



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005

November 13, 2006

EA-06-267

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SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED
INSPECTION REPORT 05000528/2006004, 05000529/2006004, AND
05000530/2006004 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Levine:

On September 30, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an 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 October 3, 2006, 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.

The report documents four NRC identified findings and two self-revealing findings. Five of these findings were evaluated under the risk significance determination process as having very low safety significance (Green). Two findings impacted the regulatory process and were assessed in accordance with the NRC Enforcement Policy. 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 noncited violations consistent with Section VI.A of the NRC Enforcement Policy. One licensee identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. If you contest these noncited 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.

The NRC exercised enforcement discretion (EA-06-267) for one violation associated with the failure to submit complete revisions to the Updated Final Safety Analysis Report reflecting modifications to the core protection calculators that were in place for more than 24 months. The finding is of very low safety significance and was entered into your corrective action program. Normally, this violation would be categorized at Severity Level IV. However, in accordance with Section VII.B.6 of the NRC Enforcement Policy, the NRC is refraining from taking enforcement action because of the NRC action taken in 1993 to issue and then retract a similar occurrence and the low safety significance of the finding. However, future failures to submit revisions to the Updated Final Safety Analysis Report will normally result in enforcement action.

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). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Troy W. Pruett, Chief
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Dockets: 50-528
50-529
50-530

Licenses: NPF-41
NPF-51
NPF-74

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05000529/2006004, and 05000530/2006004
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SUNSI Review Completed: twp ADAMS: ☐ Yes ☐ No Initials: twp
☐ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☐ Non-Sensitive

R:_REACTORS_PV\2006\PV2006-04RP-GGW.wpd

RIV:RI:DRP/D	RI:DRP/D	SRI:DRP/D	C:DRS/EB2	C:DRS/PSB
JFMelfi	PLBenvenuto	GGWarnick	LJSmith	DAPowers
<i>T - TWPrueett</i>	<i>T - TWPrueett</i>	<i>T - TWPrueett</i>	<i>/RA/</i>	<i>/RA/</i>
11/13/06	11/13/06	11/13/06	11/7/06	11/7/06
C:DRS/OB	C:DRS/EB1	ACES	C:DRP/D	
RLNease	JAClark	GMVasquez	TWPrueett	
<i>/RA/</i>	<i>/RA/</i>	<i>/RA/</i>	<i>/RA/</i>	
11/3/06	11/3/06	11/8/06	11/13/06	

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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: 05000528/2006004, 05000529/2006004, 05000530/2006004

Licensee: Arizona Public Service Company

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

Location: 5951 S. Wintersburg Road
Tonopah, Arizona

Dates: July 1 through September 30, 2006

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SUMMARY OF FINDINGS

IR 05000528/2006004, 05000529/2006004, 05000530/2006004; 07/01/06 - 09/30/06; Palo Verde Nuclear Generating Station, Units 1, 2, & 3; Integrated Res. & Reg. Rpt; Inservice Insp. Activities, Op. Perf. During Nonroutine Evolutions & Events, Surveillance Testing, & Ident. & Resolution of Problems.

This report covered a 3-month period of inspection by five resident inspectors, three reactor inspectors, one operations engineer, and one NRC contractor. The inspection identified six noncited violations and one finding. 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 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

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

The finding is greater than minor because it would become a more significant safety concern if left uncorrected because unexpected impacts to structures, systems, and components could occur, resulting in inoperable equipment and plant transients, if work permits are not appropriately reviewed prior to implementation. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding has a crosscutting aspect in the area of human performance associated with resources because the licensee did not provide accurate procedures and work instructions to plant personnel. The inaccurate procedures caused an inadvertent boration of the Unit 1 reactor coolant system (Section 1R14).

- Green. A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure of operations personnel to follow procedures that resulted in an unintended transfer of water from the chemical volume and control system to the high activity spent resin tank during a resin transfer. Specifically, on September 8, 2006, operations personnel failed to properly implement Procedure 40OP-9CH02, Step 5.3.2, to isolate the purification ion exchanger. Additionally, operations personnel failed to inform the shift manager or control room supervisor prior to starting the evolution as required by Procedure 40OP-9SR02, Step 4.3.8. The improper valve alignment resulted in the diversion of approximately 1500 gallons of water. The issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2923263.

The finding is greater than minor because it is associated with the configuration control and human performance attributes of the initiating events cornerstone and affects the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not effectively utilize human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities. The improper use of human error prevention techniques caused a diversion of 1500 gallons of water (Section 1R14).

Cornerstone: Mitigating Systems

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

The finding is greater than minor because it is associated with the equipment performance cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination

Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and there was no actual loss of piping material that exceeded the minimum allowable wall thickness or a loss of safety function that exceeded Technical Specification allowed outage times. This finding has a crosscutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate a problem that existed from 1992 to April 2006. The failure to promptly correct this condition resulted in the degradation of the wall thickness of the spray pond piping and the Unit 3 emergency diesel generator Train A being declared inoperable after the fuel transfer pump did not meet the acceptance criteria during a surveillance (Section 1RO8).

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.a for the failure of operations personnel to follow procedures for plant modifications when performing a surveillance test that impacted a component that had been recently modified. Specifically, on April 25, 2006, operations personnel used flow Element 3JSIBFE0348, a modified component that did not have a functional release, to perform surveillance testing of emergency core cooling system check valves. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2887268.

The finding is greater than minor because it is associated with the design control attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not result in the actual loss of safety function to any component, train, or system. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not follow established procedures. The failure to follow procedures resulted in the performance of testing not allowed by a functional release (Section 1R22).

- Green. The inspectors identified multiple examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failing to identify degraded material conditions on the emergency diesel generators. Between July and September 2006, operations and engineering personnel did not promptly identify and correct material conditions adverse to quality. Specifically, operations and engineering personnel did not identify numerous fluid leaks, and loose and missing fasteners on the emergency diesel generator skid, and did not enter them in the corrective action program. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2914886.

The finding is greater than minor because it would become a more significant safety concern if left uncorrected in that unidentified conditions adverse to quality could challenge the operability of equipment important to safety. The finding

affected the mitigating systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not result in the actual loss of safety function to any component, train, or system. This finding has a crosscutting aspect in the area of problem identification and resolution because failing to implement the corrective action program with a low threshold for identifying adverse material conditions resulted in degradation of the emergency diesel generators which was not being tracked and evaluated (Section 4OA2).

- SLIV. The inspectors identified a noncited violation of 10 CFR 50.71(e)(4) for the failure to file revisions to the Updated Final Safety Analysis Report. Specifically, Procedure 93DP-0LC03, "Licensing Document Maintenance," Revision 13, Step 3.5.6, required that temporary modifications that are in place for greater than 24 months be incorporated into the Updated Final Safety Analysis Report. Temporary modifications for heated junction thermocouples were installed for greater than 24 months and a revision to the Updated Final Safety Analysis Report was not made. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2894741.

The performance deficiency associated with this finding involved the failure of licensee personnel to submit revisions to the Updated Final Safety Analysis Report reflecting temporary modifications installed in Unit 3 for more than 24 months. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to revise the Updated Final Safety Analysis Report in a timely manner. The finding was determined to be a Severity Level IV violation in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. This finding has a crosscutting aspect in the area of human performance associated with work practices because not following established procedures led to an inaccurate Updated Final Safety Analysis Report (Section 4OA2).

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

The performance deficiency associated with this finding involved the failure of licensee personnel to submit revisions to the Updated Final Safety Analysis Report reflecting modifications installed in Unit 2 for more than 24 months. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the

licensee's failure to revise the Updated Final Safety Analysis Report in a timely manner. Normally, the violation would be categorized at Severity Level IV in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. However, in accordance with Section VII.B.6 of the NRC Enforcement Policy, the NRC is refraining from taking enforcement action because of the NRC action taken in 1993 to issue and then retract a similar occurrence and the low safety significance of the finding (EA-06-267). The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance.

B. Licensee-Identified Violations

One violation of very low safety significance which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and its corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period in Mode 3, making preparations to return to power operations. Unit 1 closed the main generator output breakers on July 7, 2006, and began post-modification testing of shutdown cooling isolation Valve SIA-UV-0651, and performance testing of the replacement steam generators. Unit 1 returned to full power on July 16. On July 19, an unintentional boration reduced power to 98 percent. Unit 1 returned to full power the same day and remained there until August 7, when power was reduced to 79 percent due to a slipped part strength control element assembly (CEA). Unit 1 returned to essentially full power on August 8 and remained there until September 19, when the plant was shutdown to replace the pressurizer heaters. Unit 1 was shutdown for the remainder the inspection period.

Unit 2 operated at essentially full power until July 26, 2006, when an automatic reactor trip occurred from a main turbine electro-hydraulic control malfunction. Unit 2 returned to 80 percent power on July 30 and remained there to repair a feedwater heater level control valve. Unit 2 achieved essentially full power on August 4. The unit operated at this power level until September 30, when the unit was shutdown for refueling Outage 1R13.

Unit 3 operated at essentially full power until July 1, 2006, when an automatic power cutback and subsequent manual trip occurred due to a leak in the condensate system. Following repairs to the condensate system, the unit returned to essentially full power on July 5. On August 12, the unit reduced power to 96 percent due to an anomaly with a secondary calorimetric power indicator. The unit returned to essentially full power on August 15 and remained there for the 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.

- August 9, 2006, Unit 1, essential chilled water and emergency diesel generator (EDG) Train B while Train A was out of service for preplanned maintenance

- September 13, 2006, Unit 2, essential spray pond (SP) Train A while Train B was out of service for maintenance
- September 20, 2006, Unit 3, electrical alignment of Class 1E offsite power supplies and EDG Train B during an EDG Train A outage

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

- July 11, 2006, Unit 3, auxiliary building, 100 foot, 120 foot, and 140 foot elevations
- July 11, 2006, Unit 1, auxiliary building, 100 foot, 120 foot, and 140 foot elevations
- July 17, 2006, Unit 1, main steam support structure, all elevations
- August 3, 2006, Unit 1, fuel building, all elevations
- August 8, 2006, Unit 2, fuel building, all elevations

- August 9, 2006, Unit 3, fuel building, all elevations
- August 28, 2006, Unit 3, main steam support structure, all elevations

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed seven samples.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors: (1) reviewed the UFSAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving external flooding; (2) reviewed the UFSAR and CAP to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and (d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the two below listed areas to verify the adequacy of: (a) equipment seals located below the flooding, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers.

- August 10, 2006, Unit 1, Manhole Y1H08A (1EZV06BKEM04)
- August 10, 2006, Unit 2, SP Vault AZYNDY1H04B

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Refer to Section 4OA2 for discussion of the licensee's actions to maintain the operability of safety related equipment in underground vaults and manholes during the rainy season.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

The inspectors reviewed the licensee's evaluations and corrective actions for previously identified issues associated with water intrusion and corrosion at the facility using guidance from Inspection Procedures 71111.08 and 71152. Station personnel were also interviewed.

b. Findings

Introduction. The inspectors identified multiple examples of a Green noncited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly correct water intrusion problems in multiple areas in the facility that were identified and examined from January 1991 to April 2006.

Description.

- On January 30, 1991, plant personnel initiated Engineering Evaluation Request 91-SP-004 to document the failure of a flow transmitter after a rain storm had caused a flood of the essential SP piping vault. The licensee initiated Plant Change Request 91-13-ZZ-002 to modify the vaults to prevent water intrusion. At the time of the inspection, the licensee had not implemented this change.
- In early 1998, the licensee inspected the SP vaults in all three units for corrosion of components per Work Orders (WOs) 1108358, 1108359, and 1108004. Results indicated minor surface corrosion and coating degradation.
- On August 9, 2000, the licensee issued Condition Report/Disposition Request (CRDR) 2310163 because of flooding in the vaults. They discovered essential SP piping corrosion at this time. The licensee initiated Work Scope Library Tasks 289828 and 289829 to pump out the water periodically, however, the tasks were never implemented.
- On May 1, 2002, and December 7, 2005, additional flooding incidents occurred. The licensee issued WOs 2460014 and 2852135, and CRDR 2852145, but corrective actions did not address the long-term flooding issue after either incident. Work management records from 2000 to 2005 associated with inservice inspection pressure testing activities indicated water found in the vaults at the time of each inspection during this period.
- The licensee failed to put in place modifications to prevent flooding. Inspection of the Unit 3 essential cooling water SP piping vaults on March 30, 2006, showed more piping surface corrosion and incorrect usage of external coatings on SP piping. The licensee identified the corrosion as only cosmetic and indicated that the SP piping was supposed to be coated with paint rather than the currently existing external coating. Ultrasonic testing of the piping indicated that an

existing wall of 0.229 inches from a nominal wall thickness of 0.350 inches remained on the most corroded portion of pipe. This did not exceed the American Society of Mechanical Engineers (ASME) Code Section III minimum wall thickness of 0.125 inches.

- Design drawings specified that Hatches xAZYNDY1H04A and 4B are designed to prevent water intrusion. However, an inspection of the 4B vault on April 14, 2006, revealed about 10 inches of standing water. The licensee observed superficial corrosion on the piping in this vault.
- Unit 3 SP system piping instrument Vaults YH07A and 7B were discovered to have a corrosion protective coating wrap during the April 2006 inspection. According to Specifications 13-P-ZZG-012 and 13-PN-0204, this wrap was reserved for underground and embedded pipe, and the exposed sections of pipe in these vaults should utilize a corrosion protective paint coating. A section of the wrap coating on the Train A supply pipe in the 7A vault was removed to expose the nameplate on the pipe. As a result, the uncoated area around the nameplate was allowed to corrode to 65 percent of the nominal wall thickness of the pipe, or 0.229 inches. If left uncorrected, the corrosion would have caused the pipe to exceed its ASME minimum wall thickness of 0.125 inches.
- Concrete Hatches xAZGNDG1H01, xAZGNDG1H03, xAZGNDG1H02, and xAZGNDG1H04 at the diesel fuel oil storage tanks were found to not be water tight. However, in accordance with UFSAR, Section 9.5.4.2.1, "Diesel Fuel Oil Storage Tanks," the vaults are required to be of water proof design. During a diesel vault entry for the Unit 3 EDG Train A to perform surveillance Procedure 73ST-9DF01, "Diesel Fuel Oil Transfer Pump - Inservice Test," Revision 14, on December 15, 2004, the area operator observed water coming out of conduit Box 3EZY09AKKJ01 (power supply for the EDG Train A fuel oil transfer pump). Operations personnel completed the surveillance satisfactorily, in that, the pump ran for at least 2 minutes, but when electricians performed a megger test of the motor, it did not pass the acceptance criteria of 50k ohms. The operators declared the fuel transfer pump inoperable, which rendered EDG Train A inoperable.

Analysis. The performance deficiency associated with this finding involved the repetitive failure to prevent water intrusion leading to corrosion of safety-related piping and inoperability of EDG Train A. The finding is greater than minor because it is associated with the equipment performance cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and there was no actual loss of piping material that exceeded the minimum allowable wall thickness or a loss of safety function that exceeded TS allowed outage times. This finding has a crosscutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate a problem that existed

from 1992 to April 2006. The failure to promptly correct this condition resulted in the degradation of the wall thickness of the spray pond piping and the Unit 3 emergency diesel generator Train A being declared inoperable after the fuel transfer pump did not meet the acceptance criteria during a surveillance.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. Contrary to the above, between January 1991 and April 2006, the licensee failed to promptly correct multiple examples of a condition adverse to quality. Specifically, the licensee failed to promptly correct the water intrusion problems in the facility piping vaults and manholes. The failure to promptly correct this condition resulted in the degradation of the wall thickness of the SP piping and the Unit 3 EDG Train A being declared inoperable after the fuel oil transfer pump did not meet the acceptance criteria during a surveillance. It should be noted that this finding also has aspects of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, that measures shall be established to assure the applicable regulatory requirements and the design basis, as defined in Part 50.2 and as specified in the license application, for those structures, systems, and components (SSCs) to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. The licensee failed to maintain a vault in its watertight design condition and to coat exposed piping with its specified coating to ensure corrosion protection. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CRDRs 2885972, 2880283, and 2902572, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2006004-01, "Inadequate Corrective Actions to Preclude Water Intrusion and Corrosion of Underground Piping at the Facility."

1R11 Licensed Operator Regualification Program (71111.11)

.1 Biennial Inspection by Regional Specialist

a. Inspection Scope

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

The inspectors interviewed three licensee personnel, consisting of one instructor, one operator and a training supervisor, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written and operating examinations. These reviews included observations of portions of the operating examination by the inspectors. The operating examinations observed eight job performance measures and three scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content.

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

Additionally, the inspectors assessed the Palo Verde Nuclear Generating Station plant-referenced simulator for compliance with 10 CFR 55.46, "Simulator Facilities." This assessment included the adequacy of the licensee's simulation facility for use in operator licensing examinations as prescribed by 10 CFR 55.46. The inspectors reviewed a sample of simulator performance test records (transient tests and malfunction tests), simulator deficiency report records, and processes for ensuring simulator fidelity commensurate with 10 CFR 55.46. The inspectors reviewed selected simulator deficiency reports generated by the licensee that did not result in changes to the configuration of the simulator to assess the responsiveness of the licensee's simulator configuration management program. The inspectors also interviewed members of the licensee's simulator configuration control group as part of this review.

Documents reviewed by the inspectors are listed in the attachment.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

.2 Requalification Inspection by Resident Inspectors

a. Inspection Scope

The inspectors observed testing and training of senior reactor operators (SROs) and reactor operators (RO) to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario on August 23, 2006, involved a series of six events including; (1) an inadvertent containment spray actuation signal, (2) a reactor coolant system (RCS) leak, (3) stuck CEAs, (4) a loss of main feed pump/reactor power cutback, (5) a steam generator tube rupture, and (6) a 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 below listed maintenance activity to: (1) verify the appropriate handling of SSC performance or condition problems; (2) verify the appropriate handling of degraded SSC 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.

- September 6 - 7, 2006, Unit 1, battery charger input Breaker 1EPKBH12 replacement as documented in Deficiency Work Order 2712466

The inspectors completed one sample.

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 three 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.

- June 26 - July 10, 2006, Unit 1, assessment of engineering evaluation and operability determination for underwater cleaning activities of SP Trains A and B
- August 10, 2006, Unit 1, risk assessment and management during scheduled EDG Train B outage
- August 15, 2006, Unit 1, risk assessment and management during scheduled gas turbine generator outage

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

Emergent Work Control

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

- July 26, 2006, Unit 2, replacement of the linear voltage differential transmitter and connecting rod for high pressure turbine control Valve 2 concurrent with the EDG Train A outage
- August 2, 2006, Unit 1, replacement of accumulator for feedwater isolation Valve SGB-UV-137, due to oil leakage through a degraded o-ring seal
- August 17, 2006, Unit 1, containment spray Train B declared inoperable when lower motor bearing oil level went below the sight glass

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Nonroutine Evolutions and Events (71111.14, 71153)

a. Inspection Scope

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 non-routine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the non-routine evolutions sampled.

- On July 1, 2006, Unit 3 experienced an automatic reactor power cutback from 100 percent to 55 percent power when main feedwater (MFW) Pump A tripped on low suction pressure. Approximately 3 minutes later, operators manually tripped the reactor after alarms came in indicating that a trip of MFW Pump B

was imminent. Immediately prior to these events, a six-inch diameter sight-glass for condensate demineralizer Vessel A ruptured, resulting in a reduction of condensate flow and pressure to the MFW pump suction. Unit 3 stabilized at normal operating temperature and pressure in Mode 3 following the reactor trip. After the reactor trip, the condensate pumps tripped on low hotwell level, essentially stopping the leak. This event was documented in CRDR 2907590.

- On July 19, 2006, Unit 1 had an unintentional boration that resulted in a power reduction of approximately 2 percent. This transient occurred when a work permit was implemented to deenergize a relay on the makeup to volume control tank (VCT) Valve CHN-V512. When this relay was deenergized, the suction source to both charging pumps shifted to the refueling water tank. Operations personnel evaluated the situation, transferred the suction source of the charging pumps back to the VCT, and removed the work permit to Valve CHN-V512. This event was documented in CRDR 2911493.
- On July 27, 2006, Unit 2 was in the process of receiving new fuel for refueling Cycle 14. After inspecting the new fuel, the first assembly was placed in the new fuel elevator. When the down switch was pressed, the elevator and the assembly fell to the bottom of the transfer canal, which was full of water. The licensee conducted underwater video inspections of the assembly and the elevator, and determined that the elevator cable failed. The cause of the cable failure was attributed to a misalignment between the cable keeper bar and the wire rope drum keeper. The misalignment caused the cable to fray and eventually fail. The other fuel handling machines were not effected. The elevator basket experienced damage with failed welds and material deformation. The licensee observed no damage to the transfer canal floor or walls. The new fuel elevator was replaced and the fuel assembly was sent back to the manufacturer. This event was documented in CRDR 2913887.
- August 6, 2006, Unit 1 operations personnel implemented Procedure 40AO-9ZZ11, "CEA Malfunctions," Revision 10, following a deviation of CEA 49. In accordance with procedure and as required by TS LCO 3.1.5, operations personnel began making preparations to reduce power in accordance with the Core Operating Limits Report. The Core Operating Limits Report requires a 20 percent downpower to begin within 10 minutes and have reduced reactor power 20 percent within one hour. Unit 1 began the power reduction 13 minutes after the deviation occurred, but reduced power 20 percent within 1 hour as required by the Core Operating Limits Report. This event was documented in CRDR 2918079.
- August 13, 2006, Unit 3 was operating at 100 percent power when the control room received an alarm associated with the nuclear power sensors, concurrent with an increasing trend in cold leg temperature and first stage pressure. Operations personnel reduced turbine load and restored first stage pressure to its original value, but indicated power (according to calorimetric power),

remained high at approximately 100.5 percent. In accordance with Procedure 40DP-9OP05, "Control Room Data Sheet Instructions," Revision 56, operations personnel further reduced power to 96.6 percent using the primary temperature power indication.

After reviewing the event and analyzing the inputs received by calorimetric power, reactor engineering determined that the system responded as expected and that calorimetric power was providing an accurate indication of power. Operations personnel declared the calorimetric power operable and increased power to 99 percent pending further investigation. Upon further review, reactor engineering determined that enough evidence and industry operating experience existed to conclude that the loss of a single moisture separator due to mechanical failure was the cause of the event. The loss of the moisture separator created an increase in the moisture content of the steam. This parameter is not directly measured, but rather a constant value is assumed and used in the calculations of indicated reactor power. An actual moisture content higher than the assumed value would translate in calculated and indicated calorimetric power being higher than actual power. This event was documented in CRDR 2917750.

- On September 8, 2006, Unit 3 operations personnel started a resin transfer from purification ion Exchanger CHN-D01A to the high activity spent resin tank (HASRT). As a result of inadequate communication between operations personnel, the ion exchanger inlet isolation Valve CHN-V369 was left open. Approximately 1500 gallons of water was transferred from the chemical and volume control system (CVCS) to the HASRT before Valve CHN-V369 was closed. This event was documented in CRDR 2923263.
- On September 19, 2006, Unit 1 performed a plant shutdown required by TS 3.0.3 to perform repairs to the pressurizer heaters. The licensee declared both trains of pressurizer heaters inoperable due to low insulation resistance readings. Unit 1 stabilized at normal operating temperature and pressure in Mode 3 following the shutdown. This event was documented in CRDR 2925806.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed seven samples.

b. Findings

.1 Unintended Boration of the Reactor Coolant System

Introduction. A Green self-revealing NCV of TS 5.4.1.a was identified for the failure of operations personnel to have an adequate work control procedure that resulted in the implementation of an inadequate technical document (TD) that caused an inadvertent boration of the Unit 1 RCS.

Description. On July 19, 2006, operations personnel implemented a work permit for the replacement of Relay CHX10 associated with Valve CHN-V512 via WO 2907666. The scope of the work permit was to de-energize the relay to allow for safe replacement of the relay. The licensee used Section 8.4 of TD 40TD-9CH01, "Charging and Letdown," Revision 60, for the instructions to deenergize the specific components to establish conditions to implement the work permit and perform the relay replacement. Technical Document 40TD-9CH01 had been previously used during outages and not during power operations. Operations personnel failed to adequately review the TD to properly analyze the circuit associated with Relay CHX10 and determine the impact on the system during power operations. Due to the inadequate review of TD 40TD-9CH01 and associated drawings, Relay 63X LC-227 was mistakenly deenergized. Relay 63X LC-227 actuated the interlock for Lo-Lo VCT level, which closed VCT outlet isolation Valve CHN-V501, opened boric acid makeup to charging pump suction isolation Valve CHN-V514, and started both boric acid makeup pumps.

The on-duty RO was performing a vent of the reactor drain tank which was near the valve position indications for Valves CHN-V501 and CHN-V514 when the permit was implemented. While performing the reactor drain tank vent, the RO noticed Valve CHN-V501 stroking closed, Valve CHN-V514 stroking open, and the start of the boric acid makeup pumps to supply borated water to the suction of the charging pumps. The RO notified the control room supervisor (CRS) of the unexpected system response and that an RCS boration had initiated. The operators concluded that the VCT did not have an actual low level and that the unexpected system response was not required. The CRS directed the RO to re-position the valves by holding the hand switches in the desired positions, while he contacted plant personnel to remove the work permit and re-energize Relay 63X LC-227. In response to the inadvertent boration, operations personnel reduced turbine load to maintain RCS temperature within the required limits. After several small load reductions, RCS temperature and turbine load stabilized at approximately 98 percent power.

Analysis. The performance deficiency associated with this finding involved the failure of operations personnel to adequately review a work permit used to perform maintenance on safety-related equipment. The finding is greater than minor because it would become a more significant safety concern if left uncorrected since unexpected impacts to SSCs could occur, resulting in inoperable equipment and plant transients, if work permits are not appropriately reviewed prior to implementation. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding has a crosscutting aspect in the area of human performance associated with resources because the licensee did not provide accurate procedures and work instructions to plant personnel. The inaccurate procedures caused an inadvertent boration of the Unit 1 RCS.

Enforcement. TS 5.4.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of

Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operations)," dated February 1978. Regulatory Guide 1.33, Appendix A, Item 1(c), requires procedures for Equipment Control. Procedure 40DP-9OP38, "Operations Technical Documents," Revision 4, provides guidance on the use of TDs to establish conditions for maintenance on plant equipment. Procedure 40DP-9OP38, Step 4.2, allows the use of a TD when it has been determined that the current state of operation of the affected systems or the plant will not be affected by the action. Further, Procedure 40DP-9WP01, "Operations Processing of Work Orders," Revision 4, requires that the impact of work be assessed prior to the release of WOs. Contrary to the above, on July 19, 2006, WO 2907666, and the associated work permit, were not adequately reviewed for impact on the plant and were not assessed as having the potential for a direct reactivity impact. As a result of the inadequate review, an inadvertent boration of the RCS occurred. The consequences of the event were limited to a two percent reduction in power through operator action. Because this violation is of very low safety significance and has been entered into the CAP as CRDR 2911493, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000528/2006004-02, "Unintentional Boration of Reactor Coolant System Due to Inappropriate Work Permit."

.2 Inadvertent Transfer of CVCS Inventory During Resin Transfer

Introduction. A Green self-revealing NCV of TS 5.4.1.a was identified for the failure of operations personnel to follow procedures that resulted in an unintended transfer of water to the HASRT during a resin transfer.

Description. On September 8, 2006, Unit 3 operations personnel scheduled a resin transfer from purification ion Exchanger CHN-D01A to the HASRT. A pre-job brief for the evolution was held between the Operations Water Treatment Department (OWTD) team leader, radwaste operator, auxiliary building operator, several operations department trainees, and radiation protection personnel at the radiation area access point. The status of ion Exchanger CHN-D01A was discussed and it was determined to be in standby with inlet isolation Valve CHN-V369 open and outlet isolation Valve CHN-V378 closed. Control room operators knew that a resin transfer was scheduled to occur that day, but were not aware that the pre-job brief occurred and did not know that the evolution had commenced. The control room RO overheard radio communication concerning the ion exchanger evolution and paged the OWTD team leader to determine when the control room brief would occur. The OWTD team leader informed the RO that a control room brief would not be performed since the evolution would not impact control room personnel. The RO did not inform the control room supervisor of the discussion with the OWTD team leader.

Operations personnel used Procedures 40OP-9SR02, "Spent Resin Transfer System (Auxiliary Bldg)," Revision 12, and 40OP-9CH02, "Purification System," Revision 26. Procedure 40OP-9SR02, Step 4.3.1, required the removal of the ion exchanger from service per Procedure 40OP-9CH02, Section 5.3, which includes steps to close Valve CHN-V369. Due to a miscommunication with the auxiliary building operator, the radwaste operator misunderstood that Valve CHN-V369 was closed. No physical valve position verification was performed by operations personnel. Consequently, the

radwaste operator incorrectly signed Procedure 40OP-9SR02, Step 4.3.1, as complete based on the miscommunication. The radwaste operator then proceeded with sections of Procedure 40OP-9SR02 to fluidize the resin and start the transfer.

Procedure 40OP-9SR02, Step 4.3.8, also required notification of the shift manager or CRS prior to the transfer. However, the OWTD team leader believed that his earlier discussion with the control room RO satisfied this requirement.

Water was diverted from the CVCS to the HASRT when the ion exchanger was aligned to the HASRT since the ion exchanger was not isolated with Valve CHN-369 open. VCT level decreased from 54 percent to 30 percent, causing an automatic makeup. Control room operators responded to the low VCT level alarm, contacted the OWTD team leader to determine the status of the resin transfer, and discovered that it was in progress. The CRS then directed that the transfer be stopped and the status of the ion exchanger determined. Inlet Valve CHN-V369 was found open and the CRS directed that it be closed to isolate the diversion flowpath. The inadvertent transfer lasted for approximately 25 minutes and was stopped when operations personnel closed Valve CHN-V369. Approximately 1500 gallons of water was diverted from the CVCS system during the event.

Since radiation protection personnel posted areas around the resin sluice header flowpath to the HASRT earlier that day in preparation for the resin transfer, there was no overexposure or potential for overexposure and the licensee's ability to assess dose was not compromised.

Analysis. The performance deficiency associated with this finding involved the failure of operations personnel to follow procedures to ensure the proper system lineup prior to starting a resin transfer evolution. The finding is greater than minor because it is associated with the configuration control and human performance attributes of the initiating events cornerstone and affects the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not effectively utilize human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities. The improper use of human error prevention techniques caused a diversion of 1500 gallons of water.

Enforcement. TS 5.4.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A, dated February 1978. Regulatory Guide 1.33, Appendix A, Item 3.n, requires procedures for operating the CVCS (including letdown and purification systems). Procedures 40OP-9CH02, "Purification System," Revision 26, and 40OP-9SR02, "Spent Resin Transfer System (Auxiliary Bldg)," Revision 12, provided instructions to properly align the system for resin transfers. Contrary to the above, on September 8, 2006,

operations personnel failed to properly implement Procedure 40OP-9CH02, Step 5.3.2, to isolate purification ion Exchanger CHN-D01A, and close inlet isolation Valve CHN-V369. Additionally, operations personnel failed to inform the shift manager or CRS prior to starting the evolution as required by Procedure 40OP-9SR02, Step 4.3.8. The improper valve alignment resulted in the diversion of approximately 1500 gallons of water from the CVCS. Because this violation is of very low safety significance and has been entered into the CAP as CRDR 2923263, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000530/2006004-03, "Unintentional Transfer of Chemical Volume and Control System Inventory to High Activity Spent Resin Tank."

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.

- August 2, 2006, Units 1, 2, and 3, evaluation of TS required condensate storage tank inventory for feedwater line break accidents
- August 10, 2006, Unit 1, evaluation of the EDG Train B output breaker spring charger motor due to sparking around the brushes during operation
- August 16, Units 1, 2, and 3, testing of Engineered Safety Feature Actuation System relays not in accordance with regulatory requirements, as documented in CRDR 2918378
- August 23, 2006, Units 1, 2, and 3, functional assessment of a condition where three emergency plant sirens' output was below the required 105 decibels
- August 25, 2006, Units 1, 2, and 3, calculation for steam generator tube rupture with a loss of offsite power accident was determined to non-conservatively assume two atmospheric dump valves were available in each steam generator, when only one is required in each steam generator per TSs
- September 5 - 8, 2006, and September 18 - 22, 2006, Unit 3, shutdown cooling suction isolation Valve 3JSIDUV0654 testing following two valve replacements per WO 2884382

- September 18, 2006, Unit 3, charging pump flowrate plus uncertainty greater than design bases assumed flowrates, as documented in CRDR 2925248
- September 18, 2006, Unit 1, pressurizer heater degraded insulation condition as documented in CRDR 2925806

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed eight samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- July 1, 2006, Unit 1, test of Valve SIA-UV-651 per Procedure 40TI-9ZZ08, "Unit 1 SDC Suction Line Vibration Testing," Revision 1
- July 10 - 11, 2006, Unit 1, test of replacement steam generators load transient response, per Procedure 40TI-9ZZ03, "SGRP Unit Load Transient Test," Revision 2
- August 2, 2006, Unit 1, inservice test of feedwater isolation Valve SGB-UV-137 after replacing a leaking accumulator o-ring
- August 9, 2006, Unit 1, retest of essential SP Train B Pump 1MSPBP01 following motor bearing reservoir oil change in accordance with Procedure 40OP-9SP02, "Essential Spray Pond (SP) Train B," Revision 31, and WO 2871513

- September 5 - 8, 2006, and September 18 - 22, 2006, Unit 3, retest of shutdown cooling suction isolation Valve 3JSIDUV0654 following two valve replacements per WO 2884382
- September 13, 2006, Unit 2, full stroke test of Valves SIB-UV-616 and SIB-UV-626 after modifications were implemented to the open torque switch bypass
- September 20, 2006, Unit 3, retest of high pressure safety injection Breaker PBA-SO3E following inspections and calibrations during EDG Train A outage
- September 22, 2006, Unit 2, retest of EDG retest following maintenance, per Procedure 40ST-9DG01, "Diesel Generator A Test," Revision 27

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed eight samples.

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 six 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 ASME Code requirements; (12) updating of performance indicator 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.

- April 25, 2006, Unit 3, Procedure 73ST-9XI29, "LPSI/CS and RWT Outlet Check Valves - Inservice Test," Revision 12.
- September 5, 2006, Units 1, and 2, Procedure 33ST-9HF01, "Surveillance Testing for the Aux/Fuel Building Nuclear Air Treatment System," Revision 9, performed on November 18, 2004, and April 7, 2006

- September 13, 2006, Units 1, 2 and 3, Procedure 40ST-9RC02, "ERFDADS (Preferred) Calculation of RCS Water Inventory," Revision 37
- September 21, 2006, Unit 3, Procedure 73ST-9CL03, "Containment Airlock Door Seal Leak Test," Revision 17
- September 25, 2006, Unit 2, Procedure 73ST-9SI11, "Low Pressure Safety Injection Pumps Miniflow - Inservice Test," Revision 19
- September 27, 2006, Unit 3, Procedure 74ST-9RC02, "Reactor Coolant System Specific Activity Surveillance Test," Revision 11

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

Introduction. A Green NCV of TS 5.4.1.a was identified by the inspectors for the failure of operations personnel to follow the procedure for plant modifications when performing a surveillance test that impacted a component that had been recently modified.

Description. On April 25, 2006, the inspectors observed the performance of Procedure 73ST-9XI29, "LPSI/CS and RWT Outlet Check Valves - Inservice Test," Revision 12. Unit 3 was defueled and the test involved operating both low pressure safety injection and containment spray pumps to flow 8980 gpm into the reactor vessel to full stroke open the check valves. The inspectors arrived in the control room as the ROs were preparing for the inservice test.

The inspectors noted that flow Instrument SIB-FI-348, used in the inservice test to verify that check Valve SIB-V158 full stroked open, had recently been modified by installation of a new annubar flow element to support a future power uprate. The inspectors also noted that the retests specified in design modification work order (DMWO) 2541325 for the modification were completed over the previous two shifts. The inspectors questioned the RO directing the inservice test whether the DMWO for SIB-FI-348 was completed and whether it had been released to operations for use in the check valve test. The RO indicated that the work had been completed, but that the engineer still needed to review the DMWO and calibration data to complete closeout of the work package to release the instrument for unrestricted operations. The inspectors questioned whether their process allowed use of the flow instrument for the inservice test prior to final package closeout. The operators consulted with the shift manager for operations work control and were told to proceed with the inservice test since there was a functional release (FR) that had been provided by engineering. The operators planned to delay acceptance review of the inservice test until the DMWO and final turnover to operations were completed.

A FR is defined in Procedure 81DP-0EE10, "Plant Modifications," Revision 11, as, "A temporary agreement that allows limited operation under specific restrictions." The

inspectors asked to review the FR due to past NRC identified issues with operators' lack of verification and validation practices for documents that supported operational/maintenance evolutions (FIN 05000528/2005004-03). None of the operations personnel involved with the inservice test could readily produce the FR, so the inspectors searched the binder located in the control room that contained all active FRs. The inspectors identified two FRs associated with DMWO 2541325. The inspectors noted that the inservice test was beyond the scope of the FRs since they were issued to allow only functional testing of the annubar modification. The inspectors showed the FR forms to the RO directing the test and discussed it with several other ROs that were on-shift in the control room. The ROs were in agreement with the inspectors' conclusion that the inservice test was beyond the scope of the FRs. Since the pre-test equipment lineup had been completed and all required auxiliary operators were on station ready to perform the test, the RO conferred with the CRS to determine whether the inservice test could continue. The CRS obtained the opinion of the shift technical advisor and called the shift manager for operations work control for guidance. The shift manager for operations work control told the CRS to proceed with the inservice test since he believed that the NRC inspectors were wrong about the testing restrictions described in the FR. The CRS returned to the control station and directed the ROs to proceed. The ROs accepted the direction from the CRS and made preparations to start the pumps without questioning the basis for the decision to proceed. The inspectors displayed the FR forms to the CRS once again and commented that the testing they were about to commence was beyond the scope of the FR. The CRS acknowledged the inspectors' comments and continued with the test. The inspectors informed the CRS that it appeared that continuing with the inservice test was in violation of the licensee's procedures and processes. The CRS acknowledged the inspectors' comments and continued with the testing evolution. The ROs readily followed the CRS's orders without question and performed the test. The inspectors communicated the concerns of the procedure and process violations with an off-shift shift manager who quickly understood the concerns and communicated them to operations management. The NRC Office of Investigations determined that there were no violations of 10 CFR 50.5, "Deliberate Misconduct," associated with this finding.

Operations management discussed the issue with the inspectors and conferred with engineering to conclude that the inservice testing was beyond the scope of the FR. Operations management acknowledged that the CRS and ROs should have stopped the evolution rather than proceed in violation of their processes and procedures. The Director of Operations clarified expectations with on-shift operations personnel and directed the initiation of CRDR 2887268 to address the issue.

Analysis. The performance deficiency associated with this finding involved the failure of operations personnel to follow procedures to ensure equipment availability and operability following plant modifications and prior to use of the modified equipment to perform inservice testing. The finding is greater than minor because it is associated with the design control attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only

affected the mitigating systems cornerstone and did not result in the actual loss of safety function to any component, train, or system. This finding has a crosscutting aspect in the area of human performance associated with work practices because the licensee did not follow established procedures. The failure to follow procedures resulted in the performance of testing not allowed by a FR.

Enforcement. TS 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, Item 8, requires procedures for conducting surveillance tests. Procedure 81DP-0EE10, "Plant Modifications," Section 3.5.2.2 specified that a FR is a temporary agreement that allows limited operation under specific restrictions. A FR shall be initiated in the site work management system when a design or minor modification is being installed to, in part, release equipment, systems, and components for functional testing. The site work management system database described two FRs (2591421 and 2591422) for Design Change 2541325, which involved a replacement of flow Element 3JSIBFE0348. The restrictions for FR 2591421 only allowed data collection and recalibration of flow Transmitter 3JSIBFT0348. The restrictions for FR 2591422 only allowed for testing of flow Transmitter 3JSIBFT0348 to support a revision to Calculation 13-JC-SI-0125. The use of flow Element 3JSIBFE0348 for other purposes was not authorized. Contrary to the above, on April 25, 2006, operations personnel used flow Element 3JSIBFE0348, a modified component that did not have a FR, to perform surveillance testing of emergency core cooling system check valves. Because this violation is of very low safety significance and has been entered into the CAP as CRDR 2887268, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000530/2006004-04, "Testing Performed Beyond the Scope of the Functional Release."

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the UFSAR, plant drawings, procedure requirements, and TSs to ensure that the two below listed temporary modifications were properly implemented. The inspectors: (1) verified that the modifications did not have an effect on system operability/availability; (2) verified that the installation was consistent with modification documents; (3) ensured that the post-installation test results were satisfactory and that the impact of the temporary modifications on permanently installed SSCs were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

- July 12, 2006, Unit 1, shutdown cooling heat exchanger room rad monitoring instrumentation cables routed across safety-related conduit, as Specification 13-EN-700, "Installation Specification for the Installation of NQR Maintenance & Monitoring Equipment," Revision 2

- August 2, 2006, Unit 1, Class 1E pressurizer heater Bank A, replacement of three failed heaters with three heaters from backup heater Bank 9

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

For the two below listed drills and simulator-based training evolutions contributing to Drill/Exercise Performance and Emergency Response Organization (ERO) Performance Indicators, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and Protective Action Requirement 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.

- July 12, 2006, ERO team exercise scenario Guide 06-D-FAC-07005
- September 27, 2006, ERO team exercise drill covering a sheared reactor coolant pump shaft and a security event

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Barrier Integrity

a. Inspection Scope

The inspectors sampled licensee submittals for the two performance indicators listed below for the period November 1, 2004, to August 31, 2006, for Units 1, 2, and 3. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period. The inspectors: (1) reviewed RCS chemistry sample analyses for dose equivalent Iodine-131 and compared the results to the TS limit; (2) observed a chemistry technician obtain and analyze an RCS sample; (3) reviewed operating logs and surveillance results for measurements of RCS identified leakage; and (4) reviewed a surveillance test that determined RCS identified leakage. Licensee performance indicator data was also reviewed against the requirements of Procedures 93DP-0LC09, "Data Collection and Submittal Using INPO's Consolidated Data Entry System," Revision 5, 74DP-0LC01, "RCS Activity Performance Indicator," Revision 4, and 70DP-0PI01, "Performance Indicator Data Mitigating Systems Cornerstone," Revision 3.

- Reactor Coolant System Specific Activity
- Reactor Coolant System Leakage

Documents reviewed by the inspectors are listed in the attachment.

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. No findings of significance were identified.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the two 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.

- August 7 - 11, 2006, Units 1, 2, and 3, actions to maintain the operability of safety related equipment in underground vaults and manholes during the rainy season as described in CRDR 2882166
- September 12, 2006, Unit 1, emergent low pressure safety injection pump Train B inoperability due to a lower motor bearing oil leak as described in CRDR 2922779

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Assessment and Observations

In Section 1R08 an issue involving the failure to promptly correct water intrusion problems in multiple areas on the facility was discussed. The inspectors reviewed this issue and licensee actions to maintain the operability of safety related equipment in underground vaults and manholes during the current rainy season.

The licensee was addressing the broad issue of water intrusion into underground manways and vaults through CRDR 2882166. This CRDR was initiated on April 6, 2006. An apparent cause evaluation was completed on August 31, 2006, which identified corrective actions to resolve the longstanding issues in this area. The licensee planned to use this CRDR as the key mechanism to resolve longstanding issues in this area. The licensee has been performing scoping reviews, walkdowns, inspections, and corrective maintenance as a part of this and other related CRDRs. The inspectors noted that most of the identified areas have had recent inspections while others (fuel transfer canal hatches and refueling water tank hatches) are scheduled for inspection. The identified discrepancies have been corrected or scheduled for maintenance. For SP vaults, these actions are being tracked under CRDR 2880283. As an interim action until the implementation of final corrective actions under CRDR 2882166, CRDR 2880283 has scheduled additional SP vault inspections during future refueling outages.

Manhole water intrusion is being addressed by CRDRs 2784074 and 2861291. Of the 18 manholes containing safety related cables, one (1EZV06BKEM04) has a history of damage to a splice due to water intrusion. Routine Task 128352 is in place to have this manhole opened and inspected following a significant rainfall (greater than 0.3 inches in 24 hours) on site. Inspection of other manholes following rainfall is dependent on the cognizant engineer taking note of the rainfall and initiating the appropriate work requests. In addition, there is a preventive maintenance task (PMB 2590671) to inspect safety related, maintenance rule, important to production, and other manholes for water accumulation and general condition every one, two or five years, depending on the safety classification and the condition found when last inspected. Replacement covers are being procured for all site manholes. The replacement covers have an inspection port which will be used to facilitate inspection of the manhole without removal of the manhole cover.

While significant effort remains to finally resolve the water intrusion issue, the licensee has implemented interim actions to monitor safety related equipment in underground vaults and manholes and to detect and correct any identified degraded conditions.

.3 Crosscutting Issues Follow-up Inspections

The inspectors conducted periodic discussions with licensee management to monitor their progress in addressing the substantive crosscutting concerns and Performance Improvement Plan implementation. On September 7, 2006, a public meeting was held between the NRC and Palo Verde management to discuss the licensee's Performance Improvement Plan. The licensee indicated that they would inform the NRC when they were ready to support an assessment of their corrective actions to improve human performance and problem identification and resolution.

.4 Annual Sample: Review of Operator Workaround Program

a. Inspection Scope

The inspectors conducted a cumulative review of operator workarounds for Units 1, 2, and 3, and assessed the effectiveness of the operator workaround program to verify that the licensee is identifying operator workaround problems at an appropriate threshold and entering them into the CAP with appropriate corrective actions proposed or implemented. The review included walkdowns of the control room panels and the remote shutdown panels, interviews with licensed operators; and reviews of the control room discrepancies list, the lit annunciators list, the operator workaround list, the operator burdens list, and the operator challenges tracking system.

b. Assessment and Observations

All of the operator challenges identified by the licensee were categorized as operator burdens (affecting normal plant operations requiring operators to take compensatory actions in order to comply with plant procedures) and none were categorized as operator workarounds (affecting transient plant operations requiring operators to perform compensatory actions in order to comply with abnormal or emergency operating

procedures). The inspectors did not identify any additional operator workarounds or any operator burdens which should have been categorized as operator workarounds. There were 12 operator challenges being tracked at the time of this inspection. The licensee maintained an operator challenges tracking system which identified by unit, system, and watchstation the required routine and conditional compensatory action and time burden associated with each item. The monthly shift technical adviser review of the aggregate impact of operator challenges that could affect an operator's ability to respond to transients was noted to be documented in the monthly operating report.

The operator burdens were not considered to be excessive at the time of this inspection. However, there were a large number of control room discrepancies and temporary modifications, resulting in the licensee's metric for aggregate impact being Red. CRDR 2906940 was initiated on June 30, 2006, by the licensee to evaluate the trend for this metric which has been Red since February 2006.

.5 Emergency Diesel Generator Leaks and Material Condition

Introduction. A Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure of personnel to identify conditions adverse to quality and enter them in the CAP.

Description. On July 28, 2006, NRC managers and resident inspectors conducted a walk down of the Unit 3 EDGs. During the walk down, several puddles of oil and surfaces wet with diesel fuel and other hydraulic fluids were identified. The observations were shared with the licensee, who initiated CRDR 2914886 to address the issue. As an immediate action, between July 31 and August 2, 2006, engineering personnel conducted walk downs of all six EDGs to make an assessment of the leaks. As a result, engineering personnel issued a white paper listing 40 leaks. The licensee classified most of the leaks as minor and did not initiate a work request. Approximately 15 WOs were written to document the leaks that were classified as most significant.

The evaluation for CRDR 2914886 stated that, "Engineering, operations, and maintenance were aware of the several small oil leaks but no program existed to quantify the leakage, nor had an evaluation of the aggregate impact been performed." An evaluation of the diesel fuel storage tank concluded that a large available margin of approximately 852 gallons existed. This large margin would correspond to a leak rate of over 5 gallons per hour for a period of seven days with the diesel fully loaded. Therefore the licensee concluded that none of the identified leaks would challenge the operability of the EDGs. Concerned that not all of the leaks were identified, and that they may not have been properly classified, the inspectors conducted independent inspections of the Unit 3 Train B, and Unit 2 Trains A and B EDGs, during routine loaded runs. During the inspections, approximately 15 additional leaks were identified and brought to the attention of the licensee. Additionally, an active leak of 20 drops per minute from the fuel oil filters, and a leak from the mechanical overspeed governor in the Unit 3 Train B EDG were identified. The mechanical overspeed governor was considered significant enough to cause the licensee to question the operability of the EDG and enter the operability determination process.

During further walkdowns of the EDGs, the inspectors identified two loose u-bolt connections for the jacket water makeup tank vent piping on the Unit 3 EDG Train A skid. The licensee performed a walkdown, and identified a missing nut on the u-bolt pipe support for the suction piping to the Unit 3 Train A lube oil circulation pump. The licensee initiated CRDR 2924618 for this issue, and performed walkdowns of the Unit 1 and 2 EDG skids as part of the extent of condition review. The licensee walk downs identified a loose nut on a u-bolt support on the Unit 2 EDG Train A lube oil system and a missing nut for the lube oil system on the Unit 1 EDG Train A. The hardware in question provided support to the lube oil and jacket water piping on the EDG skids. The issues were significant enough to enter into the operability determination process. The licensee promptly corrected all missing or loose fasteners.

The leaks and loose fasteners identified by the inspectors, further questioned the licensee's sensitivity to EDG material condition and the licensee's attitude of accepting degraded material conditions. While none of the leaks or the loose fasteners were ultimately determined to challenge the operability of the EDGs, the inspectors expressed their concern to the licensee with their threshold for accepting leaks, the adequacy of the licensee's program to improve the condition of the EDGs, and to ensure that material condition issues would not create a challenge to the operability of the EDGs in the future. As a consequence of the inspector's concerns, the licensee conducted several meetings to discuss potential strategies to improve performance in this area. The strategies discussed included: coatings improvements, using a logbook to track leaks that are being monitored in order to identify the source, developing a guideline for the threshold to write a WO due to a leak, requiring the EDG system team to review each leak or concern to ensure a complete and thorough evaluation is completed, and engineering personnel observing each EDG run when possible to assist in the identification of leaks. As a result of the inspectors' observations, the licensee implemented a program of routine walk downs and inspections of all equipment important to safety to identify any material condition adverse to quality and enter it in the CAP.

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

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and

equipment, and nonconformances, are promptly identified and corrected. Contrary to this, between July 2006 and September 2006, operations and engineering personnel did not promptly identify and correct material conditions adverse to quality. Specifically, operations and engineering personnel did not identify fluid leaks and loose and missing fasteners on the EDG skids. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2914886, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2006004-05, "Failure to Identify Conditions Adverse to Quality for the Emergency Diesel Generators."

.6 Failure to Update UFSAR

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.71(e)(4) for the failure of licensing personnel to submit revisions to the UFSAR reflecting temporary modifications that were in place for more than 24 months.

The inspectors also identified a violation of 10 CFR 50.71(e)(4), for which enforcement discretion was exercised (EA-06-267), that involved a failure of licensing personnel to submit a revision to the UFSAR reflecting modifications to the Core Protection Calculator (CPC) System that were in place for more than 24 months.

Temporary Modifications

Description. On May 10, 2006, the inspectors performed a review of Unit 3 control room discrepancies and the TS component conditions records to evaluate operability of equipment and systems required for an upcoming Mode 4 entry. The inspectors also reviewed all corrective and preventive maintenance that the licensee planned to defer beyond refueling Outage 3R12. During the review, the inspectors identified two temporary modifications that have been installed on the qualified safety parameter display system (QSPDS) for more than 24 months. Procedure 93DP-OLC03, "Licensing Document Maintenance," Revision 13, Step 3.5.6, required, in part, that temporary modifications that are expected to be or have been in place for greater than 24 months be incorporated into the UFSAR.

Temporary Modification 2516877 was installed June 11, 2002, to disable a faulty heater circuit for heated junction thermocouple (HJTC) Sensor 3JRIALE0001A due to an intermittent ground that was causing spurious ground fault alarms on Panel 3EPNAD25. A load resistor was installed in its place to simulate the heater circuit to allow the companion HJTC Sensor 3JTIALE0005A to remain operable. Temporary Modification 2665440 was implemented January 23, 2004, to install jumpers in place of the heated and unheated HJTC inputs to QSPDS Train A. These two temporary modifications cannot be restored until HJTC Channel A is replaced. With the number of operable sensors in service, the licensee elected to maintain system operability with the temporary modifications since it was not economically justifiable to replace the HJTC. Consequently, the licensee elected to leave the temporary modifications installed for another cycle by deferring replacement of HJTC Channel A beyond refueling Outage 3R12 to a future outage.

Analysis. The performance deficiency associated with this finding involved the failure of licensee personnel to submit revisions to the UFSAR reflecting temporary modifications installed in Unit 3 for more than 24 months. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to update the UFSAR in a timely manner. The finding was determined to be a Severity Level IV violation in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. This finding has a crosscutting aspect in the area of human performance because not following established procedures led to an inaccurate UFSAR.

Enforcement. 10 CFR 50.71(e)(4) requires, in part, that UFSAR revisions must be filed annually or six months after each refueling outage provided the interval between successive updates does not exceed 24 months. By letter dated July 8, 1999, PVNGS obtained an exemption by the NRC from certain requirements of 10 CFR 50.71(e)(4) and is therefore allowed to submit revisions on a 24 month periodicity. Procedure 93DP-0LC03, "Licensing Document Maintenance," Revision 13, Step 3.5.6, requires, in part, that temporary modifications that are expected to be or have been in place for greater than 24 months be incorporated into the UFSAR.

Contrary to the above, for the 24 month reporting periods between, (1) January 2001 and December 2002; and (2) January 2003 and December 2004, licensing personnel failed to submit complete revisions to the UFSAR reflecting two temporary modifications that were expected to be or were in place for greater than 24 months. Specifically, temporary Modification 2516877 was installed June 11, 2002, and was expected to be in place for greater than 24 months until refueling Outage 3R11, scheduled for Fall 2004. However, no UFSAR revision was submitted during the reporting period between January 2001 and December 2002. Also, when the temporary modification was not removed during refueling Outage 3R11 as planned, no UFSAR revision was submitted during the reporting period between January 2003 and December 2004. Temporary Modification 2665440 was implemented January 23, 2004, and expected to be in place for greater than 24 months until, at least, refueling Outage 3R12, scheduled for the Spring of 2006. However, no UFSAR revision was submitted during the reporting period between January 2003 and December 2004. Because the finding is of very low safety significance and has been entered into the CAP as CRDR 2894741, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000530/2006004-06, "Failure to Submit Complete Revisions to Updated Final Safety Analysis Report for Temporary Modifications."

Permanent Modifications (Core Protection Calculator)

Description. In September 2003, during Refueling Outage 2R11, maintenance personnel began implementing a modification to replace the CPC system. The modification was initially scheduled to be implemented in three consecutive outages, completing the modifications in all three units in a period of approximately 18 months. However, due to the scope of the work, it was re-scheduled to take place during the steam generator replacement outages. The modification in Unit 2 was installed during

the Fall of 2003, the modification in Unit 1 was installed during the Fall of 2005, and the modification is scheduled to be installed in Unit 3 during the Fall of 2007. As a consequence of the delays, timely updates to the UFSAR to reflect the current configuration of each unit were not made.

The licensee informed the inspectors that a similar issue was documented in NRC Inspection Report 05000529/9315. The 1993 issue involved a delay in updating the UFSAR following modifications to the facility. Arizona Public Service (APS) contested the violation in their June 8, 1993, response to the NRC. On July 6, 1993, the NRC withdrew the violation. In particular, APS noted a passage in the UFSAR Foreword in their June 8, 1993, letter. Specifically:

"Descriptions of physical changes to PVNGS are included in the UFSAR after the changes have been approved for use and are operable in all units, unless the changes are unique to a specific unit."

The inspectors noted that the UFSAR Foreword does not provide a limitation on the time between modifications on successive units. Because of the differences between the UFSAR and 10 CFR 50.71, Region IV requested that the Office of Nuclear Reactor Regulation, the Office of General Counsel, and the Office of Enforcement review the requirements of 10 CFR 71(e)(4) as it related to Palo Verde's practice of updating the UFSAR.

10 CFR 50.71(e) requires each holder of a license to operate a nuclear power plant to periodically update its UFSAR to assure that the information included in the report contains the latest information developed. The information is required to include, among other things, the effects of all changes made in the facility or procedures.

10 CFR 50.71(e)(4) requires that the revisions to the UFSAR be filed with the NRC annually or 6 months after each refueling outage, so long as it does not exceed 24 months. By letter dated July 8, 1999, APS obtained an exemption by the NRC from certain requirements of 10 CFR 50.71(e)(4) and is therefore allowed to submit revisions on a 24 month periodicity.

The regulation contemplates regular periodic reports to the NRC updating changes to the plant. The revisions must include all changes made since the last revision, up to 6 months prior to the current filing. There is no exception in the regulation for the process used by Palo Verde. Permitting a licensee to wait until a change has been implemented at all units at a multiple unit site would subvert the intent of the regulation, which is to require the regular, periodic filing of UFSAR revisions. Therefore, the licensee must comply with 10 CFR 50.71(e)(4) (and the exemption that has already been granted) and file revisions to its UFSAR every 24 months. The revisions must reflect all changes made since the last revision, up until 6 months prior to the current revision.

Analysis. The performance deficiency associated with this finding involved the failure of licensee personnel to submit revisions to the UFSAR in a timely manner. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's failure to

update the UFSAR. The violation would normally be categorized at Severity Level IV in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance.

Enforcement. 10 CFR 50.71(e)(4) requires, in part, that UFSAR revisions be filed annually or six months after each refueling outage provided the interval between successive updates did not exceed 24 months. By letter dated July 8, 1999, PVNGS obtained an exemption by the NRC from certain requirements of 10 CFR 50.71(e)(4) and is therefore allowed to submit revisions on a 24 month periodicity. Contrary to the above, as of September 30, 2006, licensing personnel failed to submit complete revisions to the UFSAR reflecting modifications that were in place for more than 24 months. Specifically, for the reporting period between January 2003 and December 2005, licensing personnel failed to submit a revision to the UFSAR reflecting CPC system modifications. The finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2894635. Normally, this violation would be categorized at Severity Level IV. However, in accordance with Section VII.B.6 of the NRC Enforcement Policy, the NRC is refraining from taking enforcement action because of the NRC action taken in 1993 to issue and then retract a similar occurrence and the low safety significance of the finding (EA-06-267). FIN 05000528; 05000529; 05000530/2006004-07, "Failure to Submit Complete Revisions to Updated Final Safety Analysis Report for Permanent Modifications."

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

Section 1R08 describes a finding in which the licensee did not thoroughly evaluate a flooding problem that existed from 1992 to April 2006 such that the extent of flooding was fully considered and the cause resolved.

Section 4OA2.5 describes a finding where operations and engineering personnel were not identifying material conditions adverse to quality on the EDGs.

4OA3 Event Followup (71153)

.1 (Closed) Licensee Event Reports (LERs) 05000528/2005001-00 and 05000528/2005001-01, "Actuation of a Unit 1 Emergency Diesel Generator and Plant Shutdown Required by TS"

On February 6, 2005, a fault in the Unit 1, 13.8 kV Switchgear NAN-S06, resulted in the loss of offsite power to safety Bus PBB-S04. The loss of power caused EDG Train B to start and energize safety Bus PBB-S04 as designed. Not being able to restore power within the allowed time, on February 9, 2005, the licensee initiated a shutdown as required by TS LCO 3.8.1 for the loss of the offsite power supply to safety Bus PBB-S04. After completing the required repairs, the licensee returned to power operations on February 19, 2005. CRDR 2775015 was initiated to investigate the event. The licensee determine that the fault was initiated by a Phase C to ground fault in

Switchgear NAN-S06, Cubicle J. The licensee was not able to determine the exact cause of the fault due to the damage that occurred as a result of the event. However, the most probable causes were determined to be contamination over the exterior of the rosette, a high resistance bushing-finger connection within the rosette, rosette cracked porcelain, water intrusion, or a combination of these. The LER was reviewed by the inspectors and no findings of significance were identified and no violation of NRC requirements occurred. This LER is closed.

.2 (Closed) LER 05000528/2005004-00, "Technical Specification Required Reactor Shutdown on EDG "B" Voltage Regulator Failure"

On August 12, 2005, Unit 1 was shutdown as required by TS 3.8.1. On August 9, 2005, EDG Train B failed to maintain proper steady state output voltage during the performance of a routine monthly surveillance test. The licensee was unable to identify and correct the cause of the fluctuating generator output voltage within the 72 hour required action completion time per LCO 3.8.1, and shutdown the reactor. In CRDR 2821210, the licensee determined that a degraded zener diode within the automatic voltage regulator affected the generator output voltage. The licensee replaced the automatic voltage regulator, and performed appropriate postmaintenance tests. The LER was reviewed by the inspectors and no findings of significance were identified and no violation of NRC requirements occurred. This LER is closed.

.3 (Closed) LER 05000530/2006005-00, "Manual Reactor Trip Due To Loss Of Main Feedwater"

On July 1, 2006, a condensate demineralizer sight glass ruptured, resulting in lower condensate flow to the MFW pumps. The lower condensate flow resulted in a low pressure condition at both MFW pump suctions, and both MFW pumps trip circuits energized. Shortly thereafter, MFW Pump A tripped, causing a reactor power cutback and subsequent decrease in reactor power to approximately 55 percent. Suction pressure to MFW Pump B recovered slightly, but remained low. About 3 minutes after MFW Pump A tripped, the trip circuit for MFW Pump B reenergized. Because of the degrading secondary plant conditions, the shift manager directed the reactor be manually tripped. 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 event in CRDR 2907590. This LER is closed.

.4 (Closed) LER 05000530/2006001-00, "Two Independent Trains of Auxiliary Feedwater Inoperable"

On February 17, 2006, Door C-A06, a watertight fire door that functions as the train separation barrier between auxiliary feedwater (AFW) pump Rooms A and B, was found opened with no compensatory measures established. An investigation concluded that a maintenance individual had failed to close Door C-A06 after leaving the AFW pump room area. There was no loss of fire detection and suppression capability, no excessive fire loading in the two rooms, and no actual loss of normal feedwater. Therefore, there

was no actual safety consequence associated with the two essential trains of AFW being rendered inoperable for four minutes. The licensee initiated Significant CRDR 2870339 to evaluate this event.

A similar event occurred on June 23, 2005, and was reported as LER 05000529/2005003-00, "Two Independent Trains of Auxiliary Feedwater Inoperable." During the evaluation per CRDR 2870339, the licensee recognized that previous corrective actions from the June 2005 event were not adequate, and added actions to inform all employees of the requirement to maintain Door C-A06 closed, and identified an action to install flashing lights on the door to alert personnel that the door was open. See Section 4OA3.5 for results of the inspectors' review. This LER is closed.

.5 (Closed) LER 05000529/2006002-00, "Two Independent Trains of Auxiliary Feedwater Inoperable Due to a Single Cause"

On July 16, 2006, Door C-A06, a watertight fire door that functions as the train separation barrier between AFW pump Rooms A and B, was found opened with no compensatory measures established. An investigation concluded that a fire department emergency services officer had failed to close Door C-A06 after leaving the AFW pump room area. There was no loss of fire detection and suppression capability, no excessive fire loading in the two rooms, and no actual loss of normal feedwater. Therefore, there was no actual safety consequence associated with the two essential trains of AFW being rendered inoperable for approximately 4 hours and 20 minutes. The licensee initiated Significant CRDR 2910579 to evaluate this event.

Similar events occurred on June 23, 2005, reported as LER 05000529/2005003-00, "Two Independent Trains of Auxiliary Feedwater Inoperable," and February 17, 2006, reported as LER 05000530/2006001-00, "Two Independent Trains of Auxiliary Feedwater Inoperable." The licensee once again recognized that previous corrective actions were not adequate, and implemented the following additional corrective actions: (1) a site wide communication discussing the importance of Door C-A06 being closed, (2) added signs to the entry (Door C-A01) of the AFW pump rooms to ensure Door C-A06 was maintained closed, and (3) posted a security officer at Door C-A01 to ensure that the Door C-A06 will be secured by plant personnel until actions to install an alarm at the door are complete.

The inspectors reviewed the LERs associated with this repeat event and noted a performance deficiency that involved the repetitive failure to maintain Door C-A06 closed to maintain AFW system operability. The finding is greater than minor because it is associated with the configuration control attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not represent an actual loss of safety function. This licensee identified finding involved a

violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions." The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/169: Mitigating Systems Performance Index (MSPI) Verification

a. Inspection Scope

The inspectors sampled licensee data to verify that they correctly implemented the MSPI guidance for reporting unavailability and unreliability of the monitored safety systems. The monitored systems included emergency alternating current, high pressure safety injection, and heat removal via AFW, residual heat removal, and SP/essential cooling water. The inspectors reviewed operating logs, limiting condition of operation logs, and maintenance records, CRDRs, surveillance test data, and the maintenance rule database to verify that the licensee properly accounted for planned and unplanned unavailability. The inspectors sampled data to verify that the licensee: (1) accurately documented the baseline planned unavailability hours for the MSPI systems; (2) accurately documented the actual unavailability hours for the MSPI systems; and (3) accurately documented the actual unreliability information for each MSPI monitored component. The inspectors did not identify any significant errors in the reported data that resulted in a change to the indicated index color. In addition, the inspectors did not identify any significant discrepancies in the basis document that resulted in (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On July 27, 2006, the engineering inspectors telephonically presented the inspection results to Mr. C. Eubanks, Vice President, Operations, and other members of the staff who acknowledged the findings.

On September 21, 2006, the examiners briefed the results of the licensed operator requalification inspection with Mr. C. Eubanks and other members of the licensee's staff. The licensee acknowledged the findings presented. After final review of the overall biennial requalification examinations the examiners conducted a teleconference exit with the licensee on September 27, 2006.

On October 3, 2006, the resident inspectors presented the inspection results to Mr. J. Levine, Executive Vice President, Generation, and other members of the

licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

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

- 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires in part, that in the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective actions taken to preclude repetition. Contrary to the above, on July 16, 2006, the licensee failed to preclude repetition of a significant condition adverse to quality. Specifically, for the third time in two years watertight fire Door C-A06 between the AFW Trains A and B pump rooms was left open, rendering both trains susceptible to a single failure. This finding was documented in CRDR 2910579 and LER 05000529/2006002-00 (Section 4OA3.5).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

G. Andrews, Department Leader, System Engineering
S. Bauer, Department Leader, Regulatory Affairs
C. Bell, Director, Work Management
P. Borchert, Director, Operations
R. Buzard, Senior Consultant, Regulatory Affairs
D. Carnes, Director, Nuclear Assurance
P. Carpenter, Unit Department Leader, Operations
C. Churchman, Director, Engineering
D. Coxon, Unit Department Leader, Operations
C. Eubanks, Vice President, Nuclear Operations
J. Gaffney, Director, Radiation Protection
D. Hautala, Senior Compliance Engineer
R. Henry, Site Rep., SRP
J. Hesser, Director, Emergency Services
M. Hooshmand, Section Leader, Systems Engineering
M. Karbasian, Department Leader, Design Mechanical Engineering
D. Mauldin, Vice President, Engineering
M. McGhee, Unit Department Leader, Operations
S. McKinney, Department Leader, Operations Support
J. Melody, Department Leader, PV Communications
E. Merschoff, Consultant, CGE, LLC
E. O'Neil, Department Leader, Emergency Preparedness
M. Perito, Plant Manager, Nuclear Operations
J. Proctor, Section Leader, Regulatory Affairs - Compliance
M. Radsprinner, Section Leader, System Engineering
T. Radtke, General Manager, Emergency Services and Support
F. Riedel, Director, Nuclear Training Department
J. Scott, Section Leader, Nuclear Assurance
C. Seaman, General Manager, Regulatory Affairs and Performance Improvement
M. Shea, Director, Maintenance
E. Shouse, Representative, EPE
D. Smith, Plant Manager, Production
D. Straka, Senior Consultant, Regulatory Affairs
K. Swedney, Section Leader, Systems Engineering
J. Taylor, Nuclear Project Manager, PNM
D. Vogt, Section Leader, OPS STA
T. Weber, Section Leader, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000528;05000529; 05000530/2006004-01	NCV	Inadequate Corrective Actions to Preclude Water Intrusion and Corrosion of Underground Piping at the Facility (Section 1R08)
05000528/2006004-02	NCV	Unintentional Boration of Reactor Coolant System Due to Inappropriate Work Permit (Section 1R14)
05000530/2006004-03	NCV	Unintentional Transfer of CVCS Inventory to High Activity Spent Resin Tank (Section 1R14)
05000530/2006004-04	NCV	Testing Performed Beyond the Scope of the Functional Release (Section 1R22)
05000528;05000529; 05000530/2006004-05	NCV	Failure to Identify Conditions Adverse to Quality for the Emergency Diesel Generators (Section 4OA2)
05000530/2006004-06	NCV	Failure to Submit Complete Revisions to the Updated Final Safety Analysis Report for Temporary Modifications (Section 4OA2)
05000529/2006004-07	FIN	Failure to Submit Complete Revisions to the Updated Final Safety Analysis Report for Permanent Modifications (Section 4OA2)

Closed

05000528/2005001-00	LER	Actuation of a Unit 1 EDG and Plant Shutdown Required by TS (Section 40A3.1)
05000528/2005001-01	LER	Actuation of a Unit 1 EDG and Plant Shutdown Required by TS (Section 40A3.1)
05000528/2005004-00	LER	Technical Specification Required Reactor Shutdown on EDG "B" Voltage Regulator Failure (Section 40A3.2)
05000530/2006005-00	LER	Manual Reactor Trip Due To Loss Of Main Feedwater (Section 40A3.3)
05000530/2006001-00	LER	Two Independent Trains of Auxiliary Feedwater Inoperable (Section 40A3.4)
05000529/2006002-00	LER	Two Independent Trains of Auxiliary Feedwater Inoperable due to a Single Cause (Section 40A3.5)

Discussed

None

LIST OF DOCUMENTS REVIEWED

In addition to the documents described 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-9SP01	Essential Spray Pond Train A	35
40ST-9ZZ05	Weekly Electrical Distribution Checks	11

Drawings

Number	Title	Revision
02-M-SPP-001	Essential Spray Pond System	39
02-M-SPP-002	Essential Spray Pond System	1

Work Orders

2829782 2789526 2789527 2697746

Miscellaneous

Control Room Logs

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
14DP-OFP33	Control of Transient Combustibles	13
30DP-OWM12	Housekeeping	13

Miscellaneous

PreFire Plans, Revision 17

TRM Basis T3.11.100

Palo Verde Nuclear Generating Station, Pre-fire strategy

Section 1R08: Inservice Inspection Activities

Procedures

Number	Title	Revision
73TI-9ZZ78	Visual Examination for Leakage	6
73ST-9SP01	ISI Procedure for Essential Spray Pond Pumps	1

CRDRs

2310163	2852145	2763326	2882166	2859430	2837696	2880283	2884641
2885972	2886281	2761657	2823717	2732683	2813801	2886287	2813373

Work Orders

464266	1108358	2460014	1108004	2852135	1108359
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Miscellaneous

EER 91-SP-004	Engineering Evaluation Request for Spray Pond Pump Flow Transmitters "A" & "B" Train	1
EER 91-ZY-013	Engineering Evaluation Request for Spray Pond Pump Flow Transmitters "A" & "B" Train Pit Instrument Housing	1
CRAI 2902572	Action Item for CRDR 2882166	06/14/06
13-P-ZZG-012	Piping Class Sheet for ASME Code Piping	27
13-PN-0204 Att. 36	External Treatment of Underground Pipe	12
OD 285	Operability Determination for Diesel Fuel Oil Storage Tank Vaults	3
13-A-ZYD-0958	Nuclear Service Spray Pond Pump House and Condensate Tunnel Plans	5
73ST-9DF01	Surveillance of Diesel Generators	12/14/06

Section 1R11: Licensed Operator Requalification Program

Procedures

Number	Title	Revision
40EP-9EO01	Standard Post Trip Actions	13
40EP-9EO09	Functional Recovery	28

15TD-0CC01	Simulator Operator Feedback	5
15TD-0CC02	Simulator Design Control	5
15TD-0CC03	Simulator Load Control	5
15TD-0CC04	Simulator Performance Testing	5
40AO-9ZZ19	Control Room Fire	15

Scenarios:

SES-0-03-R-01,	TLI [Turbine Load Index] Failure/Inadvertent CSAS [Containment Spray Actuation System]/[Loss of Coolant LOCA (SES-1), 06/28/2006
SES-0-09-R-01,	Main Turbine Trip/ESD [Excessive Steam Demand]/Loss of Containment Spray (SES-10), 07/13/2006
SES-0-07-H-01,	Slipped CEA [Control Element Assembly]/LOFC [Loss of Forced Circulation] (SES-5), 06/29/2006
SES-0-09-U-01,	Loss of Condenser Vacuum/Steam Space LOCA/MVAC (SES-09), 07/13/2006
SES-0-07-F-00,	Slipped CEA / Loss of PNA [Class 1E Instrument Panel Train A] / LOFC, 03/23/05

Job Performance Measures (JPM):

EP029-CR-000,	Direct The Emergency Response as the Emergency Coordinator, 09/06/2006
EO032-PL-001,	Perform Appendix 25, SIT [Safety Injection Tank] Isolation Valve Power Alignment, 08/24/2006
EO001-CR-001,	Restore Containment Cooling Following Inadvertent SIAS [Safety Injection Actuation Signal], 10/01/2006
AO038-PL-000,	Respond to a Control Room Fire, 08/10/2006
FT003-CR-001,	Startup a Feedwater Pump, 08/30/2006
EO029-PL-000,	Direct Alignment of Auxiliary Feedwater Pumps Suction to RMWT [Reactor Make-up Water Tank], 09/30/2003
AO021-PL-002,	Perform Event Control Actions for a Control Room Fire, 08/31/2004
AL-004-CR-001,	Recognize and Respond to a Loss of Power Range Instrumentation, 08/09/2006

AO002-CR-001, Perform Actions for Loss of NC [Nuclear Cooling Water], 10/02/2003

NA-002-CR-001, Transfer 13.8KV Bus S01 from 13.8kv Bus S03 to the Unit Auxiliary Transformer MAN-X02

AD-025-CR-000, Ensure Compliance with Tech Specifications

Written Examinations

NUA06C00106 Week 1 RO, Revision 0
NUA06C00206 Week 1 SRO, Revision 0
NUA06C00306 Week 2 RO, Revision 0
NUA06C00406 Week 2 SRO, Revision 0
NUA06C00506 Week 3 RO, Revision 0
NUA06C00606 Week 3 SRO, Revision 0
NUA06C00706 Week 4 RO, Revision 0
NUA06C00806 Week 4 SRO, Revision 0
NUA06C00906 Week 5 RO, Revision 0
NUA06C001006 Week 5 SRO, Revision 0

Simulator Transient Tests

TTP-001, Reactor Trip from 100%, 06/15/06
TTP-002, Simultaneous Trip of all Main Feed Pumps, 06/21/06
TTP-003, Simultaneous Closure of all MSIVs, 06/26/06
TTP-004, Trip of all Reactor Coolant Pumps, 06/25/06
TTP-005, Trip of Two Reactor Coolant Pumps, 06/26/06
TTP-006, Large Load Rejection Reactor Power Cutback, 06/26/06
TTP-007, Maximum Power Rate Ramp, 06/26/06
TTP-008, LOCA with a Loss of Offsite Power, 06/28/06

Assessments

SWMS 2884666 Palo Verde Nuclear Generating Station Self-Assessment, Simulator, May 10 and 23, 2006

CRDRs

2908792 Training Documents the Results of the May, 2006 Simulator Self Assessment

2926231 Simulator Scenario for LOCT Needs to be Revised

2825485 Unplanned Reactor Trip/ESF [Engineered Safety Features] Actuation

2736503 Problems Occurred During the Performance of 40EP-9EO07 on 6/14/2004

2877591 LCO 3.0.4 Was Violated as RCS [Reactor Cooling System] Pressure Exceeded 385-PSA With the "B" CS [Containment Spray] Pump Inoperable

2791096	CRDR Notes Problems Experienced During the Performance of 40OP-9SC11
2911493	A Minor Plant Transient was Initiated During the Performance of 40TD-9CH01
2862023	CRDR Documents Issues Associated With the Performance of 73ST-9AF02
2856122	During Unit 1 Heat Up of the RCS, It was noted That the Pressure on SINPT339 did not Increase as expected
2844837	During Restoration of 40TD-9SI02 Section 5.0 for Penetration 27 and Fill of the Associated Train "A" SDC [Shut Down Cooling] Piping, Approximately 4000 Gallons of RWT Water Was Drained Through Vent Valve SIE-V860 to the Non-ESF Sump
2819009	Operations Human Performance Errors are Occurring Which Are Resulting in Misaligned Equipment
2793816	After Placing the "B" PC Cleanup on Recirculation, It Was Noticed that the SFP [Spent Fuel Pool] Level Was Dropping
2796351	RCS Loop Drain Was Inadvertently Left Open and Was Noticed When the Water Level in the RDT [Reactor Drain Tank] Increased
2817826	During the Performance of 73ST-9XI31, an Inadvertent Cross-Tie of "NC" to "EW-A" Occurred
2906937	Operations and NAD [Nuclear Assurance Department] Are Not Working Together as Effectively as Desired to Identify Areas Needing Improvement
2770751	During the Annual NRC Requalification Exam, 12 P/I [Performance Indicator] Failures Out of a Total 106 P/I Opportunities Were Observed.

Lesson Plans

NLR05C010801, EPIP-01 Overview, January 6, 2005
 NLR30C010105, Annual E-Plan, June 24, 2005
 NLR30C060100, Annual Emergency Coordinator Training, June 30, 2006
 NLR06S030400, Emergency Plan JPMs/JPM Practice, April 27, 2006
 NLR06C030300, Fission Product Barriers, April 19, 2006
 NLR05S030800, Emergency Plan JPM
 NLR05C020400, Security Changes, February 10, 2005

Miscellaneous

Licensed Operator Continuing Training [LOCT], 2005-2006 Two Year Schedule, Revision 2
 Licensed Operator Continuing Training Program Description, Revision 25
 Open DR [Deficiency Report] by Due Date Report, 09/11/2006
 LOCT Weekly Schedule Cycle NLR05-03

Operations Higher-Tiered HP Errors 9/1/04 - 9/1/06
LOCT Requalification Test Topic Matrix, Biennial Topics
LOCT Requalification Test Topic Matrix, Written Exam Matrix
Simulator to Unit Differences, 9/18/2006
81 Remediation Forms for Operators, 2004 to 2006

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Number	Title	Revision
81DP-0ZY01	Control of Potential Borne Missiles in the Outside Areas	1

CRDRs

2901589 2905162 2906487

Miscellaneous

Probabilistic Risk Assessment Report for Spray Pond Tornado Missile Hazards for the Year 2006, (attachment to letter 445-00367-ZJE)

Scheduler's Evaluation for PV Unit 1

Schedule tracker for week of 7/31/06, Cycle 54 week 11 (A) Train

Scheduler's Evaluation for PV Unit 1, August 17, 2006

Schedule tracker for week of 8/14/06, Cycle 55 week (B) Train

Scheduler's Evaluation for PV Unit 1, August 15, 2006

Schedule tracker for week of 8/14/06, Cycle 55 week (B) Train

Scheduler's Evaluation for PV Unit 1, August 8, 2006

Schedule tracker for week of 8/7/06, Cycle 54 week (B) Train

Scheduler's Evaluation for PV Unit 2

Schedule tracker for week of 7/24/06, Cycle 55 week 1 (A) Train

Section 1R14: Operator Performance During Non-Routine Evolutions and Events

Procedures

Number	Title	Revision
40EP-9EO01	Standard Post Trip Actions	13
40AO-9ZZ09	Reactor Power Cutback (Loss of Feedpump)	19
40EP-9EO02.	Reactor Trip	7
40OP-9CH02	Purification System	26
40OP-9SR02	Spent Resin Transfer System (Auxiliary Bldg)	12
40OP-9SF04	Operation of the Reactor Power Cutback Systems	7
40OP-9ZZ05	Power Operations	115
40OP-9OP02	Conduct of Shift Operations	35
40TD-9CH01	Charging and Letdown	60

Drawings

Number	Title	Revision
03-M-CHP-001	P & I Diagram, Chemical and Volume Control System	23
03-N-SRP-001	P & I Diagram, Solid Radwaste System	
01-E-CHB-056	Elementary Diagram Chemical & Volume Control System Makeup Controls	4
01-E-CHB-009	Elementary Diagram Chemical & Volume Control System Makeup Stop Valve, 1J-CHN-UV-512	2

CRDRs

2907590 2907628 2913232 2923623 2914811 2925653 2911493 2913887
2918079

Miscellaneous

Unit 3 operator logs
Unit 1 operator logs
Event notification 42847
Unit 1 operator logs
WO 2907666
Permit 130585

Section 1R15: Operability Evaluations

Procedures

Number	Title	Revision
40ST-9DG02	Diesel Generator B Test	31
40DP-9OP26	Operability Determination and Functional Assessment	17

CRDRs

2913417 2839327 2919977 2914811

Work Orders

2917302 2917310 2925252

Miscellaneous

TA-02-C00-2004-010, "Steam Generator Tube Rupture with Loss of Offsite Power-Supplementary Analysis for PVNGS 3990 Mwt - RSG/PUR Congiguration," Revision 0

Calculation 13-MC-CT-0205, "Condensate Storage Tank," Revision 4

Section 1R19: Post Maintenance Testing

Procedures

Number	Title	Revision
40TI09ZZ08	Unit 1 SDC Suction Line Vibration Testing	1
73ST-9XI16	Economizer FWIVS - Inservice Test	23
39MT-9ZZ02	PM or EQ Inspection OF THE GL 89-10 Limitorque SMB/SB Motor Operated Valve Actuators	17
32MT-9ZZ34	Maintenance of Medium Voltage Circuit Breakers TYPE AM-4.16-250	22
30DP-9WP04	Postmaintenance Testing Development	13

30DP-9MP09	Preventive Maintenance Processes and Activities	12
39DP-9ZZ04	Valve Services Maintenance - Motor Operated Valves	10,

CRDRs

2865382 2877027 2891553 2905561 2926830

Work Orders

2881438 2907890 2907628 2907761 2910011 2914462 2832812 2788515
2789521 2769545 2926829 2929677 2833943 2884382 2863567 2819605
2855817

Miscellaneous

Engineering Input Concerning the Condition of SIAUV651

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
74ST-9SS01	Primary Sampling Instructions	29
74CH-9ZZ15	RCS Gross Activity and Dose Equivalent I-131 Determination	4
74CH-9XC50	Operation of the Gamma Spectrometry System	7

Work Orders

2638818 2726978 2793397

Miscellaneous

JN106C-A00347, "Emergency Response Facilities Data Acquisition and Display System (ERFDADS) Software Design Description (SDD)," Revision 2

Section 1R23: Temporary Plant Modifications

Procedures

Number	Title	Revision
32ST-9RC01	92 Day Pressurizer Heater Capacity Test	8
40DP-9OP07	Operations Department Operating Guideline Instructions, Appendix F, Tracking Temporary Modifications	13
81DP-0DC17	Temporary Modification Control	16

CRDRs

2910995 2920633 2914811

Work Orders

2914493 2914490 2768402

Section 4OA2: Identification and Resolution of Problems

Procedures

Number	Title	Revision
40DP-9OP26	Operability Determination and Functional Assessment	17
40DP-9OP15	Operator Challenges and Discrepancy Tracking	17

CRDRs

2861291 2784074 2882166 2880283 2841586 2906940

Work Orders

2433802

Miscellaneous

Preventive Maintenance Basis Description PMB 2590674

Section 4OA2: Identification and Resolution of Problems

Drawings

Number	Title	Revision
13-E-MAA-001	Single Line Diagram	21
40AO-9ZZ09	Reactor Power Cutback, Loss of Feedwater Pump	

CRDRs

2821210 2822037 2822348 2907628

Work Orders

2831140 2831142 2831143 2831145 2831146 2831147 2775016 2755660
2755688 2776409 2782601

Section 4OA5: Other Activities

Procedures

Number	Title	Revision
40ST-9SI07	High Pressure Safety Injection System Alignment Verification	9
40OP-9SI04	Safety Injection System Venting	7

CRDRs

2925142

Miscellaneous

System Health Reports:

Essential Spray Ponds, January 1, 2006 - June 30, 2006

Essential Cooling Water, January 1, 2006 - June 30, 2006

Auxiliary Feedwater, January 1, 2006 - June 30, 2006

Safety Injection and Shutdown Cooling, January 1, 2006 - June 30, 2006

Emergency Diesel Generators, January 1, 2006 - June 30, 2006

LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
AFW	auxiliary feedwater
CAP	corrective action program
CEA	control element assembly
CFR	<i>Code of Federal Regulations</i>
CPC	Core Protection Calculator
CRDR	condition report/disposition request
CRS	control room supervisor
CVCS	chemical and volume control system
DFWO	Deficiency Work Order
DMWO	Design Modification Work Order
EDG	emergency diesel generator
ERO	emergency response organization
FIN	finding
FR	functional release
HARST	high activity spent resin tank
HJT	Heated Junction Thermocouple
LER	licensee event report
MFW	main feedwater
MSPI	Mitigating Systems Performance Index
NCV	noncited violation
NRC	Nuclear Regulatory Commission
OWTD	operations water treatment department
PVNGS	Palo Verde Nuclear Generating Station
QSPDS	Qualified Safety Parameter Display System
RCS	Reactor Coolant System
RO	reactor operator
SP	spray pond
SRO	senior reactor operator
SSC	structure, system, and component
TD	technical document
TS	technical specifications
UFSAR	Updated Final Safety Analysis Report
VCT	volume control tank
WO	Work order