Letter. The licensee submitted a list of the specific tasks, including due dates, associated with the action plans and strategies for each of the Confirmatory Action Letter items on March 31, 2008. The items selected for this quarterly Confirmatory Action Letter 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 site integrated improvement plan tasks listed below for an in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) site integrated improvement plan task matches the condition report action item description; (2) corrective actions adequately address the site integrated improvement plan task; (3) verification of site integrated improvement plan task completion; (4) timely completion of corrective actions in accordance with the site integrated improvement plan schedule; (5) review of metrics and measures for improved performance; (6) independent verification of improved performance; and (7) closure of site integrated improvement plan 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 Confirmatory Action Letter task personnel; and (4) reviewed root and apparent causes to verify effectiveness of task closures.

- Task 1.2.C.11 (Confirmatory Action Letter Item 12 and site integrated improvement plan Action Plan 2, Strategy 1) (CRAI 3065236) – Revise/implement plan to complete the Reliability Centered Maintenance Project and complete the Reliability Centered Maintenance project.
- Task 2.1.D.5.a (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 6, Strategy 5) (CRAI 3064362) – Benchmark/develop leadership/management model on the vision, mission, values, and expected behaviors for areas identified by IMPACT team and core fundamental areas.
- Task 2.1.D.5.b (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 6, Strategy 5) (CRAI 3075713) – Develop training to incorporate the expected behaviors for all leaders and frontline workers.
- Task 2.1.D.5.c (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 6, Strategy 5) (CRAI 3075716) – Provide training developed under CRAI 3075713 to Directors and above.
- Task 2.1.D.6 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 6, Strategy 5) (CRAI 3075803) – Benchmark and develop an accountability model/accountability process.
- Task 2.2.E.1.b (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 10, Strategy 6) (CRAI 3076263) – Evaluate site portion of current initial and continuing training contained in the supervisory leadership program and provide recommendations for changes.
- Task 3.2.5.a (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 6) (CRAI 3047257) – Determine/define roles and responsibilities of oversight functions (e.g. Performance Improvement Department, Corrective Action Review Board, and Nuclear Assurance Department).

- Task 3.2.5.c (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 6) (CRAI 3047259) – Implement root and apparent cause review checklists to be used by Performance Improvement Department, Corrective Action Review Board, and Nuclear Assurance Department.
- Task 3.4.10.b (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3038034) – Provide dedicated resources to support Action Request Review Committee Palo Verde Action Request review and classification activities and ensure that the Action Request Review Committee is their primary job function.
- Task 3.4.10.c (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3038054) – Revise Procedure 01DP-0AP12, Palo Verde Action Request Processing, to ensure that Substantive Crosscutting Issues identified in NRC Reports and Confirmatory Action Letters are classified as Significant.
- Task 3.4.10.f (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3038049) – Revise the Root Cause Evaluation Manual for Significant Condition Report/Disposition Reports based on benchmarking of the industry.
- Task 3.4.10.i (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3038039) – Incorporate Apparent Cause Evaluator Qualification requirements into Training Program Description to ensure that apparent cause evaluator evaluations are only assigned to personnel who are qualified.
- Task 3.4.4.c (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 5, Strategy 1) (CRAI 3047282) – Review other departmental programs/processes used in implementing Updated Final Safety Analysis Report programs to identify potential corrective action processes outside the formal Corrective Action Program.
- Task 3.4.9.d (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3047468) – Review and implement, as appropriate, previously identified process improvements.
- Task 3.7.5.e (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2785329) – Review Containment Systems Independent Design Review to determine if any other design requirement was not incorporated in design documents.
- Task 3.7.5.f (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2785331) – Review the Auxiliary Feedwater System Independent Design Review to determine if any other design requirement was not incorporated in design documents.

- Task 3.7.5.i (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2785337) – Review the results of the Independent Design Review reviews to determine if further reviews are required.
- Task 3.7.5.l (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2824066) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (auxiliary feedwater system).
- Task 3.7.5.m (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2824198) – Document a discrepancy on essential cooling water cross-tie identified during the review of the Auxiliary Systems Independent Design Review.
- Task 3.7.5.n (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2824241) – Document a discrepancy on essential cooling water heat loads and post accident peak essential cooling water temperature identified during review of auxiliary systems.
- Task 3.7.5.nn (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2825473) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (Combustion Engineering control systems).
- Task 3.7.5.o (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2825202) – Document a potential discrepancy on applicability of seismic requirement to containment access purge filter identified during review of Containment Systems.
- Task 3.7.5.oo (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2830991) – Resolve two hour battery capacity requirement for station blackout issue.
- Task 3.7.5.p (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2825460) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (containment systems).
- Task 3.7.5.r (Cal Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (balance of plant instrumentation and controls).
- Task 3.7.5.s (Cal Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) - Conduct extent of condition review to determine if

there were other instances of design or licensing commitments identified that were not effectively translated into design documents (equipment qualification).

- Task 3.7.5.t (Cal Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) - Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (fire protection).
- Task 3.7.5.v (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2893284) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents (auxiliary systems).
- Task 3.7.7.b (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 2; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 1) (CRAI 3102764) – Streamline the case study for the recirculation actuation signal event and initiate expectations for its use during pre-job briefings for self-assessments, significant investigations, and high tiered operating experience evaluations.
- Task 3.7.7.g (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 8) (CRAI 2825646) – Review a sample of past Tracking Trends documents and Topical Reports to determine whether Palo Verde should take additional actions to address the conditions identified in the reports. Perform a collective evaluation of the results of the review to determine whether the sample size should be expanded.
- Task 3.7.7.q (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 1) (CRAI 3145751) – Develop and provide briefing to selected leaders for communication of expectations and guidance to effectively use operating experience in day-to-day activities for the prevention and mitigation of events.
- Task 3.7.8.m (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 7, Strategy 3) (CRAI 2894682) – Develop and implement a work assignment checklist for the engineers assigned to Design Engineering-Instrumentation and Controls/Electrical.
- Task 3.7.8.n (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 7, Strategy 3) (CRAI 2894687) – Develop and implement a work assignment checklist for the engineers assigned to Design Engineering-Mechanical.
- Task 3.7.8.o (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 7, Strategy 3) (CRAI 2894689) – Develop and implement a work assignment checklist for the engineers assigned to Component Engineering.

- Task 3.7.9.c (Cal Item 1 and site integrated improvement plan Action Plan 15, Strategy 8) - Assigning the responsibility for performance of modifications to contractors while maintaining a core of experienced design engineers to maintain oversight of the technical adequacy of the work products and contractors.
- Task 4.1.F.15 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12) - Brief Action Request Review Committee and the Corrective Action Review Board on the recent changes to Procedure 40DP-9OP26.
- Task 4.1.G.10 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 4) (CRAI 3064341) – Identify, and review for aggregate impact, any proceduralized operator work-arounds or burdens that challenge nuclear safety and initiate Palo Verde Action Requests if such challenges exist.
- Task 4.1.G.11 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 4) (CRAI 3076145) – Proceduralize periodic aggregate impact reviews for operator work-arounds and burdens.
- Task 4.1.G.4 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3064339) – Review Institute of Nuclear Power Operations 01-002, "Conduct of Operations," and identify the key operations department attributes and behaviors of an operationally focused organization.
- Task 4.1.G.6.a (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3064340) – Develop Operational Focus training module and perform a Needs Analysis to determine the training required for establishment of an operationally focused organization (Operations).
- Task 4.1.G.6.b (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3076121) – Develop Operational Focus training module and perform a Needs Analysis to determine the training required for establishment of an operationally focused organization (Maintenance).
- Task 4.1.G.6.c (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3076123) – Develop Operational Focus training module and perform a Needs Analysis to determine the training required for establishment of an operationally focused organization (Engineering).
- Task 4.1.G.6.d (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3076124) – Develop Operational Focus training module and perform a Needs Analysis to determine the training required for establishment of an operationally focused organization (Radiation Protection).



- Task 4.1.G.6.e (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 8) (CRAI 3076126) – the training required for establishment of an operationally focused organization. Develop Operational Focus training module and perform a Needs Analysis to determine (Chemistry)
- Task 5.1.E.3 (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 3, Strategy 4) (CRAI 3062967) – Incorporate Operability Determination in Engineering Continuing Training program requirements.
- Task 6.1.1.a (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11 Part 1, Strategy 1) (CRAI 3022263) – Revise policy for human performance program to include leadership fundamentals (questioning attitude, technical rigor, decision making process).
- Task 6.1.2.a (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11 Part 1, Strategy 1) (CRAI 3032687) – Revise policy for human performance program to include engineering fundamentals (questioning attitude, technical rigor, decision making process).
- Task 6.1.3.a (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11 Part 1, Strategy 1) (CRAI 3032691) – Identify/revise procedures containing direction to use human performance tools associated with engineering tools.
- Task 6.1.3.b (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11 Part 1, Strategy 1) (CRAI 3014453) – Identify revised stations standard for graded approach to engineering error prevention tools.
- Tasks 6.1.7 and 6.1.8 (Confirmatory Action Letter item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 1) (CRAIs 3020641 and 3020644) – Develop/define what questioning attitude and technical rigor are for the site.
- Task 6.11.2.b (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 11) (CRAI 3112282) Benchmarking will be performed periodically to specifically address current standards for communication of control room alarms, status changes, and expected alarm announcements.
- Task 6.11.2.d (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 11) (CRAI 3112290) – Incorporate changes in Procedures ODP-01, "Operations Department Practices," and 40DP-9OP02, "Conduct of Operations" into requalification training for operators and operations training instructors.
- Task 6.11.2.f (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 11) (CRAI 3112294 and 3206024) – Train operating crews and operations training instructors in the changes in standards during licensed operator continuing training simulator training.

- Task 6.4.6 (Confirmatory Action Letter item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 2) (CRAI 3020647) – Develop a training program based on the definition from benchmarking for questioning attitude and technical rigor results and include systematic approach to decision making.
- Task 6.4.7 (Confirmatory Action Letter item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 2) (CRAI 3193755) – Present "questioning attitude and technical rigor" training concept to the Training Oversight Committee to obtain concurrence on concept, population to receive training, and schedule for development and implementation.
- Task 6.5.2.d (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11 Part 1, Strategy 2) (CRAI 3022273) – Perform a quarterly review and analysis of the site and department indicators, corrective action data, and observation data for potential declining trends in human performance.
- Task 6.7.17 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 5; and Confirmatory Action Letter Item 6 and site integrated improvement plan Action Plan 6 Part 2, Strategy 3) (CRAI 3096122) – Evaluate Significance Operating Experience Report listing from the Institute of Nuclear Power Operations and re-evaluate analysis and corrective actions taken by the station in response to implementing the recommendations. Develop additional actions if necessary.
- Task 6.7.30 (Confirmatory Action Letter Item 6 and site integrated improvement plan Action Plan 6 Part 2, Strategy 3) (CRAI 3133784) – Develop plan to validate and perform effectiveness reviews on other past high tier operating experience received from Institute of Nuclear Power Operations /NRC.
- Task 6.7.7 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 4) (CRAI 2988515) - Evaluate and implement metrics/indicators to include station performance on and overall health of the Operating Experience program.
- Task 7.1.B.1 (Confirmatory Action Letter Item 9 and site integrated improvement plan Action Plan 1, Strategy 7) (CRAI 3063112) – Develop and implement a site-wide communication strategy to address site alignment, operational focus and site-wide penetration of messages.
- Task 7.1.B.5 (Confirmatory Action Letter Item 9 and site integrated improvement plan Action Plan 1, Strategy 7) (CRAI 3063116) – Develop/implement a meeting strategy to ensure alignment of organization and frontline exposure to senior leadership.
- Task 8.4.4 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 10, Strategy 1) (CRAI 3063855) – Develop a process to conduct crosscutting reviews during management review meetings including corrective action program, human performance, and safety culture.

- Task 8.4.5 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 10, Strategy 1) (CRAI 3063856) – Implementation of crosscutting reviews as noted in Task 8.4.4 to commence second quarter 2008.
- Task 11.4.15 (Confirmatory Action Letter Item 6 and site integrated improvement plan Action Plan 3, Strategy 5; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 1) (CRAI 3066464) – Establish a process to formally provide technical information by the engineering staff.
- Task 11.6.1.a (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 3; Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 10, Strategy 4; and Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 5) (CRAI 3062305) – Complete a component design basis review on high risk components in the diesel generator system.
- Task 11.6.1.b (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 3; Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 10, Strategy 4; and Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 5) (CRAI 3111000) – Complete a component design basis review on high risk components in the auxiliary feedwater system.
- Task 11.6.1.c (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 3; Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 10, Strategy 4; and Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 5) (CRAI 3111001) – Complete a component design basis review on high risk components in the safety injection system.
- Task 11.7.4 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 2) (CRAI 3062346) – Perform training for identified Maintenance department personnel on configuration change process, as needed.
- Task 11.7.5 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 2) (CRAI 3062349) – Perform training for identified Operations department personnel on configuration change process, as needed.
- Task 11.7.6 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 4, Strategy 2) (CRAI 3062351) – Perform training for identified work control department personnel on configuration change process, as needed.
- Task 15.2.1.a (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 2, Strategy 7) (CRAI 3153154) – Develop guidelines delineating station benchmarking expectations including requirements for participation in benchmarking activities.

- Task 3.7.4.l (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 10) (CRAI 2937334) – Create "stand-alone" plant walkdown procedure to incorporate safety system walkdowns using the 12 week schedule.
- Task 3.7.3.q (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 2; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 10, Strategy 1) (CRAI 2825641) – Engineering to communicate to all potential design basis manual users, on the possible limitations of the design basis manual and measures to effectively use the design basis manuals. Accuracy of the design basis manuals may not be 100 percent; there may be errors of omission (primarily unincorporated engineering design changes, and other possible omissions) and possibly inaccurate content. Users should "validate" and "quality verify" the information with other resources when possible. Users should also understand the context of set point information; the differences between safety limits, operational bands, instrument inaccuracies, etc.
- Task 11.3.14 (Confirmatory Action Letter Item 12 and site integrated improvement plan Action Plan 4, Strategy 6) (CRAI 3064843) – Develop metrics to facilitate and monitor burn-off of temporary installations identified in Task 11.3.13.
- Task 3.7.4.m (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 10) (CRAI 2938060) – Develop and administer a practical demonstration of plant walkdowns to the auxiliary operators.
- Task 4.1.F.13 (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12) (CRAI 3105757) – Train all Senior Reactor Operators and Shift Technical Advisors in the immediate operability determination process.
- Task 4.1.F.16 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 2, Strategy 2; and Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12) (CRAI 3105758) – Develop/incorporate an Operability Determination process lesson plan into initial License Training that uses actual events for exercises.
- Task 4.1.F.17 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1; and Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12) (CRAI 3109594) – Develop/incorporate a lesson plan into Initial Non-License Training that uses actual events for exercises with emphasis on the importance of Area Rounds and field observations as input to the control room determination of degraded safety systems.
- Task 4.1.F.21 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 2, Strategy 2; and Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12)

(CRAI 3105761) – Provide operability determination training to engineering Fix-It-Now team and Senior Reactor Operators and Shift Technical Advisors on the operability determination related procedure changes, the standard for technical rigor, and use of design basis information in support of prompt operability determinations.

- Task 4.1.F.23 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 2, Strategy 2; and Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 12) (CRAI 3105763) – Establish a formal qualification requirement for prompt operability determination preparation and incorporate into the engineering training program.
- Task 1.2.E.35 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 5, Strategy 1) (CRAI 3107133) – Ensure condition report action items are in place and linked to CRDR 3048870 for each program owner to complete self-assessments using Policy Guide 120 based on the ranking and recommended schedule developed in CRAI 3065077.
- Task 3.7.5.dd (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 2; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 6) (CRAI 2825630) – Training will develop the Emergency Core Cooling Sump event as a case study emphasizing how the design configuration escaped detection for over 20 years during various missed opportunities.
- Task 3.7.4.q (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 10) (CRAI 2937950) – Provide plant walkdown training for auxiliary operators using the NRC Plant Walkdown Guide as a reference.
- Task 3.7.5.z (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4) (CRAI 2956158) – Cover lessons learned from technical communications trends during engineering events training.
- Task 3.7.5.aa (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4) (CRAI 3053911) – Determine action plan to identify a means of tracking/sampling the impact reviews to ensure reviews get to all of the correct groups and review is accurate.
- Task 6.7.11 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 1; and Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 2, Strategy 4) (CRAI 2941720) – Develop a process to add operating experience to work packages.
- Task 3.3.12 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 5) (CRAI 3065881) – Commence/document review of 100 percent of closed Condition Report/Disposition Reports on month-to-month basis using existing closure quality review criteria.

- Task 3.7.5.mm (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 1, Strategy 3; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 2) (CRAI 2856525) – Develop and implement a plan for improving qualification, validation & verification of engineering products.
- Task 6.11.2.e (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 11) (CRAI 3112292) – Develop a lesson plan that provides training communication of control room alarms and status change into initial simulator training. Institute of Nuclear Power Operations Area for Improvement OP.1-1
- Task 20.5.1 (Confirmatory Action Letter Item 7, and site integrated improvement plan Action Plan 12, Strategy 8) (CRAI 3083285) – Complete the Safety Culture Improvement Plan (Maintenance Services).
- Task 1.2.C.12 (Confirmatory Action Letter Item 12 and site integrated improvement plan Action Plan 2, Strategy 1) (CRAI 3109106) – Improve the effectiveness of preventive maintenance programs and complete the reliability centered maintenance project actions.
- Task 1.2.F.4 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 3 Part 2, Strategy 6; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 8) (CRAI 3060770) – Revise the system engineering handbook to include the expectations identified in item 1.2.F.3.
- Task 1.2.E.32 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 5, Strategy 8) (CRAI 3109552) – Improve the effectiveness of engineering and component programs.
- Task 3.3.2.a (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 6) (CRAI 3047268) – Establish a core group of root cause evaluators.
- Task 3.7.5.g (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2785335) – Review the alternating current power systems independent design review to determine if any other design requirement was not incorporated in design documents.
- Task 3.7.5.q (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRAI 2825464) – Conduct extent of condition review to determine if there were other instances of design or licensing commitments identified that were not effectively translated into design documents.
- Task 3.7.5.u (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 4, Strategy 4) (CRDR 2893281) – Track resolution of open items associated with recirculation actuation signal event.

- Task 3.4.10.h (Confirmatory Action Letter Item 3 and site integrated improvement plan Action Plan 6 Part 1, Strategy 10) (CRAI 3038050) – Revise Procedure 90DP-OIP10, "Condition Reporting," to require that procedure changes implemented as corrective actions to prevent recurrence be annotated.
- Task 3.7.9.i (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 8, Strategy 2) (CRAI 2856499) – Complete implementation and closure of corrective actions associated with the recirculation actuation signal event.
- Task 4.4.35 (Confirmatory Action Letter Item 7 and site integrated improvement plan Action Plan 12, Strategy 8) (CRAI 3106479) – Improve the site safety culture.
- Task 6.10.1 (Confirmatory Action Letter Item 9 and site integrated improvement plan Action Plan 12, Strategy 9) (CRAI 3076290) – Improve change management practices at Palo Verde.
- Task 6.11.2.c (Confirmatory Action Letter Item 8 and site integrated improvement plan Action Plan 1, Strategy 11) (CRAI 3112285) – Based on benchmark results, revise Procedures ODP-01, "Operations Department Practices," and 40DP-9OP02, "Conduct of Shift Operations," to reflect industry best practices.
- Task 3.7.4.g (Confirmatory Action Letter Item 1 and site integrated improvement plan 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 operation experience evaluations for use by all of Engineering.
- Task 3.7.4.h (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 7) (CRAI 2830094) – Review the guidance in Procedure 93DP-0LC05 to ensure that adequate technical reviews are performed in response to Generic Letters, Bulletins, or other NRC correspondence.
- Tasks 3.7.5.gg and 3.7.8.j (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 2) (CRAI 3082354) – Revise NGT-91 to communicate the design basis manual usage limitations to future engineering staff.
- Task 4.4.32 (Confirmatory Action Letter Item 7 and site integrated improvement plan Action Plan 12, Strategy 10) (CRAI 3082475) - Include in the apparent cause evaluation: appropriate interdisciplinary input/review, review of products/processes to ensure technical adequacy, and priority of improvements to the Corrective Action Program and Work Management.
- The inspectors were made aware of certain tasks 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. The inspectors re-reviewed the following task closure packages:

- Task 3.2.9.b (Confirmatory Action Letter Item 6 and site integrated improvement plan Action Plan 3, Strategy 13) (CRAI 3132248) – Review preventive maintenance items currently planned to be performed past their due date plus grace period.
- Tasks 3.7.3.o, 3.7.5.gg and 3.7.8.j (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 10, Strategy 1; and Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 2, Strategy 2) (CRAI 2894710) – Revise NGT-91 to communicate the design basis manual usage limitations to future engineering staff.
- Task 3.7.3.p (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 1, Strategy 2) (CRAI 2785390) – Implement Work Order #2760330 to implement the Emergency Core Cooling Suction Piping Modification in Unit 1.
- Task 3.7.7.f / 3.7.4.g (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 4) (CRAI 2825634) – Engineering will apply an independent verification process for the technical quality of high-tiered internal operating experience evaluations for use by all of Engineering.
- Task 3.7.4.h/3.7.7.k (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 6, Strategy 7) (CRAI 2830094) – Review the guidance in 93DP-OLC05 to ensure that adequate technical reviews are performed in response to Generic Letters, Bulletins, or other NRC correspondence.
- Task 11.9.A.8 (Confirmatory Action Letter Item 1 and site integrated improvement plan Action Plan 15, Focus Area 8, Strategy 3; and Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 3, Strategy 10) (CRAI 3062655) – Issue initial base load work schedules for Design, System, and Maintenance Engineering Department.
- Task 6.5.2.c (Confirmatory Action Letter Item 4 and site integrated improvement plan Action Plan 11, Part 1, Strategy 2) (CRAI 3022272) – Fourth quarter 2007, review and determine if additional analysis is required for declining human performance.
- Task 11.1.6 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 3, Strategy 2) (CRAI 3076314) – Provide training on the Conduct of Engineering procedure develop under task 11.8.30 to the engineering staff and implement procedure.
- Task 1.2.E.28 (Confirmatory Action Letter Item 5 and site integrated improvement plan Action Plan 5, Strategy 9) (CRAI 3109541) – Review the



Equipment Qualification self-assessment and enter improvement actions in the corrective action program.

- Task 1.2.E.35, ensure condition report action items are in place and linked to CRDR 3048870 for each program owner to complete self-assessments using Policy Guide 120 based on the ranking and recommended schedule developed in CRAI 3065077, was reviewed in draft form in NRC Inspection Report 05000528/529/530/2008002, but was waiting final closure review board review before the task was closed. This task was re-reviewed this quarter and is considered completed and closed.

The inspectors considered all of the above tasks closed except Task 3.7.3.q. For more details, see section 4OA5.3.b.1.

b. Findings and Observations

.1 Task Closure

Each task within the site integrated improvement plan 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 site integrated improvement plan and the Confirmatory Action Letter. These tasks were in various stages of the closure process, including some items that were still open. The site integrated improvement plan task closure packages that were completed were reviewed in accordance with Procedure 01DP-0AC06, "Site Integrated Business Plan/Site Integrated Improvement Plan Process," to determine if PVNGS personnel were following the closure process. The process has three closure categories:

- Category A – included significant conditions adverse to quality and Confirmatory Action Letter items
- Category B – included adverse conditions and improvement plan Priority 3 condition report action items
- Category C – included improvement plan Priority 4 condition report action items.

Category A tasks get the most reviews including: the standard Condition Report/Disposition Report and condition report action item closure process; initiative lead concurrence that the action is ready for closure; reviewed and approved by the Condition Report/Disposition Report Review Board; and, independent reviews from senior management led boards.

During the review of the site integrated improvement plan tasks, the inspectors identified quality issues, associate with the closure packages for Tasks 3.7.3.q; 3.2.9.b; 4.1.G.6.a; 3.7.5.e; 6.7.17; 6.7.30; 11.3.14; 3.7.4.l; 3.7.5.dd; and 3.7.5.z as follows:

- Closure package for Task 3.7.3.q; engineering to communicate to all potential design basis manual users, on the possible limitations of the design basis manual and measures to effectively use the design basis manuals. Accuracy of the design basis manuals may not be 100 percent there may be errors of omission (primarily unincorporated engineering design changes, and other

possible omissions) and possibly inaccurate content. Users should "validate" and "quality verify" the information with other resources when possible. Users should also understand the context of set point information; the differences between safety limits, operational bands, instrument inaccuracies, etc; did not address the setpoint information as discussed in the task, and the setpoint information portion was deleted from the task without relaying the information to the NRC. The inspectors are reviewing whether the setpoint information should be in the task, and should be addressed in the closure package. This task will remain open pending further NRC review. To address this issue, PVARs 3259364 and 3259437 were written.

- Closure package for Task 3.2.9.b, review preventive maintenance items currently planned to be performed past their due date plus grace period, was reopened after a Nuclear Assurance department review determined that 13 of the identified preventative maintenance items need to have an engineering evaluation to ensure component operability. The inspectors determined the engineering evaluation was inadequate, and the components did not get the required operability review. Also, after questions from the inspectors, maintenance personnel determined these 13 components should be in the out of tolerance program for instruments used to satisfy technical specification surveillance requirements. Further, the equipment classification codes for these components were still classified as not needing preventative maintenance, such that the preventative maintenance requirements could have been deleted again. There are no current operability concerns since all 13 components have up to date preventative maintenance calibrations. Two of the items involving diesel generator starting air pressure transmitters, were found to be out of calibration when the preventative maintenance was performed. However, there were no past operability impacts or maintenance rule issues since the components were found to be out of calibration in a conservative direction. To address these issues, PVARs 3260866, 3260878, 3260874, 3260935, 3260959 were written.
- Closure package for Task 4.1.G.6.a, incorporate operational focus training into initial and continuing training for licensed operator, non-licensed operator, shift manager, and shift technical advisor training programs, did not include the comprehensive assessment as the task described. To address this issue, PVAR 3259688 was written.
- Closure package for Task 4.1.G.6.a, incorporate operational focus training into initial and continuing training for licensed operator, non-licensed operator, shift manager, and shift technical advisor training programs, was not scheduled for the 2008 Cycle 5 non-licensed operator continuing training. To address this issue, PVAR 3259601 was written.

- Closure package for Task 3.7.5.e, review Containment Systems Independent Design Review to determine if any other design requirement was not incorporated in design documents, did not revise Calculation 13-MC-CH-0201 for a non-conservative containment pressure value. The licensee reevaluated this calculation and determined that the current calculation is conservative. To address this issue, PVAR 3260354 was written.
- Closure package for Task 6.7.17, evaluate Significant Operating Experience Report listings from the Institute for Nuclear Power Operations and re-evaluate analysis and corrective actions taken by the station in response to implementing the recommendations, did not incorporate continued training for supervisors and managers on the Chernobyl accident. To address this issue, PVAR 3260817 was written.
- Closure package for Task 6.7.30, develop a plan to validate and perform effectiveness reviews on other past high tier operating experience received from INPO/NRC, did not address two tasks from CRAIs 3217955 and 3217956, and were not included in the Site Integrated Business Plan. To address this issue, PVAR 3259510 was written.
- Draft Closure package for Task 11.3.14, develop metrics to facilitate and monitor burn-off of temporary installations identified in Task 11.3.13, did not develop a metric for temporary jumper installations, and did not develop sustainable metrics for temporary installations. To address these issues, CRAIs 3260351, 3260358, 3260359, 3260360, 3260514 were written.
- Closure package for Task 3.7.4.I, create a "stand-alone" Plant Walkdown procedure to incorporate Safety System Walkdowns using the 12 week schedule, did not include some risk significant equipment. To address this issue, PVAR 3259339 was written.
- Closure package for Task 3.7.5.dd, training will develop the Emergency Core Cooling Sump event as a case study emphasizing how the design configuration escaped detection for over 20 years during various missed opportunities, developed one time only training, not continued training for sustainability. Also, training on questioning attitude, technical rigor, and tunnel vision was performed as part of the task, but was not documented in the closure package attachments. To address these issues, PVARs 3259987 and 3260002 were written.
- Closure package for Task 3.7.5.z, cover lessons learned from technical communications trends during engineering events training, developed one time only training not continued training for sustainability. To address this issue, PVAR 3259312 was written.

## .2. Metrics and Measures to Monitor Improvement

The inspectors also reviewed the site integrated improvement plan quality performance indicators, interviewed numerous personnel, and reviewed several effectiveness reviews related to Confirmatory Action Letter site integrated improvement plan actions. The inspectors noted that the licensee had developed 12 performance indicators to track the quality and schedule completion of site integrated improvement plan and Confirmatory Action Letter tasks. The performance indicators included schedule adherence burn curves, site integrated improvement plan 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. During their review of the Confirmatory Action Letter closure package quality performance indicators, the inspectors noted that it appeared overall package quality continued to improve.

## .3 Confirmatory Action Letter Item Closure

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

- Key Performance Area 6, to mitigate the potential for previous decisions to affect the quality of current evaluations associated with significant equipment problems
- Key Performance Area 9, to define and implement a change management process
- Key Performance Area 12, to address problems with backlog tracking systems and prioritization

During this Confirmatory Action Letter inspection, the inspectors reviewed and closed the three remaining open Confirmatory Action Letter items associated with Key Performance Area 6, the three remaining open Confirmatory Action Letter items associated with Key Performance Area 9, and the three remaining open Confirmatory Action Letter items associated with Key Performance Area 12. The NRC considers Key Performance Areas 6, 9, and 12 closed.

## **4OA6 Meetings, Including Exit**

On October 3, 2008, the inspectors presented the occupational and public radiation safety inspection results to Mr. R. Bement, Vice President Nuclear Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 23, 2008, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan to Ms. M. Ray, Director Emergency Planning Programs, who acknowledged the findings.

On October 24, 2008, the inspectors presented the results of this in-service inspection to Mr. J. Hesser, Vice President Engineering, and other members of licensee management. Licensee management acknowledged the inspection findings.

On December 4, 2008, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan to Ms. M. Ray, Director Emergency Planning Programs, who acknowledged the findings.

On December 4, 2008, the inspectors presented the results from the evaluation of changes, tests, or experiments inspection to Mr. R. Edington, Executive Vice President Nuclear, and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On December 16, 2008, the inspectors presented the inspection results of the Confirmatory Action Letter inspection to Mr. R. Edington, Executive Vice President Nuclear, and Chief Nuclear Officer, and other members of the licensee's management staff. The licensee acknowledged the presented findings.

On December 18, 2008, the results of the Confirmatory Action Letter 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 Arlington, Texas.

On January 13, 2009, the inspectors presented the resident inspection results to Mr. R. Bement, Vice President Nuclear Operations, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

On January 21, 2009, the inspectors conducted a telephonic exit with Mr. R. Buzard, Compliance Section Leader, to present changes in our characterization of findings.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

G. Andrews, Director, Performance Improvement  
J. Bayless, Sr. Engineer  
S. Bauer, Department Leader, Regulatory Affairs  
R. Bement, Vice President, Nuclear Operations  
P. Borchert, Unit 1 Assistant Plant Manager  
R. Browning, Sr. Engineer  
F. Burdick, Regulatory Affairs  
R. Burge, Sr. Engineer  
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, CNO  
D. Elkington, Consultant, Regulatory Affairs  
E. Fernandez, Sr. Engineer  
M. Grigsby, Unit Department Leader, Operations  
W. Grover Hettel, Director, Operations  
D. Hansen, Sr. Consulting Engineer  
D. Hautala, Senior Engineer, Regulatory Affairs  
M. Heider, Section Leader, Minor Mods  
J. Hesser, Vice President, Engineering  
G. Hettel, Director, Operations  
M. Karbasian, Director, Design Engineering  
F. Lake, Performance Improvement  
D. Mims, Vice President, Regulatory Affairs and Performance Improvement  
P. Paramithas, Department Lead, Modification Engineering  
T. Radtke, General Manager, Emergency Services and Support  
M. Ray, Director, Emergency Planning Programs  
H. Ridenour, Director, Maintenance  
R. Roehler, Regulatory Affairs, 50.59 Programs  
S. Sawtschenko, Department Leader, Emergency Preparedness  
M. Shea, Director, IMPACT  
J. Summy, Director, Plant Engineering  
J. Taylor, Unit Department Leader, Operations  
D. Vogt, Section Leader, Operations Shift Technical Advisor  
J. Waid, Director, Nuclear Training  
T. Weber, Section Leader, Regulatory Affairs  
J. Wilson, Plant Engineer/Engineering Inspections

#### Nuclear Regulatory Commission

M. Runyan, Senior Reactor Analyst, Region IV

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000528;529;530/2008005-01	FIN	Failure to Promptly Identify and Correct Degraded Hydrostatic Penetration Seals (Section 1R06)
05000528/2008005-02	NCV	Failure to Adequately Implement Procedure Requirements for Refueling Machine Operation (Section 1R20)

### Closed

05000528;529;530/2008004-03	URI	Potentially Degraded Flood Penetration Seals (Section 1R06)
05000528/2006005-01	LER	Technical Specification Prohibited Condition Due to Check Valve Not Seated (Section 4OA3)
05000528,529,530/2007-003-00	LER	Inadequate Surveillance Test Procedure Resulting in Failure to Meet Technical Specification Requirements (Section 4OA3)
05000528,529,530/2007-004-00	LER	Inadequate Surveillance Test Procedure Resulted in Failure to Meet Surveillance Requirement (Section 4OA3)
05000528,529,530/2007-005-00	LER	Inadequate Surveillance Test Procedure Resulted in Failure to Meet Surveillance Requirement (Section 4OA3)
05000528/2008-003-00	LER	Technical Specification Required Shutdown – Safety Injection Tank 1A Inoperable (Section 4OA3)
05000529/2008-002-00	LER	Manual Reactor Trip During Low Power Physics Testing (Section 4OA3)
05000528/2007-001-00	LER	Technical Specification Prohibited Condition Due to Check Valve Not Fully Seated (Section 4OA3)
05000529/2007-001-00	LER	Completion Of A Shutdown Required by Technical Specification 3.5.3, Condition C (Section 4OA3)
05000530/2006-006-01	LER	Failure of Emergency Diesel Generator To Attain Required Voltage Due To A Failed K1 Relay Contactor (Section 4OA3)
05000530/2008001-00	LER	Manual Reactor Trip when Removing a Degraded CEDM MG Set from Service (Section 4OA3)
05000530/2008002-00	LER	Manual Reactor Trip due to High Main Turbine Vibrations During Unit Shutdown (Section 4OA3)

## 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**

Drawing	Title	Revision
13-C-ZVA-001	Location and Vicinity Plan	3
13-C-ZVA-002	Site Drainage General Arrangement Plan	6
13-C-ZVA-003	Site General Arrangement Plan, Sheet 1	25
13-C-ZVC-066	Site Rough Grading Plan, Area 2	6
13-C-ZVC-067	Site Rough Grading Plan, Area 3	9
13-C-ZVC-068	Site Rough Grading Plan, Area 4	6
13-C-ZVC-071	Site Rough Grading Plan, Area 7	6
13-C-ZVC-072	Site Rough Grading Plan, Area 8	14
13-C-ZVC-085	Site Rough Grading Sections and Details Sheet 1	3
13-C-ZVC-099	Site Storm Drainage Profiles	10
13-C-ZVC-100	Site Storm Drainage Dikes and Channels Sheet 1	6
13-C-ZVC-102	Site Storm Drainage Culver, Plan, Sections and Details, Sheet 1	15

### **Section 1R04: Equipment Alignment**

Procedure	Title	Revision
40OP-9AF01	Essential Auxiliary Feedwater System	44
40ST-9AF07	Auxiliary Feedwater Pump AFA-P01 Monthly Valve Alignment	4
73DP-9ZZ05	Lubrication of Plant Equipment	26
74ST-9DF01	Diesel Generator Fuel Oil Surveillance Test	12
40OP-9HD02	Emergency Diesel Generator B Building HVAC	8
40ST-9DG02	Diesel Generator B Test	40

Drawing	Title	Revision
01-M-DFP-001	Diesel Fuel Oil & Transfer System	11
01-M-DGP-001, Sheet 1	Diesel Generator System	49
01-M-DGP-001, Sheet 2	Air Intake and Exhaust, Diesel Generator System	49
01-M-DGP-001, Sheet 3	Lube Oil, Diesel Generator System	49
01-M-DGP-001, Sheet 4	Jacket Water, Diesel Generator System	49
01-M-DGP-001, Sheet 5	Cooling Water, Diesel Generator System	49
01-M-DGP-001, Sheet 6	Starting Air, Diesel Generator System	49
01-M-DGP-001, Sheet 7	Fuel Oil, Diesel Generator System	49

### **Palo Verde Action Requests**

2962116



Condition Report/Disposition Reports

3005112      2963525

Condition Report Action Items

3017034      2963527      2963529      2963530      2974950

Miscellaneous

S-07-0139, 10 CFR 50.59 Screening and Response Justification Form, Revision 0

**Section 1R05: Fire Protection**

Procedure	Title	Revision
	Pre-Fire Strategies Manual	21
14DP-0FP33	Control of Transient Combustibles	20
30DP-0WM12	Housekeeping	18
73DP-9ZZ05	Lubrication of Plant Equipment	26
Calculation	Title	Revision
13-MC-FP-0805	Combustible Loads-Containment Building	11

Palo Verde Action Requests

3243729      3247834      3247188      3248997      3249175      3249580

Condition Report/Disposition Reports

3244931      3251395

**Section 1R06: Flood Protection**

Procedure	Title	Revision
14FT-9FP70	Appendix R and Former Technical Specification Penetration Seal Surveillance	7
31MT-9ZZ12	Replacement/Rework of Penetration and Internal Conduit Seals	7
73TI-9ZZ86	Visual Assessment of Hydrostatic/Flood, High Energy Line Break, EDP, and Radiation Barriers and Penetrations	2
81DP-0ZZ01	Civil System, Structure, and Component Monitoring Program	7
Calculation	Title	Revision
13-MC-ZA-0805	Auxiliary Building Flooding	6
13-MC-ZA-0809	As Built Auxiliary Building Flooding Calculation	4

Drawing	Title	Revision
13-A-ZZD-0002	Typical Penetration Seal Details – Conduits	27

#### Palo Verde Action Requests

2968359	3112224	3264501	3206120	3217048	3213332
3252454	3214199	3217048	3214912	3218773	3224358
3229969	3235248	3234137	3203134	3206120	3207581
3207816	3209413	3212087	3212378		

#### Condition Report/Disposition Reports

2846647	2882166	2970134	3112895	3218874	3266035
3214809	3204240	3206882	3208383	3210823	

#### Condition Report Action Items

2970135	3007692	3007697	3007702	3007708	3007710
3045868	3218875	3240602	3230894	3230646	3210824

#### Work Orders

3056337	3056342	3056345	3203218
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#### 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

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

13-AS-A003, Development of the Barrier Function List, Revision 9

#### **Section 1RO8: Inservice Inspection Activities**

Procedure	Title	Revision
70TI-9ZC01	Boric Acid Walkdown Leak Detection	7

Procedure	Title	Revision
73DP-0EE16	Qualification and Certification of Non-Destructive Examination Personnel	7
73DP-9WP05	Weld Filler Material Control	6
73DP-9XI03	American Society of Mechanical Engineers Section XI In-service Inspection	8
73DP-9ZC01	Boric Acid Corrosion Control Program	1
73DP-9ZZ17	Repair and Replacement – American Society of Mechanical Engineers Section XI	16
73TI-0ZZ13	Radiographic Examination	15
73TI-9ZZ05	Dry Magnetic Particle Examination	14
73TI-9ZZ07	Liquid Penetrant Examination	14
73TI-9ZZ78	"Visual Examination for Leakage"	9
73TI-9ZZ79	American Society of Mechanical Engineers Section XI Appendix VIII Ultrasonic Examination of Ferritic Piping	6
73WP-0ZZ05	Welding of Ferritic and Martensitic Steels	11
73WP-0ZZ05	Welding of Ferritic and Martensitic Steels	11
75RP-9RP10	Conduct of R.P. Operations Appendix A3	26
ANATEC-08	Certification of NDT Personnel (Eddy Current Method)	21
N001-0302-0374	IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations Time of Flight Ultrasonic Longitudinal Wave & Shear Wave	15
N001-0302-0383	IntraSpect Eddy Current Inspection of J-Groove Welds in Vessel Head Penetrations	10
N001-0302-0392	IntraSpect Ultrasonic Testing Analysis Guidelines	13
N001-0302-0393	IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations	12
N001-0302-0394	IntraSpect Eddy Current Analysis Guidelines	12
N001-0302-0395	IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations with Gap Scanner	9
N001-0302-0406	Pulser/Receiver Linearity Procedure	7

Procedure	Title	Revision
N001-0302-0407	IntraSpect Non-Destructive Examination Procedure for Inspection of Reactor Vessel Head Vent Tubes	11
N001-0302-0414	RVHI Vent Tube J-Weld Eddy Current Examination	6
SSI-A-005	Qualification and Certification of Nondestructive Personnel	23
SSI-A-013	Qualification and Certification of Ultrasonic Personnel for American Society of Mechanical Engineers XI PSI/ISI Inspections	3
WDI-SSP-1040	Reactor Vessel Head Penetration Inspection Tool Operation for Palo Verde Unit 1 – ROSA	1
WDP-9.2	Quality Assurance Procedure	12
WPS 01-08-T-804-Bottom	Welding Procedure Specification	1
WPS 08-08-T-001-Buttler SS	Welding Procedure Specification	2

#### Palo Verde Action Requests

3051349	3178664	3185716	3227142	3227144	3227145
3227146	3227147	3227148	3227149	3227155	3227156
3227157	3227159	3227161	3231184	3231187	3231190
3231194	3231201	3231202	3231204		

#### Condition Report Action Items

3020219

#### Work Orders

3039450	3081497	3081498	3081500	3081502	3081505
3081508	3081513	3081514	3081516	3099727	3100291
3186912	3186915	3186916	3186917	3186918	3186971
3192155					

#### Welding Reports

08-RT-1001	07-UT-1010	07-PT-158	08-MT-1007	07-UT-1011	07-PT-159
08-UT-1018	07-PT-140	07-PT-160	08-UT-1024	07-PT-141	07-PT-170
08-UT-1030	07-PT-142	07-PT-171	08-UT-1033	07-PT-143	07-PT-173
08-PT-636	07-PT-145	07-PT-174	08-PT-641	07-PT-146	07-PT-175
08-PT-643	07-PT-147	07-PT-176	08-PT-642	07-PT-148	07-PT-177
08-PT-661	07-PT-149	07-PT-178	08-PT-662	07-PT-150	07-PT-179
08-PT-1011	07-PT-151	07-PT-180	07-UT-1006	07-PT-152	07-PT-181
07-UT-1004	07-PT-153	07-PT-182	07-PT-184	07-PT-155	07-UT-1007

07-UT-1005	07-PT-154	07-PT-183	07-PT-185	07-PT-156	07-UT-1008
07-UT-1009	07-PT-157				

### **Section 1R11: Licensed Operator Regualification Program**

Procedure	Title	Revision
40AO-9ZZ11	Control Rod Assembly Malfunction	12
40EP-9EO02	Reactor Trip	8
EPIP-99	Emergency Plan Standard Appendices	25

### **Section 1R12: Maintenance Effectiveness**

Procedure	Title	Revision
01DP-0AP10	Corrective Action Program	1
01PR-0AP04	Corrective Action Program	2
40ST-9DG02	Diesel Generator B Test	40
90DP-0IP10	Condition Reporting	32
90DP-0IP10	Condition Reporting	42
90DP-0IP12	Root Cause Condition Report/Disposition Report Evaluation	0

### **Palo Verde Action Requests**

3174014	2983905
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### **Condition Report/Disposition Reports**

2714674	2984713	3233445	3229603	2926830	2913232
2912694	2722708	2773947			

### **Condition Report Action Items**

3240925	3240734	3240899	3240897	3240919	3240880
3240890	3240894	3240897	3242359	3229604	2993676
3003157	2993680	2993682	2993685		

### **Work Orders**

3174788	3239547	3255903	2656028	2934073	2655758
2723541	2915829	3232010	3035254	3035256	2983907
2993180	2993181				

### **Miscellaneous**

Certificate of Analysis, Herguth Laboratories, October 17, 2008  
Significant Root Cause Investigation Report, CRDR 3229603, November 12, 2008  
Significant Root Cause Investigation Report, CRDR 2984713, May 4, 2007

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedure	Title	Revision
01DP-0ZZ01	Systematic Troubleshooting	2
36ST-9SA01	ESFAS Train A Subgroup Relay Functional Test	41
40DP-9OP02	Conduct of Shift Operations	42
40ST-9DG02	Diesel Generator B Test	40
70DP-0RA01	Shutdown Risk Assessments	25

**Palo Verde Action Requests**

3234828      3220308      3230005      3255903

**Condition Report/Disposition Reports**

3221100      3174373      2969923      2959958      2950532

**Work Orders**

3234831      3239548      3239547      3174788

**Miscellaneous**

Unit One Fourteenth Refueling Outage Shutdown Risk Assessment, Revision 0

Unit 3, ESFAS Test Module Troubleshooting Game Plan, Level C, Revision 0

Unit 3, EDG 3B Tripped During Performance of 40ST-9DG02, Troubleshooting Game Plan,  
Level B, Revision 0

**Section 1R15: Operability Evaluations**

Procedure	Title	Revision
30DP-9MP03	System Cleanliness and Foreign Material Exclusion Controls	13
32MT-9ZZ58	Preventive Maintenance of Inverters	29
40OP-9PN02	120V AC Class 1E Instrument Channel "B"	6
40ST-9ZZM6	Operations Mode 6 Surveillance Log	18
PG 1502-01	Issues Response Team Implementation	1

**Palo Verde Action Requests**

3233081      3202233      3243984      3221258      3221771      3222784

### Condition Report/Disposition Reports

3202468      3165478      3225124

### Condition Report Action Items

3224263

### Work Orders

3233102      3218210      3202235      3202233      3231106      3231107  
3231108      3231109      3090342

### Miscellaneous

Prompt Operability Determination Unit 1 Excore Start Up Channel #1 Count Spikes, 10/12/08, Revision 0

Immediate Operability Determination for PVAR 3233081 Spiking observed in count rate signal from "A" start up channel, 10/11/2008, Revision 0

Equipment Root Cause Failure Analysis -1, Loss of Unit 2 Class 1E Instrument AC Power Inverter, Revision 0

Engineering Game Plan for 2EPNBN12, Revision 1

Technical Specifications, Section 3.8.7, Inverters-Operating

Prompt Operability Determination for Age Related Failures of 120 VAC and 480 VAC Class 1E Inverters, 10/31/08, Revision 0

13-VTD-I075-0014-3, Ingersoll-Rand Operation and Maintenance Instructions and Parts Catalog for Essential Cooling Water Pumps, February 8, 1995

Unit 3 Operating Logs for September 11 – 13, 2008

### **Section 1R17: Evaluations of Changes, Tests, or Experiments**

Procedure	Title	Revision/Date
01-E-DGB-007,	Elementary Diagram Diesel Generator System Diesel Engine 1M-DGA-H01 Control, Sheet 1	10
01-E-DGF-007,	Control Wiring Diagram Diesel Generator System Diesel Engine 1M-DGA-H01, Sheet 5	B
01-E-PNA-0002	Single line diagram 120 VAC Class 1E Power System Ungrounded Vital Instrument and Control distribution panels 1E-PNB-026 and 1E-PND-D28	12

Procedure	Title	Revision/Date
01-E-PNA-002	Single line diagram 120 VAC Class 1E Power System Ungrounded Vital Instrument and Control distribution panels 1E-PNB-D26 and 1E-PND-D28	12
02-E-PNA-0001	Single line diagram 120 VAC Class 1E Power System Ungrounded Vital Instrument and Control distribution panels 1E-PNB-D25 and 1E-PNC-D27	14
02-E-PNA-001	Single line diagram 120 VAC Class 1E Power System Ungrounded Vital Instrument and Control distribution panels 2E-PNA-D25 and 2E-PNC-D27	16
02-E-SGB-001	Main Steam System Steam Gen 1 to Aux Feedwater Pump A Steam Supply Valve 2J-SGA-UV-134 and Valve 2J-SGA-UV-134A	15
02-E-SGB-002	Main Steam System Steam Gen 2 to Aux Feedwater Pump A Steam Supply Valve 2J-SGA-UV-138 and Valve 2J-SGA-UV-138A	15
02-M-SGP-001	Main Steam System	66
32MT-9ZZ52	Preventive Maintenance Procedure Battery Charger	25
32ST-9PK01	7-Day Surveillance Test of Station Batteries	29
36MT-9SE14	EXCORE Safety Channel Calorimetric Compensation	42
36ST-9SE03	EXCORE Safety Linear Channel Quarterly Calibration	63
40EP-9EO04	Steam Generator Tube Rupture	22
40EP-9EO10	Standard Appendices: Appendix 27, AFAS Check / Reset	58
40EP-9EO10	Standard Appendices: Appendix 42, Aligning Essential Aux Feedwater Pumps Suction to RMWT	58
76Q-001-1	Project Control Drawing 1" X 1" Relief Valve Assembly 150 lb Flanges	March 6, 2007
81-DP-0DC17	Temporary Modification Control	21
90DP-0IP10	Condition Reporting	42
93DP-0LC07	10 CFR 50.59 and 72.48 Screenings and Evaluations	17
93DP-0LC17	10 CFR 50.59 and 72.48 Guidance Manual	4



Plant Mod	Title	Revision/Date
2578794	Replace Solenoid Operated Valves 1,2,3JSGAUV0134A and 1,2,3JSGAUV0138A with Motor Operated Valves	March 1, 2008
2653709	PVNGS Support Area (SA) within Owner Controlled Area	July 21, 2004
2683378	CRDR 2639739 identified a Maintenance Rule Functional Failure at hatch cover (2AZCND-C1H02). This hatch is a water-tight flood barrier. Water was observed leaking onto the "B" AFW pump motor. Rework hatch installation per Engr. instructions.	February 18, 2004
2730735	Replace Feedwater Recirculation Valves	0/July 17, 2006
2735209	Develop a plant design modification (DM) to replace the identified Tantalum capacitors with higher rated Tantalum capacitors on Elgar inverter control log boards.	July 13, 2007
2739907	A train Shutdown Cooling suction valve from containment Recirculation Sump	2/ June 30, 2007
2760330	ECCS Recirculation Piping and Valve Upgrade	2/ March 30, 2007
2777535	Treat 200 feet of FW piping with ammonia for Iron corrosion control	0/ April 29, 2008
2778582	Upgrade the Spent Fuel Handling Machine, the Transfer System on both the containment and Fuel Building sides and the Refueling Machine.	3
2835485	Upgrade Emergency Diesel Generator Governing System to a Woodward 2301-A Electronic Governor And a EDG 50-Pls Governor Actuator	0
2905497	Install portable Air Conditioning Unit for Ultrasonic Flow Meter Assemblies	May 18, 2007
2909756	Replace Actuator Gears on 13J-SI-652 and 23J-SI-651 to Achieve an OAR of 186.40	0/ April 17, 2008
2965576	Add bracing (C-channel) to FT oil reservoir/oil pump motor mount to reduce vibration levels.	0/ December 18, 2007
2974904	Install HPSI Pump bearing isolators, lower bearing oil level, add bearing oil sight glass	August 9, 2008
2990957	Change Battery Charger High Voltage Alarm Settings for Units 1, 2 and 3 Class 1E Battery Chargers	May 12, 2008
3003599	Replace the 2-conductor non-shielded DG RUN cable,	April 22, 2007

Plant Mod	Title	Revision/Date
	1EDG07AC1RG, with a 2-conductor twisted shielded cable.	
3054112	Install a manual isolation valve downstream of Valves SG134A and SG138A	1
3093326	Provides a Use-As-Is disposition for erroneous, intermittent pre-trip and trip indications that occur during EXCORE testing.	October 28, 2008

50.59 Evals	Title	Revision/Date
E-05-0003	Addition of Recirculation Sump Containment Penetration Piping Vents and Drains	0
E-06-0020	TA-13-C00-2004-003 (Chapter 15 Dose Consequences) revision 1. LDCRs 2006-F029, 2006-B019	0
E-07-0006	Replace the existing EDG voltage regulator units (90VR) with new and more reliable ones	2
E-07-0024	New Analysis of Record LOF-TA, "Total Loss of Reactor Coolant Flow", revision 00 and associated LDCR 2007-F037	0
E-07-0025	Calculation 13-MC-AF-0504	29
E-07-0026	Replace obsolete Woodward Diesel Generator Engine electronics governor package	June 12, 2008
E-08-0001	Recalculate Mode 3 Main Steam Line Break Analysis	0
E-08-0005	Replace solenoid operated Steam Supply to AFA-P01 Bypass Valves, 2JSGAUV0134A and 2JSGAUV0138A, with motor operated valves	2

Calculation	Title	Revision
01-EC-PK-0207	DC Battery and Minimum Voltage Calculation	4
01-EC-PK-0207	DC Battery and Minimum Voltage Calculation	6
02-EC-PK-0207	DC Battery Sizing and Minimum Voltage Calculation	7
13-JC-AF-0205	Turbine Driven AFW Pump Control Settings	4
13-MC-AF-0209	TDAFP Warming Line Sizing Calculation	4
13-MC-DG-0306	As Built Calculation for Sizing the Diesel Fuel Storage and Day Tanks	8

Condition Report Action Item's

2833643	2984702	2987706	2987727	3003890	3003894
3004459	3004460	3024221	3035306	3035307	3108294
3203090	3216992				

Condition Report/Disposition Report's

2639739	2641676	2641676	2645321	2821210	2830641
2835218	2897368	2897706	2947334	2936461	2984700
2987706	3064983	3213762			

Palo Verde Action Request's

3088780	3131631	3212867	3252379	3252389	3252389
3252634	3252991	3253019	3253233	3253493	3253633
3255405	3258002				

50.59 Screenings

S-02-0072	S-05-0531	S-06-0198	S-06-0212	S-06-0247	S-06-0248
S-06-0282	S-06-0319	S-03-0343	S-04-0036	S-04-0292	S-05-0414
S-05-0421	S-05-0525	S-06-0375	S-07-0139	S-08-0218	S-06-0380
S-07-0177	S-08-0224	S-06-0396	S-07-0329	S-08-0233	S-06-0486
S-07-0404	S-08-0248	S-07-0014	S-08-0161	S-08-0253	S-07-0026
S-08-0195	S-08-0278	S-07-0093	S-08-0199		

Miscellaneous

EDC 2008-00556, Engineering Document Change to replace the 2-conductor non-shielded DG RUN cable, 1EDG07AC1RG, with a 2-conductor twisted shielded cable, August 28, 2008

IEEE Std 308-1974, IEEE Standard Criteria for Class IE Power Systems for Nuclear Power Generating Stations, February 28, 1974

IEEE Std 384-1974, IEEE Trial Use Standard Criteria for Separation of Class IE Equipment and Circuits Not Available

IEEE Std 344-1975, IEEE Recommended Practice for Seismic Qualification of Class IE Equipment for Nuclear Generating Stations Not Available

VTD-W290-00045, Woodward Installation and Operation Manual of 2301A Load Sharing & Speed Control with Dual Dynamics (Manual # 82046), Revision 0

MEE-2212, Commodity Substitution Evaluation, Revision 1

OD#274, Degraded Condition of Hatch C-1-H02, Revision 0

AF STM, Volume 21 Aux Feed Training Manual, Revision 6

**Section 1R18: Plant Modifications**

Procedure	Title	Revision
81DP-0EE10	Design Change Process	15
81DP-0DC13	Deficiency (DF) Work Order	24
Drawing	Title	Revision
01-M-SGP-0001	P & I Diagram Main Steam System	58
01-P-AFF-0131	Isometric Turbine Driven Auxiliary Feedwater System	8
13-A-ZZD-0002	Penetration Seals Details Conduit	27

**Work Orders**

3051359	3051424	3199500	3116901	3082153	3082160
3082156	3195037	3098838	3137381		

**Miscellaneous**

ENG-DMWO 2578794, Outage (MOD 340) Replace SOVs for Unit 1,2,3, valve JSGAUV0134A and for Unit 1,2,3, valve JSGAUV0138A with MOVs, Revision 3

DI-PC 3137381, Modification Process Form, Revision 0

**Section 1R19: Post-Maintenance Testing**

Procedure	Title	Revision
40ST-9DG02	Diesel Generator B Test	40
32MT-9ZZ82	Time Delay Relay Test	17
32ST-9ZZ09	Post Maintenance Motor Operated Valve Thermal Overload Relay Protection and/or Bypass Device Operability	8
30DP-9WP04	Post Maintenance Testing Development	15
73ST-9AF04	AFA-P01 Full Flow Inservice Test	8
73ST-9AF02	AFA-P01 Recirc Flow Inservice Test	46
73ST-9XI34	AFA-P01 Steam Supply Valves Inservice Test	6
40ST-9DG01	Diesel Generator A Test	35
40OP-9DG01	Emergency Diesel Generator A	58

### Palo Verde Action Requests

3234828      3220308      3230005      3255903      3249235

### Condition Report/Disposition Reports

2714674      3221100      3174373      2969923      2959958      2950532

Drawing	Title	Revision
13-M018-152	Control Schematic (Shutdown & Alarm System)	23
13-M018-153	Control Schematic (Starting Sequence Control)	17
13-M018-141	Control Schematic (Starting Sequence Control)	24
13-M018-142	Control Schematic (Starting Sequence Control)	25
13-M018-144	Control Schematic (Starting Sequence Control)	12
13-M018-143	Control Schematic (Starting Sequence Control)	19
13-M018-00157	Control Schematic Generator (High Voltage Regulator)	23
13-M018-00157	Control Schematic Generator (Voltage Regulator & Tripping)	17
13-M-FPR-008	Appendix R Safety Function Diagram Diesel Generator "A"	2
13-M-FPR-018	Appendix R Safety Function Diagram Electric Power Distribution	3
02-E-PEF-002	Control Wiring Diagram Standby Diesel Generation System	2

### Work Orders

3239547	3239548	3256105	3174788	3137381	3244539
2935243	3020915	3057389	3078596	3078601	3078687
3074091	3074094	3074097	3078534	2863774	2855987
3171830	2935246	3089078	3085467	3151806	3171829
3249423	3249236	3249340			

### Miscellaneous

Functional Release Comments Sheet for WO 3137381  
Functional Release Comments Sheet for WO 3051424  
Functional Release Comments Sheet for WO 33051359  
Functional Release Comments Sheet for WO 3082156  
Functional Release Comments Sheet for WO 3082160  
Functional Release Comments Sheet for WO 3098838  
Supplemental Discussion of Design Validation Test (DVT) Results  
Foreign Material Exclusion Checklist, dated 11/14/08  
EDG 2A Troubleshooting and Retest Summary, dated 11/15/08  
Troubleshooting Game Plan for EDG 2A Differential Relay Trip, Revision 3, 11/15/2008

## **Section 1R20: Refueling and Other Outage Activities**

Procedure	Title	Revision
14DP-0FP33	Control of Transient Combustibles	20
30DP-0WM12	Housekeeping	18
30DP-9MP01	Conduct of Maintenance	57
30DP-9MP03	System Cleanliness and Foreign Material Exclusion Controls	13
31MT-9RC43	Control Element Assembly Extension Shaft Replacement	13
40DP-9OP02	Conduct of Shift Operations	42
40DP-9ZZ01	Containment Entry in Modes 1 Thru 4	30
72IC-9RX03	Core Reload	31
78OP-9FX01	Refueling Machine Operations	36

Calculation	Title	Revision
13-MC-FP-0805	Containment	

Drawing	Title	Revision
E-Sys80-162-013	CEA Extension Shaft Self-Latching Mechanism	3
E-Sys80-162-010	Extension Shaft Assembly	2

### Palo Verde Action Requests

3235153      3242987      3246748      3247098      3245947

### Condition Report/Disposition Reports

3237465

### Condition Report Action Items

3243934      3243928

### Work Orders

3248545      3078672      3248099      3246038

### Tagging Permits

153167	153493	152765	152769	153218	153016
153217	155096	154157	153161	154157	153166
153163	152964	153044			

### Miscellaneous

Prompt Human Performance Evaluation Form, October 14, 2008  
Personal Statements, Bridge Operator and Limited Senior Reactor Operator, October 14, 2008  
Training Attendance Record, Fuel Movement-Incorrect Use of Interlock, October 14, 2008  
Shutdown Safety Functional Assessment, October 14, 2008

Adverse CRDR 3237465 Evaluation, November 13, 2008  
 Use As-Is Dispo for DFWO 3248545, Setscrews missing from UGSLR handrail, 11/10/2008  
 Use As-Is Dispo for DFWO 3248099, Missing Roll Pin in RCS, 11/10/2008  
 10 CFR 50.59 Screening, E-08-0020, for DFWO 3248099, Revision 0  
 DAR-SEE-II-9-08-7, Westinghouse Evaluation of Missing Vacuum System Roll Pin, Revision 0  
 Shutdown Safety Functional Assessment, November 12, 2008  
 Shutdown Safety Functional Assessment, November 10, 2008

### **Section 1R22: Surveillance Testing**

Procedure	Title	Revision
36ST-9CT01	Condensate Storage Tank A – Train Level Loop Calibration	3
36ST-9CT02	Condensate Storage Tank B – Train Level Loop Calibration	3
40ST-9HF02	Train B ESF Pump Room and Fuel Building Ventilation System Operability Test	15
73ST09AF05	Auxiliary Feedwater Pump B – Comprehensive Pump Test	3
Drawing	Title	Revision
03-M-CTP-001	P & I Diagram Condensate Storage and Transfer System	11
13-C-CTS-701	Condensate Storage Tank Liner Plate Plans Sections, and Details	8
13-C-CTS-703	Condensate Storage Tank Liner Plate Elevation, Plans Sections, and Details	7
13-J-03D-135	Outside Area Isometric CTA-LT-35 & CTB-LT-36 Sensing Line	2
13-J-03K-065	Condensate Storage Tank Level Setting Diagram	7
13-J-ZYF-005	Instrument Location Plan Condensate Water Storage Tank Area	3

### **Work Orders**

3084839      3257042

### **Miscellaneous**

T-Note 3-B2-0873

### **Section 1EP4: Emergency Action Level and Emergency Plan Changes**

Procedure	Title	Revision
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix A, EALs	25

**Section 1EP6: Drill Evaluation**

Procedure	Title	Revision
EPIP-02	Operation Support Center Actions	31
EPIP-03	Technical Support Center Actions	48
EPIP-04	Emergency Operations Facility Actions	43
EPIP-14	Dose Assessment	7
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix B, Protective Action Recommendations	25
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix D, Notifications	25

**Section 2OS1: ALARA Planning and Controls**

Procedure	Title	Revision
75DP-9RP01	Radiation Exposure and Access Control	13
75RP-9RP07	Radiological Surveys and Air Sampling	16

**Section 2OS2: ALARA Planning and Controls**

Procedure	Title	Revision
75DP-0RP03	ALARA Program Overview	3
75DP-0RP06	ALARA Committee	5
75RP-9RP12	ALARA Reports	3

**Audits, Self-Assessments, and Surveillances**

2008-005, Refueling Outage Audit Report

**Radiation Work Permits**

2-1383, Relocate SIAUV651  
 2-3512, Install/Remove Temporary Shielding  
 2-3319, Reactor Coolant Pump Maintenance

**Condition Report/Disposition Reports**

3046953	3169937	3170265	3181459	3185255	3193852
3194010	3194010	3195038	3210871	3210900	



### Miscellaneous

Collective Radiation Exposure – 3 Year Average  
Refueling Outage U2R14 ALARA Summary  
U2R14 Dose Estimates vs Actual Dose  
Outline of Source Term Strategy

### **Section 40A1: Performance Indicator Verification**

Procedure	Title	Revision
70DP-0PI01	Performance Indicator Data Mitigating System Cornerstone	3
73ST09AF05	Auxiliary Feedwater Pump B – Comprehensive Pump Test	3

### Palo Verde Action Requests

3038359      3045940      3082507      3120370      3224832

### Condition Report/Disposition Reports

3059796      3059797      3059798      3085884

### **Section 40A2: Identification and Resolution of Problems**

Procedure	Title	Revision
01DP-0AC06	Site Integrated Business Plan/Site Integrated Improvement Plan Process	3
01DP-0AP12	Palo Verde Action Request Processing	4
01DP-0AP12	Palo Verde Action Request Processing	5
01PR-0AP04	Corrective Action Program	0
01DP-0AP16	PVNGS Self-Assessment and Benchmarking	0
60DP-0QQ02	Trend Analysis and Coding	18

### Miscellaneous

System Health Reports, November 2008  
PVNGS Monthly Trend Report, November 2008  
PVNGS Site Integrated Improvement Plan Performance Indicators, November 2008  
Effectiveness Reviews for Key Performance Area 1 through Key Performance Area 12

### **Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

### Palo Verde Action Requests

2968814      2991020      2965773      3038324      3037047      3216808

Condition Report/Disposition Reports

2973682      2883052      2883283      2970675      2988145

Condition Report Action Items

2899232      2990958      2879018      2990950      2990960      2991034  
2990963

Work Orders

2965364

Miscellaneous

Significant Root Cause Investigation Report, CRDR 2973682, Revision 1, February 19, 2007

**Section 4OA5: Other Activities**

Procedure	Title	Revision
01DP-0AC06	Site Integrated Business Plan/Site Integrated Improvement Plan Process	4
01DP-0AC06	Site Integrated Business Plan / Site Integrated Improvement Plan Process	5
01DP-0AC06	Site Integrated Business Plan (SIBP) / Site Integrated Improvement Plan Process	6
01DP-0AC06	Site Integrated Business Plan (SIBP) / Site Integrated Improvement Plan Process	3
01DP-0AP12	Palo Verde Action Request Processing	5
01DP-0AP16	PVNGS Self-Assessment and Benchmarking	3
01DP-0AP16	PVNGS Self-Assessment and Benchmarking	4
01PR-0AP04	Corrective Action Program	1
14DP-0FP33	Control of Transient Combustibles	16
15DP-0TR45	Radiation Protection Training Program Description	25
15DP-0TR69	Training and Qualification Administration	28
15DP-0TR69	Training and Qualification Administration	32
15DP-0TR72	General Employee Training Program Description	16

Procedure	Title	Revision
15TD-0TR11	Analysis	11
30DP-9MP08	Preventive Maintenance Program	18
30DP-9MP09	Preventive Maintenance Processes and Activities	23 and 24
30DP-9MP09	Preventative Maintenance Processes and Activities	22
40DP-9IPA4	Area 4 Operator Logs, Modes 1-4	92
40DP-9OP02	Conduct of Shift Operations	42
40DP-9OP02	Conduct of Shift Operations	39
40DP-9OP15	Operator Challenges and Discrepancy Tracking	19 and 22
40DP-9OP26	Operability Determination and Functional Assessment	22
40ST-9DG01	Diesel Generator A test	35
65DP-0QQ01	Industry Operating Experience Review	9 and 19
70DP-0AC01	Conduct of Engineering	0
70DP-0EE01	Equipment Rot Cause of Failure Analysis	17
71DP-0AC01	Engineering Product Review Board	1
73DP-0AP07	Engineering Competency Analysis	1
73ST-9AF02	AFA-P01 – Inservice Test	34
73TD-0ZZ03	System Engineering Handbook	8
81DP-0CC15	Engineering Evaluation	0
81DP-0EE03	Component Design Basis Review	5
82DP-9PP01	Out of Tolerance Program Controls	7
86DP-0EE01	Reliability Centered Maintenance (RCM) Based System Reviews	10
90DP-0IP10	Condition Reporting	40
90DP-0IP10	Condition Reporting	39
90DP-0IP12	Root Cause Condition Report/Disposition Report Evaluation	0

Procedure	Title	Revision
90DP-0IP13	Apparent Cause Condition Report/Disposition Report Evaluation	0
90DP-0IP13	Apparent Cause Condition Report/Disposition Report Evaluation	0
ODP-01	Operations Department Practices	8
PD-0AP01	Administrative Control Program	2

Site Integrated Business Plan/Site Integrated Improvement Plan Closure Documents

Task	Title	Revision/Date
6.7.30	Closure Document	November 17, 2008
4.4.35	Closure Document	May 20, 2008
15.2.1.a	Closure Document	September 22, 2008
20.5.1	Closure Document	October 27, 2008
6.1.1.a	Closure Document	November 18, 2008
6.10.1	Closure Document	July 17, 2008
11.6.1.a	Closure Document	November 24, 2008
11.6.1.b	Closure Document	November 25, 2008
11.6.1.c	Closure Document	November 25, 2008
3.3.2.a	Closure Document	September 3, 2008
6.1.2.a	Closure Document	November 20, 2008
6.5.2.d	Closure Document	November 12, 2008
6.5.2.c	Closure Document	November 4, 2008
6.11.2.d	Closure Document	November 31, 2008
6.11.2.b	Closure Document	September 26, 2008
6.11.2.f	Closure Document	October 15, 2008
6.11.2.e	Closure Document	September 5, 2008
6.11.2.c	Closure Document	September 8, 2008
3.7.3.o	Closure Document	October 6, 2008

Task	Title	Revision/Date
3.7.3.p	Closure Document	June 17, 2008
3.7.3.q	Closure Document	September 2, 2008
6.1.3.a	Closure Document	August 4, 2008
6.1.3.b	Closure Document	November 14, 2008
3.7.7.f/3.7.4.g	Closure Document	October 6, 2008
3.7.7.k/3.7.4.h	Closure Document	October 6, 2008
3.7.4.l	Closure Document	August 6, 2008
3.7.4.m	Closure Document	August 25, 2008
3.7.4.q	Closure Document	August 25, 2008
8.4.4	Closure Document	August 8, 2008
3.2.5.f	Closure Document	October 2, 2008
3.2.5.a	Closure Document	August 14, 2008
3.2.5.c	Closure Document	August 25, 2008
3.7.3.a, 3.7.5.a, 3.7.5.nn, 3.7.5.vv, and 3.7.5.zh	Closure Document	September 15, 2008
3.7.5.e, 3.7.5.o, 3.7.5.p, 3.7.5.rr, and 3.7.5.zc	Closure Document	October 12, 2008
3.7.5.f, 3.7.5.l, 3.7.5.oo, 3.7.5.yy, and 3.7.5.za	Closure Document	October 9, 2008
3.7.5.m, 3.7.5.n, 3.7.5.v, 3.7.5.ww, and 3.7.5.zb	Closure Document	October 9, 2008
3.7.5.i	Closure Document	September 9, 2008
3.7.5.dd	Closure Document	August 6, 2008
3.7.5.z	Closure Document	August 12, 2008
3.7.5.aa	Closure Document	November 24, 2008
3.7.5.mm	Closure Document	July 11, 2008
3.7.5.u	Closure Document	September 12, 2008
3.7.5.g	Closure Document	September 17, 2008

Task	Title	Revision/Date
3.7.5.q	Closure Document	September 17, 2008
8.4.5	Closure Document	August 8, 2008
11.1.6	Closure Document	September 20, 2008
11.7.4 – 11.7.6	Closure Document	October 30, 2008
3.7.7.b	Closure Document	October 23, 2008
3.7.7.g	Closure Document	November 14, 2008
3.7.7.q	Closure Document	October 28, 2008
6.1.7, 6.1.8, 6.4.6 and 6.4.7	Closure Document	October 30, 2008
6.7.7	Closure Document	September 6, 2008
3.7.8.m,n,o	Closure Document	October 14, 2008
3.7.3.o,3.7.5.gg and 3.7.8.j	Closure Document	June 7, 2008
1.2.C.11	Closure Document	November 26, 2008
1.2.E.28	Closure Document	September 25, 2008
1.2.E.35	Closure Document	May 16, 2008
1.2.c.12	Closure Document	September 13, 2008
1.2.E.32	Closure Document	September 11, 2008
1.2.F.4	Closure Document	September 10, 2008
2.1.D.5.b	Closure Document	October 2, 2008
2.1.D.5.c	Closure Document	October 7, 2008
2.1.D.5.a and 2.1.D.6	Closure Document	August 21, 2008
2.2.E.1.b	Closure Document	November 12, 2008
4.1.G.10	Closure Document	November 25, 2008
4.1.G.11	Closure Document	December 01, 2008
4.1.G.4	Closure Document	August 27, 2008
4.1.G.6.a, b, c, d, e	Closure Document	September 26, 2008

Task	Title	Revision/Date
4.1.G.6.a, b, c, d, e (Addendum)	Closure Document	November 24, 2008
4.1.F.13	Closure Document	August 26, 2008
4.1.F.16	Closure Document	October 30, 2008
4.1.F.17	Closure Document	October 31, 2008
4.1.F.21	Closure Document	October 15, 2008
4.1.F.23	Closure Document	November 10, 2008
5.1.E.3	Closure Document	January 4, 2008
7.1.B.1	Closure Document	November 26, 2008
7.1.B.5	Closure Document	November 26, 2008
11.9.A.8	Closure Document	August 20, 2008
3.2.9.b	Closure Document	October 16, 2008
3.4.9.d	Closure Document	October 1, 2008
3.7.9.i	Closure Document	August 22, 2008
3.4.10.c	Closure Document	October 7, 2008
3.4.10.b	Closure Document	October 1, 2008
3.4.10.i	Closure Document	August 22, 2008
3.4.10.f	Closure Document	September 10, 2008
3.4.10.h	Closure Document	June 18, 2008
6.7.11	Closure Document	November 26, 2008
3.3.12	Closure Document	October 9, 2008
11.3.14	Draft Closure Document	December 8, 2008
11.4.15	Closure Document	November 25, 2008
6.7.17	Closure Document	November 24, 2008
6.7.29	Closure Document	August 17, 2008

### NAD Closure Review Checklists

Task	Title	Revision
6.7.30	NAD Closure Review	November 24, 2008
15.2.1.a	NAD Closure Review	October 6, 2008
6.1.1.a	NAD Closure Review	November 24, 2008
11.6.1.a	NAD Closure Review	December 02, 2008
11.6.1.b	NAD Closure Review	December 02, 2008
11.6.1.c	NAD Closure Review	December 02, 2008
6.1.2.a	NAD Closure Review	November 24, 2008
6.5.2.d	NAD Closure Review	November 26, 2008
6.11.2.b	NAD Closure Review	October 17, 2008
6.11.2.d	NAD Closure Review	December 2, 2008
6.11.2.f	NAD Closure Review	November 07, 2008
6.1.3.b	NAD Closure Review	November 24, 2008
3.7.4.l	NAD Closure Review	September 7, 2008
3.7.3.a, 3.7.5.a, 3.7.5.nn, 3.7.5.vv, and 3.7.5.zh	NAD Closure Review	September 18, 2008
3.7.5.e, 3.7.5.o, 3.7.5.p, 3.7.5.rr and 3.7.5.zc	NAD Closure Review	November 28, 2008
3.7.5.f, 3.7.5.l, 3.7.5.oo, 3.7.5.yy, 3.7.5.za	NAD Closure Review	November 5, 2008
3.7.5.m, 3.7.5.n, 3.7.5.v, 3.7.5.ww, 3.7.5.zb	NAD Closure Review	November 7, 2008
3.7.5.i	NAD Closure Review	September 17, 2008
3.7.5.aa	NAD Closure Review	October 31, 2008
11.7.4 – 11.7.6	NAD Closure Review	November 13, 2008
3.7.7.b	NAD Closure Review	November 21, 2008
3.7.7.g	NAD Closure Review	December 03, 2008
3.7.7.q	NAD Closure Review	November 20, 2008



6.1.7, 6.1.8, 6.4.6 and 6.4.7	NAD Closure Review	November 24, 2008
3.7.8.m,n,o	NAD Closure Review	October 31, 2008
1.2.C.11	NAD Closure Review	December 03, 2008
2.1.D.5.a and 2.1.D.6	NAD Closure Review	September 23, 2008
2.1.D.5.c	NAD Closure Review	November 5, 2008
2.2.E.1.b	NAD Closure Review	November 24, 2008
4.1.G.10	NAD Closure Review	December 02, 2008
4.1.G.11	NAD Closure Review	December 03, 2008
4.1.G.6.a, b, c, d, e	NAD Closure Review	November 28, 2008
4.1.G.6.a, b, c, d, e (Addendum)	NAD Closure Review	November 28, 2008
5.1.E.3	NAD Closure Review	March 7, 2008
7.1.B.1	NAD Closure Review	December 02, 2008
7.1.B.5	NAD Closure Review	December 02, 2008
3.4.9.d	NAD Closure Review	July 31, 2008
3.4.10.c	NAD Closure Review	September 5, 2008
3.4.10.f	NAD Closure Review	October 8, 2008
11.4.15	NAD Closure Review	December 3, 2008
6.7.17	NAD Closure Review	December 5, 2008

Palo Verde Action Requests

3069890	3090824	2950626	2990966	2990047	3109179
3259688	3259601	3075548	3259344	3005342	2963354
2960946	3058776	3090824	3259621	3102356	3260959
3260354	3259510	3260866	3214734	3196644	3196446
3260341	3260349	3259987	3260002	3259510	3225051
3259339	3259365	3259437	3259312	3259601	3259621
3259688	3259987	3260002	3260354	3260817	3260866
3260878	3260874	3260935	3200937	3210008	3067580
3068529					

Condition Report/Disposition Reports

3032921	3016954	3074872	2726509	3022625	3069084
3079100	3015327	2993034	3095373	3223354	3208331
3214374	3095373	3109369	3233976	2830991	2824198
2785329	3219199	3225482	2824066	2830991	2824198
2825202	2825460	2824241	2893284	2824714	2833414
2785329	3219199	3225482	2824066	3197062	3215430
3227099	3260811	3069066	3056534	3068529	2893281
2726509	2825372	3077502			

Condition Report Action Items

2988515	3102371	3063855	3063856	3047257	3047259
3047282	3047608	3038054	3038034	3038039	3130559
3064362	3075803	3076263	3112282	3062346	3062349
3062351	3062967	3038049	3153154	3032691	3014453
3066464	3075713	3075716	3244819	3075719	3075721
3075680	3075726	3112290	3082515	3020641	3020644
3020647	3193755	3030882	3065697	3193751	3193753
3193754	3214091	2825482	3204207	3207465	3209369
2894682	2894687	2894689	2825660	3221123	3221121
3221061	3062305	3111000	3064341	3137727	3076145
3064339	3022273	3065236	3101555	3109852	3102764
2825646	3145751	3111001	3064340	3076121	3076123
3076124	3076126	3112294	3206024	3063112	3063116
3022273	3209373	3224973	3209370	3076134	3215431
2785329	3199933	3202424	2785331	2845017	3220688
2833457	3200063	3202420	2845022	2833456	2833459
2833429	2833431	2893284	3200054	3202423	3244746
2785337	3133784	3096122	3133820	3244746	3032687
3239302	3261507	3260350	3260358	3260359	3260360
3260351	3260514	3038597	3197063	3065881	3188536
2856525	3112292	3083285	3068568	3083287	3106479
3109106	3060070	3109552	2856499	3076290	3047268
3057870	3038050	3106479	3112285	2785335	2825464

Training Change System Action Item

3258929	3193735	3259348	3193688	3193733	3193696
3193689	3193692	3209310	3209313		

Work Orders

3234667	3234185	3178372	3194512
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### Site Integrated Improvement Plan Tasks

6.7.7	8.4.4	8.4.5	3.4.9.d	3.4.10.b	3.4.10.c
3.4.4.c	11.4.15	11.7.4	11.7.5	11.7.6	2.1.D.5.a
3.2.5.a	2.1.D.5.b	2.1.D.5.c	2.1.D.6	2.2.E.1.b	6.1.3.b
3.2.5.c	6.1.7	6.1.8	15.2.1.a	3.4.10.f	6.11.2.b
3.4.10.i	6.11.2.d	6.4.6	6.4.7	6.1.3.a	5.1.E.3
3.7.7.b	3.7.7.g	3.7.7.q	3.7.8.m	3.7.8.n	3.7.8.o
11.6.1.a	11.6.1.b	11.6.1.c	4.1.G.10	4.1.G.11	4.1.G.4
6.11.2.f	4.1.G.6.a	4.1.G.6.b	4.1.G.6.c	4.1.G.6.d	4.1.G.6.e
7.1.B.1	7.1.B.5	6.5.2.d	1.2.C.11	3.7.5.e	3.7.5.f
3.7.5.i	3.7.5.l	3.7.5.m	3.7.5.n	3.7.5.nn	3.7.5.o
3.7.5.oo	3.7.5.p	3.7.5.v	6.1.1.a	6.1.2.a	6.7.17
6.7.30	6.10.1	3.7.5.u	3.7.5.g	3.7.5.q	3.7.9.i
4.4.35	6.11.2.c	3.3.2.a	3.4.10.h	1.2.E.35	11.3.14
3.7.3.q	3.7.3.q	3.7.4.l	3.7.4.m	3.7.4.q	3.7.5.aa
3.7.5.dd	3.7.5.z	4.1.F.13	4.1.F.16	4.1.F.17	4.1.F.21
4.1.F.23	6.7.11	3.7.5.s	3.7.5.t	3.7.9.c	4.1.F.15
3.7.5.r	3.2.9.b	11.9.A.8	3.7.3.o	3.7.3.p	3.7.7.f
3.7.7.k	6.5.2.c	11.1.6	1.2.E.28	3.3.12	3.7.5.mm
6.11.2.e	20.5.1	1.2.C.12	1.2.E.32	1.2.F.4	3.7.4.g
3.7.4.h	3.7.5.gg	3.7.8.j	4.4.32	3.7.8.k	3.7.11.b
3.7.4.h	3.7.4.g				

### Miscellaneous

Policy Guide PG-1301-01, Palo Verde Human Performance Policy Guide, Revision 05 and 07

2008 Operating Experience Program, Performance Indicators

Updated 2008 Schedule for MRMs and Cross-Cutting Reviews

Agenda and Sign in Sheets from the Deep Dive Cross Cutting Review Meetings  
September 24, 2007 and October 22, 2007 for CAP

PG-1304-01, PVNGS Performance Management Policy Guide, Revision 1

PG-1304-01, PVNGS Performance Management Policy Guide, Revision 2

Corrective Action Review Board Charter approved October 10, 2008

Corrective Action Review Board Significant Condition Report/Disposition Report Review  
Checklist 543 dated December 9, 2008

CAP01-C-0001-03, Apparent Cause Evaluation Lesson Plan

EDG 01, Engineering Human Performance Tools, Revision 0

EDG 02, Engineering Human Performance Tools for Technical Task Risk / Rigor, Revision 0

PG-1031-01, Palo Verde Human Performance Policy Guide, Revision 7

Standards & Expectations: Preventing Events, Revision 3

429-00646, Interim Guidance Letter: Communication of Engineering Technical Evaluations, March 31, 2008

LDC09C000101, Leading Change – Shifting into Overdrive, September 5, 2008

Cause Analysis Manual, Revision 7

AMX13X0001, Configuration Management / Design Authority, August 10, 2008

NKASMC072205, System Status Control, October 3, 2008

Reactor Operator / Senior Reactor Operator Initial Training Program Description, Revision 30

Shift Technical Advisor Training Program Description, Revision 22

NLR08C030600, Standards and Expectations, May 22, 2008

NLR08S030400, Standards and Expectations Simulator Scenario, April 30, 2008

Operations Professionalism Improvement Plan, February 28, 2008

Operation Standards – Gap Analysis – Change Matrix

ODP-1, Operations Principles and Standards, Revision 9

License Operator Continuing Training Program Description, Revision 41

PG-1300-01, Leadership Model, Revision 0

NGT90C000131, NGT90 Industry and Engineering Events 1Q2007, April 4, 2007

AMX-17, Technical Rigor and Questioning Attitude, August 29, 2008

Palo Verde Study 13-NS-C083, CDBR Project Importance Ranking, Revision 3

Plant Health Committee Meeting Minutes, February 13, 2008

Palo Verde Daily Outage Update, October 23, 2008 – November 19, 2008

Communication Liaisons Sign-in Sheet, March 19, 2008 – October 15, 2008

Policy No. 1506-01, PVNGS Plant Health Committee Policy Guide, Revision 3

PVNGS Preventive Maintenance Health Report 2008 – 3rd Quarter Summary of PM Health Report Metrics, October 16, 2008

PVNGS Study 13-NS-C083, CDBR Project Importance Ranking, Revision 3

Licensed Operator Continuing Training - Reactor Operator (RO) Attendance Record Verification Cycle 2008-003, August 07, 2008

Licensed Operator Continuing Training - Senior Reactor Operator (SRO) Attendance Record Verification Cycle 2008-003, August 08, 2008

Licensed Operator Continuing Training - Shift Technical Advisor (STA) Attendance Record Verification Cycle 2008-003, August 07, 2008

Component Design Basis Review Condition Report/Disposition Report/Palo Verde Action Request Metrics, December 05, 2008

Daily Operational Focus Meeting Highlights, October 14, 2008 – December 04, 2008

Business Operations Departmental Communication Plan

Chemistry Departmental Communication Plan

Communications Departmental Communication Plan

Policy No. 1506-01, PVNGS Plant Health Committee Policy Guide, Revision 2

Employee Concerns Departmental Communication Plan

Emergency Services Division Communication Plan

Human Resources and Health Services Departments Communication Plan

Information Services Departmental Communication Plan

Maintenance Departmental Communication Plan

Nuclear Information and Records Management Departmental Communication Plan

Nuclear Assurance Division Communication Plan

Nuclear Engineering Departmental Communication Plan

Nuclear Fuel Management Departmental Communication Plan

Nuclear Projects Departmental Communication Plan

Nuclear Regulatory Affairs Communication Plan

Operations Departmental Communication Plan

Radiation Protection Departmental Communication Plan

Site Procedure Standards SPS Departmental Communication Plan

Strategic Projects Departmental Communications Plan

Supply Chain Services Departmental Communication Plan

Training Departmental Communication Plan

Water Reclamation Facility Departmental Communication Plan

Work Management Department Communication Plan

LP NDS18, Operational Focus Training Module

Palo Verde Nuclear Generating Station Engineering Training Program Description, Revision 36

ESP15-00-008, Engineering Prompt Operability Determination Job Qualification Card

Policy No. 1202, Palo Verde Nuclear Generating Station Communications Policy, Revision 0

Policy No. 1202-01, Site Communications, Revision 1

Palo Verde Communications Strategy, October 03, 2008

Shift Technical Advisor Training Program Description, Revision 19

NEA9901100, Electrical Maintenance Training General Plant Electrician Job Qualification Card

Operational Focus Needs Analysis, Revision 0

Licensed Operator Initial Training Program Description, Revision 27

Non-License Initial Training Program Description, Revisions 25 and 31

Engineering Training Program Description, Revision 35

Chemistry Training Program Description, Revision 14

Attendance Record for Leader Alignment Meeting, August 25, 2008

Leader Alignment Meeting Agenda, August 25, 2008

October 2007 Impact Process Compliance Review, November 8, 2007

Effectiveness Review Challenge Board for Key Performance Area 9, November, 7, 2008

Site Integrated Improvement Plan Performance Indicators, September 2008

Key Performance Area 9 Summary Report, November, 6, 2008

0100-01, PVNGS Policy Program, Revision 2

Key Performance Area 12 Closure Report, December 2008

Comprehension Analysis, July 21, 2008

Key Performance Area 6 Closure Report, December 2008

Technical Specification 3.8.8 Diesel Fuel Oil, Lube Oil, and Starting Air, Revision 117

1JDGNPI0213 DG A Starting Air Receiver A Pressure Indicator Component Data Sheet

Effectiveness Review Challenge Board (ERCB) Meeting Minutes for Key Performance Area 9, November 4, 2008

Change Management Summary Report, December 19, 2008