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

May 20, 2008

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

SUBJECT: ERRATA FOR PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000528/2008002, 05000529/2008002, AND 05000530/2008002

Dear Mr. Edington:

This errata corrects the decision basis for the significance determination for Noncited Violation 05000528; 05000529; 05000530/2008002-04, "Failure To Maintain Adequate Staffing Levels Results in Heavy Use of Overtime to Maintain Adequate Shift Coverage," described in Section 4OA2 of the subject inspection report. Please replace page 4 of the Summary of Findings and page 30 of NRC Inspection Report 05000528/2008002, 05000529/2008002, and 05000530/2008008, dated May 9, 2008, with the enclosed revised pages. We regret any inconvenience this may have caused.

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).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Michael C. Hay, Chief
Projects Branch D
Division of Reactor Projects

Dockets: 50-528
50-529
50-530

Licenses: NPF-41
NPF-51
NPF-74

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ROPreports
PV Site Secretary (Patricia.Coleman@nrc.gov)

SUNSI Review Completed: MCH ADAMS: √ Yes No Initials: MCH
√ Publicly Available Non-Publicly Available Sensitive √ Non-Sensitive
R:_REACTORS_PV\2008\PV2008-02Errata-GGW.doc ML

RIV:RI:DRP/D	RI:DRP/D	RI:DRP/D	RI:DRP/D	RI:DRP/D	RI:DRP/D
JHBashore	MPCatts	JFMelfi	GGWarnick	RITreadway	GBMiller
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05/20/2008	05/19/2008	05/20/2008	05/20/2008	05/19/2008	05/192008
RI:DRP/E	C:DRP/D				
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05/20/2008	05/19/2008				

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and maintenance personnel failed to incorporate the adequate level of detail into their troubleshooting plans for the Unit 3 auxiliary feedwater trip and throttle Valve AFA-HV-0054 when it failed to fully close upon demand from the control room hand switch, and for the Unit 3 log power Channel A when induced noise was present. These issues were entered into the licensee's corrective action program as Palo Verde Action Requests 3120075 and 3118744.

This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. Both examples have a crosscutting aspect in the area of human performance associated with decision-making because the licensee did not obtain appropriate interdisciplinary input and reviews on safety-significant or risk-significant decisions [H.1(a)]. (Section 1R19)

- Green. The inspectors identified a noncited violation of Technical Specification 5.2.2.d involving the routine use of excessive overtime for operations personnel that performed safety-related functions. Specifically, between January 1 and December 31, 2007, operations personnel routinely used excessive overtime. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3112231.

  The finding is greater than minor because if left uncorrected the finding would become a more significant safety concern in that the routine use of excessive work hours increases the likelihood of operator errors. Using the Manual Chapter 0609, "Significance Determination Process," Appendix M, the finding is determined to have very low safety significance because there were no recent instances where findings of low to moderate (White) or greater significance were attributed to the increased use of overtime by operating personnel. The finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to maintain sufficient qualified operations personnel to maintain working hours within guidelines without the excessive use of overtime [H.2(b)] (Section 4OA2).

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the Class 1E 125 Vdc system were reviewed for operability. Specifically, between September 29, 2007 and March 7, 2008, engineering personnel failed to ensure all relevant information was reviewed for operability when it was determined that vendor recommended preventative maintenance tasks were not being performed on the Class 1E 125 Vdc system. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3144707.

	2003	2004	2005	2006	2007
Control Room Supervisor	7.32	8.92	10.53	14.13	20.87
Reactor Operator	10.43	13.84	16.25	20.96	27.65
Shift Manager	8.81	10.29	12.12	17.51	20.28

Since 2003, overtime, as a percent of regular hours worked, has increased steadily and substantively for control room operators. The inspectors noted that the increase in overtime rates for operations department positions appeared to be largely the result of a decrease in staffing, rather than the result of an increase in the total number of person-hours expended. The inspectors also noted that the 2007 overtime rates were more than double the overtime rates of 2003.

During their review the inspectors noted that Technical Specification 5.2.2.d, "Organization – Unit Staff," requires that administrative procedures shall be developed and implemented to limit the working hours of unit staff that perform safety-related functions, as well as requiring that the controls shall include guidelines on working hours that ensure adequate shift coverage shall be maintained without routine heavy use of overtime. Station procedure 01DP-9EM01, "Overtime Limitations," Revision 6, is the licensee's administrative procedure used to control unit staff working hours in accordance with facility Technical Specifications. Section 2.1 of this procedure requires that department leaders ensure that adequate shift coverage is maintained without the routine heavy use of overtime. The objective is to have personnel work a nominal 40-hour week while the plant is operating.

The inspectors determined that the licensee had several missed opportunities to identify this issue. Specifically, during their review the inspectors noted that the licensee had not been issuing and reviewing Technical Specification required excess overtime reports from approximately June 2006 through July 2007. The purpose of these reports was to facilitate identification of excess overtime usage by site management. However, due to changing computer software the reports were not generated and reviewed. Also, the inspector noted that several CRDRs written that identified the metric window for operations overtime were red for most of 2007. The inspectors determined that these were indicators of the use of excessive overtime and these indicators were missed by the licensee.

Analysis. The performance deficiency associated with this finding involved excessive routine use of heavy amounts of overtime for operations personnel that perform safety-related functions. The finding is greater than minor because if left uncorrected the finding would become a more significant safety concern in that the routine use of excessive work hours increases the likelihood of operator errors. Using the Manual Chapter 0609, "Significance Determination Process," Appendix M, the finding is determined to have very low safety significance because there were no recent instances where findings of low to moderate (White) or greater significance were attributed to the increased use of overtime by operating personnel. The finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to maintain sufficient qualified operations personnel to maintain working hours within guidelines without heavy use of overtime [H.2(b)].

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REGION IV
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May 9, 2008

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SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000528/2008002, 05000529/2008002, AND 05000530/2008002

Dear Mr. Edington:

On March 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 April 16, 2008, with you and other members of your staff.

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.

This report documents five NRC identified findings and two self-revealing findings. These findings were evaluated under the risk significance determination process as having very low safety significance (Green). Because of the very low safety significance of these violations and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations consistent with Section VI.A.1 of the NRC Enforcement Policy. Two licensee-identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. 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, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; 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/

Michael C. Hay, Chief
Projects, Branch D
Division of Reactor Projects

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

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

Enclosure:
NRC Inspection Report 05000528/2008002, 05000529/2008002, and 05000530/2008002
w/Attachment: Supplemental Information

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ROPreports
PV Site Secretary (Patricia.Coleman@nrc.gov)

SUNSI Review Completed: GEW ADAMS: ☑Yes □ No Initials: GEW
☑Publicly Available □ Non-Publicly Available □ Sensitive ☑Non-Sensitive
R:_REACTORS_PV\2008\PV2008-002RP-GGW.doc ML)81300387

RIV:RI:DRP/D	RI:DRP/D	RI:DRP/D	SRI:DRP/D	SRI:DRP/D	SPE:DRP/D
JBashore	MCatts	JFMelfi	GGWarnick	RTreadway	GEWerner
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05/8/2008	05/8/2008	05/9/2008	05/8/2008	05/8/2008	05/5/2008
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MPShannon	LJSmith	RLBywater	RELantz	MHay	
/RA/	*/RA/ DProulx for*	*/RA/*	*/RA/ MRunyan for*	*/RA/*	
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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:	05000528/2008002, 05000529/2008002, 05000530/2008002
Licensee:	Arizona Public Service Company
Facility:	Palo Verde Nuclear Generating Station, Units 1, 2, and 3
Location:	5951 S. Wintersburg Road Tonopah, Arizona
Dates:	January 1 through March 31, 2008
Inspectors:	J. Bashore, Resident Inspector M. Catts, Resident Inspector L. Carson II, Senior Health Physics Inspector P. Elkmann, Emergency Preparedness Inspector J. Melfi, Resident Inspector R. Treadway, Senior Resident Inspector G. Warnick, Senior Resident Inspector G. Werner, Senior Project Engineer
Approved By:	Michael C. Hay, Chief, Project Branch D Division of Reactor Projects

CONTENTS

SUMMARY OF FINDINGS

IR 05000528/2008002, 05000529/2008002, 05000530/2008002; 01/01/08 - 03/31/08; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Integrated Resident and Regional Report; Maintenance Risk Assessments and Emergent Work Control, Operability Evaluations, Post-Maintenance Testing, Identification and Resolution of Problems, Follow-Up of Events.

This report covered a 3-month period of inspection by resident inspectors and regional inspectors. The inspection identified nine 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's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the failure of operations and engineering personnel to establish and implement maintenance procedures for inspection and replacement of items that have a specific lifetime. Specifically, between February 12, 2007 and March 7, 2008, operations and engineering personnel failed to inspect or replace the emergency diesel generators fuel oil injection pump upper O-rings prior to the end of their service life resulting in fuel leakage and increased unavailability and unreliability of Unit 1 Train A, Unit 2 Train B, and Unit 3 Train B emergency diesel generators. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3143422.

  This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience because the licensee failed to use available operating experience, including vendor recommendations, to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)]. (Section 1R15)

- Green. The inspectors identified two examples of a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of operations, engineering, and maintenance personnel to follow procedures for troubleshooting failures of safety-related components.

Specifically, between January 8 and January 13, 2008, operations, engineering, and maintenance personnel failed to incorporate the adequate level of detail into their troubleshooting plans for the Unit 3 auxiliary feedwater trip and throttle Valve AFA-HV-0054 when it failed to fully close upon demand from the control room hand switch, and for the Unit 3 log power Channel A when induced noise was present. These issues were entered into the licensee's corrective action program as Palo Verde Action Requests 3120075 and 3118744.

This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. Both examples have a crosscutting aspect in the area of human performance associated with decision-making because the licensee did not obtain appropriate interdisciplinary input and reviews on safety-significant or risk-significant decisions [H.1(a)]. (Section 1R19)

- Green. The inspectors identified a non-cited violation of Technical Specification 5.2.2.d involving the routine use of excessive overtime for operations personnel that performed safety-related functions. Specifically, between January 1 and December 31, 2007, operations personnel routinely used excessive overtime. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3112231.

  The finding is greater than minor because if left uncorrected the finding would become a more significant safety concern in that the routine use of excessive work hours increases the likelihood of operator errors. Using the IMC 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because no specific human performance issues due to personnel fatigue were identified that resulted in the degradation or loss of safety function of equipment important to safety. The finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to maintain sufficient qualified operations personnel to maintain working hours within guidelines without the excessive use of overtime [H.2(b)]. (Section 4OA2)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the Class 1E 125 Vdc system were reviewed for operability. Specifically, between September 29, 2007 and March 7, 2008, engineering personnel failed to ensure all relevant information was reviewed for operability when it was determined that vendor recommended preventative maintenance tasks were not being performed on the Class 1E 125 Vdc system. This issue was entered into the licensee's corrective action program as Palo Verde Action Request 3144707.

This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with decision-making because safety-significant decisions were not verified to validate underlying assumptions and identify unintended consequences [H.1(b)]. (Section 4OA2)

- Green. A self-revealing non-cited violation of Technical Specification 3.7.3.c was identified for the failure of operations personnel to perform the actions required for an inoperable main feedwater isolation valve. Specifically, on July 17, 2006, operations personnel failed to perform actions to place the unit in Mode 3 within 6 hours and Mode 5 within 36 hours, as required by Technical Specification 3.7.3.c, for an inoperable main feedwater isolation valve that had not been closed or isolated in 72 hours, as required by Technical Specification 3.7.3.a. This resulted in main feedwater isolation Valve 2JSGAUV0174 to steam Generator A exceeding the Technical Specification 3.7.3 allowed outage time. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2915450.

  This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. A Phase 2 analysis was required because the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, determined that there was a loss of main feedwater isolation of a single train to steam Generator A for greater than the technical specification allowed outage time. Using the Phase 2 Worksheets associated with a steam generator tube rupture without steam generator isolation, the finding is determined to have very low safety significance since all remaining mitigation capability was available or recoverable. (Section 4OA3)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of fuels services personnel to evaluate leaving foreign material in the Unit 2 spent fuel pool in accordance with procedures, and failed to ensure those procedures included appropriate quantitative and qualitative acceptance criteria. Specifically, between October 13, 2006, and January 31, 2008, fuels services personnel used Procedure 30DP-9MP03, "System Cleanliness and Foreign Material Exclusion Controls," Revision 6, which did not specify acceptance criteria for time to perform a functional assessment of foreign material in the spent fuel pool, resulting in foreign material being left in the spent fuel pool for greater than one year without an evaluation on affected safety systems. This issue was entered

into the licensee's corrective action program as Palo Verde Action Request 3126308.

This finding is greater than minor because it is associated with the structure, systems, and component performance and human performance attributes 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. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because the finding did not result in loss of cooling to the spent fuel pool; the finding did not result from fuel handling errors that caused damage to the fuel clad integrity or a dropped assembly; and the finding did not result in a loss of spent fuel pool inventory greater than ten percent of the spent fuel pool volume. This finding has a crosscutting aspect in the area of human performance associated with decision-making because the licensee failed to use conservative assumptions when evaluating degraded and nonconforming conditions [H.1.(b)]. (Section 4OA2)

- Green. A self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for the failure of operations personnel to follow procedures. Specifically, on January 13, 2008, operations personnel failed to properly implement Procedure 40OP-9PC06, "Fuel Pool Cleanup and Transfer," Revision 41, for operating the pool cooling cleanup system, resulting in pool cooling cleanup Filter PCN-F01B bypass Valve PCN-V061 being improperly aligned. This resulted in the inadvertent transfer of 300 gallons of spent fuel pool water to the refueling water tank. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 3121713.

  The finding is greater than minor because it is associated with the configuration control and human performance attributes 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. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because the finding did not result in loss of cooling to the spent fuel pool; the finding did not result from fuel handling errors that caused damage to the fuel clad integrity or a dropped assembly; and the finding did not result in a loss of spent fuel pool inventory greater than ten percent of the spent fuel pool volume. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee failed to use adequate human error prevention techniques, such as pre-job briefings, to ensure that the pool cooling cleanup system activity was performed safely [H.4(a)]. (Section 4OA3)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at essentially full power for the entire inspection period.

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

Unit 3 began the inspection period shutdown for refueling Outage 3R13. The unit was restarted on January 15, 2008**,** returned to full power on January 24, 2008, and remained there for duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown

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

- January 17, 2008, Unit 3, emergency diesel generator (EDG) Train B
- February 20, 2008, Unit 2, essential chilled water, essential spray pond water, and high pressure safety injection Train A while Train B was out of service
- March 14, 2008, Unit 1, 13.8 kV and 4.16 kV non-class 1E alternating current power system Train B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Quarterly Inspection

The inspectors walked down the four below listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) verified the licensee identified and corrected fire protection problems.

- January 29, 2008, Unit 1, condensate storage pump house and tunnel
- January 29, 2008, Unit 1, spray pond pump house
- February 11, 2008, Unit 3, diesel generator building, 100 foot, 115 foot, and 131 foot elevations
- February 25, 2008, Unit 2, condensate storage pump house and tunnel

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

Quarterly Inspection

On February 26, 2008, the inspectors observed testing and training of senior reactor operators (SROs) and reactor operators (ROs) to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training Scenario SES-0-07-E--02, "Loss of PKC-M43/Loss of Offsite Power," involved four events including: (1) failure of condensate storage tank level instrument; (2) failure of a steam flow transmitter; (3) loss of Class 1E 125 volts direct current Bus (PK) C; and (4) loss of offsite power.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- January 25, 2008, Units 1, 2, and 3, EDG fuel oil injection pump leakage that impacted EDG operability as described in Condition Report/Disposition Request (CRDR) 2950136 and Palo Verde Action Requests (PVARs) 3092611, 3125050, and 3125979

- February 5, 2008, Unit 3, failure of control element Assembly 26 causing cross channel comparison failures and control element assembly Calculator 1 deviations

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

Risk Assessment and Management of Risk

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

- January 9, 2008, Unit 2, risk assessment and management during scheduled implementation of design modification to lower average reactor coolant system (RCS) temperature by one degree Fahrenheit

- February 17 through March 3, 2008, Units 1, 2 and 3, risk assessment and management during re-performance of remote shutdown disconnect switch surveillance tests

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

a. Inspection Scope

Emergent Work Control

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

- January 8, 2008, Unit 3, troubleshooting and repair of nuclear instrument log Channel A induced noise while EDG Train A was in service

- January 10-17, 2008, Unit 3, auxiliary feedwater (AFW) Train A, trip and throttle Valve AFA-HV-54, troubleshooting and repair

- March 3, 2008, Unit 1, AFW actuating system for steam Generator (SG) A, Train B, troubleshooting and repair

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- January 1-15, 2008, Unit 3, evaluation of dissolved desiccant in the reactor coolant system (RCS) during heatup
- January 10, 2008, Unit 3, AFW pump Train A operability following troubleshooting efforts on AFW trip and throttle Valve AFA-HV-0054
- January 10, 2008, evaluation of Unit 3, shutdown cooling heat exchanger Train B performance degradation
- January 25, 2008, Units 1, 2, and 3, operability assessment associated with leakage from the EDGs fuel oil injection pumps
- February 17-March 3, 2008, Units 1, 2 and 3, operability evaluation of remote shutdown disconnect switches
- March 24 - 26, 2008, Units 1 and 2, EDG Train A operability for non optimal field configuration of overspeed trip air line pressure switch isolation valves

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

Introduction. The inspectors identified a Green non-cited violation (NCV) of TS 5.4.1.a for the failure of operations and engineering personnel to adequately establish and implement maintenance procedures for inspection and replacement of items that have a specific lifetime.

Description. Fuel oil leakage from the EDG fuel oil injection pump upper O-rings was first identified on December 12, 2006, when Unit 1 Train A EDG fuel oil injection Pump 5L developed a leak from the upper O-ring and was declared inoperable as documented in CRDR 2950136. On February 12, 2007, the fuel oil injection pump vendor, Haynes, completed a report and determined the Unit 1 Train A EDG fuel oil injection pump leakage was due to the pump's O-ring, made from Buna-N material, having approached the end of its useful life, as documented in 8000865-FA, "Failure Analysis of Fuel Injection Pump." Also, the licensee performed an apparent cause

evaluation on February 20, 2007, as documented in CRDR 2950136 and determined the leakage was due to material aging of the Buna-N rubber. It was determined the shelf life of the Buna-N O-rings was 13 to 15 years and Unit 1 Trains A and B EDGs had pumps with O-rings that were approximately 15 years old. The evaluation also determined the contributing cause was that no preventative maintenance (PM) task existed to inspect and replace the O-rings even though the O-rings have a finite life time. On February 28, 2007, the licensee wrote condition report action item (CRAI) 2976063 to evaluate the Haynes report for eight pumps sent off-site for rework, including the degraded Unit 1 Train A EDG fuel oil injection Pump 5L. The due date for CRAI 2976063 was extended from December 21, 2007, to March 31, 2008, without putting a PM plan or schedule in place for the aging O-rings.

Three more leaks occurred on fuel oil injection pumps' upper O-rings. On November 13, 2007, Unit 1 Train A EDG fuel oil injection Pump 9L developed a leak of approximately 300 drops per minute (dpm) and was declared inoperable as documented in PVAR 3092611. After this leak, CRAI 3095506 was written on November 16, 2007, to implement replacement of the Buna-N O-rings for all EDGs onsite. However, the inspectors noted that the licensee did not initiate this action and determined the strategy was to replace the fuel oil injection pumps as they leaked. On January 23, 2008, approximately a 61 dpm leak was identified on Unit 2 Train B EDG fuel oil injection Pump 3R and the EDG was declared inoperable. On January 25, 2008, Unit 3 Train B EDG fuel oil injection Pump 5L developed a leak of approximately 200 dpm and the EDG was declared inoperable.

The inspectors questioned the licensee on the operability of all EDGs onsite due to the increased fuel oil injection pump leakage and the age of the Buna-N O-rings. On January 25, 2008, the licensee performed an immediate operability determination on the reliability of all EDGs to perform their seven day mission time with the O-ring leakage, as documented in PVAR 3126297. Operations personnel reiterated that the service life of the fuel oil injection pump upper O-rings is 13 to 15 years and that the O-rings on all three units' fuel oil injection pumps were reaching, or had reached, the end of their service life resulting in leakage from the O-rings. On January 28, 2008, the licensee completed a more in-depth evaluation in a prompt operability determination, documented in PVAR 3125979. The licensee determined a reasonable expectation of operability of the EDGs based on; 1) the leakage was low pressure; 2) multiple O-ring failures were unlikely to occur on a single EDG during any single EDG start and run; 3) complete failures of the O-rings would not occur; and, 4) the leak rate would not increase over time as determined in Haynes Vendor Report 8001090-Test, dated February 13, 2008.

Following the review of the multiple fuel oil injection pump leakage issues, the inspectors noted that a maintenance procedure and had not been implemented for the inspection and replacement of the fuel oil injection pump upper O-rings that had exceeded their service life. On March 7, 2008, the inspectors shared their observations with the licensee who subsequently wrote PVAR 3143422 to develop and implement this PM procedure and schedule.

Analysis. The performance deficiency associated with this finding involved the failure of operations and engineering personnel to adequately establish and implement maintenance procedures for inspection and replacement of items that have a specific lifetime; specifically, the EDG fuel oil injection pump upper O-rings. This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the

availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its TS 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 the licensee failed to use available operating experience, including vendor recommendations, to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)].

Enforcement. Technical Specification 5.4.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33 Appendix A, Section 9, "Procedures for Performing Maintenance," Sub-Section "b", requires that preventative maintenance procedures and schedules be developed to include inspections of equipment and replacement of items that have a specific lifetime. Contrary to this, between February 12, 2007 and March 7, 2008, operations and engineering personnel failed to establish and implement a PM procedure and schedule to inspect and replace the EDG fuel oil injection pump upper O-rings resulting in fuel leakage and increased unavailability and unreliability of Unit 1 Train A EDG, Unit 2 Train B EDG, and Unit 3 Train B EDG. Because this finding is of very low safety significance and has been entered into the licensee's CAP as PVAR 3143422, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2008002-01, "Failure to Establish Preventative Maintenance Procedures for Emergency Diesel Generator Fuel Oil Injection Pump O-rings."

1R18 Plant Modifications (71111.18)

a. Inspection Scope

Temporary Modifications

On March 24, 2008, the inspectors reviewed a temporary modification for Unit 2 to install an accelerometer on Train A shutdown cooling suction Valve 2JSIAUV0651 from reactor coolant Loop 1A. The inspectors reviewed the UFSAR, plant drawings, procedure requirements, operator logs, and TSs to ensure that the temporary modification was properly implemented. The inspectors verified that: (1) the modification did not have an effect on system operability/availability; (2) the installation was consistent with modification documents; (3) the post-installation test results were satisfactory and that the impact of the temporary modification on permanently installed SSCs were supported by the test; (4) the modification was identified on control room drawings and that appropriate identification tags were placed on the affected drawings; (5) the licensee evaluated the combined effects of temporary modifications; and (6) there were no temporary modifications installed that have not been evaluated. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- January 10-17, 2008, Unit 3, AFW Train A, trip and throttle Valve AFA-HV-0054 following troubleshooting and repair when the valve failed to close upon demand from the control room hand switch

- February 7, 2008, Unit 3, EDG Train A, following replacement of six fuel oil injection pumps

- February 28, 2008, Unit 2, low pressure safety injection Train B, following planned maintenance activities to lubricate, clean, and inspect motor operated valves and change oil in upper and lower motor bearings

- March 21, 2008, Unit 3, EDG Train B, following troubleshooting and repair of a packing leak on Valve 3PDGBV652

- March 21, 2008, Unit 3, EDG Train B, following replacement of the fuel oil injection Pump 7L

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

Introduction. The inspectors identified two examples of a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of operations, engineering, and maintenance personnel to follow procedures for troubleshooting degraded safety-related components.

Description. The first example occurred on January 9, 2008, when the Unit 3 AFW system, Train A, was started to support retest activities. Following the run, operations personnel attempted to close trip and throttle Valve AFA-HV-0054 via the hand switch from the control room. Valve AFA-HV-0054 is the trip and throttle valve that provides overspeed protection for steam driven AFW Pump AFA-P01. The valve stroked partially closed and then stopped in mid position. Operations personnel reopened the valve and contacted outage maintenance and engineering personnel. At the time of the failure, the AFW system Train A was already considered inoperable during the retest activities on Valve AFA-HV-0054. Unit 3 was in Mode 3 at normal operating temperature and pressure.

The valve failure was entered into the CAP on January 9, 2008, as PVAR 3118968. On January 9, 2008, a Level C troubleshooting plan was developed by valve services engineering. Work Order (WO) 3118969 was generated to implement the troubleshooting plan. The WO and troubleshooting plan were reviewed by the on duty shift manager (SM) and troubleshooting activities were authorized to begin. The inspectors noted the troubleshooting plan narrowly focused on the torque switch contacts in the Limitorque valve actuator, while other potential failure mechanisms were not addressed. On January 9, 2008, maintenance personnel determined that the resistance across the torque switch contacts was satisfactory, although a small fiber near the contact device was found. When the fiber was found, troubleshooting was stopped with the troubleshooting plan only partially completed. Operations and maintenance personnel were satisfied that the cause of the valve's failure to close had been adequately addressed. On January 10, 2008, following the completion of other maintenance and required post maintenance testing on the AFW system Train A, the system was declared operable.

On January 10, 2008, inspectors questioned the licensee's decision-making process and the adequacy of a Level C troubleshooting plan. Procedure 01DP-9ZZ01, "Systematic Troubleshooting," Revision 0, requires that a Level A troubleshooting plan be used for equipment classified as Key-Safety and having an impact on a safety function. Valve AFA-V-0054 is classified Key-Safety and its failure could adversely impact the reliability and availability of the steam driven AFW system. Engineering and maintenance personnel informally determined that a Level C troubleshooting plan would be sufficient and a valve services engineer subsequently developed the plan. The SM did not question the level or the rigor of the proposed troubleshooting plan. As a result, all potential failure mechanisms were not adequately addressed or evaluated. In addition, the Level C troubleshooting plan that was implemented was not performed in the field as written. Additionally, Procedure 70DP-0EE01, "Equipment Root Cause of Failure Analysis," Revision 17, provides guidance for quarantine and control of equipment failures to preserve physical evidence in order to aid the troubleshooting and diagnostic efforts. Upon its failure, before initiation of the troubleshooting plan, Valve AFA-HV-0054 was reopened thereby losing any contact or relay status information.

The issue of not establishing a Level A troubleshooting plan was entered into the CAP as PVAR 3120075 and subsequently addressed in Adverse CRDR 3120574. On January 11, 2008, the troubleshooting plan was revised to eliminate other potential failure mechanisms to ensure increased reliability of Valve AFA-HV-0054.

The second example occurred on January 8, 2008, when operations personnel observed that the Unit 3 meter indication for log power Channel A increased approximately two decades while EDG Train A was in operation for a surveillance test. Log power Channel A is one of four log power channels. Two of four log power channels exceeding a trip setpoint would generate a reactor trip. The licensee entered this issue into the CAP as PVAR 3118744 and as adverse CRDR 3119111 on January 9, 2008. The inspection associated with this example is documented in Section 1R13 of this inspection report.

On January 10, 2008, the inspectors requested a copy of the troubleshooting plan. The inspectors observed that a formal troubleshooting plan did not exist, and only a Level C one page hand written troubleshooting plan was available for review. The inspectors challenged the licensee regarding the adequacy of the troubleshooting plan for an SSC designated as Key-Safety. Inspectors noted that Procedure 01DP-9ZZ01, "Systematic Troubleshooting," Revision 0, provided guidance that a Level A troubleshooting plan be used for equipment classified as Key-Safety and having an impact on a safety function. Since Unit 3 was shutdown for refueling Outage 3R13, the safety function was not impacted, and a Level B, not a Level C troubleshooting plan, was appropriate. The inspectors noted that engineering and maintenance personnel did not recognize that the equipment reliability classification for log power Channel A was designated as Key-Safety. On January 11, 2008, the licensee developed a formal Level B troubleshooting plan, and implemented corrective maintenance WO 3118787.

Troubleshooting determined that this indication deviation would occur whenever the exciter to EDG Train A was producing voltage, whether the generator was running with or without load. Maintenance personnel observed that the log power meter indication returned to normal when a cable within core protection calculator Channel A cabinet was disconnected. Maintenance personnel also confirmed that the noise was coming from the EDG exciter via core protection calculator Channel A, and not from the detector and preamplifier. The indication deviation was determined to be a result of typical noise produced by a generator exciter. The licensee eliminated the noise by installing an instrumentation filter via WO 3120932 on January 13, 2008.

The inspectors noted both examples for this issue involved self-imposed schedule pressures during periods of high work activity, which are related to previously identified findings by the NRC and documented as NCV 05000528; 05000529; 05000530/2006003-07 and NCV 05000528; 05000529; 05000530/2006005-09.

Analysis. The performance deficiency associated with this finding was the failure of operations, engineering, and maintenance personnel to follow procedures for troubleshooting degraded safety-related components. The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low

safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its TS allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. Both examples have a crosscutting aspect in the area of human performance associated with decision-making because the licensee did not obtain appropriate interdisciplinary input and reviews on safety-significant or risk-significant decisions [H.1(a)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, and shall be accomplished in accordance with those instructions, procedures, and drawings. The troubleshooting process of safety-related equipment needed to mitigate accidents was an activity affecting quality and was implemented by Procedure 01DP-9ZZ01, "Systematic Troubleshooting," Revision 0. Procedure 01DP-9ZZ01, Step 3.2.1, requires an engineering troubleshooting plan, Level A or Level B, when a degraded SSC is classified as Key-Safety. Contrary to the above, between January 8 and 13, 2008, operations, engineering, and maintenance personnel failed to enter the appropriate level of troubleshooting plan upon discovery of degraded conditions that affected SSCs. Specifically, operations, engineering, and maintenance personnel failed to adequately incorporate the level and detail into their troubleshooting plans on the Unit 3 AFW trip and throttle Valve AFA-HV-0054 when it failed to fully close upon demand from the control room hand switch, and on the Unit 3 log power Channel A when induced noise was present on the channel. Because this finding is of very low safety significance and has been entered into the CAP as PVARs 3120075 and 3118744, and CRDRs 3120574 and 3119111, respectively, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000530/2008002-02, "Two Examples of a Failure to Properly Implement the Systematic Troubleshooting Process."

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

Unit 3 Refueling Outage 3R13

The inspectors reviewed the following risk-significant refueling items or outage activities to verify defense in depth commensurate with the outage risk control plan, compliance with the TSs, and adherence to commitments in response to Generic Letter 88-17, "Loss of Decay Heat Removal:" (1) the risk control plan; (2) tagging/clearance activities; (3) reactor coolant system instrumentation; (4) electrical power; (5) decay heat removal; (6) spent fuel pool (SFP) cooling; (7) inventory control; (8) reactivity control; (9) containment closure; (10) reduced inventory or mid-loop conditions; (11) refueling activities; (12) heatup and cooldown activities; (13) restart activities; and (14) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities. The inspectors' containment inspections included observations of the containment sump for damage and debris; and supports, braces, and snubbers for evidence of excessive stress, water hammer, or aging.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- January 3-17, 2008, Unit 3, Procedure 73ST-9AF04, "AFA-P01 Full Flow-Inservice Test," Revision 2

- February 7, 2008, Unit 3, Procedure 40ST-9DG01, "Diesel Generator A Test," Revision 32

- February 17, 2008, Unit 3, Procedure 40ST-9ZZ25, "Online Remote Shutdown Disconnect Switch Operability," Revision 1

- February 28, 2008, Unit 2, Procedure 73ST-9ZZ18, "Main Steam and Pressurizer Safety Valve Set Pressure Verification," Revision 20

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

The inspector discussed with licensee staff the status of offsite siren and tone alert radio systems to determine the adequacy of licensee methods for testing the alert and notification system in accordance with 10 CFR Part 50 Appendix E. The licensee's alert and notification system testing program was compared with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, Federal Emergency Management Agency Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," and the licensee's current Federal Emergency Management Agency approved alert and notification system design report.

Documents reviewed by the inspector are listed in the attachment.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspector discussed with licensee staff the status of primary and backup systems for augmenting the on-shift emergency response staff to determine the adequacy of licensee methods for staffing emergency response facilities. The inspector reviewed licensee Procedure EPIP-61, "Emergency Planning Equipment Testing," Revision 5, and the references listed in the attachment to this report related to the emergency response organization augmentation system, to evaluate the licensee's ability to staff the emergency response facilities in accordance with the licensee emergency plan and the requirements of 10 CFR Part 50 Appendix E.

Documents reviewed by the inspector are listed in the attachment.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector performed an in-office review of:

- Palo Verde Nuclear Generating Station Emergency Plan, Revision 36, submitted May 21, 2007

- Palo Verde Nuclear Generating Station Emergency Plan, Revision 37, submitted May 21, 2007

- EPIP-99, "Emergency Plan Implementing Procedures Standard Appendices," Revision 16, Appendix P, "Emergency Action Level (EAL) Bases," submitted November 9, 2007

- Palo Verde Nuclear Generating Station Emergency Plan, Revision 38, submitted February 11, 2008

These revisions added descriptions to the technical basis for security-related EALs 7-5, 7-6, and 7-7; updated descriptions of the duties of the shift technical advisor and systems engineering; updated emergency planning zone maps; added public alert and notification system sirens; updated the locations of offsite reception and care centers; changed the licensee's computer dose projection system from Mesorem Jr. to Raddose; updated the locations of telecommunications equipment; added a description of the transfer of dose projection duties from the control room to other emergency response facilities; removed the requirement that changes to EALs be approved by offsite officials in accordance with 10 CFR Part 50, Appendix E; updated emergency planning zone demographic information; added detail concerning the performance requirements for licensee dose assessment software; and made minor administrative corrections.

These 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 Nuclear Energy Institute (NEI) Report 99-01, "Methodology for Development of Emergency Action Levels," Revisions 2 and 4, 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 approval of licensee changes; therefore, these revisions are subject to future inspection.

Documents reviewed by the inspector are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspector reviewed the licensee's corrective action program requirements in Procedures 01DP-0AP12, "Palo Verde Action Request Processing," Revision 4, and 90DP-0IP10, "Condition Reporting," Revision 36, and other documents listed in the attachment to this report. The inspector reviewed summaries of 363 CRDRs assigned to the emergency preparedness department between February 2006 and January 2008, and selected 20 for detailed review against the program requirements. The inspector evaluated the response to the corrective action program requests to determine the licensee's ability to identify, evaluate, and correct problems in accordance with the

licensee program requirements and 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E.

Documents reviewed by the inspector are listed in the attachment.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On March 5, 2008, for the Emergency Response Organization exercise scenario Guide 08-E-AEV-03002 simulator-based training evolution, contributing to Drill/Exercise Performance and Emergency Response Organization PIs, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and Protective Action Requirements development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the NEI 99-02, "Voluntary Submission of Performance Indicator Data," acceptance criteria.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

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

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone (two samples)

- Controls (surveys, posting, and barricades) of three radiation, high radiation, or airborne radioactivity areas
- Radiation exposure permits, procedures, engineering controls, and air sampler locations
- Self-assessments, audits, licensee event reports (LERs), and special reports related to the access control program since the last inspection
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Posting and locking of entrances to all accessible high dose rate-high radiation areas and very high radiation areas

Documents reviewed by the inspector are listed in the attachment.

The inspector completed seven samples**.**

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning And Controls (71121.02)

a. Inspection Scope

The inspector assessed licensee performance with respect to maintaining individual and collective radiation exposures ALARA. The inspector used the requirements in 10 CFR Part 20 and the licensee's procedures required by TSs as criteria for determining compliance. The inspector interviewed select licensee personnel and reviewed:

- Five outage work activities scheduled during the inspection period and associated work activity exposure estimates which were likely to result in the highest personnel collective exposures
- Site-specific ALARA procedures
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents
- Person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements

- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Workers' use of the low dose waiting areas
- 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
- Specific sources identified by the licensee for exposure reduction actions and priorities established for these actions, and results achieved against since the last refueling cycle
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Resolution through the CAP of problems identified through post-job reviews and post-outage ALARA report critiques
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking

Documents reviewed by the inspector are listed in the attachment.

The inspector completed 14 samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the three PIs listed below for the period January 2007 to December 2007, for Units 1, 2, and 3. The definitions and guidance of NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of PI data reported during the assessment period. The inspectors reviewed LERs, monthly operating reports, and operating logs as part of the assessment. Licensee PI data was also reviewed against the requirements of Procedures 93DP-0LC09, "Data Collection and Submittal Using INPO's Consolidated Data Entry System," Revision 7, and 70DP-0PI01, "Performance Indicator Data Mitigating Systems Cornerstone," Revision 3.

- Unplanned Scrams Per 7,000 Critical Hours

- Unplanned Scrams With Complications
- Unplanned Power Changes Per 7,000 Critical Hour

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

Cornerstone: Emergency Preparedness

The inspector reviewed licensee evaluations for three emergency preparedness cornerstone PIs for the period of January through December 2007. The definitions and guidance of NEI Report 99-02, "Regulatory Assessment Indicator Guideline," Revisions 3 through 5, and licensee PI Procedure 16DP-0EP19, "Performance Indicator Emergency Preparedness Cornerstone," Revision 6, were used to verify the accuracy of the licensee's evaluations for each PI reported during the assessment period. The inspector reviewed a one hundred percent sample of drill and exercise scenarios and licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspector reviewed sixteen selected emergency responder qualification, training, and drill participation records. The inspector reviewed alert and notification system testing procedures, maintenance records, and a one hundred percent sample of siren test records.

- Drill and Exercise Performance
- Emergency Response Organization Participation
- Alert and Notification System Reliability

Documents reviewed by the inspectors are listed in the attachment.

The inspector completed three samples.

Cornerstone: Occupational Radiation Safety

The inspector reviewed the Occupational Exposure Control Effectiveness PI and associated licensee documents from October 1 through December 31, 2007. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed the licensee that were accountable for collecting and evaluating the PI data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

Documents reviewed by the inspectors are listed in the attachment.

The inspector completed one sample.

Cornerstone: Public Radiation Safety

The inspector reviewed the Radiological Effluent TS /Offsite Dose Calculation Manual Radiological Effluent Occurrences PI and associated licensee documents from October 1, 2007, through December 31, 2007. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded PI thresholds and those reported to the NRC. The inspector interviewed the licensee that was accountable for collecting and evaluating the PI data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

Documents reviewed by the inspectors are listed in the attachment.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

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

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

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

- January 29, 2008, Unit 2, foreign material (FM) previously found in the spent fuel pool (SFP) no longer visible

- February 4, 2008, Units 1, 2, and 3, reviewed unresolved Item 05000528, 05000529, 05000530/2007012-18, "Routine Heavy Use of Overtime," opened during the IP 95003 Supplemental Inspection for an NRC review of actual hours worked by operations personnel

- February 6-26, 2008, Units 1, 2, and 3, reviewed quality control evaluators' organizational structure

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings and Observations

.1 Foreign Material in the Spent Fuel Pool

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of fuels services personnel to evaluate leaving foreign material (FM) in the Unit 2 SFP in accordance with procedures, and failed to ensure those procedures included appropriate quantitative and qualitative acceptance criteria.

Description. On October 13, 2006, during Unit 2 refueling Outage 2R13, fuels services personnel were performing under-bundle fuel inspection for fuel being removed from the reactor when FM was found. The FM appeared to be fixed inside the guardian grid of the lower end fitting of fuel Assembly P2N111, as documented in CRDR 2932719. A control room review of CRDR 2932719, performed on October 14, 2006, stated no additional foreign object search and retrieval (FOSAR) was required to look for the material.

On November 7, 2006, fuels services personnel initiated CRAI 2940130 to use Procedure 78DP-9ZZ01, "Foreign Object Search And Retrieval, Remotely Operated Vehicles, And Submersible Retrieval Tools And Pumps," Revision 0, and a written plan to attempt to remove the FM from Assembly P2N111 per WO 2940366. Engineering personnel planned to evaluate leaving the debris in Assembly P2N111, if the removal attempt was unsuccessful. Fuels services personnel attempted to recover the FM on January 24, 2008, in accordance with WO 2940366; however, the piece of debris was no longer visible. On January 24, 2008, PVAR 3126308 documented that the FM may have been transported to another location in the Unit 2 SFP or RCS, and that the FOSAR effort would be expanded to the rest of the SFP. The PVAR stated, in part, that if the FOSAR effort failed to locate and retrieve the debris, then, an evaluation and an engineering deficiency work order (ENG-DFWO) would be initiated in accordance with Procedure 30DP-9MP03, "System Cleanliness and Foreign Material Exclusion Controls," Revision 6.

On January 24, 2008, inspectors reviewed Procedure 30DP-9MP03, Step 2.9.5, which states, "that if the FM cannot be retrieved, then the Responsible Leader shall ensure that an ENG-DFWO has been initiated and dispositioned by the Responsible Engineer before the system is closed. The ENG-DFWO shall be linked to the CRDR written to document the loss of FME control." Procedure 81DP-0DC13, "Deficiency Work Order," Revision 21, Step 3.2.1 states, "engineering personnel assigned to disposition a deficiency work order (DFWO) which addresses degraded or nonconforming conditions to TS equipment or equipment that supports TS equipment should verify an operability determination or functional assessment has been performed in accordance with Procedure 40DP-9OP26, "Operability Determination and Functional Assessment," Revision 18." The inspectors observed that Procedure 30DP-9MP03 provided no time limit acceptance criteria to perform a functional assessment and to write a DFWO, as

specified in Procedure 81DP-0DC13, from the time the FM was found in the SFP. Additionally, the inspectors questioned fuels services personnel whether FM in the SFP was a potentially degraded or nonconforming condition and should be evaluated by the control room in accordance with Procedure 01DP-0AP12, "Palo Verde Action Request Processing," Revision 4, and Procedure 40DP-9OP26. Procedure 01DP-0AP12, Step 3.5 states, "A control room review will be performed for PVARs that have been screened at the Operations Review step and determined that a control room review is warranted. The condition described in the PVAR shall be evaluated by the SM for the assessment of potential operability concerns." If a degraded or nonconforming condition exists, Step 3.5.3 states, "the SM shall initiate actions to determine Operability/Functionality per Procedure 40DP-9OP26." On January 27, 2008, operations personnel performed a functional assessment of the effects of SFP FM on SFP cooling and the ability of the SFP to provide a borated water source, as documented in PVAR 3126308. Operations personnel determined the small piece of FM would have little impact on fuel assembly cooling and SFP cooling; and that the FM would not go back into the RCS because under-bundle inspections on fuel bundles are performed before the fuel is put back in the core.

The inspectors noted that the FM could have been transferred back into the RCS and affect reactor core fuel assemblies, because at the time the FM was found in October 2006, no under-bundle inspections were performed for fuel going back into the RCS. Consequently, the licensee updated the functional assessment performed in PVAR 3126308 on January 31, 2008, to address the possibility that the FM was transported into the RCS. The licensee determined that due to the size of the FM, about three eights of an inch, that it would not create any operability concerns. The licensee determined that this FM was very similar in shape and size, and was covered by a more limiting evaluation performed for FM found in Unit 3 fuel bundles, as documented in DFWO 2885310. This DFWO, including Westinghouse vendor guidance, determined that the material was flexible graphite (grafoil), which is commonly used in gasket and valve packing material and has been approved for use in the RCS. The licensee wrote WO 3139395 to continue to look for the debris.

Analysis. The performance deficiency associated with this finding involved the failure of fuels services personnel to evaluate leaving FM in the Unit 2 SFP in accordance with procedures, and failed to ensure those procedures included appropriate quantitative and qualitative acceptance criteria. The finding is greater than minor because it is associated with the SSC performance and human performance attributes of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, RCS, and containment) protect the public from radionuclide releases caused by accidents or events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because the finding did not result in loss of cooling to the SFP; the finding did not result from fuel handling errors that caused damage to the fuel clad integrity or a dropped assembly; and the finding did not result in a loss of SFP inventory greater than ten percent of the SFP volume. This finding has a crosscutting aspect in the area of human performance associated with decision-making because the licensee failed to use conservative assumptions when evaluating degraded and nonconforming conditions [H.1.(b)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, and shall be accomplished in accordance with those

instructions, procedures, and drawings. The control of FM to prevent damage to quality and quality augmented components is implemented by Procedure 30DP-9MP03, "System Cleanliness and Foreign Material Exclusion Controls," Revision 6. Procedure 30DP-9MP03, Step 2.9.5 states, "that if the FM cannot be retrieved, then the Responsible Leader shall ensure that an ENG-DFWO has been initiated and dispositioned by the Responsible Engineer before the system is closed. The ENG-DFWO shall be linked to the CRDR written to document the loss of FME control." Procedure 81DP-0DC13, "Deficiency Work Order," Revision 21, Step 3.2.1, states, "engineering personnel assigned to disposition a DFWO which addresses degraded or nonconforming conditions to TS equipment or equipment that supports TS equipment should verify an operability determination or functional assessment has been performed in accordance with Procedure 40DP-9OP26, 'Operability Determination and Functional Assessment,' Revision 18." Contrary to the above, between October 13, 2006 and January 31, 2008, fuels services personnel failed to evaluate leaving FM in the Unit 2 SFP in accordance with procedures, and failed to ensure those procedures included appropriate quantitative and qualitative acceptance criteria. Specifically, fuels services personnel used Procedure 30DP-9MP03, "System Cleanliness and Foreign Material Exclusion Controls," Revision 6, which did not specify acceptance criteria for time to perform a functional assessment of FM in the SFP, resulting in FM being left in the SFP for greater than one year without an evaluation on affected safety systems. Because this finding is of very low safety significance and has been entered into the licensee's CAP as PVAR 3126308, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 0500529/2008002-03, "Inadequate Procedure to Evaluate Foreign Material in the Spent Fuel Pool."

.2 Failure To Maintain Adequate Staffing Levels

Introduction. The inspectors identified a Green noncited violation of Technical Specification 5.2.2.d involving the routine use of excessive overtime for operations personnel.

Description. The inspectors reviewed APS payroll data from January 1, 2003 through December 31, 2007, that summarized the regular and overtime hours worked for each operations department position. During this review the inspectors noted that the total number of hours worked annually by operations department personnel remained relatively constant, or decreased, while the percentage of those total hours that were worked as overtime increased. As a result, the inspectors determined that the licensee increasingly relied on the use of overtime to provide the person-hours necessary to operate the three units.

Operator staffing from January 1 for 2003 through December 31, 2007

	2003	2004	2005	2006	2007
Control Room Supervisor	25	24	24	23	33
Reactor Operator	43	40	40	39	36
Shift Manager	20	20	19	19	19

*Data is an average number of personnel in the position over the year, taken from APS payroll data.

Operator Hours from January 1, 2003 through December 31, 2007

		2003	2004	2005	2006	2007
Control Room Supervisor	Regular	44411	40415	42407	38713	57367
	Overtime	5014	5562	6890	8440	18473
Reactor Operator	Regular	75589	71183	71329	67199	62945
	Overtime	12161	15206	17888	21740	26854
Shift Manager	Regular	35821	33348	33545	32300	32059
	Overtime	4870	5294	6273	8726	10035

*Data taken from APS payroll data.

Average regular hours worked by position

	2003	2004	2005	2006	2007
Control Room Supervisor	1776	1684	1767	1683	1738
Reactor Operator	1758	1780	1783	1723	1748
Shift Manager	1791	1667	1766	1700	1687

*Hours worked were calculated based on a comparison of the total regular hours worked by personnel in the position relative to the average number of personnel in that position.

The inspectors derived the percent overtime using the following assumptions:

1. A 4 percent correction factor to account for overtime hours worked as part of the normally scheduled shift rotation.

2. A 5 to10 percent correction factor to account for shift turnover.

3. A 75 percent correction factor to exclude overtime worked during refueling outages.

The inspectors used the following equation to calculate the percent overtime worked.

$X=[[((Y*0.96)*0.9)/Z]*100]*0.75$

X = Percent overtime
Y = Total overtime hours worked as documented in payroll data
Z = Total regular hours worked as documented in payroll data

	2003	2004	2005	2006	2007
Control Room Supervisor	7.32	8.92	10.53	14.13	20.87
Reactor Operator	10.43	13.84	16.25	20.96	27.65
Shift Manager	8.81	10.29	12.12	17.51	20.28

Since 2003, overtime, as a percent of regular hours worked, has increased steadily and substantively for control room operators. The inspectors noted that the increase in overtime rates for operations department positions appeared to be largely the result of a decrease in staffing, rather than the result of an increase in the total number of person-hours expended. The inspectors also noted that the 2007 overtime rates were more than double the overtime rates of 2003.

During their review the inspectors noted that Technical Specification 5.2.2.d, "Organization – Unit Staff," requires that administrative procedures shall be developed and implemented to limit the working hours of unit staff that perform safety-related functions, as well as requiring that the controls shall include guidelines on working hours that ensure adequate shift coverage shall be maintained without routine heavy use of overtime. Station procedure 01DP-9EM01, "Overtime Limitations," Revision 6, is the licensee's administrative procedure used to control unit staff working hours in accordance with facility Technical Specifications. Section 2.1 of this procedure requires that department leaders ensure that adequate shift coverage is maintained without the routine heavy use of overtime. The objective is to have personnel work a nominal 40-hour week while the plant is operating.

The inspectors determined that the licensee had several missed opportunities to identify this issue. Specifically, during their review the inspectors noted that the licensee had not been issuing and reviewing Technical Specification required excess overtime reports from approximately June 2006 through July 2007. The purpose of these reports was to facilitate identification of excess overtime usage by site management. However, due to changing computer software the reports were not generated and reviewed. Also, the inspector noted that several CRDRs written that identified the metric window for operations overtime were red for most of 2007. The inspectors determined that these were indicators of the use of excessive overtime and these indicators were missed by the licensee.

Analysis. The performance deficiency associated with this finding involved excessive routine use of heavy amounts of overtime for operations personnel that perform safety-related functions. The finding is greater than minor because if left uncorrected the finding would become a more significant safety concern in that the routine use of excessive work hours increases the likelihood of operator errors. Using the Manual C Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because no specific human performance issues due to personnel fatigue were identified that resulted in the degradation or loss of safety function of equipment important to safety. The finding has a crosscutting aspect in the area of human performance associated with resources because the licensee failed to maintain sufficient qualified operations personnel to maintain working hours within guidelines without heavy use of overtime [H.2(b)].

Enforcement. Technical Specification 5.2.2.d, "Organization-Unit Staff," requires, in part, that administrative procedures be developed and implemented to limit the working hours of unit staff that perform safety-related functions (e.g., licensed SROs, licensed ROs, radiation protection technicians, auxiliary operators and key maintenance personnel). This TS further requires the controls include guidelines on working hours that ensure adequate shift coverage be maintained without the routine heavy use of overtime. Procedure 01DP-9EM01, "Overtime Limitations," Revision 6, is the licensee's administrative procedure used to control unit staff working hours. Procedure 01DP-9EM01 requires, in part, that department leaders ensure that adequate shift coverage is maintained without the routine heavy use of overtime. The objective is to have personnel work a nominal 40-hour week while the plant is operating. Contrary to the above, between January 1 and December 31, 2007, the licensee failed to meet the objective of operations personnel working a nominal 40-hour week while all three units are operating, and has relied upon the excessive use of overtime to maintain adequate shift coverage. Because this finding is of very low safety significance and has been entered into the CAP as CRDR 3112231, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2008002-04, "Failure To Maintain Adequate Staffing Levels Results In Heavy Use of Overtime to Maintain Adequate Shift Coverage." Unresolved Item 05000528; 05000529; 05000530/2007012-18 is closed.

.3 Quality Control Organizational Structure

Inspectors determined that no findings of significance were identified during the review of CRDR 3129081. Inspectors reviewed issues regarding warehouse operations as documented in CRDR 3129081. Inspectors evaluated the organizational structure of the Quality Control (QC) Evaluators and the effectiveness of the Employee Concerns Program within the Supply Chain and Stores department. The licensee addressed these issues in a letter to the NRC dated January 25, 2008. Inspectors evaluated the adequacy of the licensee's response by conducting independent inspections.

Inspectors observed that currently QC Evaluators report directly to the Warehouse Section Leader-Stores. The Warehouse Section Leader has the responsibility for receiving, processing, handling, and placing into stores, equipment and components for use at Palo Verde Nuclear Generating Station (PVNGS). Quality Control Evaluators perform inspections for quality related equipment and components in this receipt process. While QC Evaluators are insulated from cost and schedule pressures associated with the rest of the PVNGS organization, they are subject to the production pressures and budget constraints within the Supply Chain and Stores department. Consequently, QC Evaluators do not report to a management level that assures the required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations.

Inspectors noted that the PVNGS Quality Assurance (QA) program was revised as specified in licensing document change request (LDCR) 01-F-012. Quality Control Evaluators were reassigned from the Nuclear Assurance Department to the Strategic Procurement organization. This change to the QA program was accomplished without prior NRC review and approval. Justification for changing the QA program without prior NRC review and approval was described in LDCR 01-012. Regulatory Affairs and NAD personnel concluded that the change was allowed without prior NRC approval under the provisions of 10 CFR 50.54(a)(3). The NRC previously approved, with an NRC safety evaluation, a similar quality assurance program description change to the Beaver Valley

Power Station (BVPS). The licensee concluded that the commitments made by Beaver Valley prior to the program change were the same as PVNGS commitments with respect to the quality assurance program. The licensee also concluded that all other issues questioned by the NRC during Beaver Valley's approval process were adequately addressed in LDCR-01-012. Based on these conclusions, the licensee believed that they were allowed to change the quality assurance program description in the UFSAR without prior NRC approval.

Variations in the methods employed to meet the standards of the commitments exist between the licensee and the BVPS. At the BVPS, in order to provide maximum independence from production pressures within the Nuclear Procurement Department, QC Inspectors would report directly to the department manager and would be assigned a separate budget. At Palo Verde, the QC Evaluators report directly to a front line supervisor and fall under one common Supply Chain and Stores budget. Although the commitments themselves may be the same between the two facilities, the methods in which those commitments are met are different. Inspectors observed that by reporting directly to a front line supervisor, and being subject to one common budget, the QC Evaluators may not have an the necessary level of independence from production pressures within the Supply Chain and Stores department. No findings of significance were identified since the changes to the UFSAR did not involve a decrease in commitments to the NRC. The organizational structure for QC Evaluators is being addressed in the CAP as PVAR 3143574.

.3 Annual Sample: Review of Apparent Cause Evaluations

a. Inspection Scope

The inspectors selected 20 CRDRs and six apparent cause evaluations for detailed review. The reports were reviewed to ensure that the full extent of the performance issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the selected CRDRs against the requirements of licensee Procedure 90DP-0IP10, "Condition Reporting," Revision 36.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

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

Quarterly Confirmatory Action Letter Inspection

This inspection was the first in a series of inspections to be performed by the NRC to assess the progress that PVNGS made with respect to the implementation of their Site Integrated Improvement Plan (SIIP) and to verify their progress in addressing the specific actions in the NRC Confirmatory Action Letter (CAL) dated February 15, 2008.

During the IP 95003 Supplemental Inspection, the licensee was still in the process of developing the SIIP and only limited progress had been made in completing SIIP tasks. As of November 1, 2007, the licensee had completed 12 closure packages and only 2 had been approved for closure by the Closure Review Board (CRB). On December 31, 2007, PVNGS submitted portions of their SIIP to address Action 5 of the original CAL dated June 21, 2007. Action 5 required the licensee to submit the portions of their improvement plan that impacted the Reactor Safety strategic performance area.

The revised CAL, dated February 15, 2008, superseded the CAL dated June 21, 2007. The revised CAL contains a subset of actions delineated in the SIIP that the NRC determined were necessary to address the performance insights identified by PVNGS assessment activities and the IP 95003 Supplemental Inspection. The key performance areas that PVNGS 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 CAL. The licensee submitted a list of the specific tasks, including due dates, associated with the action plans and strategies for each of the CAL items on March 31, 2008. The items selected for this quarterly CAL inspection were based on the completion due dates provided by the licensee from their submittal dated, December 31, 2007.

a. Inspection Scope

The inspectors selected the SIIP tasks listed below for an in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) SIIP task matches the CRAI description; (2) corrective actions address and correct the SIIP task; (3) corrective actions address the action plan problem statement and primary causes; (4) verification of SIIP task completion; (5) timely completion of corrective actions in accordance with the SIIP schedule; (6) review of metrics and measures for improved performance; (7) independent verification of improved performance; and (8) closure of SIIP task in accordance with procedures.

- Task 1.2.E.35 (CAL Item 5 and SIIP Action Plan 5, Strategy 1) (CRAI 3107133) -based on rankings, each engineering program owner complete a self assessment

- Task 2.2.B.1 (CAL Item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3062459) -develop a targeted staffing strategy for operations

- Task 2.2.B.2 (CAL Item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3062460) -develop a targeted staffing strategy for engineering

- Task 2.2.B.3 (CAL Item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3062461) -develop a targeted staffing strategy for maintenance

- Task 2.2.B.4 (CAL Item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3062464) -develop a targeted strategy for radiation protection and chemistry

- Task 2.2.B.5 (CAL Item 7 and SIIP Action Plan 12, Strategy 8) (CRAI 3062465) -develop a targeted staffing strategy for other positions

- Task 3.6.48 (CAL Item 2 and SIIP Action Plan 14, Strategy 2) (CRAI 3104935) -engineering design change for K1 relay module

- Task 3.6.60 (CAL Item 2 and SIIP Action Plan 14, Strategy 4) (CRAI 3042092) -identify and classify components in the Class 1E 480V Power Switchgear system

- Task 3.6.62 (CAL Item 2 and SIIP Action Plan 14, Strategy 4) (CRAI 3042095) -identify and classify components in the PK system

- Task 3.6.64 (CAL Item 2 and SIIP Action Plan 14, Strategy 4) (CRAI 3042098) -identify and classify components in the AFW system

- Task 3.7.3 f (CAL Item 1 and SIIP Action Plan 15, Focus Area 2) (CRAI 2785420) -implement design modification work order 2760330 to replace the existing carbon steel parts on the inboard butterfly valves JSIAUV0673 and JSIBUV0675 with stainless steel parts

- Task 3.7.3 p (CAL Item 1 and SIIP Action Plan 15, Focus Area 1) (CRAI 2785390) -implement design modification for the Unit 1 containment sump suction valves

- Task 5.1.E.3 (CAL Item 3 and SIIP Action Plan 3, Strategy 4) (CRAI 3062967) -incorporate operability determination in engineering continuing training program requirements

- Task 9.1.A.1 (CAL Item 10 and SIIP Action Plan 8, Strategy 1) (CRAI 3063144) – implement Policy 1503, “Emergency Planning,” to require personnel to fill positions within required timeframe

- Task 9.1.A.5 (CAL Item 10 and SIIP Action Plan 8, Strategy 1) (CRAI 3063199) -revise Policy Guide 150, "Emergency Planning"

- Task 9.1.A.24 (CAL Item 10 and SIIP Action Plan 8, Strategy 8) (CRAI 3077904) -develop and implement a multi-discipline Emergency Plan Steering Committee

- Task 15.1.10 (CAL Item 3 and SIIP Action Plan 6, Part 2, Strategy 7) (CRAI 3017939) -develop and implement station metrics/indicators associated with self assessments

- Task 15.2.1.b (CAL Item 3 and SIIP Action Plan 6, Part 2, Strategy 7) (CRAI 3017946) -lessons learned and recommendations for incorporation of good practices into the site work management system

The inspectors considered the following CAL SIIP tasks completed: 2.2.B.1, 2.2.B.2, 2.2.B.3, 2.2.B.4, 2.2.B.5, 3.6.48, 3.6.60, 3.6.64, 3.7.3.p, 9.1.A.1, 9.1.A.5, 9.1.A.24, 15.1.10, and 15.2.1.b.

b. Findings

.1 Task Closure

Each task within the SIIP required a closure package along with varying levels of management review for closure based on the priority of the corrective action. The inspectors reviewed a total of 33 tasks associated with the licensee's SIIP. These tasks were in various stages of the closure process, including some items that were still open. The SIIP task closure packages were reviewed in accordance with Procedure 01DP-0AC06, "SIBP/SIIP Process," Revision 3, 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 CAL items
- Category B – included adverse conditions and improvement plan Priority 3 CRAIs
- Category C – included improvement plan Priority 4 CRAIs.

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

During the review of the SIIP tasks, the inspectors identified numerous quality issues, including closure packages for Tasks 3.6.62, 3.7.3.p, 5.1.E.3, and 9.1.A.8, as follows:

- Closure package for Task 3.6.62, "identify and classify components in the PK system," was inappropriately closed with outstanding reviews not completed to ensure operability of the PK system. For details, refer to Section .3 below.
- Closure package for Task 3.7.3.p, "implement design modification for the Unit 1 containment sump suction valves," was closed without supporting documentation to demonstrate that testing had verified the containment sump piping was full of water after the modifications were completed. This action was completed, but the completion documentation was missing.
- Closure package for Task 5.1.E.3, "incorporate operability determination in engineering continuing training program requirements," was submitted without demonstrating that the training was effective. The inspectors determined that the submitted package quality failed to meet the purpose to enhance the skill and knowledge of engineers performing operability determinations. The package took credit for general engineering lessons learned training that was conducted in April and May 2007. The CRB also recognized that operability determination concerns still existed and additional efforts were needed. CRDR 3095373 was initiated and it contained 24 CRAIs to address the continuing problems with operability determinations. Additional inspections will be required to close CAL SIIP Task 5.1.E.3.

The inspectors also reviewed the SIIP quality PIs, interviewed numerous personnel, and reviewed several Nuclear Assurance evaluations related to CAL SIIP actions. The licensee has been and continued to provide training to the task owners on Procedure 01DP-0AC06 closure process, and was also providing coaching to

individuals. Packages can be unsatisfactory for many reasons including: improper formatting, missing signatures, incomplete documentation, lack of demonstrated implementation, inadequate corrective actions, and inadequate sustainability requirements. The closure review process was described in Procedure 01DP-0AC06, Appendix L, "SIBP/SIIP Action Closure Flowchart," and contained two quality control steps, administrative and preliminary reviews. Numerous packages that were submitted for closure did not meet the closure review checklist criteria and were sent back to the owners for correction prior to CRB review. The licensee was in the early stage of task closure and overall package quality needs to be improved.

Nuclear Assurance Evaluation 08-0024, dated March 4, 2008, determined that the backlog of closure reviews and approvals was growing and that the rejection rate was high. As of February 4, 2008, 246 packages were submitted and 145 did not meet the standards during the administrative and preliminary reviews and were returned to the responsible owners. Those owners were provided feedback to improve the quality of the closure packages. During the same time period, the CRB reviewed 55 closure packages and CRB only accepted 40 packages for closure (of those, 30 packages had minor changes that needed to be made and were verified acceptable by the CRB chairman). Approximately 25 percent of the packages submitted to CRB required additional work. In reviewing recent SIIP quality PIs, it appears that package quality was improving, but no trend was available since the indicators were for January and February 2008. For comparison between January and February 2008, document quality was as follows: four packages verses 44 packages were accepted by the CRB without comments; 13 packages verses one package were accepted by the CRB with comments; four packages for both January and February were tabled (not reviewed by the CRB); and five packages verses zero packages were rejected. The inspectors attended several recent CRB meetings and found the packages reviewed to be of higher quality.

.2 Metrics and Measures to Monitor Improvement

During the inspection, the licensee was still in the process of finalizing the SIIP PIs. These indicators will not be finalized until PVNGS provides details of their actions to address each item of the CAL dated February 15, 2008, which was submitted to the NRC on March 31, 2008. The licensee developed eight additional PIs to track the quality and schedule completion of SIIP tasks. The inspectors reviewed a sample of these draft PIs and determined that most of the indicators appeared appropriate and should provide useful information. However, the inspectors determined that not enough time had passed to assess trends or determine the appropriateness of the goals and thresholds.

The SIIP PIs used to track the schedule completion of the tasks were somewhat misleading because they used the site work management system completion dates verses SIIP completion dates. At the end of the inspection, none of the Category A closure packages (highest level and includes over 500 CAL SIIP items) were completely closed. Only 13 of over 500 CAL SIIP items were accepted by the CRB and these had not received the independent reviews required by Procedure 01DP-0AC06.

.3 Failure to Implement Corrective Action Process for Class 1E 125 Vdc System

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the PK system were reviewed for operability.

Description. On September 22, 2006, a root cause evaluation was documented in CRDR 2926830 for the Unit 3 EDG K1 contactor repeat failure, as discussed in NRC Inspection Report 05000528; 05000529; and 05000530/2006012. The licensee's root cause evaluation stated the root cause to be that the "K1 contactor was treated as a single reliable component; therefore, subcomponents of the K1 contactor mechanics were not fully understood. This lack of understanding produced ineffective PM tasks for the EDG field flash and de-excitation circuits." On May 15, 2007, during the extent of cause/condition review for CRDR 2926830, the licensee wrote CRAI 3014243 to address the following in other systems: identify and classify any auxiliary contacts, relays, starters, or contactors that had moving parts which break or make contacts and/or had physical adjustments; of those components identified, determine if dimensional criteria is given for the components as described in the vendor technical documents (VTDs); and if criteria is given, determine if the criteria is verified through PM tasks.

On July 20, 2007, the licensee initiated CRAI 3042095 that looked at this extent of cause for the PK system. The CRAI evaluation identified over 300 relays and starters in the PK system that either required periodic gap/wipe adjustments in accordance with their VTDs, but had no PM to verify proper alignment; or had existing PMs, but the VTD adjustment requirements were not adequately reflected in the PMs. The licensee dispositioned this as an enhancement to create or modify these PMs, and on September 29, 2007, wrote CRAI 3069502 to track the completion of the necessary PM creation and revision tasks.

The Palo Verde Site Integrated Business Plan (SIBP)/SIIP, Initiative 3.6, addressed corrective actions associated with the EDG K1 Relay. Specifically, Task 3.6.62 addressed the extent of cause/condition to the PK system and performed the actions specified in CRAI 3042095. During review of the closure documentation associated with Task 3.6.62 on March 3, 2008, the reviewers concurred with the conclusion of writing CRAI 3069502 that tracked the creation and modification of PMs for the affected PK components.

On March 11, 2008, inspectors reviewed SIBP/SIIP Closure Document for Task 3.6.62. The affected relays and starters in the PK system potentially did not conform to the vendor technical documents since adjustments were possible, but were not being verified through PMs. Inspectors questioned whether this constituted a potentially degraded/nonconforming condition instead of an enhancement as dispositioned in CRAI 3042095. Procedure 90DP-0IO10, "Condition Reporting," Revision 36, Step 3.3.1.12 states, in part, that during the course of a CRDR evaluation, if additional conditions unrelated to the original condition are discovered, a new PVAR for each new condition shall be initiated and submitted for review in accordance with Procedure 01DP-0AP12, "Palo Verde Action Request Processing," Revision 4. Procedure 01DP-0AP12, Step 3.5 states, in part, that the condition described in the PVAR shall be evaluated by the SM for the assessment of potential operability concerns.

Based on the inspectors concerns, the licensee wrote PVAR 3144707 and performed an immediate operability determination in accordance with Procedure 40DP-9OP26, "Operability Determination and Functional Assessment," Revision 18. The immediate operability determination stated the affected PK components were operable based on all surveillances of the associated valves and equipment being current, and that there were no known failures in these control circuits.

Analysis. The performance deficiency associated with this finding was the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the PK system were reviewed for operability. This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because it did not represent a loss of system safety function, an actual loss of safety function of a single train for greater than its TS allowed outage time, or screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of human performance associated with decision-making because safety-significant decisions were not verified to validate underlying assumptions and identify unintended consequences [H.1(b)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires that activities affecting quality shall be prescribed by instructions, procedures, or drawings, and shall be accomplished in accordance with those instructions, procedures, and drawings. The resolution of adverse conditions is implemented by Procedure 90DP-0IO10, "Condition Reporting," Revision 36. Procedure 90DP-0IO10, Step 3.3.1.12 states, in part, that during the course of a CRDR evaluation, additional conditions unrelated to the original condition are discovered, a new PVAR for each new condition shall be initiated and submitted for review in accordance with Procedure 01DP-0AP12, "Palo Verde Action Request Processing," Revision 4. Procedure 01DP-0AP12, Step 3.5 states, in part, that the condition described in the PVAR shall be evaluated by the SM for the assessment of potential operability concerns. The assessment of operability of safety-related equipment needed to mitigate accidents is implemented by Procedure 40DP-9OP26, "Operability Determination and Functional Assessment," Revision 18. Contrary to the above, between September 29, 2007 and March 7, 2008, engineering personnel failed to ensure that potentially nonconforming conditions associated with the PK system were reviewed for operability. Specifically, engineering personnel failed to ensure all relevant information was reviewed for operability when it was determined that vendor recommended preventative maintenance tasks were not being performed on PK system. Because this finding is of very low safety significance and has been entered into the CAP as PVAR 3144707, this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2008002-05, "Failure to Properly Implement Corrective Action Process for Potential Operability Issues with the Class 1E 125 Vdc System."

.4 Cross-References to Problem Identification and Resolution Observations and Findings Documented Elsewhere

Section 1R15 describes a finding where operations and engineering personnel failed to use available operating experience, including vendor recommendations, to implement

and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs.

Section 4OA2.4 describes a finding where CAP personnel failed to ensure a proper classification and prioritization of two CRDRs. The inspector evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 2OS1)
- ALARA Planning and Controls (Section 2OS2)

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

Event Follow-Up

a. Inspection Scope

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

- January 13, 2008, a RO noticed a SFP level change on the control room remote camera while an auxiliary operator (AO) was performing an evolution on the pool cooling (PC) system

- January 20-March 15, 2008, Units 1, 2, and 3, design issues with remote shutdown disconnect switches to the remote shutdown panel

- January 22, 2008, Unit 3, dry cask storage platforms stored in the fuel building did not meet seismic requirements and could have affected pump room exhaust air cleanup system Trains A and B

- January 25, 2008, Units 1, 2, and 3, EDG fuel oil injection pump leakage that impacted EDG operability

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

Introduction. A Green self-revealing NCV of TS 5.4.1.a was identified for the failure of operations personnel to follow procedures, which resulted in an inadvertent transfer of SFP water to the refueling water tank (RWT).

Description. On January 13, 2008, the Unit 3 control room supervisor directed an AO to place PC cleanup Filter PCN-F01B in service or standby following filter replacement per Procedure 40OP-9PC06, "Fuel Pool Clean-up and Transfer," Revision 41. A pre-job briefing was performed where the pool cooling lineup was discussed. Specifically, it was

communicated to the AO that PC cleanup Train A was in service and that PC cleanup Train B was secured. It was, however, noted that PC cleanup Train B had recently been aligned for RWT recirculation/cleanup. The system drawing was not referenced during the pre-job briefing to verify the flowpath and ensure that the current system lineup was understood.

The AO made an erroneous assumption during the valve alignment and marked Procedure 40OP-9PC06, Step 10.6.2.3, as not applicable since he believed Filter PCN-F01B Bypass Valve PCN-061 was not in the current flowpath. Step 10.6.2.3 would have closed Valve PCN-V061. This assumption was in error since Valve PCN-V061 was in the current flowpath due to the recent RWT recirculation/cleanup alignment. Consequently, Step 10.6.2.3 was not performed and Valve PCN-V061 was left open. When Step 10.6.2.5 was performed to open cleanup pump cross-tie isolation Valve PCN V045, a flowpath was established from PC cleanup Train A, through PC cleanup Train B to the RWT. The water transfer event was stopped by isolating the flowpath after a RO noticed a SFP level change on the control room remote camera and notified the AO. As a result of the improper alignment, an estimated 300 gallons of SFP inventory was transferred to the RWT.

Similar events occurred between April 2003 and April 2006, when valves associated with the SFP were inappropriately positioned, resulting in a loss of SFP inventory. The events were documented in NCVs 05000528; 05000529; 05000530/2004003-09, 05000528/2005003-04, and 05000530/2006003-04.

Analysis. The performance deficiency associated with this finding involved operations personnel not following procedures. The finding is greater than minor because it is associated with the configuration control and human performance attributes 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. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance because the finding did not result in loss of cooling to the SFP; the finding did not result from fuel handling errors that caused damage to the fuel clad integrity or a dropped assembly; and the finding did not result in a loss of SFP inventory greater than ten percent of the SFP volume. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee failed to use adequate human error prevention techniques, such as pre-job briefings, to ensure that the pool cooling cleanup system activity was performed safely [H.4(a)].

Enforcement. Technical Specification 5.4.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 3.h, Procedures for Startup, Operation, and Shutdown of Safety-Related PWR Systems, which requires procedures for operating the fuel storage pool purification and cooling system. Procedure 40OP-9PC06, "Fuel Pool Cleanup and Transfer," Revision 41, provided instructions for placing a cleanup filter in service or standby. Contrary to the above, on January 13, 2008, operations personnel failed to properly implement Procedure 40OP-9PC06 for operating the PC cleanup system, resulting in Filter PCN-F01B Bypass Valve PCN-V061 being improperly aligned. This resulted in an inadvertent transfer of SFP water to the RWT. Because this finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 3121713, this

violation is being treated as an NCV consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000530/2008002-06, "Failure to Follow Procedures Resulted in Water Transfer from the Spent Fuel Pool."

Event Report Reviews

a. Inspection Scope

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

b. Findings

.1 (Closed) LER 05000528/2006-003-00, "EDG Actuation on Loss of Power to A Train 4.16 Kilovolt Bus"

On May 30, 2006, Unit 1 was defueled, when an invalid load shed signal was received from the balance of plant engineered safety features actuation system load sequencer Train A resulting in a loss of power (LOP) to safety-related electrical Bus PBAS03. Prior to the LOP, EDG Train A had been manually removed from Bus PBAS03 following a maintenance surveillance test and was still operating in a post-run cooldown mode. The normal offsite power source had been restored to Bus PBAS03.

The deenergization of Bus PBAS03 caused a valid LOP signal which resulted in EDG Train A receiving a valid emergency run signal. EDG Train A returned to rated frequency and voltage; however, its output breaker did not close because the load sequencer had locked-up, thus, preventing the closure signal to the EDG output breaker. Operations personnel completed actions to isolate the balance of plant engineered safety features actuation system load sequencer Train A, and energize electrical Bus PBAS03 from its normal offsite power supply approximately six hours after the LOP. Through extensive troubleshooting and reviews of previous events caused by the load sequencer, the licensee's investigation determined that the most probable cause for the event was from electrical noise/interference which affected the operation of the load sequencer. Corrective actions included the installation of a design modification to reduce electromagnetic interference in the sequencer. Suspect relays and noise suppression networks were also replaced in the EDG control cabinet, and several connections in the cabinet were reworked to further reduce the electrical noise. The LER was reviewed by the inspectors and no findings of significance were identified and no violation of NRC requirements occurred. The licensee documented the failed equipment in CRDR 2899375. This LER is closed.

.2 (Closed) LER 05000529/2006004-00, "Unit 2 Feedwater Isolation Valve Inoperability Results in Condition Prohibited by Technical Specifications"

On July 27, 2006, the Unit 2 hydraulic accumulator for main feedwater isolation Valve (MFIV) 2JSGAUV0174 would not recharge due to a failed four-way valve lodged in the center block position. Evaluation of the valve concluded this condition would have prevented fast closure of Valve 2JSGAUV0174 upon receipt of a main steam isolation signal and had existed since July 13, 2006. This outage time exceeded the time requirements of TS 3.7.3.c, to place the plant in Mode 3 within 6 hours and Mode 6 within 36 hours. The cause of the TS violation was the failure of operations personnel to

identify that Valve 2JSGAUV0174 "N" four-way valve did not return to the standby position following accumulator pressure reduction. The four-way valve was replaced and the MFIV operating procedure was revised to verify the four-way valves return to their required position. The licensee documented the failed equipment in CRDR 2915450. This LER is closed.

Introduction. A Green self-revealing NCV of TS 3.7.3.c was identified for the failure of Unit 2 operations personnel to perform the actions specified in TS 3.7.3 for an inoperable MFIV, resulting in MFIV 2JSGAUV0174 to SG 1 exceeding the TS 3.7.3 allowed outage time.

Description. On July 27, 2006, operations personnel declared MFIV 2JSGAUV0174 to SG 1 inoperable as a result of the hydraulic accumulator for Valve 2JSGAUV0174 failing to recharge. This failure occurred when the four-way "N" valve for Valve 2JSGAUV0174 became lodged in the center blocked position such that flow to the hydraulic accumulator was blocked. This would have prevented fast closure of Valve 2JSGAUV0174 upon receipt of a main steam isolation signal and had existed since July 13, 2006.

The safety function of this MFIV is to provide containment isolation between the steam generators and the feedwater line in the event of a main steam line break, feedwater line break, or loss of reactor coolant accident. The MFIVs isolate main feedwater flow to the secondary side of the SGs following a high energy line break. Closure of the MFIVs terminates flow to both SGs, terminating the event for feedwater line breaks occurring upstream of the MFIVs. The safety function of the MFIV, to provide containment isolation, was not affected since the redundant valve, MFIV 2JSGBUV0132, on the economizer line would have closed. The normal position and the safety position for Valve 2JSGAUV0174 four-way "N" valve is in the open position to port accumulator nitrogen to fast close the MFIVs.

Valve 2JSGAUV0174 was declared inoperable on July 27, 2006, and the "N" four-way valve was replaced. Engineering personnel evaluated the accumulator pressure trends and determined the "N" valve had been lodged in the blocked position since the last time operations personnel reduced pressure on July 13, 2006. A root cause investigation was conducted and documented in CRDR 2915450. The root cause investigation identified the cause to be the inability to detect the failure of the four-way "N" valve when using Procedure 40OP-9SG01, "Main Steam," Revision 53. Procedure 40OP-9SG01, Step 4.5, is used to verify the nitrogen precharge of the accumulators by turning the MFIV exercise/accumulator charge test switch to "ACC CH TEST," which shuttles the "N" four-way valve to bleed off accumulator hydraulic fluid. After verifying the nitrogen pre-charge, operations personnel turn the switch back to normal which causes the actuator air operated hydraulic pump to recharge the accumulator. Further, Procedure 40OP-9SG01, Step 4.6.10, is used if pressure becomes too high in the accumulators, then operations personnel reduce pressure by cycling the exercise/accumulator charge test switch to "ACC CH TEST," which cycles the "N" four-way valve to bleed off a slight amount of pressure. This process should automatically return the "N" four-way valve to its required position. Procedure 40OP-9SG01 did not provide a step to verify the position of the "N" four-way valve after cycling the valve. The action to prevent recurrence was to revise the procedure to require verification of hydraulic pump start and accumulator pressure increase greater than 100 pounds per square inch. The ability to increase accumulator pressure indicates the "N" four-way valve has returned to its proper position to support

MFIV operation. The direct cause of the failure of Valve 2JSGAUV0174 "N" four-way valve is unknown.

This issue is similar to an event from June 1998 when the Unit 3 MFIV 3JSGAUV0177 "N" four-way valve was found lodged in the center blocked position as described in CRDR 380142.

Analysis. The performance deficiency associated with this finding involved the failure of operations personnel to perform the actions specified in TS 3.7.3.c. This finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. A Phase 2 analysis is required because the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, determined that there was a loss of main feedwater isolation of a single train to SG 1 for greater than the TS allowed outage time. The initiating event likelihood is determined to be three to 30 days since the finding occurred between July 17 and 27, 2006. Using the Phase 2 Worksheets associated with a SG tube rupture without SG isolation, the finding is determined to only affect Sequence 2, with operator action credit reduced to zero, the finding is determined to have very low safety significance since all remaining mitigation capability was available or recoverable.

Enforcement. Technical Specification 3.7.3.a requires that with one MFIV inoperable, actions must be taken to close or isolate the inoperable valve within 72 hours. If these actions are not completed, TS 3.7.3.c requires the unit be placed in Mode 3 within 6 hours, and in Mode 5 within 36 hours. Contrary to the above, on July 17, 2006, operations personnel failed to perform the actions specified in TS 3.7.3.c. Specifically, on July 17, 2006, operations personnel failed to perform actions to place the unit in Mode 3 within 6 hours and Mode 5 within 36 hours, as required by TS 3.7.3.c for an inoperable MFIV that had not been closed or isolated in 72 hours, as required by TS 3.7.3.a. This resulted in MFIV 2JSGAUV0174 to SG 1 exceeding the TS 3.7.3 allowed outage time. Because this finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2915450, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000529/2008002-07, "Failure to Identify Inoperable Feedwater Isolation Valve Exceeds Technical Specification Allowed Outage Time."

.3 (Closed) 05000529/2006005-00, "Reactor Head Vent Axial Indications Caused by Degraded Alloy 600 Component"

On October 7, 2006, engineering personnel performing preplanned in-service examinations of the Unit 2 reactor vessel head vent penetration discovered two axial indications. Operation personnel entered TS Limiting Condition for Operations 3.4.103, Condition A, and made an eight hour notification to the NRC for a nonconforming condition of the RCS. The indications were located on the inner diameter surface of the pipe adjacent to the J-weld to the head. The licensee determined that these indications were due to primary water stress corrosion cracking. The licensee removed the flaws by machining away approximately one inch of the vessel head vent. These removed indications were similar to indications found on April 23, 2005, during the previous refueling outage. This issue was previously noted on LER 05000529/2005001, and the licensee's corrective actions at that time included machining the inside surface of the pipe, and verifying no indications by examination. The LER was reviewed by the

inspectors and no findings of significance were identified and no violations of NRC requirements occurred. The licensee documented the problem in CRDR 2931237. This LER is closed.

.4 (Closed) LER 05000529/2006006-00 and 05000529/2006-01, "Technical Specification 3.7.7 Violation for an Inoperable Essential Cooling Water Heat Exchanger"

The event described in this LER was previously discussed in NRC Inspection Report 05000528/2006011; 05000529/2006011; 05000530/2006011, and documented as NCV 0500529/2006011-01, EW Train 2B Inoperable Longer than Allowed Outage Time. The inspectors reviewed this LER and its supplement and no additional findings were identified. This LER is closed.

Personnel Performance

a. Inspection Scope

On January 3, 2008, inspectors reviewed the pressurizer level decrease to below TS limits during the performance of AFW Pump AFA-P01 full flow testing on Unit 3. The inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts for the below listed evolutions to evaluate operator performance in coping with nonroutine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolutions sampled.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

a. Inspection Scope

The inspectors reviewed the Institute of Nuclear Power Operations assessment dated July 2007.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On January 8, 2008, the inspectors presented the inspection results of the in-office review of licensee changes to the emergency plan and EALs, on a telephonic exit, to Mr. E. O'Neil, Department leader, Emergency Preparedness, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

On February 15, 2008, the inspectors presented the occupational radiation safety inspection results to Mr. L. Cortopassi, Plant Manager, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

On February 15, 2008, the inspectors presented the biennial emergency preparedness inspection results to Mr. R. Edington, Executive Vice President, Nuclear, and Chief Nuclear Officer, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

On March 12, 2008, the inspectors presented the inspection results of the in-office review of licensee changes to the emergency plan, on a telephonic exit, to Mr. E. O'Neil, Department leader, Emergency Preparedness, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

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

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

4OA7 Licensee-Identified Violations

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

- 10 CFR 50.54(q) of Title 10 of the Code of Federal Regulations requires the licensee to follow their emergency plan. Contrary to the above, between 2002 and 2007, training personnel did not administer annual emergency preparedness training to all employee site badge holders, as required by Section 8.1.1 of the Emergency Plan. The finding was entered into the CAP as CRDR 2966025. The finding is of very low safety significance because it is associated with Planning Standards 50.47(b)(7) and 50.47(b)(15), is not a functional failure of the planning standards because all employees received initial general emergency preparedness training, and means existed to inform holders of site badges about the actions they should take during an emergency.

- Technical Specification Surveillance Requirement 3.3.11.2 requires that each remote shutdown system disconnect switch and control circuit is verified capable of performing the intended function. Contrary to the above, between January 20, 2008 and March 15, 2008**,** Procedure 40ST-9ZZ20, "Remote Shutdown Disconnect Switch and Control Circuit Operability," Revision 10, did not verify all circuit paths associated with each disconnect switch were adequately tested. This issue affected all the disconnect switches to the remote shutdown panel.

The licensee entered into TS Surveillance Requirement 3.0.3 for a missed surveillance, performed a risk evaluation, and tested the most risk-significant disconnect switches to verify that these disconnect switches could perform their intended function. Of the risk-significant disconnect switches tested, the licensee identified that one disconnect switch associated with Unit 1 AFW pump to SG 1 block Valve AFB-UV-34 would not have been capable of performing it's intended function due to an electrical jumper installed in the closing circuit. This valve is in the flow path from the motor driven AFW pump to SG 1. However, the potential failure of this valve would not have affected the ability to maintain a shutdown condition, because the flowpath to the SG 2 was not affected. The finding was entered into the CAP as PVARs 3129077, 3135575, 3136664, 3138937 and 3144595. Using Manual Chapter 0609, "Significance Determination Process," Appendix F, "Fire Protection Significance Determination Process," the finding is determined to have very low safety significance because at Step 1.3, Qualitative Screening Approach, the finding only affected the ability to reach and maintain a cold shutdown condition.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000528; 05000529; 05000530/2008002-01	NCV	Failure to Establish Preventative Maintenance Procedures for Emergency Diesel Generator Fuel Oil Injection Pump O-rings (Section 1R15)
05000530/2008002-02	NCV	Two Examples of a Failure to Properly Implement the Systematic Troubleshooting Process (Section 1R19)
05000529/2008002-03	NCV	Inadequate Procedure to Evaluate Foreign Material in the Spent Fuel Pool (Section 4OA2)
05000528; 05000529; 05000530/2008002-04	NCV	Failure to Maintain Adequate Staffing Levels Results in Heavy Use of Overtime to Maintain Adequate Shift Coverage (Section 4OA2)
05000528; 05000529; 05000530/2008002-05	NCV	Failure to Properly Implement Corrective Action Process for Potential Operability Issues with the Class 1E 125 V DC System (Section 4OA2)
05000530/2008002-06	NCV	Failure to Follow Procedures Resulted in Water Transfer from the Spent Fuel Pool (Section 4OA3)
05000529/2008002-07	NCV	Failure to Identify Inoperable Feedwater Isolation Valve Exceeds Technical Specification Allowed Outage Time (Section 4OA3)

Closed

05000528/2006003-00	LER	EDG Actuation on Loss of Power to A Train 4.16KV Bus (Section 4OA3)
05000529/2006004-00	LER	Unit 2 Feedwater Isolation Valve Inoperability Results in Condition Prohibited by Technical Specifications (Section 4OA3)
05000529/2006005-00	LER	Reactor Head Vent Axial Indications Caused by Degraded Alloy 600 Component (Section 4OA3)
05000529/2006006-00 and 05000529/2006006-01	LER	Technical Specification 3.7.7 Violation for an Inoperable Essential Cooling Water Heat Exchanger (Section 4OA3)
05000528; 05000529; 05000530/2007012-18	URI	Routine Heavy Use of Overtime (Section 4OA2)

Discussed

None

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 1R04: Equipment Alignment

Procedures

NUMBER	TITLE	REVISION
40OP-9DG02	Emergency Diesel Generator B, Appendix A - DG "B" Valve Checklist	51
40OP-9DG02	Emergency Diesel Generator B, Appendix B - DG "B" Electrical Checklist	51
40OP-9ZZ04	Plant Startup Mode 2 To Mode 1	53
40OP-9ZZ05	Power Operations	123
40OP-9NA03	13.8 kV Electrical System (NA)	30

Drawings

NUMBER	TITLE	REVISION
02-M-ECP-001	P&I Diagram, Essential Chilled Water System	29
02-M-SIP-002	P&I Diagram, Essential Spray Pond System, Sheet 1 of 3	40
02-M-SIP-001	P&I Diagram, Safety Injection & Shutdown Cooling System	37
13-E-MAA-001	Main Single Line Diagram	23
01-M-DGP-001	P&I Diagram Diesel Generator System, Sheets 1through 9	49
13-E-MAA-001	Main Single Line Diagram	23

Work Orders

3025982 3025983

Miscellaneous
Scheduler's Evaluation for Palo Verde Unit 1, week of March 10, 2008
Scheduler's Evaluation for Palo Verde Unit 1, week of January 14, 2008
System Health Report, January 1, 2007, through June 30, 2007

Section 1R05: Fire Protection

Procedures

NUMBER	TITLE	REVISION
14DP-0FP33	Control of Transient Combustibles	15
14DP-0FP33	Control of Transient Combustibles	16
14FT-9FP42	Monthly Portable Fire Extinguisher Inspection	9

Miscellaneous
Technical Requirements Manual 3.11, Revision 44
PVNGS Pre-Fire Strategies Manual, Revision 19
UFSAR Appendix 9B, Fire Protection Evaluation Report, Revision 14
UFSAR Section 9.5.1, Fire Protection Evaluation Report, Revision 14

Section 1R11: Licensed Operator Requalification Program

Procedures

NUMBER	TITLE	REVISION
EPIP-01	Satellite Technical Support Center Actions	24

EPIP-99	Emergency Plan Implementing Procedure, Appendices A and P	20

PVARs

3137869 3139481 3139486

Miscellaneous
SES-0-07-E-02, Loss of PKC-M43/LOOP, Licensed Operator Continuing Training Simulator Evaluation Guide

Licensed Operator Continuing Training 2008 Weekly Schedule Cycle NLR08-02, Revision 0

Simulator Evaluation Summary Sheet, Crew 33, Cycle NLR08-02

Section 1R12: Maintenance Effectiveness

Procedures

NUMBER	TITLE	REVISION
70DP-0MR01	Maintenance Rule	17
01DP-9ZZ01	Systematic Troubleshooting	1

PVARs

2951473 2954664 2963881 2964221 2995235 2988892 3005648 3027524
3053912 3092611 3093774 3094517 3114753 3119518 3119520 3124489
3125979 3126297 3130468

CRDRs

2945319 3095450

Work Orders

3092613 3129996

Miscellaneous
January 1-June 30, 2007,DG- Diesel Generator System Health Report

Maintenance Rule System Basis Document, DG - Diesel Generator, Revision 3

Reactor Protection System Health Report

Westinghouse Drawing E-14273-435-501, APC – Channel A Wiring Diagram, Sheet 3 of 11, Revision 5

Westinghouse Drawing E-14273-435-501, APC – Channel A Wiring Diagram, Sheet 4 of 11, Revision 5

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

NUMBER	TITLE	REVISION
01DP-9ZZ01	Systematic Troubleshooting	1
01DP-9ZZ01	Systematic Troubleshooting	0
30DP-9MT03	Assessment and Management of Risk When Performing Maintenance in Modes 1 – 4	10
70DP-0MR01	Maintenance Rule	11
70DP-0RA05	Assessment and Management of Risk When Performing Maintenance in Modes 1 and 2	6
86TD-0EE01	Reliability Centered Maintenance System Review Process	9
86TD-0EE02	Equipment Reliability Classification Process	1

Drawings

NUMBER	TITLE	REVISION
01-E-AFB-005	Elementary Diagram Auxiliary Feedwater System Iso Valves Pump B to SG-1 & SF-2 1J-AFB-HV-34, Sheet 1 of 2	9
01-E-PKB-001	Elementary Diagram 125V DC Class 1E Power System DC Cont Center 1E-PKB-M42, 125V DC Battery 1E-PKB0F12, Sheet 2	12
01-E-SAF-001	Sheets 3 and 4, Control Wiring Diagram Engineered Safety Features Actuation System NSSS, ESFAS Alarms	3
01-E-SBF-006	Sheets 3 and 4, Control Wiring Diagram Plant Protection System Channel B, Part 4	6
03-E-AFB-003	Elementary Diagram Auxiliary Feedwater System Aux FDW Regulating Valve Pump B to SG-1 & 2 3J-AFB-HV-31, Sheet 2	5
03-E-AFB-007	Elementary Diagram Auxiliary Feedwater System, Aux FDW Turbine Trip & Throttle Valve 3J-AFA-HV-0054 & Thermocouples	8
03-J-AFA-HV-54	Control Logic Diagram Aux. Feedwater Pump A Turbine Trip & Throttle Valve J-AFA-HV-54	1
13–VTD-E146-0006	ESFAS Auxiliary Relay Cabinet Assembly Manual	4

NP-1516	4" - 900# ASA Trip Throttle Valve TDP Mechanism With SMB 000 Limitorque Operator, Hard Packing, Double Leakoff, Strainer, Mech. Trip, (2) Limit Switches, Solenoid	B

PVARs

3140408	3120075	3118968	3119426	3119964	3118744	3129956	3135143
3140246	3143624						

CRDRs

3140975	3120574	3120411	3121467	3119111

CRAIs

3136090

Work Orders

3140409	3118969	2980775	2992529	3120932	3133493	3135731	3140249

Miscellaneous

CHAR Services Power Point Presentation, Reduction of Electrical Noise Interference with Palo Verde Log Amp 3A Due to Operation of DG3A, January 13, 2008

Control Room Alarm Typer Printout, January 9, 2008

Unit 2 Control Room Logs, January 9, 2008

Section 1R15: Operability Evaluations

Procedures

NUMBER	TITLE	REVISION
40DP-9OP26	Operability Determination and Functional Assessment	18
40ST-9DG02	Diesel Generator B Test	36

Drawings

NUMBER	TITLE	REVISION
01-E-AFB-005	Elementary Diagram Auxiliary Feedwater System Iso Valves Pump B to SG-1 & SF-2 1J-AFB-HV-34, Sheet 1 of 2	9
01-E-PKB-001	Elementary Diagram 125V DC Class 1E Power System DC Cont Center 1E PKB M42, 125V DC Battery 1E-PKB0F12, Sheet 2	12

03-E-AFB-003	Elementary Diagram Auxiliary Feedwater System Aux FDW Regulating Valve Pump B to SG 1 & 2 3J-AFB-HV-31, Sheet 2	5
03-M-DGP-001	P & ID Diagram, Control Air Diesel Generator System, Sheet 8	44

PVARs

2951473	2954664	2988892	3005648	3027524	3053912	3093774	3119518
3119520	3125979	3126297	3125050	3092611	3129956	3135143	3140246
3143624	3118968	3148305	3150570				

CRDRs

2945319	3095450	3095505	2950136	3149153

CRAIs

2950256	2976063	3095506	3126903	2950257	3104314	3009278

Work Orders

3107411	3133493	3135731	3140249	3104640	3111422	3148320

Miscellaneous

13-JC-DF-202, Diesel Fuel Oil Storage Tank Level Instrument Uncertainty Calculation, Revision 6

13-JC-DF-202, Diesel Fuel Oil Storage Tank Level Instrument Uncertainty Calculation, Revision 6

8000865-FA, Haynes Vendor Report - Failure Analysis of Fuel Injection Pump, Revision 0

8001090-Test, Haynes Vendor Report - Special Testing of Fuel Injection Pump, Revision 0

Appendix C data sheets, September 29, 2001 and March 30, 2003 to 73DP 9ZZ10, "Guidelines for Heat Exchanger Thermal Performance Analysis," Revision 5

Letter, James S. Olszewski to James McDowell, "APS Fall, 2007 Desiccant Issue CAPS Root Cause Analysis Report," February 7, 2008

PROTO-HX 4.10 Data sheet, dated January 4, 2008

Regulatory Guide 1.33, Appendix A, Section 9, Procedures for Performing Maintenance, Revision 2

Section 1R18: Plant Modifications

Procedures

NUMBER	TITLE	REVISION
81DP-ODC17	Temporary Modification Control	20

PVARs
3109083

CRAIs
2779043

Work Orders
3112242

Miscellaneous
Impact Review Form for Temporary Modification Work Order 3112242

S-07-0451, 50.59 screening for Temporary Modification Work Order 3112242

Temporary Modification 3112242

Temporary Modification 2862207

Updated Final Safety Analysis Report, Section 3.9.2, Dynamic System Analysis and Testing, Revision 14

Updated Final Safety Analysis Report, Section 5.4.7, Residual Heat Removal System, Revision 14

Final Safety Analysis Report, Section 14.B 11.3.2, Pipe Shock and Vibration Testing, Revision 14

Section 1R19: Post-Maintenance Testing

Procedures

NUMBER	TITLE	REVISION
01DP-9ZZ01	Systematic Troubleshooting	0
86TD-0EE01	Reliability Centered Maintenance System Review Process	9
86TD-0EE02	Equipment Reliability Classification Process	1
40OP-9CH12	Refueling Water Tank Operations	27

73ST-2XI12	Safety Injection Train B Emergency Core Cooling System Throttle Valves-Inservice Test	21
39MT-9ZZ32	Motor Operated Valve Diagnostic Testing	9
39MT-9ZZ02	PM or EQ Inspection of the Generic Letter 89-10 Limitorque SMB/SB Motor Operated Valve Actuators	21
40ST-9DG01	Diesel Generator A Test	32
30DP-9MP01	Conduct of Maintenance	52
40DP-9OP02	Conduct of Shift Operations	37
70DP-0EE01	Equipment Root Cause of Failure Analysis	17
01DP-0AP12	Palo Verde Action Request Processing	4
90DP-0IP10	Condition Reporting	36
40ST-9DG02	Diesel Generator B Test	36

Drawings

NUMBER	TITLE	REVISION
03-E-AFB-007	Elementary Diagram Auxiliary Feedwater System, Aux FDW Turbine Trip & Throttle Valve 3J-AFA-HV-0054 & Thermocouples	8
NP-1516	4" - 900# ASA Trip Throttle Valve TDP Mechanism With SMB 000 Limitorque Operator, Hard Packing, Double Leakoff, Strainer, Mech. Trip, (2) Limit Switches, Solenoid	B
03-J-AFA-HV-54	Control Logic Diagram Auxiliary Feedwater Pump A Turbine Trip & Throttle Valve J-AFA-HV-54	1
03-M-DGP-001	P & ID Diagram, Control Air Diesel Generator System, Sheet 8	44

PVARs

3120075 3118968 3127568 3126297 3125979 3149118 3148305 3149003

CRDRs

3120574 3149153

CRAIs

3129614 3140483

Work Orders

3118969	3124794	3021681	3021678	3052999	3021829	3021791	3021675
2855497	3127795	3120015	3149122	3149370	3017284	3148320	2983608

Miscellaneous

3JAFAHV0054 Troubleshooting Game Plan, January 9, 2008

Palo Verde Nuclear Generating Station Design Basis Manual-Auxiliary Feedwater System, Revision 16

Technical Specification 3.7.5, Auxiliary Feedwater System

Technical Specification Bases B3.7.5, Auxiliary Feedwater System

Palo Verde Nuclear Generating Station Surveillance Package Review Sheet

Prompt Operability Determination, PVAR 3125979/3126297, EDG Fuel Pump Leakage, Revision 0

Engine Combustion Report APS Emergency Diesel Generator, 3A, February 7, 2008

U3-Diesel 3A Jerk Pump Replacement Schedule, February 4, 2008

Jerk Pump Inspection Checklist, January 2008

Emergency Diesel Generator Emergency Pump Monitoring Test

3JAFAHV0054 Level C Troubleshooting Game Plan, Revision1, January 11, 2008

Review of 3JAFAHV0054 Troubleshooting Game Plan, January 10, 2008

Emergency Diesel Generator Emergency Pump Monitoring Test

Engine Combustion Report APS Emergency Diesel Generator, 3B, March 21, 2008

VTD-C628-00051, Cooper Energy Instruction Manual For KSV Turbocharged Diesel Generating Unit For Nuclear Power Plant Emergency Stand-By Service, Revision 11

Section 1R20: Refueling and Other Outage Activities

Procedures

NUMBER	TITLE	REVISION
70DP-0RA01	Shutdown Risk Assessments	22
40DP-9ZZ01	Containment Entry in Modes 1 Thru 4	27
40DP-9ZZ01	Containment Entry in Modes 1 Thru 4	28

72OP-9RX01	Calculation of Estimated Critical Condition	20
40OP-9ZZ03	Reactor Startup	46

Permits

139182	137458	139567	139608	139609	143273	143274	142827
143405	143462	143494	145574	146500			

Section 1R22: Surveillance Testing

Procedures

NUMBER	TITLE	REVISION
40ST-9DG01	Diesel Generator A Test	32
40ST-9ZZ25	Online Remote Shutdown Disconnect Switch Operability	1
73DP-9ZZ14	Surveillance Testing	9
73ST-9AF04	AFA-P01 Full Flow - Inservice Test	2
73ST-9ZZ18	Main Steam and Pressurizer Safety Valve Set Pressure Verification	20
73DP-9XI01	Pump and Valve Inservice Testing Program – Component Tables	22

PVARs

3140020	3117353	3120075	3128646	3134489

Work Orders

3131169	3006277	3108764

Miscellaneous

NUREG-1482, Guideline for Inservice Testing at Nuclear Power Plants, Revision 1
ASME/ANSI OM-1990, Operation and Maintenance of Nuclear Power Plants
PVNGS Surveillance Test Package Review Sheet
Technical Specification 3.7.1.1, Main Steam Safety Valves

Section 1EP2: Alert Notification System Testing

Procedures

NUMBER	TITLE	REVISION
EPIP-8	Emergency Planning Administration	19
EPIP-61	Emergency Planning Equipment Testing	5

16DP-0EP20	Emergency Planning Conduct of Operations	9

Miscellaneous
Palo Verde Nuclear Generating Station Remote Control Siren System Operating Manual, Revisions 8 and 9

Section 1EP3: Emergency Response Organization Augmentation Testing

Procedures

NUMBER	TITLE	REVISION
EPIP 7	Telecommunications	17
EPIP 99	EPIP Standard Appendices, Appendix H, Autodialer Activation	18

Miscellaneous
Call-In Drill Evaluation Reports: January 18, 2007; January 16, 2007; March 16, 2007; May 17, 2007; June 26, 2007; July 31, 2007; August 21, 2007; September 26, 2007; October 23, 2007; November 14, 2007; and December 27; 2007

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures

NUMBER	TITLE	REVISION
EPIP-99	EPIP Standard Appendices	16

Miscellaneous
Nuclear Energy Institute Report 99-01, Methodology for Development of Emergency Action Levels 2 and 4

NUREG 0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision 1

Palo Verde Nuclear Generating Station Emergency Plan, Revision 36, submitted May 21, 2007

Palo Verde Nuclear Generating Station Emergency Plan, Revision 37, submitted May 21, 2007

Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies

Procedures

NUMBER	TITLE	REVISION
60DP-0QQ19	Internal Audits	18

Palo Verde Nuclear Generating Station Policy 120	Section 100, PVNGS Self-Assessment and Benchmarking Policy	5
EPIP-1	Satellite Technical Support Center Actions	20 and 21

PVARs

2870126	2807473	2870126	2914362	2973337	2976699	2981306	2981606
2981932	3028784	3046518	3048866	3051083	3053838	3053838	3089226
3104356	3107606	3107851	3133068	3133077	3132912		

CRDRs

2966025	2966067	2976703	2981615	3014284	3015235	3080366

Work Orders

3009109	095917

Miscellaneous

Audit Report 2006-001, "Emergency Planning," March 18, 2006

Audit Report 2007-001, "Emergency Planning," March 7, 2007

Self Assessment EP-06-01: Review EPIPs to ensure Changes meet 50.54Q Requirements, January 10, 2006

Self Assessment (Item 2905254): Autodialer Issue Self Assessment, August 6, 2006

Self Assessment (Item 2926340): Emergency Planning Generic Training Requirements, November 6, 2006

Self Assessment (Item 2947666): Contingency Plans to cope with Problems Encountered during Natural Disasters

Self Assessment (Item 2949664): Quarterly Communications Surveillance

Self Assessment (Item 2950098): Annual Validation of the Emergency Response Organization Database

Self Assessment (Item 2950117): Assessment Summary of PVNGS Master List of Emergency Planning Objectives

Self Assessment (Item 2951677): Review of On-site Emergency Kits for Outdated Radioactive Material Labels, December 19, 2006

Self Assessment (Item 2952177): Comparison of EPIP and Emergency Planning Procedure Phone Numbers, January 2, 2007

Self Assessment (Item 2957279): STSC Communicator Annual Training Documentation for EP Performance Indicators

Self Assessment (Item 2991885): EPlan Pager Validations, May 29, 2007

Self Assessment (Item 3067589): Results from Benchmarking Trips to Improve OSC Performance, October 24, 2007

Self Assessment (Item 3084358): SAMG Training

Self Assessment (Item 3084363): Review EPIP-99 Appendix D, Notification, October 19, 2007

Self Assessment (Item 3084379): STARS Review of EPIP-09, Revision 10, October 18, 2007

Self Assessment (Item 3083981): PIs, October 18, 2007

Self Assessment (Item 3108037): Dose Model Assessment Report, December 12, 2007

Self Assessment (Item 3108421): Benchmark of EP Emergency Notification Form, December 12, 2007

Drill Evaluation Reports: 2006: February 15, March 29, June 16, June 28, July 12, September 7 (06-D-FAC-09007), September 27, December 1, December 6, and December 7 (06-D-ENV-12011); 2007: January 31, February 15, March 7, March 29 and 30, April 19, May 3, July 19, August 16, September 13, September 14, October 18, and October 19

Design Change Request QF-1093

Section 1EP6: Drill Evaluation

Procedures

NUMBER	TITLE	REVISION
EPIP 03	Technical Support Center Actions	46
EPIP 04	Emergency Operations Facility Actions	41
EPIP 14	Dose Assessment	7
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix A, Emergency Action Levels	19
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix B, Protective Action Recommendations	19
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix D, Notifications	19

EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix O, Recovery Organization	19
EPIP-99	Emergency Plan Implementing Procedure Standard Appendices, Appendix S, Consideration for the use of Fire Streams/Sprays to Reduce Plume Activity	19

PVARs

3171747 3142619

CRDRs

3143064 3143276

CRAIs

3150447

Miscellaneous

Palo Verde Nuclear Generating Station Emergency Planning Form EP-0541, Palo Verde NAN Emergency Message Form

Palo Verde Dose Assessment Forecast

Palo Verde Nuclear Generating Station Emergency Planning Form EP-0012, Emergency Action Log

NRC Form 361, Reactor Plant Event Notification Worksheet

Palo Verde Nuclear Generating Station Annual Objective Evaluations

Palo Verde Nuclear Generating Station Biennial Objective Evaluations

2008 Emergency Preparedness Evaluated Scenario 08-AEV-03002

Section 2OS1: Access Control to Radiologically Significant Areas

Procedures

NUMBER	TITLE	REVISION
75DP-0RP01	Radiation Protection Program Overview	6
75DP-0RP02	Radiation Contamination Control	8
75DP-0RP03	ALARA Program Overview	3
75DP-9RP01	Radiation Exposure and Access Control	10
75RP-0RP01	Radiological Posting and Labeling	24
75RP-9RP01	Radiation Exposure and Access Control	10
75RP-9RP07	Radiological Surveys and Air Sampling	15
75RP-9RP10	Conduct of Radiation Protection Operations	24
75RP-9OP02	Control of High Radiation Areas, Locked High Radiation Areas and Very High Radiation Areas	2

PVARs

3132404	3105482	3116100	3119691	3125775	3125779	

Radiation Exposure Permits

3-1393	3-3002	3-3003	3-3006	3-3015	3-6000	3-6001	3-6003
3-6005	3-6006	3-6007	3-6009	3-6010	3-6011	3-6012	3-6013

Section 2OS2: As Low As Is Reasonably Achievable (ALARA) Planning And Controls

Procedures

NUMBER	TITLE	REVISION
75DP-0RP01	Radiation Protection Program Overview	6
75DP-0RP02	Radiation Contamination Control	8
75DP-0RP03	ALARA Program Overview	3
75DP-9RP01	Radiation Exposure and Access Control	10
75RP-0RP01	Radiological Posting and Labeling	24
75RP-9RP01	Radiation Exposure and Access Control	10
75RP-9RP07	Radiological Surveys and Air Sampling	15
75RP-9RP10	Conduct of Radiation Protection Operations	24
75RP-9OP02	Control of High Radiation Areas, Locked High Radiation Areas and Very High Radiation Areas	2

PVARs

3132404	3105482	3116100	3119691	3125775	3125779

Radiation Exposure Permits

3-1393	3-3002	3-3003	3-3006	3-3015	3-6000	3-6001	3-6003
3-6005	3-6006	3-6007	3-6009	3-6010	3-6011	3-6012	3-6013

Section 4OA1: Performance Indicator Verification

Procedures

NUMBER	TITLE	REVISION
93DP-0LC09	Data Collection and Submittal Using INPO's Consolidated Data Entry System	7
EPIP 99	EPIP Standard Appendices, Appendix A, Emergency Action Levels	18
EPIP 99	EPIP Standard Appendices, Appendix B, Protective Action Recommendations	18
EPIP 99	EPIP Standard Appendices, Appendix D and P	18

Miscellaneous

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

Palo Verde Units 1 - 3, Performance Indicator View Report, Unplanned Scrams With Complications, January - December, 2007

Palo Verde Units 1 - 3, Performance Indicator View Report, Unplanned Power Changes per 7000 Critical Hours, January - December, 2007

Palo Verde Units 1-3, PI View Report, Unplanned Scrams per 7000 Critical Hours, January - December, 2007

Palo Verde Units 1 - 3, Operating Data Reports, January - December, 2007

Palo Verde Units 1 - 3, 24 Month Power History Report, February 2006 - February 2008

LER 05000529/2007003, Manual Reactor Trip due to Increased Steam Generator Sodium Levels from Failed Heat Exchanger Plug, Revision 0

LER 05000529/2007001, Completion of a Shutdown Required by Technical Specification 3.5.3, Condition C, Revision 0

LER 05000528/2007006, Required Shutdown due to Inoperable Steam Admission Bypass Supply Valve to Auxiliary Feedwater Pump, Revision 0

Palo Verde Nuclear Generating Station Emergency Plan, Revision 37

Section 4OA2: Identification and Resolution of Problems (71152)

Procedures

NUMBER	TITLE	REVISION
01DP-0AC06	Site Integrated Business Plan/Site Integrated Improvement Plan Process	3
01DP-0AP12	Palo Verde Action Request Processing	4
01DP-0AP16	PVNGS Self-Assessment and Benchmarking	0
01DP-OEM09	Employee Concerns Program	0
12DP-0MC48	Quality Receiving Checklist Development	1
12DP-0MC46	Receipt Inspection	4
12DP-0MC29	Warehouse Discrepancy Notice	18
12DP-0MC25	Stores	22
12DP-0MC 50	Control And Use Of The Metallurgist Pro-Alloy Analyzer	3

30DP-9MP03	System Cleanliness and Foreign Material Exclusion Controls	6
32MT-9ZZ06	Testing and Calibration of the 12IFC53A & 53B and the 77A & 77B Time Overcurrent Relays	4
32MT-9ZZ98	Testing and Recalibration Of The GR5 Ground Fault Relay	1
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40OP-9SI02	Recovery From Shutdown Cooling to Normal Operating Lineup	61
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41AL-1RK1C	Alarm Response Procedure for 480 Volt 1E Trouble	36
60DP-0QQ21	Qualification and Certification Of Inspection Personnel	5
60DP-0QQ23	Qualification and Certification Of Inspection Personnel	1
73DP-0AP05	Engineering Programs Management and Health Reporting	3
78DP-9ZZ01	Foreign Object Search and Retrieval, Remotely Operated Vehicles, And Submersible Retrieval Tools and Pumps	0
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ECP 02	Employee Concerns Program Guideline	8
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01DP-OEM09	Employee Concerns Program	0
60DP-0QQ21	Qualification and Certification Of Inspection Personnel	5
0DP-0QQ23	Nuclear Assurance Stop Work And Escalation Processes	1
12DP-0MC48	Quality Receiving Checklist Development	1
12DP-0MC46	Receipt Inspection	4
12DP-0MC29	Warehouse Discrepancy Notice	18

12DP-0MC25	Stores	22
12DP-0MC 50	Control And Use Of The Metallurgist Pro-Alloy Analyzer	3
ECP 01	Employee Concerns Program Guideline	1
ECP 02	Employee Concerns Program Guideline	8
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01-J-RKS-0001	Annunciator/Electronic Isolation List	22

PVARs

2982198 3124586 3126308 3128719 3143447 2982198 3128719 3110619
3072309

CRDRs

2726509 2913790 2926830 3048870 2984206 3129081 2883793 2932719
2984206 3127014 3144707 2883793 2984206 3129081 3065644 3130583
3095373 3098690 3110358 3130576 3090963 3112991 3112231 3075207
3058809 3075207 3030699 3039642 2984254 3075207 2859635 2774488
2870654 2908560 3030505

Work Orders

026318 026440 244627 2760330 2767628 2767631 2767649 2767650
2792424 2792442 2792443 2836046 2836047 2836050 2836051 2869753
2869762 2869769 2869770 2885310 2940366 3139395

CRAIs

2785390	2785420	2933567	2938874	2940130	3014243	3017939	3017946
3042092	3042095	3042098	3065077	3069502	3086662	3086672	3104091
3104935	3126034	3100375	3123378	3126171	3129886	3075208	3090964
3116079	2987384	2993402	2993405	3020782	2874473	2844961	2779868

Site Integrated Improvement Plan Tasks

1.2.A.3	1.4.2	3.4.7.d	3.6.5	3.6.55	3.7.2.d	3.7.2.h	3.7.5.f
3.7.5.l	3.7.9.g	4.1.F.30	4.4.20	6.1.11	6.7.13	6.11.2.a	8.4.4
9.2.A.15	11.3.1	11.9.A.4.d	11.9.A.5.d				

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Task 3.6.48 Closure Document, February 19, 2008
Task 3.6.64 Closure Document, February 19, 2008
Task 15.1.10 Closure Document, February 19, 2008
Task 3.6.60 Closure Document, February 20, 2008
Task 3.7.3.f Closure Document, February 26, 2008
Task 3.7.3.p Closure Document, February 26, 2008
Task 1.2.E.35 Closure Document, February 27, 2008
Task 3.6.62 Closure Document, March 3, 3008
Task 6.7.13 Closure Document, October 31, 2007
Task 15.2.1.b Closure Document, February 5, 2008

Miscellaneous

Nuclear Assurance Department Noteworthy Station Quality Issue: Warehouse Operations

Nuclear Assurance Department Station Quality Issue: Warehouse Operations

List of Warehouse Discrepancy Notices for 2005, 2006, 2007

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Integrated Issues Resolution Process brochure

List of Warehouse Receipt Inspection Condition Report Disposition Request for 2005, 2006, 2007

Warehouse Operations and Human Performance Issues Event Date: March 16, 2007 Apparent Cause Evaluation Report

Employee Concerns Program files July 1, 2001 through July 1, 2007

APS Investigation Results And Response To Allegation RIV-2007-A-0129

Licensing Document Change Request 01-F-012

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Attendance Record, Senior Management Meeting with warehouse personnel, Jan 18, 2008

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Palo Verde Job Description, Storekeeper, June 11, 2007

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Unit 2 Operator Logs, January 23, 2008

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13-VTD-G080-0246-1, General Electric Instructions For Undervoltage Relays Types IAV54 & IAV55, Revision 0

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73ST-9XI16	Economizer Feedwater Isolation Valves - Inservice Test	27
90DP-0IP10	Condition Reporting	36
93DP-0LC17	10CFR 50.59 and 72.48 Guidance Manual	4
30DP-9MP03	System Cleanliness and Foreign Materials Exclusion Controls	11
74DP-9CY03	Chemistry Control Instruction	5

74DP-9CY04	System Chemistry Specification	52
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Westinghouse Drawing,10005D 69	Vent Pipe Repair Palo Verde 2 Reactor Vessel Head	0
Westinghouse Drawing 10008C66	Replacement Guide Cone Palo Verde 1, 2 & 3 Reactor Vessel	0

PVARs

2954664	2963881	2995235	3005648	3053912	3092611	3093774	3119520
3125050	3125979	3126297	2954664	2963881	2995235	3005648	3053912
3092611	3093774	3119520	3125050	3125979	3126297	3121048	3120070
2793806	2764549						

CRDRs

2900393	3033543	2984700	2990092	3005058	3033623	3032677	2974523
2929277	2904740	2906158	2945319	2950136	3095450	117037	2604468
2915450	2928540	3121713	2897810	2905161	2902498	2928230	2913430

CRAIs

2928802	2946438	3121046	2937383,	2921512	2921404	2921856	2921406
2837083	2938381	2921501	2910704	2905572	2940200	2921504	2921508
2921521	2921515	2921517	2921513	2921508	2921501	2921403	2909939
2910010	2910041	2910020	2910103				

Work Orders

2304865	3032675	2913678	2917854	2897128	2897130	2901582	2897078
2896333	2897080	2901584	2901583	2901582	2901581	2901580	2901579
2900133	2900132	2900131	2900130	2900129	2900128	2805530	2805528

2804567	2804566	2898679	2898676	2805524	2897083	2898681	2898682
2804562	2804563	2805523	2917539	2717779	2793837		

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Westinghouse Calculation CN-EMT-02-27, Replacement Guide Cone Weld Strength Evaluation, Revision 3

ENS# 42886

10 CFR 50.59 Evaluation S-06-0485

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
AO	Auxiliary Operator
BVPS	Beaver Valley Power Station
CAL	Confirmatory Action Letter
CAP	Corrective Action Program
CFR	*Code of Federal Regulations*
CRAI	Condition Report Action Item
CRB	Closure Review Board
CRDR	Condition Report Disposition Request
CRS	Control
DFWO	Deficiency Work Order
DIWO	Design Implementation Work Order
DPM	Drops Per Minute
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
ENG-DFWO	Engineering Deficiency Work Order
FM	Foreign Material
FOSAR	Foreign Object Search and Retrieval
IP	Inspection Procedure
LDCR	Licensing Document Change Request
LER	Licensee Event Report
LOP	Loss of Power
MFIV	Main Feedwater Isolation Valve
NEI	Nuclear Energy Institute
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
PC	Pool Cooling
PI	Performance Indicator
PK	Class 1E 125 Vdc System
PM	Preventative Maintenance
PVAR	Palo Verde Action Request
PVNGS	Palo Verde Nuclear Generating Station
QA	Quality Assurance
QC	Quality Control
RCS	Reactor Coolant System
RO	Reactor Operators
RPCS	Reactor Power Cutback System
RWT	Refueling Water Tank
SBC	Steam Bypass Control
SFP	Spent Fuel Pool
SIBP	Site Integrated Improvement Plan
SIIP	Site Integrated Improvement Plan
SM	Shift Manager
SSC	Structures, Systems, and Components
SG	Steam Generator
SRO	Senior Reactor Operators
TLI	Turbine Load Index
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report

VTD	Vendor Technical Document
WO	Work Order