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

May 3, 2006

James M. Levine, Executive Vice
President, Generation
Arizona Public Service Company
P.O. Box 52034
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SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000528/2006002, 05000529/2006002, AND 05000530/2006002

Dear Mr. Levine:

On March 31, 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 April 4, 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 two NRC identified findings and one self-revealing finding. These findings were evaluated under the risk significance determination process as having very low safety significance (Green). These findings involved violations of NRC requirements. 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. Four licensee identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. If you contest these 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 Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). 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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Division of Reactor Projects

Dockets: 50-528
50-529
50-530

Licenses: NPF-41
NPF-51
NPF-74

Enclosure:
NRC Inspection Report 05000528/2006002, 05000529/2006002, and 05000530/2006002
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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\PV2006-002RP-GGW.wpd

RIV:RI:DRP/D	RI:DRP/D	SRI:DRP/D	SPE:DRP/D	C:DRS/PEB
JFMelfi	PLBenvenuto	GGWarnick	GEWerner	LJSmith
T-TWP	T-TWP	T-TWP	N/A	/RA/
04/ /06	04/ /06	04/ /06	04/ /06	05/2/06

C:DRS/PSB	C:DRS/OB	C:DRS/EMB	C:DRP/D	
MPShannon	ATGODY	JCLARK	TWPruett	
LCCarson for	/RA/	/RA/	/RA/	
05/3/06	04/26/06	04/28/06	05/3/06	

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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:	05000528/2006002, 050000529/2006002, 05000530/2006002
Licensee:	Arizona Public Service Company
Facility:	Palo Verde Nuclear Generating Station, Units 1, 2, and 3
Location:	5951 S. Wintersburg Road Tonopah, Arizona
Dates:	January 1 through March 31, 2006
Inspectors:	P. Benvenuto, Resident Inspector L. Carson, Senior Health Physicist, Plant Support Branch P. Elkmann, Emergency Preparedness Inspector T. Jackson, Senior Resident Inspector, Diablo Canyon Power Plant J. Melfi, Resident Inspector G. Warnick, Senior Resident Inspector C. Young, Project Engineer, Project Branch D
Approved By:	Troy W. Pruett, Chief, Project Branch D Division of Reactor Projects

Enclosure

CONTENTS

SUMMARY OF FINDINGS 3

REACTOR SAFETY 6
1R04 Equipment Alignment 6
1R05 Fire Protection 7
1R11 Licensed Operator Requalification Program 9
1R12 Maintenance Effectiveness 10
1R13 Maintenance Risk Assessments and Emergent Work Control 11
1R14 Operator Performance During Nonroutine Evolutions and Events 12
1R15 Operability Evaluations 13
1R19 Postmaintenance Testing 14
1R20 Refueling and Other Outage Activities 15
1R22 Surveillance Testing 16
1R23 Temporary Plant Modifications 17
1EP2 Alert Notification System Testing 17
1EP3 Emergency Response Organization Augmentation Testing 18
1EP4 Emergency Action Level and Emergency Plan Changes 18
1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies 19
1EP6 Drill Evaluation 21

RADIATION SAFETY 22
2OS1 Access Control to Radiologically Significant Areas 22
2OS2 ALARA Planning and Controls 24

OTHER ACTIVITIES 25
4OA1 Performance Indicator Verification 25
4OA2 Identification and Resolution of Problems 26
4OA3 Event Followup 28
4OA6 Meetings, Including Exit 29
4OA7 Licensee-Identified Violations 29

ATTACHMENT: SUPPLEMENTAL INFORMATION A-1

KEY POINTS OF CONTACT A-1

LIST OF DOCUMENTS REVIEWED A-2

LIST OF ACRONYMS A-10

SUMMARY OF FINDINGS

IR 05000528/2006002, 05000529/2006002, 05000530/2006002; 01/01/06 - 03/31/06; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Integrated Resident and Regional Report; Fire Protection, Correction of EP Weaknesses, Access Control To Radiologically Significant Areas.

This report covered a 3-month period of inspection by four resident inspectors, one senior health physicist, one emergency preparedness inspector, and one project engineer. The inspection identified three noncited violations. 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: Mitigating Systems

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

  The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet and Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," the finding is determined to have very low safety significance because the fire pump battery performance and reliability is minimally affected since the batteries were replaced every two years, and the required capacity of the batteries is approximately 60 percent of a newly installed battery (Section 1R05).

Cornerstone: Occupational Radiation Safety

- Green. The inspector reviewed a self-revealing, noncited violation of Technical Specification 5.4.1.a, resulting from two radiation workers' failure to follow radiation exposure permit instructions. On November 22, 2005, two radiation workers, without

notifying radiation protection staff, used a pneumatic grinder with a wire wheel inside of the Unit-1 Steam Generator No. 2 cold leg pipe. As a result of the wire wheel grinding, both workers were contaminated. Radiation protection staff members were not made aware of the contamination event until the workers alarmed the PM-7 portal monitor upon attempting egress from the 140-foot radiological controlled area. One worker received unplanned and unintended internal dose of 6 millirem. The other worker did not receive an internal dose. As corrective action, the licensee counseled the two workers and their supervision, and informed the contractor's management.

The finding was greater than minor because it was associated with one of the cornerstone attributes (exposure control) and the finding affected the occupational radiation safety cornerstone objective, in that a failure to follow radiation exposure permit instructions resulted in additional radiation dose. The inspector determined that the finding had no more than very low safety significance because: (1) it did not involve an ALARA finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise the licensee's ability to assess dose. The finding also had crosscutting aspects related to human performance, in that, radiation workers failed to follow the radiation exposure permit instructions, which directly resulted in the finding (Section 2OS1).

Cornerstone: Emergency Preparedness

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

  This finding is greater than minor because it (1) had a credible impact on the Emergency Preparedness cornerstone objective, (2) involved the ability to implement adequate measures to protect the health and safety of the public during an emergency, and (3) impacted the cornerstone attributes of Emergency Response Organization readiness and performance. The finding is of very low safety significance because the Corporate Spokesperson is not a key emergency responder as defined by NEI 99-02, "Regulatory Assessment Indicator Guideline," and the untrained personnel would be relied upon to perform their response function during an emergency. This finding is a noncited violation of 10 CFR 50.47(b)(15). The licensee has entered this issue into their corrective action system as Condition Report Disposition Request 2863948. This finding has crosscutting aspects related to problem identification and resolution because if the licensee had properly evaluated Condition Report Disposition Request 2667913 the problems with the content and documentation of annual briefings conducted by the APS Corporate Public Information Department could have been identified and resolved prior to January 2006 (Section 1EP5).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Due to vibration limitations on shutdown cooling (SDC) suction isolation Valve 1JS1AUV0651, Unit 1 operated at 32 percent power until January 15, 2006, when the unit reduced power to 25 percent for the installation of a mass-dampening modification to reduce the vibrations. Unit 1 shutdown on January 17 to complete the mass-dampening modification. The modification was removed following unsatisfactory results for reducing vibration. The unit returned to approximately 26 percent power on January 21 and remained there until March 17 when the unit shutdown to perform testing and collect data for development of a permanent plant modification to correct the vibration issue. On March 27, as a result of the testing performed, the licensee extended the shutdown to complete implementation of the permanent plant modification.

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

Unit 3 operated at essentially full power until March 5, 2006, when a reactor trip occurred due to a failure of a control element assembly preamplifier. Following repairs to the preamplifier, the unit returned to essentially full power on March 8. The unit operated at this power level until March 31 when power was reduced to 20 percent in preparations for refueling Outage 3R12.

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 two below listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's updated final safety analysis report (UFSAR) and Corrective Action Program (CAP) to ensure problems were being identified and corrected.

- January 25, 2006, Unit 3, emergency diesel generator (EDG) Train A

C February 8, 2006**,** Unit 2, high pressure safety injection (HPSI) and essential cooling water (EW) Train B while Train A was taken out of service for maintenance

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

Complete Walkdown

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, Technical Specifications (TSs), and vendor manuals to determine the correct alignment of the essential spray pond (SP) system; (2) reviewed outstanding design issues, operator work arounds, and UFSAR documents to determine if open issues affected the functionality of the SP system; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Quarterly Inspection

The inspectors walked down the eight 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.

- January 12, 2006, Unit 1, EDG building, all elevations
- January 13, 2006, Unit 2, EDG building, all elevations
- January 24, 2006, Unit 3, EDG building, all elevations
- January 24, 2006, Unit 1, fuel building, all elevations

C February 14, 2006, Units 1, 2, and 3, fire pump house

C February 17, 2006, Unit 3, auxiliary building 100-foot, 120-foot, and 140-foot elevations

• March 30, 2006, Unit 1, control building, all elevations

• March 31, 2006, Unit 2, condensate storage pump house and tunnel

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed eight samples.

b. Findings

Introduction. A Green noncited violation (NCV) of TS 5.4.1.d was identified by the inspectors for an inadequate surveillance test associated with the diesel fire pump batteries. The fire protection program verifies that the Technical Requirements Manual (TRM) Surveillance Requirements (TSRs) are implemented. The inadequate surveillance involved the failure to adequately verify the specific gravity of the battery cells.

Description. On February 14, 2006, the inspectors reviewed the TSRs for the diesel fire pump batteries, and questioned whether some of the TSRs for the fire pump batteries could be implemented as described in Procedure 38FT-9FP02, "Fire Protection System Monthly Diesel Fire Battery Test," Revision 4.

TSR 3.11.101.8 requires that the licensee, "Verify that the specific gravity of each fire pump diesel starting 24-volt battery is appropriate for continued service of the battery," every 92 days. Step 8.4 of Procedure 38FT-9FP02 implements the TSR 3.11.101.8 requirement. The specific gravity was not directly measured, but was verified by a correlation to open circuit voltage (OCV). The correlation was developed by Engineering Evaluation Request 91-FP-033, which provided a 30 minute wait time to develop the OCV. The inspectors determined that the procedure instructions were inadequate since the 30 minute wait time did not have a basis and is not long enough to establish an appropriate OCV. Based on discussions with the NRC's Office of Nuclear Reactor Regulation and the licensee's engineering staff, acceptable times are greater than 30 minutes, generally between 12 to 48 hours. The long wait time allows the surface charge effects of the battery cell plates to decay away. The specific gravity determination method described in Procedure 38FT-9FP02, Step 8.4, leads to the situation where measured battery voltage would be higher than the true specific gravity would provide. The licensee initiated Condition Report Disposition Request (CRDR) 2875906 to address the issue.

The inspectors noted that new battery capacity provides 1150 amps to start the diesel fire pump where only a minimum capacity of 625 amps is required. Since the licensee replaces the batteries every two years as a preventative maintenance measure, actual

battery capacity should always exceed the minimum capacity required. Furthermore, the licensee has not identified any battery capacity issues during the monthly starts of the diesel fire pumps.

Analysis. The performance deficiency associated with this finding involved the inadequate instructions contained in Procedure 38FT-9FP02 to verify the continued operablity of the diesel fire pumps. The finding is greater than minor because it is associated with the procedure quality 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 and Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," the finding is determined to have very low safety significance because the fire pump battery performance and reliability is minimally affected since the batteries were replaced every two years, and the required capacity of the batteries is approximately 60 percent of a newly installed battery.

Enforcement. Technical Specification 5.4.1.d requires that written procedures be established, implemented, and maintained covering the activities specified in the Fire Protection Program. The Fire Protection Program requirements are noted in PD-0AP01, "Administrative Control Program," Revision 2, and requires procedures to implement the applicable surveillances contained in the TRM. Procedure 38FT-9FP02, "Fire Protection System Monthly Diesel Fire Battery Test," Revision 4, was developed to implement the surveillances required by TRM 3.11.101, "Fire Suppression Water System." Procedure 38FT-9FP02, Step 8.4, requires that the licensee, "Verify that the specific gravity of each fire pump diesel starting 24-volt battery is appropriate for continued service of the battery," every 92 days.

Contrary to this, since 1995, the method described in Procedure 38FT-9FP02 to verify the specific gravity of the diesel fire pump batteries, as required by TSR 3.11.101.8, was inadequate in that the specific gravity was not directly measured, but was verified by a correlation to OCV. This methodology could result in a measured battery voltage that would be higher that than the true specific gravity would provide. The cause was due to an inadequate engineering evaluation to develop the correlation used in the surveillance procedure. At the end of the inspection period, the licensee continued to review appropriate corrective actions to comply with the TSR via CRDR 2875906. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2875906, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: 05000528: 05000529; 05000530/2006002-01, "Inadequate Diesel Fire Pump Battery Surveillance."

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved a dropped control element assembly and loss of offsite power.

Documents reviewed by the inspectors included:

Miscellaneous
Scenario SES-0-07-G-00, "NBN-X02 Trouble/Dropped CEA/LOOP," Revision 0

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 three below listed maintenance activities to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded 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 TSs.

- August 2 - September 9, 2005, Unit 2, high particulate identified in oil samples from HPSI pump Train B outboard bearing as described in CRDRs 2820810 and 2828477

- March 14, 2006, Unit 3, review of control element assembly position isolation amplifier failure, which caused the Unit 3 trip on March 5, 2006, as described in CRDRs 2873799 and 2873800

- March 20, 2006, Units 1, 2, and 3, review of unavailability of the qualified safety parameter display system due to heated junction thermocouple equipment issues as described in CRDR 2863140

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

Risk Assessment and Management of Risk

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

- January 10, 2006, Unit 2, evaluation of the risk management action levels during Transformer NBN-X02 outage with auxiliary feedwater system Train A work in progress

- January 17, 2006, Unit 1, evaluation of the risk management action levels during a plant shutdown while gas turbine generator Train 1 was out of service

- January 25, 2006, Unit 3, evaluation of the risk management action levels during a Train B outage of the EDG, EW, essential chilled water, SP, and safety injection systems

- February 8, 2006, Unit 2, evaluation of the risk management action levels during a Train A outage of the EDG, EW, essential chilled water, SP, and safety injection systems

- March 10, 2006, Unit 1, evaluation of the risk management action levels during scheduled maintenance on the start up Transformer NAN-X03, concurrently with repairs to the Unit 1 main turbine generator AC voltage regulator

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five 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.

- **January 14-28, 2006, Unit 2, review of work performed on atmospheric dump Valves (ADVs) ADV-184 and ADV-179, as described in CRDRs 2861606, 2864804, and 2865081**

- February 13, 2006, Unit 3, leaking root valve on feedwater isolation Valve 177 affecting accumulator pressure as noted in CRDR 2868028.

- February 16, 2006, Units 2 and 3, essential pipe chase tunnel water intrusion and potential SP piping leaks as documented in CRDRs 2869959 and 2870062

Documents reviewed by the inspectors included:

Work Order
2870395

Procedures
70DP-0RA01, "Shutdown Risk Assessments," Revision 12

70DP-0RA03, "Probabilistic Risk Assessment Model Control," Revision 2

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

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 January 13, 2006, Unit 1 was shutdown to implement a modification in the reactor coolant system. The modification added mass-dampening devices to the SDC line in an effort to minimize the vibrations measured at SDC suction isolation Valve 1JSIAUV0651. The modification did not create the results predicted by the licensee. Therefore, the licensee decided to remove the dampening devices and restore Unit 1 to 26 percent power. This event was documented in CRDR 2863938.

- On December 25, 2005, Unit 1 conducted a startup after completion of refueling Outage 1R12. During the startup, measured vibration referenced at SDC suction isolation Valve 1JSIAUV0651 was excessive. The licensee stopped the power ascension at 32 percent power since the administrative vibration limit established by engineering evaluation was reached. Due to the operation of Unit 1 at a low power level for an extended period of time, the inspectors reviewed operating experience and any potential issues that could develop associated with operator actions, procedural usage, and unfamiliar operating conditions. Licensee analysis indicated that operating at this power level would not constitute a safety concern. This event was documented in CRDR 2865953.

- On March 5, 2006, Unit 3 experienced a reactor trip from 100 percent power due to a low departure from nucleate boiling ratio trip. This trip was generated as a result of a failed control element assembly amplifier that caused indeterminate rod position for control Rod 60. At the time of the trip, the rod group was full out at approximately 151 inches and control Rod 60 position varied from 160 to 115 inches. The rod deviation from the group position resulted in the control element assembly calculators inputting a penalty factor to the core protection calculators that resulted in a reactor trip. The unit was stabilized at normal operating temperature and pressure in Mode 3 following the reactor trip. This event was documented in CRDR 2873799.

Documents reviewed by the inspectors included:

CRDR
2859409

Procedures
40OP-9ZZ05, "Power Operations," Revision 110
41TP-1SI02, "Unit 1 SIA-UV-651 Vibration Alarm Response," Revision 1
40EP-9EO01, "Standard Post Trip Actions," Revision 13
40EP-9EO02, "Reactor Trip," Revision 7

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and night orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with

operability evaluations; (4) determined degraded component impact on any TSs; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- January 10, 2006, Unit 1, new display and alarm response for SDC suction isolation Valve 1JS1AUV0651 vibration
- January 26, 2006, Unit 3, turbine-driven auxiliary feedwater pump room temperature as documented in CRDR 2833902
- February 2, 2006, Unit 2, failure of the core protection calculator Channel D event log to properly update, and associated impact to TS surveillance requirement 3.3.1.3 as documented in CRDRs 2865384 and 2865529
- February 10, 2006, Unit 2, EW surge tank low level alarm adequacy as documented in CRDR 2867673
- February 10, 2006, Unit 3, degraded epoxy repairs to Class 1E Battery 3EPKAFLL Cells 16 and 34 as documented in CRDR 2867662
- February 15, 2006, Units 1 and 2, broken support bracket on SP pump motor termination box Trains A and B as documented in CRDR 2869796
- February 16, 2006, Units 2 and 3, Operability Determination 305, related to water seepage through the SP piping penetration seals discovered in the essential pipe chase tunnels

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed seven samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five below listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were

properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR to determine if the licensee identified and corrected problems related to post-maintenance testing.

- January 25, 2006, Unit 3, retest of essential chiller Train B per Procedure 40OP-9EC02, "Essential Chilled Water Train "B" (EC)," Revision 5
- January 30-31, 2006, Unit 2, retest of ADV-184 per work order (WO) 2861613 and ADV-179 per WO 2865078
- February 7, 2006, Unit 1, static testing of auxiliary feed pump discharge isolation Valve 1JAFCUV0036 per WO 2794993
- February 8, 2006, Unit 2, Procedure 73ST-9SI10, "HPSI Pumps Miniflow - Inservice Test," Revision 31
- March 18, 2006, Unit 1, retest of pressurizer backup heaters Train B per WO 2877281

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

Unit 1 Short Notice Outage

The inspectors reviewed the following risk significant outage activities to verify defense in depth commensurate with the outage risk control plan and compliance with the TSs: (1) the risk control plan; (2) reactor coolant system instrumentation; (3) electrical power; (4) decay heat removal; (5) reactivity control; (6) heatup and coldown activities; (7) restart activities; and (8) licensee identification and implementation of appropriate corrective actions associated with outage activities.

Documents reviewed by the inspectors included:

CRDRs
2877591, 2877648

Procedures
40OP-9ZZ11, "Mode Change Checklist," Revision 66
40AL-9RK4A, "Panel BO4A Alarm Response," Revision 18
40OP-9ZZ24, "SNOW Outage," Revision 23
40ST-9SI13, "LPSI and CS System Alignment Verification," Revision 9

The inspectors completed one sample.

b. Findings

The Unit 1 short notice outage was still in progress at the end of the inspection period. Any findings of significance associated with this outage will be documented in an upcoming inspection report.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TSs to ensure that the five 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.

- January 5, 2006, Unit 3, Procedure 32MT-9QM01, "Adjustments of Special Process Heat Trace Controllers," Revision 6

- January 10, 2006, Unit 2, Procedure 73ST-9AF02, "AFA-P01 Inservice Test," Revision 33

- January 11, 2006, Unit 3, Procedure 73ST-9SI10, "HPSI Pumps Miniflow - Inservice Test," Revision 30

- January 26, 2006, Unit 2, Procedure 73ST-9DF01, "Diesel Fuel Oil Transfer Pump - Inservice Test," Revision 14

- March 17-18, 2006, Unit 1, Procedure 40TI-9ZZ08, “Unit 1 SDC Suction Line Vibration Testing,” Revision 0

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

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.

- January 17, 2006, Unit 1, Temporary Modification 2859913, "Installation of Masses in SDC Train A to Reduce Vibration"

- January 23, 2006, Unit 1, Temporary Modification 2690709, "Unit 1 SDC Suction Line High Level Vibration Monitoring"

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

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

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

Management Agency (FEMA) Report REP-10, “Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants,” and the licensee’s FEMA-approved alert and notification system design report, dated May 1984. The inspector also reviewed “PVNGS Remote Control Siren System Operating Manual,” Revision 6.

The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspector discussed with licensee staff the status of primary and backup systems for augmenting the on-shift emergency response to determine the adequacy of licensee methods for staffing emergency response facilities in accordance with the licensee emergency plan and the requirements of 10 CFR Part 50, Appendix E. The inspector also reviewed EPIP [emergency plan implementing procedure] 99, “Standard Appendices,” Appendix H, “Autodialer Activation,” Revision 9, EPIP 61, “Emergency Planning Equipment Testing,” Revisions 0 and 1, and 16DP-0EP20, “Emergency Planning Conduct of Operations,” Revision 0, and the results of seven call-in and drive-in drills conducted between March and December 2005.

The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector performed an in-office review of Revision 9 to Palo Verde emergency plan implementing procedure, EPIP 99, “EPIP Standard Appendices," Appendix A, "Emergency Action Levels," and Appendix P, “EAL Technical Bases," received February 6, 2006. This revision updated emergency classification definitions, defined "Hostile Action,” and revised the security-based emergency action level scheme consistent with NRC Bulletin 2005-002," Emergency Preparedness and Response Actions for Security-Based Events."

The revision was compared to it's previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 2, to NRC Bulletin 2005-002, and to the requirements of 10 CFR 50.47(b) and 50.54(q), to determine if the licensee adequately implemented 10 CFR 50.54(q).

The inspector completed one sample.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector reviewed the following documents related to the licensee's corrective action program to determine the licensee's ability to identify and correct problems in accordance with 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E. The documents were reviewed to determine the licensee's ability to identify, correct, and document problems and conditions requiring correction action in accordance with Procedure 90DP-0IP10, "Condition Reporting," Revision 24.

- Summaries of 245 corrective actions assigned to the emergency preparedness department during calendar years 2004 and 2005
- Details of 29 selected Condition Report Disposition Requests
- Evaluation Reports for 11 Drills and Exercises
- Audit Reports for audits conducted in 2004 and 2005

The inspector completed 1 sample during the inspection.

b. Findings

.1 Introduction. A Green noncited violation was identified for the failure to train Corporate Spokespersons as required by Procedure EPIP 59, "Emergency Planning Training Program Description," Revision 0, 10 CFR 50.47(b)(15), and 10 CFR Part 50, Appendix E, IV(F)(1).

Description. Licensee Procedure EPIP 59, Revision 0, states, "1.8 Offsite Organization Training . . . 1.8.1 As appropriate, briefings for the members of the following offsite support organizations shall occur on an annual basis * Arizona Public Service [APS] Corporate Public Information Personnel . . . 1.8.2 Briefings should be specific to the agencies' response assignment(s) and, at a minimum, should include the following, * Basic radiation protection, * Emergency response procedures, * Interface with the Palo Verde Nuclear Generating Station Emergency Response Organization." During 2005, APS Corporate Public Information personnel located offsite in Phoenix, Arizona, assigned as Corporate Spokespersons in the Palo Verde emergency response organization did not receive a required annual training briefing.

The inspector determined that informal arrangements were in place for APS Corporate Public Information personnel assigned Palo Verde-related emergency response duties to be given annual briefings by the APS Corporate Public Information Department.

Training briefings for personnel assigned to the Palo Verde emergency response organization were conducted by the APS Corporate Public Information department in 2005 and signature sheets were forwarded to the Palo Verde Emergency Planning groups, but neither the Corporate Public Information department nor Palo Verde Emergency Planning identified that no Corporate Spokespersons attended the briefings. During the inspection the licensee determined that APS Corporate Public Information department briefings conducted in 2004 and 2005 could not be verified to contain the specific information required by EPIP 59, section 1.8.2, because the licencee's Emergency Planning group did not control training content, and did not monitor the training.

Audit results from the licensee's emergency preparedness audit 2004-001 were summarized in Condition Report Disposition Request (CRDR) 2667913. The audit identified that the Corporate Spokesperson emergency response position did not have any training requirements in the emergency plan or emergency response organization training program description. The licensee's response to CRDR 2667913 stated, "EPIP-08, Step 10.3.7 states in part, 'Lesson plans and examinations are not required for offsite support organization training. In this case briefing forms and outlines may establish acceptable means of documentation'...Therefore the training requirements for the JENC [Joint Emergency News Center] Spokesperson are not are part of the onsite training program and are not in SWMS [Site Work Management System]." The licensee closed the audit finding without action based on the emergency planning group's response. The inspector determined that by closing this corrective action without taking action, the licensee missed an opportunity to identify that APS Corporate Public Information department briefings could not be verified to contain the specific information required by EPIP 59, Section 1.8.2, and failed to establish oversight of the training of APS Corporate Public Information department staff which could have prevented failing to identify that no Corporate Spokespersons were training in 2005.

Analysis. The inspector determined the failure to train members of the emergency response organization is a performance deficiency because untrained personnel may not effectively protect the health and safety of the public during an emergency. This finding is more than minor because it (1) had a credible impact on the Emergency Preparedness cornerstone objective, (2) involved the ability to implement adequate measures to protect the health and safety of the public during an emergency, and (3) impacted the cornerstone attributes of Emergency Response Organization readiness and performance. The finding was associated with a violation of NRC requirements. This finding was evaluated using the Emergency Preparedness Significance Determination Process and was determined to be of very low safety significance because the Corporate Spokesperson is not a key emergency responder as defined by NEI 99-02, "Regulatory Assessment Indicator Guideline," and the untrained personnel would be relied upon to perform their response function during an emergency.

This finding has cross-cutting aspects in the area of problem identification and resolution, specifically in the evaluation of problems. The licensee evaluated CRDR 2667913 as not requiring corrective action because training for offsite support organization staff assigned to the emergency response organization was not the responsibility of the onsite Palo Verde emergency planning group. However, 10 CFR 50.47(b)(15) states, "Radiological emergency response training is provided to those who

may be called on to assist in an emergency," without distinguishing between onsite and offsite work locations. If the licensee had properly evaluated Condition Report Disposition Request 2667913 the problems with the content and documentation of annual briefings conducted by the APS Corporate Public Information Department could have been identified and resolved prior to January 2006.

Enforcement. 10 CFR 50.54(q) states in part, "a licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in Section 50.47(b) and the requirements in Appendix E of this part." 10 CFR 50.47(b)(15) states, "Radiological emergency response training is provided to those who may be called on to assist in an emergency." 10 CFR Part 50, Appendix E, IV.F(1) states, in part, "The program to provide for: (a) The training of employees...to ensure that employees of the licensee are familiar with their specific emergency response duties...shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel: (viii) Licensee's headquarters support personnel." Contrary to the above, during 2005 the licensee failed to provide periodic retraining programs to Corporate Spokespersons located at the licensee's corporate headquarters. Because this failure is of very low safety significance and has been entered into the licensee's corrective action system (CRDR 2863948), this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000528/2006002, 05000529/2006002, 05000530/2006002-02 (Failure to Train Emergency Response Personnel).

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

For the below listed drill contributing to Drill/Exercise Performance and Emergency Response Organization Performance Indicators, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and Protective Action Requirements development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the NEI 99-02, "Voluntary Submission of Performance Indicator Data," acceptance criteria.

1. March 29, 2006, Unit 1, Emergency Preparedness Simulator Scenario 06-E-AEV-03002 that involved an inadvertent main steam isolation signal, reactor trip, stuck open steam generator safety valve, and steam generator tube rupture

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas (71121.01)

a. Inspection Scope

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

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Radiation exposure permit, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem Committed Effective Dose Equivalent
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation exposure permit briefings and worker instructions
- Adequacy of radiological controls such as, required surveys, radiation protection job coverage, and contamination controls during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas

The inspector completed 15 of the required 21 samples.

b. Findings

Introduction. The inspector reviewed a self-revealing, Green NCV of TS 5.4.1.a, resulting from two radiation workers' failure to follow radiation exposure permit instructions.

Description. On November 22, 2005, two radiation workers, without notifying radiation protection staff, used a pneumatic grinder with a wire wheel inside of the Unit 1 steam Generator 2 cold leg pipe. As a result, both workers were contaminated. Radiation protection staff members were not made aware of the contamination event until the workers alarmed the PM-7 portal monitor upon attempting egress from the 140-foot radiological controlled area. One worker received unplanned and unintended internal dose of 6 millirem. The other worker did not receive an internal dose. Corrective actions included counseling the two workers, their supervision, and informed the contractor's management.

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

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering activities in the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Section 7(e) recommends radiation protection procedures for access control to radiation areas including a radiation exposure permit system for limiting personnel exposure. Procedure 75DP-9RP01, "Radiation Exposure and Access Control," Revision 6, Section 2.1.6, required that the workers read the applicable radiation exposure permit for their specific job or task, and obey all instructions and requirements. Radiation Exposure Permit 1-6006A Task-2 required workers to notify radiation protection staff prior to commencing surface destroying activities [i.e., grinding] on contaminated surfaces. Contrary to this, on November 22, 2005, two radiation workers, used a pneumatic grinder on a contaminated surface before notifying radiation protection staff.

Because the failure to follow radiation exposure permit instructions was determined to be of very low safety significance and was entered into the licensee's CAP as CRDR 2848859, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000528/2006002-03, "Failure to Follow Radiation Exposure Permit Instructions."

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

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

- Current 3-year rolling average collective exposure
- Five work activities from previous work history data which resulted in the highest personnel collective exposures
- Three work activities of highest exposure significance completed during the last outage
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation exposure permit documents
- Person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements
- Post-job (work activity) reviews
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Resolution through the corrective action process of problems identified through post-job reviews and post-outage ALARA report critiques
- Corrective action documents related to the ALARA program and follow-up activities such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspector completed 8 of the required 15 samples and 6 of the optional samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the three performance indicators listed below for the period January 2004 to December 2005, for Units 1, 2, and 3. The definitions and guidance of Nuclear Energy Institute 99-02, “Regulatory Assessment Indicator Guideline,” were used to verify the licensee’s basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period. The inspectors reviewed licensee event reports, monthly operating reports, and operating logs as part of the assessment. Licensee performance indicator data were also reviewed against the requirements of Procedures 93DP-0LC09, "Data Collection and Submittal Using INPO's Consolidated Data Entry System," Revision 4, 73DP-9PP01, "Thermal Performance Monitoring and Evaluation Process," Revision 3, and 70DP-0PI01, "Performance Indicator Data Mitigating Systems Cornerstone," Revision 2.

- Unplanned Scrams Per 7,000 Critical Hours
- Unplanned Scrams With Loss of Normal Heat Removal
- Unplanned Power Changes Per 7,000 Critical Hours

Cornerstone: Occupational Radiation Safety

The inspector reviewed licensee documents from April 1 through December 31, 2005. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee’s TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 3, were used to verify the basis in reporting for each data element.

- Occupational Exposure Control Effectiveness

Cornerstone: Public Radiation Safety

The inspector reviewed licensee documents from April 1through December 31, 2005. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspector interviewed licensee personnel

that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 3, were used to verify the basis in reporting for each data element.

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

Cornerstone: Emergency Preparedness

The inspector sampled licensee submittals for the performance indicators listed below for the period January through December 2005. The definitions and guidance of NEI 99-02, "Regulatory Assessment Indicator Guideline," Revisions 2 and 3, 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 licensee's performance indicator data were also reviewed against the requirements of 16DP-0EP19, "Performance Indicator Emergency Preparedness Cornerstone," Revision 2, and 93DP-0LC09, "Data Collection and Submittal using INPO's Consolidated Data Entry System," Revision 4.

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

The inspector reviewed a 100 percent sample of drill and exercise scenarios, licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspector reviewed 12 selected emergency responder qualification, training, and drill participation records. The inspector reviewed a 100 percent sample of siren test and maintenance records and procedures. The inspector also interviewed licensee personnel accountable for collecting and evaluating the PI data. The inspector completed 3 samples during this inspection.

b. Findings

No findings of significance were identified. The performance indicators remained in the licensee response band (Green).

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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.

b. Findings

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.

- January - February 2006, Unit 1, CRDR 2863818, excessive vibration levels on SDC suction line as measured at SDC suction isolation Valve SIAUV0651

- January 3, 2006, Unit 1, CRDR 2830186, evaluation of list of transient materials taken into containment during steam generator replacement Outage 1R12

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

.3 Crosscutting Issues Followup Inspections

The inspectors conducted periodic discussions with licensee management to monitor their progress in addressing the substantive crosscutting concerns and Performance Improvement Plan implementation. The substantive crosscutting areas of human performance and problem identification and resolution have not seen the level of performance improvement expected. Palo Verde staff has invested considerable resources evaluating the concerns in these areas and corrective actions are being implemented to improve performance. On March 30, 2006, a public meeting was held between the NRC and Palo Verde management to discuss the licensee's Performance Improvement Plan. As of the end of the inspection period, the licensee's corrective actions for the substantive crosscutting issues had not been completed.

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

Section 2OS1 evaluated the effectiveness of the licensee's problem identification and resolution processes regarding access controls to radiologically significant areas and radiation worker practices. The inspector reviewed selected corrective action documents for root cause/apparent cause analysis against the licensee's problem identification and resolution process. No findings of significance were identified.

Section 2OS2 evaluated the effectiveness of the licensee's problem identification and resolution processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. The inspector reviewed the corrective action documents listed in the attachment against the licensee's problem identification and resolution program requirements. No findings of significance were identified.

.5 Annual Sample Review: Emergency Preparedness

The inspector reviewed in detail 29 selected Condition Report Disposition Requests relating to emergency preparedness planning standards. The condition reports were evaluated for an accurate and complete description of the problem, adequate description of the problem evaluation, adequate documentation of the conclusion and basis, and the alignment of apparent causes and corrective actions, according to the standards of Procedure 90DP-0IP10, "Condition Reporting," Revision 24. No findings of significance were identified.

4OA3 Event Followup (71153)

a. Inspection Scope

.1 (Closed) Licensee Event Report (LER) 05000528; 05000529; 05000530/2003004-01, "Cracks in Contact Block of Main Control Room Hand Switches Result in Inoperable Equipment"

This LER revision was to update the previous LER addressed in Inspection Report 05000528; 05000529; 05000530/2004004. This LER provided the root cause of the switch failure and a safety assessment of the condition. No new findings were identified in the inspectors' review. This LER is closed.

.2 (Closed) LER 05000528/2005007-00, "Potential Loss of Low Pressure Safety Injection (LPSI) Due to a Seismic Event"

On October 26, 2005, a maintenance technician discovered a screwdriver inside the limit switch compartment for the motor operated LPSI discharge header containment isolation Valve 1JSIAUV0635. The screwdriver was left in the limit switch compartment since October 4, 2002, the last time the limit switch compartment was opened. Following completion of a maintenance rule functional failure evaluation on December 13, 2005, the licensee determined that the screwdriver could have been dislodged during a seismic event and potentially render this valve inoperable. Based on engineering's evaluation, this condition could have prevented the LPSI system Train A from performing its safety

function, and consequently, LPSI was considered inoperable from October 4, 2002 through October 26, 2005. The licensee reported this under 10 CFR 50.73(a)(2)(v) as a condition that could have prevented the fulfillment of a safety function to remove residual heat and mitigate the consequences of an accident.

The screwdriver was removed and Valve 1JSIAUV0635 was satisfactorily retested. The licensee discussed this event with the responsible valve services technicians and other valve services personnel.

The performance deficiency associated with this finding involved the failure to follow procedural guidelines associated with foreign material exclusion controls during maintenance. This finding is greater than minor because it is associated with the human 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 it only affected the mitigating systems cornerstone, was assumed to fail during a seismic event, and would not have degraded two or more trains of a multi-train system. This licensee identified finding involved a violation of TS 5.4.1.a. The enforcement aspects of the violation are discussed in Section 4OA7. The LER is closed.

4OA6 Meetings, Including Exit

At an onsite meeting conducted January 27, 2005, the emergency preparedness inspector presented the inspection results to Mr. J. Levine, Executive Vice President, Generation, and other members of his staff who acknowledged the findings. Telephonic conferences were conducted February 1 and 22, 2006, with Mssr. E. O'Neil, Department Leader, Emergency Preparedness, and D. Kanitz, Licensing Engineer, to discuss characterization of one issue not fully characterized during the onsite meeting.

On February 17, 2006, the health physics inspector presented the occupational radiation safety and a portion of the performance indicator verification inspection results to Mr. C. Eubanks, Vice-President, Nuclear Operations, and other members of his staff who acknowledged the findings.

On March 30, 2006, the NRC conducted a public meeting with the licensee in Arlington, TX, to discuss performance improvement initiatives.

On April 4, 2006, the resident inspectors presented the integrated inspection results to Mr. J. Levine, Executive Vice President, Generation, and other members of the licensee's management staff. The licensee acknowledged the findings presented.

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

4OA7 Licensee-Identified Violations

The following violations of very low 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 an NCVs.

- 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design basis information is correctly translated into specifications, drawings, procedures, and instructions. Contrary to this, in 1988, through Site Modifications 1, 2, and 3-SM-HA-003, the licensee changed the auxiliary feedwater Train A pump room high temperature alarm setpoint from 105EF to 112EF, although the design basis room temperature was 104EF. The inappropriate design change was discovered in October 2005, and the cause of the inappropriate design change was determined to be an inadequate review of the design basis at the time of the change. The licensee entered the issue into their CAP as CRDR 2833902 and has planned to modify the design basis room temperature as part of the corrective actions. 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. The finding is of very low safety significance since it was determined to be a design deficiency confirmed not to result in loss of function per Inspection Manual Chapter Part 9900: Technical Guidance – "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety."

- Technical Specification 5.7.1 states, in part, that areas with radiation intensity greater than 100 millirem per hour but less that 1 rem per hour shall be barricaded and conspicuously posted as a high radiation area, and the entrance controlled by a radiation exposure permit. Radiation exposure permit Number 1-6006A, Task-2, required that workers receive a briefing on the high radiation area conditions by radiation protection staff before entry. Contrary to this requirement, on November 2, 2005, a radiation worker entered a posted high radiation area without being signed on radiation exposure permit Number 1-6006A, Task-2, and without receiving the required briefing on the high radiation area conditions by a radiation protection staff member. The high radiation area was located on the 140-foot elevation area of the Unit 1 refueling area cavity deck. The hot-leg nozzle on steam Generator 1 contained radiation dose rates of 1.2 rem per hour on contact and 600 millirem per hour at 30 centimeters. This event was documented in CRDR 2843661. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

- Technical Specification 5.4.1.a requires 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 9.a, requires, in part, procedures for performing maintenance that can affect the performance of safety related equipment. Contrary to the above, on October 4, 2002, maintenance technicians did not follow the instructions in Procedure 39MT-9ZZ02, "PM or EQ Inspection of the GL 89-10 Limitorque SMB/SB Motor Operated Valve Actuators," Revision 11, to control foreign material in that they failed to remove a screwdriver from the limit switch compartment after work was completed on LPSI discharge header containment isolation Valve 1JSIAUV0635. This finding was documented in CRDR 2841586 and LER 05000528/2005007-00 (Section 4OA3.3).

- 10 CFR 50.47(b)(9) requires, "Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use." Between October 15, 2003, and August 2, 2005,

procedure EPIP 99, “EPIP Standard Appendices, Appendix F, “Dose Projection,” Step 3.4, contained a nonconservative value for iodine filtration of the Plant Vent Stack release pathway. Consequently, doses calculated by the licensee’s dose assessment software for this pathway were systematically 30 percent lower than the correct value. This issue is documented in the licensee’s corrective action program as Condition Report Disposition Request 279471. This issue is greater than minor because it affected the Emergency Preparedness Cornerstone, in that the systematic error would have caused the licensee to delay recommending measures to protect some members of the public, and compensatory actions were not taken within 24 hours of discovery of the condition. It is of very low safety significance because the systematic error affected recommendations for only members of the public living in the 5 to 10 mile portion of the Emergency Planning Zone, and the error is small compared to the overall variation allowable in dose assessment models.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
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M. Karbasian, Department Leader, Design Mechanical Engineering
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E. O'Neil, Department Leader, Emergency Preparedness
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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
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M. Shea, Director, Maintenance
D. Smith, Plant Manager, Production
D. Straka, Senior Consultant, Regulatory Affairs
T. Weber, Section Leader, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000528; 05000529; 05000530/2006002-01	NCV	Inadequate Diesel Fire Pump Battery Surveillance (Section 1R05)
05000528; 05000529; 05000530/2006002-02	NCV	Failure to Train Emergency Response Personnel (Section 1EP5)
05000528/2006002-03	NCV	Failure to Follow Radiation Exposure Permit Instructions (Section 2OS1)

Closed

05000528; 05000529; 05000530/2003004-01	LER	Cracks in Contact Block of Main Control Room Hand Switches Result in Inoperable Equipment (Section 4OA3.1)
05000528/2005007-00	LER	Potential Loss of Low Pressure Safety Injection (LPSI) Due to a Seismic Event (Section 4OA3.2)

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

Section 1R04: Equipment Alignment

Drawings
02-M-SIP-001, "P&I Diagram Safety Injection & SDC System," Revision 30

02-M-EWP-001, "P&I Diagram Essential Cooling Water System," Revision 25

02-M-ECP-001, "P&I Diagram Essential Chilled Water System," Revision 28

13-J-03K-019, "Essential Cooling Water Surge Tank 1-M-EWB-T01," Revision 8

13-JC-EW-0200, "Evaluation of the Adequacy of ECWS Surge Tank Level Setpoints," Revision 3

01-P-ZYA-061, "Essential Spray Pond Sections & Details"

B-35317, "Arrangement Drawing of ESPS Pump"

01-M-SPP-001, "P&I Diagram Essential Spray Pond System," Revision 37

01-M-SPP-002, "P&I Diagram Essential Spray Pond System," Revision 12

Miscellaneous
Palo Verde Nuclear Generating Station Design Basis Manual, - EQ System, Revision 17

Site Work Management Systems component data sheet - 2JEWNLSHL0098**IBISSW Surge Tk B LVL SW HI/LO

Technical Document, 81TD-0EE10, "Essential Spray Pond System Design Bases Manual," Revision 15

13-MC-SP-306, "MINET Hydraulic Analysis of SP System"

13-MC-SP-307, "SP/EW System Thermal Performance Design Bases Analysis"

13-CC-SP-015, "Spray Pond Walls and Slab"

Procedures
40OP-9DG01, "Emergency Diesel Generator A," Revision 43
40DP-9OP06, "Operations Department Repetitive Task Program," Revision 83

Section 1R05: Fire Protection

CRDRs
2720228, 2833902, 2878067, 2876765, 2854954

Work Order
2772146

Miscellaneous
Pre-Fire Strategies Manual

13-A-ZYD-031, "Fire Protection Diesel Generator Building Floor Plan at Elevation 100'-0" & 113'-0," Level 1, Sheet 1 of 3," Revision 1

13-A-ZYD-031, "Fire Protection Diesel Generator Building Floor Plan at Elevation 131'-0," Level 2, Sheet 2 of 3," Revision 1

13-A-ZYD-031, "Fire Protection Diesel Generator Building Sections, Sheet 3 of 3," Revision 1

13-A-ZYD-021, "Fire Protection Yard Area Floor Plant at Elevation 100'-0," Revision 16

38FT-9FP02, "Fire Protection System Monthly Diesel Fire Pump Battery Test," Revision 4

14FT-0FP02, "Well Water/Fire Water Reserve Tanks Operational Check and Battery Electrolyte Level Check," Revision 7

13-ES-A15, "Station Blackout Coping Study," Revision 1

ECE-AF-A038, "Dropping Resistor Part No. 75863A01 / To Evaluate the Qualified Life of the Voltage-Dropping Resistor for the Turbine-Driven Aux-Feedwater Which Installed in Aux. Feedwater Pump Control Panel Due to Several Failures"

EQ-MM-021, "Auxiliary Feedwater Turbine Control Panel," Revision 6

IEEE Standard 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations"

Site Modifications 1, 2, 3-SM-HA-003 dated September 15, 1988

PVNGS Pre-Fire Strategies Manual, Revision 15

1R12: Maintenance Effectiveness

CRDRs
2859441, 2859401, 2835475, 2828919, 2852133, 2828558

Work Order
2828475

Procedures
40DP-9OP02, "Conduct of Shift Operation," Revision 31

70DP-0MR01, "Maintenance Rule," Revision 11

40AL-9RK5B, "Panel B05B Alarm Responses," Revision 1

32MT-9SI02, "High Pressure Safety Injection Pump Disassembly, Examination and Assembly," Revision 12

Miscellaneous
PVNGS Maintenance Rule Unavailability Detail Report with Mode Changes
Functional Design Requirements for a Core Protection Calculator, CE-NPSD-335-P, Revision 2P
System Training Manual, Chapter 52, Core Protection Calculator System, Revision 2
APSC PO No. 500290585, "Failure Analysis of SKF 7411 Bearings"
APS Report No. 06-01, "HPSI Pump Bearing Abrasive Particle Examination (Unit 2)"
SKF Bearing Reliability and Root Cause Failure Assessment

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

CRDRs
2862028, 2864195

Work Orders
2730803, 2862028, 2862028

Procedures
70DP-0RA01, "Shutdown Risk Assessments," Revision 12

70DP-0RA03, "Probabilistic Risk Assessment Model Control," Revision 2

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

Drawings
13-E-MAA-001, "Main Single Line Diagram," Revision 21

Miscellaneous
Schedulers Evaluation for Unit 2
Work week plan for January 9 - January 12, 2006
Engineering Game Plan for GTG 1 Lube Oil Trip, January 18, 2006

Permits
123314, 122082, 119605, 120561, 121673, 123307, 122853, 123047

Section 1R15: Operability Evaluations

CRDRs
2869796, 2865641, 2866053

Work Orders
2869332, 2845297, 2743847

Procedures
13-JC-EW-0200, "Evaluation of the Adequacy of ECWS Surge Tank Level Setpoints," Revision 3

41TP-1SI02, "Unit 1 SIA-UV-651 Vibration Alarm Response," Revision 1A

Drawings
02-M-EWP-001, "P&I Diagram, Essential Cooling Water System," Revision 25

Miscellaneous
Palo Verde Nuclear Generating Station Design Basis Manual - EW System, Revision 17
Component Data Sheet, 2JEWNLSHL0098**IBISSW, Surge Tk B Lvl SW Hi/Lo
System Training Manual Volume 52, "Core Protection Calculator System (CPC)"

Section 1R19: Post Maintenance Testing

Work Orders
2832304, 2764158, 2764154, 2752371, 2752356, 2752381, 2724847, 2877278, 2878030, 2878201, 2879706

Drawings
03-M-ECP-001, "P & I Diagram Essential Chilled Water System," Revision 22

01-E-RCB-010, "Elementary Diagram Reactor Coolant System Pressurizer Backup Heaters 1M-RCE-B01, B09, A14 & 1M-RCE-B18, B10, A05," Revision 6, Sheet 2

01-E-PGA-001, "Single Line Diagram 480V Class 1E Power System Load Center 1E-PGB-L32," Revision 8

Procedures
30DP-9WP04 "Post-Maintenance Testing Development," Revision 13

40OP-9PB01, "4.16 kV Class 1E Power (PB)," Revision 20

30DP-9MP09, "Preventive Maintenance Processes and Activities," Revision 13

32MT-9ZZ25, "Maintenance of Low Voltage Circuit Breakers Type K-600S and K-800S," Revision 22

Miscellaneous
Unit 1 Alarm Typer Printout, March 26, 2006

TSCCR 2877285

02-J-SGE-001, "Pneumatic Loop Diagram Atmospheric Dump Valves," Revision 3

02-P-SGF-158, "MSSS. Isometric Main Steam Bypass and Atmospheric Dump, Sheet 1 of 2," Revision 1

02-P-SGF-158, "MSSS. Isometric Main Steam Bypass and Atmospheric Dump, Sheet 2 of 2," Revision 1

01-E-SGF-021. "Control Wiring Diagram Main Steam System Steam Gen No 2 line 2 Atmospheric Dump Valve 1J-SGA-HV-179," Revision 2

Section 1R22: Surveillance Testing

CRDRs
2813686, 2859659, 2857133

Work Order
2727606, 2773077, 2773077, 2856586

Procedures
40TI-9ZZ08, "Unit 1 SDC Suction Line Vibration Testing," Revision 0
73ST-9AF02, "AFA-P01 Inservice Test," Revision 33
73ST-9XI38, "AF Pumps Discharge Check Valves - Inservice Test," Revision 12
73ST-9SI10, "HPSI Pumps Miniflow - Inservice Test," Revision 30

Drawings
02-M-AFP-001, "Auxiliary Feedwater System," Revision 24
01-M-SIP-002, "Safety Injection and SDC System," Revision 32
03-E-QMI-001, "Unit 3 Heat Trace Setpoints Index," Revision 0, Sheets 1 and 2

1R23: Temporary Plant Modifications

CRDRs
2862014, 2864100

Work Order
2433802

Procedures
39MT-9ZZ02, "PM or EQ Inspection of the GL89-10 Limitorque SMB/SB Motor Operated Valve Actuators," Revision 11

Drawings
13-E-ZCC-007, "Containment Bldg Conduit & Tray Plan at EL 80 ft Level A ZCAA, ZCAB," Revision 27

13-E-ZCC-008, "Containment Bldg Conduit & Tray Plan at EL 80 ft Level A ZCAC, ZCAD," Revision 39

13-E-ZCC-012, "Containment Building Conduit & Tray Plan at EL 100 ft Level 1 ZC1D," Revision 30

13-E-ZCC-016, "Containment Building Conduit & Tray Plan at EL 120 ft Level 2 ZC2D," Revision 21

Miscellaneous
Engineering Design Change 2006-00057
10CFR 50.59 S-06-0009, Revision 0
10CFR 50.59 S-04-0123, Revision 4

1EP3: Emergency Response Organization Augmentation Testing

Evaluation Reports for Drills conducted:

August 20, 2004
September 3, 2004
March 24, 2005
June 23, 2005
August 18, 2005
September 15, 2005
October 21, 2005
November 17, 2005
December 15, 2005

Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies

Procedures

EPIP 59, “Emergency Planning Training Program Description,” Revision 0
EPIP 99, “EPIP Standard Appendices,” Appendix F, “Dose Projection,” Revisions 0, 1, 2, 3 & 7

Evaluation Reports for Drills Conducted:

March 17, 2004
June 30, 2004
August 20, 2004
November 19, 2004
December 8, 2004
January 25, 2005
February 17, 2005
March 1, 2005
May 26, 2005
October 28, 2005

December 14, 2005

Condition Report Disposition Requests

2666284, 2666318, 2667913, 2693497, 2705742, 2705926, 2713893, 2758760, 2761670, 2762058, 2766678, 2767148, 2767171, 2769864, 2771956, 2773616, 2773738, 2774206, 2778144, 2779959, 2781085, 2794710, 2798248, 2813861, 2818797, 2819008, 2829230, 2847856, 2861311, 2861315, 2861355, 2861534, 2862527, 2862793, and 2863948

Section 2OS1: Access Control To Radiologically Significant Areas

CRDRs
2815531, 2815935 2827493, 2829144, 2832650, 2842242, 2843429, 2843661, 2843889, 2844664, 2848061, 2848859, 2856752, 2866484, 2869963

Procedures
40OP-9ZZ02, "Initial Reactor Startup Following Refueling," Revision 38
60DP-0QQ19, "Internal Audits," Revision 13
75DP-0RP01, "RP Program Overview," Revision 4
75DP-9RP01, "Radiation Exposure and Access Control," Revision 6
75RP-0RP01, "Radiological Posting and Labeling," Revision 20
75RP-9RP02, "Radiation Exposure Permits," Revision 17
75RP-9RP05, "Contamination Dose Evaluation," Revision 4
75RP-9RP07, "Radiological Surveys and Air Sampling," Revision 11
75RP-9RP10, "Conduct of Radiation Protection Operations," Revision 15
75RP-9RP16, "Special Dosimetry," Revision 10
90DP-01P10, "Condition Reporting," Revision 24

Radiation Exposure Permits
1-1007D, 1-1374A, 1-3504, 1-6001A, 1-6006A

Audits and Self-Assessments
Review of High Noise EPD Utilization in U2R11

Radiation Safety Audit 2004-013

2004 Annual Radioactive Effluent Release Report

Palo Verde Nuclear Generating Station, Self-Assessment, "EPD Dose Rate Alarm Response and Adjustments to Dose Rate Set-Points," December 15, 2004

Miscellaneous
U2R12 ALARA Outage Report
PVNGS ALARA Committee: July 14, 2005

Section 4OA2: Identification and Resolution of Problems

Work Order
218763

Procedure
40ST-9ZZ09, "Containment Cleanliness Inspection," Revision 11

Drawing
01-P-SIF-105, "Containment Building Isometric Safety Injection System Shutdown Cooling Lines," Revision 19

Miscellaneous
Site Modification 1-SM-XM-001

Site Modification 1-SM-XM-002

Letter from IMPELL Corporation 1650-065-005, "Drain Pipe Fillet Weld Capability Study," dated October 5, 1987

PVNGS Unit III Piping Verification Program

ANSI/ASME OM3-1982, Appendix D, "Velocity Criterion"

Calculation 13-MC-ZZ-658, "Piping Vibration Acceptance Velocity Screening Criteria," Revision 0

EPRI Review of Palo Verde Unit 1 Shutdown Cooling Line Vibration Problem, August 25, 2004

Calculation 01-MC-SI-509, "Safety Injection System Shutdown Cooling - Loop 1," dated March 1, 2003

Engineering White Paper, "Justification for Increasing the Actuator Vibration Limits," dated January 19, 2006

Engineering White Paper, "1JSIAUV0651 Vibration Allowable Limits," dated November 13, 2002

Unit 1 R11 Outage - NDE Exams Performed in Zones 21 39 (UV651)

Surveillance Test Packages for Unit 1, per Procedure 40ST-9ZZ09, dated December 18-24, 2005, and December 28, 2005 - January 1, 2006

Section 4OA1

Procedures:

EPIP 99, “EPIP Standard Appendices,” Appendix A, “Emergency Action Levels,” Revision 7
EPIP 99, “EPIP Standard Appendices,” Appendix B, “Protective Actions,” Revision 7
EPIP 99, “EPIP Standard Appendices,” Appendix D, “Notification,” Revision 7

LIST OF ACRONYMS

ADV	atmospheric dump valve
ALARA	as low as is reasonably achievable
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	*Code of Federal Regulations*
CRDR	Condition Report/Disposition Request
EDG	emergency diesel generator
EW	essential cooling water
HPSI	high pressure safety injection
INPO	Institute of Nuclear Power Operations
LER	licensee event report
LPSI	low pressure safety injection
NEI	Nuclear Energy Institute
NCV	noncited violation
OCV	open circuit voltage
SDC	shutdown cooling
SP	spray pond system
SSC	structure, system, and component
TSR	Technical Requirements Manual Surveillance Requirements
TRM	Technical Requirements Manual
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report