



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

February 8, 2011

Randall K. Edington, Executive  
Vice President, Nuclear/CNO  
Mail Station 7602  
Arizona Public Service Company  
P.O. Box 52034  
Phoenix, AZ 85072 2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION -- NRC INTEGRATED  
INSPECTION REPORT 05000528/2010005, 05000529/2010005, and  
5000530/2010005

Dear Mr. Edington:

On December 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 5, 2011, with Mr. D. Mims, Vice President, Regulatory Affairs and Plant Improvement, and other members of your staff.

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

This report documents three NRC identified findings of very low safety significance (Green) and one Severity Level IV violation. All four of these issues were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy. Additionally, three licensee identified violations which were determined to be of very low safety significance are listed in the report.

If you contest the violations or the significance of the 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the facility. In addition, if you disagree with the crosscutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date

of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if you choose to provide one for cases where a response is not required, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

Sincerely,

**/RA/**

Ryan Lantz, Chief  
Project Branch D  
Division of Reactor Projects

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

License: NPF-41, NPF-51, NPF-74

Enclosure:

NRC Inspection Report 05000528/2010005, 05000529/2010005, and 05000530/2010005  
w/Attachment: Supplemental Information

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R:\

ADAMS ML

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		<input checked="" type="checkbox"/> Publicly Available		<input checked="" type="checkbox"/> Non-Sensitive	
		<input type="checkbox"/> Non-publicly Available		<input type="checkbox"/> Sensitive	
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C:DRS/EB2	C:DRS/PSB1	C:DRS/EB1	C:DRS/PSB2	C:DRP/D	
NFO'Keefe	MPShannon	TRFarnholtz	GEWerner	RLantz	
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 50-528, 50-529, 50-530

License: NPF-41, NPF-51, NPF-74

Report: 05000528/2010005, 05000529/2010005, 05000530/2010005

Licensee: Arizona Public Service Company

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

Location: 5951 S. Wintersburg Road  
Tonopah, Arizona

Dates: October 1 through December 31, 2010

Inspectors: J. Bashore, Acting Senior Resident Inspector  
M. Baquera, Resident Inspector  
D. Reinert, Acting Resident Inspector  
C. Smith, Acting Resident Inspector  
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T. Buchanan, Reactor Inspector  
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Approved By: Ryan Lantz, Chief, Project Branch D  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000528/2010005, 05000529/2010005, 05000530/2010005; 10/01/10 - 12/31/10; Palo Verde Nuclear Generating Station, Units 1, 2, and 3, Integrated Resident and Regional Report.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by region-based inspectors. Three Green, noncited violations and one Severity Level IV noncited violation were identified. The significance of most findings are indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The crosscutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a Severity Level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," for the failure of the licensee to ensure that the integrity of an operating test administered to licensed operators was maintained. During the week of December 8, 2009, twenty-four licensed operators received three job performance measures and one additional licensed operator received five job performance measures for their operating tests that had been previously administered to other licensed operators in previous weeks. This failure resulted in a compromise of examination integrity because it exceeded the 50 percent overlap required by quality procedure LOCT-TPD-R56, "Licensed Operator Continuing Training Program," Revision 56, for this portion of the examination, but did not lead to an actual effect on the equitable and consistent administration of the examination. This issue was entered into the licensee's corrective action program as Condition Report Disposition Request 3527071.

The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial examinations could be a precursor to a more significant event. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance (Green) because, although the

finding resulted in a compromise of the integrity of operating test job performance measures and compensatory actions were not immediately taken when the compromise should have been discovered in 2009, the equitable and consistent administration of the test was not actually impacted by this compromise. This finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that procedures were accurately translated from industry standards such that the 50 percent maximum overlap was not exceeded [H.2(c)](Section 1R11.2).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of the licensee to follow their quality procedure 01DP-0EM13, "Licensed Operator Medical Examinations," Revision, which provides the medical examination requirements for licensed operators at Palo Verde Nuclear Generating Station. Of the 15 medical records reviewed by the inspectors, 7 licensed senior reactor operator medical records did not contain the proper no-solo restrictions imposed by the NRC when these individuals were licensed. Additionally, the software that the licensee used to track these restrictions (Station Work Management System or SWMS) did not reflect the proper restrictions for these 7 individuals. This issue was entered into the licensee's corrective action program as Condition Report Disposition Requests 3527072 and 3526979.

The failure of the licensee's medical staff to follow their procedure for implementing the required medical examination program was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance and is being characterized as a Green, noncited violation. The finding was determined to be Green, using Appendix I of Manual Chapter 0609, because more than 20 percent of the medical records reviewed contained significant deficiencies. The finding was also determined to have very low safety significance (Green) because: (1) the finding did not result in any events in the control room; and (2) no health requirements required by ANS/ANSI 3.4-1983 "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants" were exceeded by any licensed operator while on watch. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because this procedure and its associated software are the two principle mechanisms that the facility uses to ensure that licensed operators are fit for duty [H.4(a)](Section 1R11.2).

- SL-IV The inspectors identified a Severity Level IV violation of 10 CFR 55.3, "License Requirements," for the failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of

their licenses as defined in 10 CFR 55.3. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators was not met for three licensed operators. Two of these licensed operators performed licensed operator duties 42 times between February 8 and March 25, 2010, after the deadline for their biennial examinations had passed. Upon discovery, the licensee removed these individuals from watchstanding duties pending follow-up medical evaluations. This issue was entered into the licensee's corrective action program as Condition Report Disposition Request 3526981.

The failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3 is a performance deficiency. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators (as required in 10 CFR 55.21) was not met for three licensed operators, two of which were standing watch with expired medical examinations. The finding was evaluated using the traditional enforcement process because the failure to determine an operator's medical condition and general health has the potential to impact the NRC's ability to perform its regulatory function; the NRC was not notified nor allowed an opportunity to review the specific medical conditions of the two operators whose medical qualifications had expired while they were standing watch or eligible to stand watch. Using the NRC's Enforcement Policy, section 6.4.d, Severity Level IV violation examples, this finding is similar to example 1 which states, in part that "an unqualified individual performing the functions of an operator or senior operator." Two licensed operators stood watch without a certified medical examination within the two year period that the medical examination is required to be completed and certified by the physician. Because: (1) the medical conditions of the two licensed operators did not change when they received their medical examinations in recent weeks; (2) the finding did not cause any plant events or transients while the individuals were on watch; (3) it was not repetitive or willful; and (4) it was entered into the corrective action program, the finding was determined to be of very low safety significance and is being treated as a Severity Level IV noncited violation consistent with the NRC Enforcement Policy. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because medical staff supervisors did not oversee the biennial physical examination due dates such that nuclear safety was supported [H.4(c)](Section 1R11.2).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of engineering personnel to promptly correct a condition adverse to quality associated with room cooler AHU-3MHAAZ05 blower shaft dimensions. Specifically, between July 2008 and November 2010, corrective actions for high vibrations in the Unit 3 essential cooling water system train A room cooler blower failed to promptly address the incorrect shaft dimensions at the bearing shaft interface. The licensee is developing corrective actions to replace the defective shaft by procuring a new shaft or machining a shaft on site. The licensee

entered this issue into the corrective action program as Palo Verde Action Request 3559219.

The inspectors concluded the finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined the finding had a very low safety significance (Green) because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined this finding had a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that personnel, equipment, and procedure were available and adequate to assure nuclear safety by minimizing long standing equipment issues [H.2(a)](Section 1R15).

**B. Licensee-Identified Violations**

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

## REPORT DETAILS

### Summary of Plant Status

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

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

Unit 3 entered the inspection at essentially full power and was shutdown on October 2, 2010, for refueling outage 15. Unit 3 returned to essentially full power on November 14, 2010, and remained at essentially full power for the duration of the inspection period.

### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignments (71111.04)

##### .1 Partial Walkdown

##### a. Inspection Scope

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

- September 16, 2010, Unit 2, emergency diesel generator train B
- November 3, 2010, Unit 1, essential cooling water train A
- December 14, 2010, Unit 1, emergency diesel generator, train A

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

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

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On October 15, 2010, the inspectors performed a complete system alignment inspection of the Unit 3 low pressure safety injection system, train B to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.3 System Walkdown associated with Temporary Instruction (TI) 2515/177, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems

Additional activities were performed during this system walkdown that were associated with TI 2515/177, "Managing gas accumulation in emergency core cooling, decay heat removal, and containment spray systems." These activities are described in bullet .2 of this section.

a. Inspection Scope

On October 15, 2010, the inspectors conducted a walkdown of low pressure safety injection system, train B, in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d). The inspectors also verified that the information obtained during the licensee's walkdowns was consistent with the items

identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3). In addition, the inspectors verified that the licensee had isometric drawings that describe the low pressure safety injection system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- High point vents were identified
- High points that do not have vents were acceptably recognizable
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation
- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified
- All pipes and fittings were clearly shown

The inspectors verified that piping and instrumentation diagrams accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the piping and instrumentation diagrams were documented and entered into the corrective action program for resolution (TI 2515/177, Section 04.02.b).

Documents reviewed are listed in the attachment to this report. This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

b. Findings

No findings were identified.

**1R05 Fire Protection (71111.05)**

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

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

- October 19, 2010, Unit 3, containment, all elevations
- November 1, Unit 1, emergency diesel generator building all elevations

- November 2, Unit 1, auxiliary feedwater pump rooms and condensate storage tank pump house
- November 4, 2010, Unit 1, fuel building 100 foot, 120 foot, 140 foot elevations

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the UFSAR, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- October 26, 2010, Unit 2, auxiliary building 52 foot and 40 foot elevations

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

b. Findings

No findings were identified.

**1R08 In-Service Inspection Activities (71111.08)**

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

a. Inspection Scope

The inspectors observed 11 nondestructive examination activities and reviewed 5 nondestructive examination activities that included 4 types of examinations. The licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Feedwater	Down Comer Feedwater Steam Generator 1 (Welds 60-7, 60-14, 60-15)	Magnetic Particle
Feedwater	Down Comer Feedwater Steam Generator 1 (Weld 60-14)	Ultrasonic
Feedwater	Down Comer Feedwater Steam Generator 1 (Weld 60-7)	Ultrasonic
Feedwater	Down Comer Feedwater Steam Generator 1 (Weld 60-15)	Ultrasonic
Shutdown Cooling	Shutdown Cooling Loop 1 (Overlay 21-20 and 6-11)	Liquid Penetrant
Shutdown Cooling	Shutdown Cooling Loop 1 (Overlay 21-20 and 6-11)	Ultrasonic
Reactor Coolant	Reactor Coolant Pump 2A Cold Leg Safety Injection Nozzle (Weld 13-10)	Phased Array Ultrasonic

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Reactor Coolant	Reactor Coolant Pump 1A Cold Leg Safety Injection Nozzle (Weld 9-10)	Phased Array Ultrasonic
Reactor Coolant	Reactor Coolant Pump 1B Cold Leg Safety Injection Nozzle (Weld 11-10)	Phased Array Ultrasonic
Steam Generator	Steam Generator 1 Pedestal Studs (3.25 inch)	Ultrasonic
Steam Generator	Steam Generator 2 Pedestal Studs (3.25 inch)	Ultrasonic
Steam Generator	Steam Generator 1 & 2 Pedestal Studs (5.5 inch)	Ultrasonic

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspectors also verified the qualifications of all nondestructive examination technicians performing the inspections were current.

The inspectors observed one weld on the reactor coolant system pressure boundary.

The inspectors directly observed a portion of the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Safety Injection	Train A 24" SI-189 (3187449-2)	Gas Tungsten Arc Weld

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

Completion of Sections .1 through .5 constitutes completion of one sample as defined in Inspection Procedure 71111.08-05. These actions constitute completion of the requirements for Section 02.01.

- b. Findings  
No findings were identified.

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

The Unit 3 reactor pressure vessel head was replaced during this outage. The required inspections were performed and will be documented in a subsequent report.

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

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walkdown as specified in Procedure 70TI-9ZC01, "Boric Acid Walkdown Leak Detection," Revision 10. The inspectors also reviewed the visual records of the components and equipment. The inspectors verified that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors also verified that the engineering evaluations for those components where boric acid was identified gave assurance that the ASME Code wall thickness limits were properly maintained. The inspectors confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the one requirement for Section 02.03.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors assessed the in situ screening criteria to assure consistency between assumed nondestructive examination flaw sizing accuracy and data from the Electric Power Research Institute (EPRI) examination technique specification sheets. No conditions were identified that warranted in situ pressure testing.

Due to the tube wear identified during the previous outage, a 100 percent review of all tubes in both steam generators was performed during this outage. The inspectors reviewed both the licensee site-validated and qualified acquisition and analysis technique sheets used during this refueling outage and the qualifying EPRI examination technique specification sheets to verify that the essential variables regarding flaw sizing accuracy, tubing, equipment, technique, and analysis had been identified and qualified through demonstration.

The inspection procedure specified comparing the estimated size and number of tube flaws detected during the current outage against the previous outage operational assessment predictions to assess the licensee's prediction capability. The number of identified indications (for Steam Generator 31 zero tubes were plugged and/or staked and for Steam Generator 32 six tubes were plugged and four tubes were staked) was consistent with predictions from the vendor for the previous outage (estimate of seven tubes plugged and three tubes staked per steam generator). No new damage mechanisms were identified during this inspection.

The inspection procedure specified confirmation that the steam generator tube eddy current test scope and expansion criteria meet technical specification requirements, EPRI guidelines, and commitments made to the NRC. The inspectors evaluated the recommended steam generator tube eddy current test scope established by technical specification requirements and the licensee's degradation assessment report. The inspectors compared the recommended test scope to the actual test scope and found that the licensee had accounted for all known flaws and had, as a minimum, established a test scope that met technical specification requirements, EPRI guidelines, and commitments made to the NRC.

As mentioned above, the base scope inspection plan required 100 percent tube inspection for this refueling outage. The inspection scope for Refueling Outage 3R15 included:

- 100 percent visual inspection of installed plugs
- Tube sheet periphery and tube lane foreign object search and retrieval
- 100 percent full bobbin examination using a 0.610 inch bobbin probe in rows 5 and higher and from hot leg tube end to batwing 1 in rows 1 through 4
- 100 percent bobbin examination using a 0.590 inch bobbin probe from batwing 1 to cold leg tube end in rows 1 through 4 (testing from both legs)
- 100 percent plus point inspection of bobbin flaw-like signals at tube support structures (including row 1 through 4 U-bends)
- Plus point inspection of special interest locations

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

These actions constitute completion of the requirements of Section 02.04.

b. Findings

No findings were identified.

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

a. Inspection scope

The inspectors reviewed 26 condition reports, which dealt with in-service inspection activities and found the corrective actions were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering in-service inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.05.

b. Findings

No findings were identified.

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

.1 Quarterly Review

a. Inspection Scope

On December 6, 2010, during licensed operator continuing training simulator scenarios, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

.2 Biennial Inspection

The licensed operator requalification program involves two training cycles that are conducted over a two year period. In the first cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

a. Inspection Scope

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

The inspectors interviewed 10 licensee personnel, consisting of 4 operators, 3 instructors, 2 managers, and the simulator supervisor, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written exams and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included two 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 inspectors also reviewed medical records of 15 licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for 2 operators.

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

Chapter 0609, Appendix I,” Operator Requalification Human Performance Significance Determination Process.”

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

On October 14, 2010, the licensee informed the lead inspector of the following Units 1, 2, and 3 results for the Licensed Operator Requalification Program:

- Of the 123 total licensed operators, 2 operators have not been tested due to medical reasons
- 23 of 23 crews passed the simulator portion of the operating test
- 121 of 121 licensed operators passed the simulator portion of the operating test
- 121 of 121 licensed operators passed the Job Performance Measure portion of the examination
- 116 of 121 licensed operators passed the biennial written exam

The individuals that failed the applicable portions of their exams and operating tests were remediated, retested, and passed their retake exams.

On November 4, 2010, the licensee informed the lead inspector of the following results for the Licensed Limited Senior Reactor Operator (LSRO) Requalification Program:

- All 12 LSRO's took the examinations and operating tests
- All 12 LSRO's passed the written examination
- All 12 LSRO's passed the simulator portion of the operating test
- All 12 LSRO's passed the Job Performance Measure portion of the operating test

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

- .1 Introduction. The inspectors identified a Green, noncited violation of 10 CFR 55.49, “Integrity of Examinations and Tests,” for the failure of the licensee to ensure that the integrity of an operating test administered to licensed operators was maintained. During the week of December 8, 2009, twenty-four licensed operators received three job performance measures and one additional licensed operator received five job performance measures for their operating test(s) that had been previously administered to other licensed operators in previous weeks. This failure resulted in a compromise of examination integrity because it exceeded the 50 percent overlap required by quality Procedure LOCT-TPD-R56 “Licensed Operator Continuing Training Program,” Revision 56, for this portion of the examination, but did not lead to an actual effect on the equitable and consistent administration of the examination.

Description. On September 10, 2010, while performing a biennial requalification inspection in accordance with Inspection Procedure 71111.11, "Licensed Operator Requalification Program," the inspectors discovered that during the week of December 8, 2009, twenty-four licensed operators received three Job Performance Measures (JPMs) for their operating test that had been previously administered to other licensed operators during the week of December 1, 2009. Also, during the week of December 8, 2009, one additional licensed operator received five JPMs for his operating test that had been previously administered to other licensed operators the week of December 1, 2009. This resulted in this group of licensed operators receiving 60 percent overlap and 100 percent overlap, respectively, on their operating test JPMs. Procedure LOCT-TPD-R56, "Licensed Operator Continuing Training Program," Revision 56, requires that no more than 50 percent of each portion of the annual operating test (including JPMs) will be comprised of test items used in any other operating test in the same examination cycle. The inspectors concluded that failure to fulfill the requirements of this procedure constituted a compromise of examination integrity required by 10 CFR 55.49. Seventeen of the affected operators had completed their 2010 JPMs and did not have to perform additional JPMs to maintain their qualifications. However, eight remaining operators had their qualifications suspended in the licensee's Site Work Management System (SWMS). This is the system the licensee uses to track various licensed operator qualifications and requirements. The licensee removed these eight operators from shift until they had successfully passed their JPM's for the 2010 examination cycle.

Between September 11 and October 8, 2010, the licensee evaluated this issue using an apparent cause evaluation and associated condition report disposition request (CRDR) 3527071 to fully understand the extent of condition, the causal factors, and appropriate corrective actions. The licensee maintained that they did not understand the 50 percent overlap requirement that they translated from the industry standard document ACAD 2007-001 "Guidelines for the Continuing Training of Licensed Personnel" to their procedure LOCT-TPD-R56. The licensee did not understand the 50 percent overlap requirement applied between and among all aspects of the examination and operating tests. The inspectors concluded from this discussion that the translation was not clear enough to prevent the overlap threshold of 50 percent from being exceeded and that the licensee did not fully understand the meaning of this industry standard and the NRC's expectation regarding examination and operating test overlap requirements.

The inspectors reviewed various items to ensure that examination security was effective at preventing an actual impact on examination integrity. The inspectors noted that licensee training personnel performed a formal briefing to all operations personnel prior to the administration of their 2009 operating test that specifically prohibited them from discussing the details of their test with other personnel. Additionally, all of the licensed operators signed a security agreement documenting that they would not discuss the details of their test with other personnel. The licensee and the inspectors also reviewed the grading of the 2009 operating tests to determine if there was any discernable discrepancy in evaluated performance between the different weeks that would indicate that the equitable and consistent administration of the test had actually been affected. During this review it was determined that grades actually were lower for some of the operators who took their JPMs in the weeks where the overlap occurred. The inspectors concluded that, although the integrity of the 2009 operating test was not maintained, no

actual affect on the equitable and consistent administration of the 2009 operating test had occurred. The licensee documented this issue in CRDR 3527071.

Analysis. The failure of the licensee's training staff to maintain the integrity of examinations administered to licensed operations personnel was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial examinations could be a precursor to a significant event if undetected performance deficiencies develop. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance (Green) because, although the finding resulted in a compromise of the integrity of operating test JPMs and compensatory actions were not immediately taken when the compromise should have been discovered in 2009, the equitable and consistent administration of the test was not actually impacted by this compromise. This finding has a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that procedures were accurately translated from industry standards such that the 50 percent maximum overlap requirement was not exceeded [H.2(c)].

Enforcement. Title 10 CFR 55.49, "Integrity of Examinations," requires, in part, that facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination required by this part. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, could have affected the equitable and consistent administration of the test or examination. This includes activities related to the preparation, administration, and grading of the tests and examinations required by this part. Contrary to the above, during the week of December 8, 2009, the licensee engaged in an activity that compromised the integrity of a test required by 10 CFR Part 55. Specifically, training personnel administered three JPMs to twenty-four licensed operators and five JPMs to one additional licensed operator for their operating tests that had been previously administered to other licensed operators the week of December 1, 2009. This resulted in this group of licensed operators receiving 60 percent overlap and 100 percent overlap, respectively, on their operating test JPMs that had been administered in previous weeks of the requalification testing cycle. Administering an operating test with greater than 50 percent overlap from previously administered operating tests is considered a compromise of the integrity of the test in that it is a practice that, but for detection, could affect the equitable and consistent administration of the these tests. The inspectors determined that the compromise of the 2009 operating test did not result in an actual effect on the equitable and consistent administration of the test. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as CRDR 3527071, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000528;

05000529; 05000530/2010005-01, "Failure to Maintain Licensed Operator Examination Integrity."

- .2 Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of the licensee to follow their quality procedure 01DP-0EM13, "Licensed Operator Medical Examinations," Revision 15, which provides the medical examination requirements for licensed operators at Palo Verde Nuclear Generating Station. Of the 15 medical records reviewed by the inspectors, seven licensed senior reactor operator medical records did not contain the proper no-solo restrictions imposed by the NRC when these individuals were licensed. Additionally, the system that the licensee uses to track these restrictions (Station Work Management System or SWMS) also did not reflect the proper restrictions for these seven individuals.

Description. On September 9, 2010, while reviewing a 10 percent sample of medical records (15 of approximately 136 licensed operators), the inspectors were comparing NRC records for various licensing restrictions against the licensee medical records when they discovered that seven licensed senior reactor operator medical records did not contain the no-solo restrictions imposed by the NRC when these individuals were licensed. These restrictions are documented on NRC Form 396, "Certification of Medical Examination by Facility Licensee." The inspectors reviewed the procedure that the licensee uses to implement the medical examination program and found that this was one of several procedural requirements that was not followed for the medical program. Procedure 01DP-0EM13, "Licensed Operator Medical Examinations," Revision 15, requires that: (1) Site Work Management System or SWMS is updated with regards to an individual's medical qualification; (2) health services personnel are responsible to interface with Operations Management, Nuclear Regulatory Affairs, Nuclear Training, Nuclear Assurance and Quality Control Departments to ensure the medical examination of the Licensed Nuclear Operators are at all times, in compliance with NRC regulations, guidance, and interpretations as well as the guidance of ANSI/ANS 3.4-1983; (3) the Appendix F, "PVNGS Medical Evaluation Report" shall be reviewed and signed by the physician and this form shall certify completion of the medical certification and should be signed by the licensed operator; (4) the medical file will be processed for entering into APS Medical Monitoring computer system; and (5) if a change in medical qualification or certification of a Licensed Operator occurs, subsequent to the examination date utilized for the current NRC Form 396, a new NRC Form 396 will be submitted to Nuclear Regulatory Affairs and it will reflect the necessary restrictions or waiver requests.

The inspectors found that the no-solo restrictions were missing from seven medical records and in some cases there were no NRC Form 396s. The inspectors asked the licensee how their staff controls licensing restrictions if the medical records do not contain these forms. The licensee responded that the SWMS system tracks this information. During the review of SWMS the licensee's staff and inspectors identified that the SWMS medical code for the senior reactor operator no-solo restriction (Code 55) dropped off of operator licensing qualifications on July 31, 2010, and it was not known why this had occurred. Additionally, the SWMS system dates that the licensee uses to track the two year requirement for the physical did not reflect the dates in the

medical records. In addition, the licensee does not have a formal process to ensure correspondence or information related to an operator license that is sent to the site Vice-President, License Training, Regulatory Affairs, and the individual operator is communicated and shared with the medical staff. Another licensed operator had a medical restriction placed on his license by the NRC and the licensee's medical staff was not aware of this restriction change. As a result of these issues, the licensee's staff verified the medical status and certification of the crews that would be standing watch over the next two days (September 9-10, 2010) from this discovery and then completed the review of the remainder of the licensed operator medical records on September 10, 2010. The results of the licensee's review confirmed the inspector's concern that two licensed operators stood watch while unqualified due to expired medical examinations. As a result, the licensee removed these two licensed operators from watchstanding duties until they received new physical examinations. There were no new medical issues discovered during the physical examinations therefore they were allowed to return to watch. This issue was entered into the licensee's corrective action program as CRDR 3527072, CRDR 3526981, and CRDR 3526979.

Analysis. The failure of the licensee's medical staff to follow their procedure for implementing the required medical examination program was a performance deficiency. The performance deficiency is more than minor, and therefore a finding, because it adversely impacted the human performance attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process," the finding was determined to have very low safety significance and is being characterized as a Green noncited violation because more than 20 percent of the medical records sampled contained significant deficiencies. The finding was also determined to have very low safety significance (Green) because: (1) the finding did not result in any events in the control room; and (2) no health requirements required by ANS/ANSI 3.4-1983 "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants" were exceeded by any licensed operator while on watch. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because this procedure and its associated software are the two principle mechanisms that the facility uses to ensure that licensed operators are fit for duty [H.4(a)].

Enforcement. Title 10 CFR Part 55, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, multiple examples were found by the inspectors where the licensee's staff failed to follow their quality procedure, 01DP-0EM13, "Licensed Operator Medical Examinations," Revision 15. Specifically, the licensee: (1) did not ensure SWMS was updated with regards to an individual's medical qualification in that they lost track of no-solo restrictions in the individual medical records and in SWMS for seven senior reactor operators; (2) health services personnel did not adequately interface with Nuclear Regulatory Affairs to ensure the medical examinations

of the licensed nuclear operators were in compliance with NRC regulations, guidance, and interpretations as well as the guidance of ANSI/ANS 3.4-1983; (3) none of the no-solo restriction issues that were identified by the inspectors were entered into the medical files within the APS Medical Monitoring computer system; and (4) one individual had a change in medical qualification or certification subsequent to the examination date utilized for the current NRC Form 396, however, a new NRC Form 396 was not submitted to Nuclear Regulatory Affairs because the individual did not inform them of the change in restriction status. Because this violation is of very low safety significance and has been entered into the licensee's corrective action program as CRDR 3527072, CRDR 3526981, and CRDR 3526979, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2010005-02, "Failure to Follow Procedures for Medical Examinations of Licensed Operators."

- .3 Introduction. The inspectors identified a Severity Level IV violation of 10 CFR 55.3, "License Requirements," for the failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators was not met for three licensed operators. Two of these licensed operators performed licensed operator duties 42 times between February 8 and March 25, 2010, after the deadline for their biennial examinations had passed. Upon discovery, the licensee removed these individuals from watchstanding duties pending follow-up medical evaluations.

Description. On September 9, 2010, the inspectors discovered that at least one licensed operator's medical file had the Medical Reviewing Officer (MRO) or physician's signature dated 13 months after the physical was actually performed by the physician's assistant and the date placed on the NRC Form 396 "Certification of Medical Examination by Facility Licensee" was the date that the physician's assistant completed the hands-on portion of the physical.

The licensee's medical staff entered the date the hands-on physical examination was performed by the physician assistant in the "Most Recent Biennial Medical Examination" block on NRC Form 396 and for updating medical qualifications in SWMS. The date required on NRC Form 396 and for updating qualifications in SWMS is the date that the physical examination was signed and certified by the MRO. According to ANSI/ANSI-3.4-1983, the medical examiner is a licensed medical practitioner designated by the facility to perform nuclear licensed operator medical examinations. The MRO is the licensed medical designee and has the responsibility for certifying that the medical examination was completed in accordance with regulatory standards and that the licensed operator or initial applicant for a license meets all of the medical requirements. A clarification is provided in NUREG-1021, Revision 9, Supplement 1, Section ES-202, page 4, which states, in part, "However, the physician has the ultimate responsibility for certifying that the medical examination was conducted in accordance with the standard and that the applicant meets the medical requirements." The directions provided for this specific date block on the NRC Form 396 require the date that the medical examination is certified complete. Additionally, in 10 CFR 55.21, it states that "An applicant for a

license shall have a medical examination by a physician. A licensee shall have a medical examination by a physician every two years. The physician shall determine that the applicant or licensee meets the requirements of 10 CFR 55.33(a)(1).” Furthermore, a physician is defined in 10 CFR 55.4 as “Physician means an individual licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to dispense drugs in the practice of medicine.” The inspectors asked the Arizona Public Service (APS) medical staff to clarify the State of Arizona Statutes regarding who can dispense medicine. Their research of the State of Arizona Statutes revealed that the state scope of practice requirements for a physician assistant in Arizona under Article 3: Scope of Practice R4-17-301 (page 7), indicates that the Physician Assistant must be delegated to dispense controlled medications, and must use the supervising physician's DEA number. This would require that the licensed operator medical records, qualifications, and SWMS are updated with the date that the physician (MRO) certifies the examination is complete and as mentioned above would also be the required date to be used on the NRC Form 396 “Certification of Medical Examination by Facility Licensee” for initial applications or license renewals.

The licensee initiated an Apparent Cause Evaluation (ACE), CRDR 3536981, which involved a complete a review of all 136 medical records for all licensed operators at the facility. The inspector's concerns were validated during the licensee's review in that the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators was not met for three licensed operators. Two of these licensed operators performed licensed operator duties 42 times between February 8 and March 25, 2010, after the deadline for their biennial examinations had passed. Upon discovery, the licensee removed these individuals from watchstanding duties pending follow-up medical evaluations. This issue was entered into the licensee's corrective action program as CRDR 3526981.

Analysis. The failure of the licensee to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3 is a performance deficiency. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators (as required in 10 CFR 55.21) was not met for three licensed operators, two of which were standing watch with expired medical examinations. The finding was evaluated using the traditional enforcement process because the failure to determine an operator's medical condition and general health has the potential to impact the NRC's ability to perform its regulatory function in that the NRC was not notified nor allowed an opportunity to review the specific medical conditions of the three operators whose medical qualifications had expired while they were standing watch or eligible to stand watch. Using the NRC's Enforcement Policy, Section 6.4.d, Severity Level IV violation examples, this finding is similar to example 1 which states, in part, “an unqualified individual performing the functions of an operator or senior operator.” This finding is being characterized as Severity Level IV because two licensed operators stood watch without a certified medical examination within the two year period that the medical examination is required to be completed and certified by the physician. Because: (1) the medical conditions of the two licensed operators did not change when they received their medical examinations in recent weeks; (2) the finding did not cause

any plant events or transients while the individuals were on watch; (3) it was not repetitive or willful; and (4) it was entered into the corrective action program, the finding was determined to be of very low safety significance and is being treated as a Severity Level IV noncited violation consistent with the NRC Enforcement Policy. This finding has a crosscutting aspect in the area of human performance associated with the work practices component because medical staff supervisors did not oversee the biennial physical examination due dates such that nuclear safety was supported [H.4(c)].

Enforcement. Title 10 CFR 55.3, "License Requirements," states that "a person must be authorized by a license issued by the Commission to perform the function of an operator or senior operator as defined in this part." Furthermore, 10 CFR 55.21 requires, in part, that a licensee shall have a medical examination by a physician every two years. The physician shall determine that the applicant or licensee meets the requirements of 10 CFR 55.33(a)(1).

Contrary to the above, during the past two years of this requalification cycle, the licensee failed to ensure that all individuals authorized by a license to operate the controls of the facility met all the conditions of their licenses as defined in 10 CFR 55.3. Specifically, the requirement to have a biennial physical completed and certified by the facility's physician during the continuous two year period for all licensed operators was not met for three licensed operators. Two of these licensed operators performed licensed operator duties 42 times between February 8 and March 25, 2010, after the deadline for their biennial examinations had passed. Because this violation is of low safety significance and has been entered into the licensee's corrective action program as CRDR 3526981, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2010005-03, "Failure to Ensure that All License Conditions Are Met for Licensed Operators."

## **1R12 Maintenance Effectiveness (71111.12)**

### **a. Inspection Scope**

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- October 21, 2010, Unit 1, pressurizer spray control valve packing leak
- November 18, 2010, Unit 3, containment spray valve SIA-UV672 failure to open

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

- Implementing appropriate work practices
- Identifying and addressing common cause failures

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- October 5, 2010, Unit 3, refueling outage shutdown risk assessment
- November 17, 2010, Units 1 and 2, startup transformer AE-NAN-X03 out of service for planned maintenance
- November 22, 2010, Unit 1, risk management actions when emergency diesel generator, train B, was removed from service

- December 8, 2010, Unit 1, emergency diesel generator, essential chiller, essential cooling water, high pressure safety injection, and essential spray pond systems, train A out of service for planned maintenance
- December 16, 2010, Units 1, 2, and 3, station blackout generators out of service for planned maintenance

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

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

b. Findings

No findings were identified.

**1R15 Operability Evaluations (71111.15)**

a. Inspection Scope

The inspectors reviewed the following issues:

- September 16, 2010, Unit 2, emergency diesel generator, train B, following a failure of train A fuel oil transfer pump
- October 4, 2010, Unit 3, steam generator pedestal bolt failed due to stress corrosion cracking
- October 27, 2010, Unit 1, essential chiller train A essential cooling water outlet valve open further than expected
- November, 2010, Units 1 and 2, relevant indications in welds associated with the reactor vessel head vent lines

- November 3, 2010, Unit 3, emergency diesel generator train B air intake manifold cracking
- November 15, 2010, Unit 3, essential cooling water train A room cooler fan shaft nonconformance
- November 23, 2010, Unit 1, emergency diesel generator train A air intake manifold hairline crack
- December 1, 2010, Unit 2, pressurizer back-up heater banks low resistance
- December 7, 2010, Unit 3, safety injection tank 2B nitrogen leaks
- December 12, 2010, Unit 2, essential chiller train A oil temperature low
- December 20, 2010, Unit 2, elevated containment hydrogen levels

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

These activities constitute completion of 11 operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure of engineering personnel to promptly correct a condition adverse to quality associated with room cooler AHU-3MHAZ05 blower shaft dimensions. Specifically, between July 2008 and November 2010, corrective actions for high vibrations in the Unit 3 essential cooling water system train A room cooler blower failed to promptly address the incorrect shaft dimensions at the bearing shaft interface.

Description. On November 15, 2010, Unit 3 operations and maintenance personnel completed performance of surveillance test 73ST-9EW01, "Essential Cooling Water Pumps –Inservice Test, Train A." During the surveillance, the licensee discovered that data collected on the essential cooling water system train A room cooler blower AHU-3MHAAZ05 was in the high alarm range. The specified safety function of the room cooler is to maintain the essential cooling water pump room within design temperature limits. Although the immediate operability determination supported declaring the equipment operable, a subsequent prompt operability determination performed by engineering resulted in the equipment being declared inoperable. On November 16, 2010 the essential cooling water system, train A, was declared inoperable and Unit 3 entered a 72 hour technical specification shutdown action statement. Blower AHU-3MHAAZ05 outboard bearing was replaced and the fan was returned to service on November 18, 2010.

In June 2007, condition notification report 4051 was issued by engineering personnel for vibration trending due to AHU-3MAAZ05 reaching the alert range. In April 2008, Palo Verde Action Request (PVAR) 3161162 documented increased vibration trends on the blower. This issue was documented again in PVAR 3168434 in May 2008. Corrective maintenance work order 3161812 was generated to inspect the blower components. Corrective maintenance work order 3168911 was generated in June 2008 and implemented in July 2008 to replace the outboard bearing. The bearing was replaced and the fan was returned to service. Following the bearing replacement, PVAR 3202619 was generated documenting the condition of the blower shaft. The technician performing the bearing replacement noted that the shaft diameter was not consistent along the axial length of the inner bearing race. The technician also noted that the shaft was not concentric. Operations personnel performed an immediate operability determination to assess the impact of this nonconforming condition. Condition report disposition request (CRDR) 3202957 was generated to evaluate the identified condition adverse to quality. In December 2008, condition report action item (CRAI) 3212753 completed evaluation of potential corrective actions and determined no additional corrective actions were required.

In April 2009, condition notification report 4243 was issued by engineering personnel for vibration trending due to AHU-3MAAZ05 reaching the alert range. In July 2009, PVAR 335177 documented increased vibrations on the outboard bearing. A corrective maintenance work order was generated to adjust the set screws on the inner race that secure the outboard bearing in the correct position. Corrective maintenance work order 3352188 was also generated to replace the blower shaft. In February 2010, a new corrective maintenance work order again adjusted the set screws on the inner bearing race. In August 2010, condition notification report 4243 was closed due to acceptable vibration levels for several consecutive months. In November 2010, bearing and shaft vibrations forced the equipment to be removed from service for bearing replacement.

The nonconforming shaft dimension was first identified in July 2008. A full year elapsed between the time this condition adverse to quality was first identified and the decision was made to replace the shaft in July 2009. Procurement of a new shaft had not occurred by the November 2010 failure. The air handling unit was supplied to the site as

a complete unit. Consequently, the licensee did not have specific drawings for individual components within the unit. A replacement shaft was not listed on the parts list provided in the vendor technical document. The lack of specific procurement information was not discovered until May 2010. The licensee is currently pursuing obtaining the required technical data to purchase a new shaft, or machine a shaft on site.

Analysis. The inspectors concluded that the failure of engineering personnel to promptly correct a condition adverse to quality with essential cooling water room cooler blower shaft was a performance deficiency. The finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined that the finding had a very low safety significance because the finding did not result in a loss of system safety function, an actual loss of safety function of a single train for greater than its technical specification allowed outage time, or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined this finding had a crosscutting aspect in the area of human performance associated with the resources component because the licensee failed to ensure that personnel, equipment, and procedure were available and adequate to assure nuclear safety by minimizing long standing equipment [H.2(a)].

Enforcement. Title 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 are promptly identified and corrected. Procedure 01PR-0AP04, "Corrective Action Program," Revision 5, step 3.1.3.1, stated, in part, that adverse conditions and conditions adverse to quality shall be promptly corrected. Contrary to the above, between July 2008, and November 2010, engineering personnel did not take corrective actions for an identified condition adverse to quality. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as PVAR 3559219, this violation is being treated as a noncited violation consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000530/2010005-04, "Failure to Promptly Correct a Condition Adverse to Quality for the Essential Cooling Water Room Cooler."

## **1R18 Plant Modifications (71111.18)**

### Temporary Modifications

#### a. Inspection Scope

To verify that the safety functions of important safety systems were not degraded, the inspectors reviewed the following temporary modifications identified as:

- October 15, 2010, Unit 3, temporary cooling towers to nuclear cooling water heat exchanger for plant cooling water system outage
- October 27, 2010, Unit 2, pressurizer backup heater setpoint change

The inspectors reviewed the temporary modifications and the associated safety evaluation screening against the system design bases documentation, including the UFSAR and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of two samples for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings were identified.

**1R19 Postmaintenance Testing (71111.19)**

a. Inspection Scope

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

- September 16, 2010, Unit 2, emergency diesel generator, train A, following corrective maintenance for the failure of the fuel oil transfer pump
- October 24, 2010, Unit 3, auxiliary spray valve control circuit from remote shutdown panel
- November 18, 2010, Unit 3, essential cooling water train A room cooler returned to service following maintenance
- December 10, 2010, Unit 1, emergency diesel generator train A out of service for planned maintenance
- December 11, 2010, Unit 1, atmospheric dump valve ADV-179 low pressure nitrogen supply check valve 1PSEV334 soft seat replacement
- December 16, 2010, Units 1, 2, and 3, station blackout generators out of service for planned maintenance
- December 20, 2010, Unit 2, atmospheric dump valve ADV-185 nitrogen accumulator safety relief valve 2JSGBPSV0322 replacement

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

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

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

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

c. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 3 refueling outage, conducted October 2, through November 14, 2010, to confirm licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Shutdown and cooldown, including portions of the cooldown process to verify that technical specification cooldown restrictions are followed, primary containment walkdown immediately after shutdown to inspect plant areas which are inaccessible during power operations
- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and

compliance with the applicable technical specifications when taking equipment out of service

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

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

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

b. Findings

No findings were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

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

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

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

- October 7, 2010, Unit 1, recirculation actuation system line fill verification
- October 11, 2010, Unit 2, moderator temperature coefficient testing
- October 27, 2010, Unit 3, full flow inservice test of high pressure safety injection pump train A
- November 1, 2010, Unit 2, containment purge valve leak rate testing
- November 5, 2010, Unit 3, local leak rate testing on penetration 53, fuel transfer tube quick operating closure device

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

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

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

**40A1 Performance Indicator Verification (71151)**

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the third quarter 2010 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

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

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index – Auxiliary Feedwater System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index for Units 1, 2, and 3 – auxiliary feedwater system performance indicator for the period from the fourth quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, was used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 1, 2009, through September 30, 2010, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the fourth quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, was used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2009 through September 30, 2010, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the performance indicator data

collected or transmitted for this indicator and none were identified. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for the period from the fourth quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of October 1, 2009, through September 30, 2010, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

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

b. Findings

No findings were identified.

**40A2 Identification and Resolution of Problems (71152)**

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

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human

performance results. The inspectors nominally considered the 6-month period of July 1 through December 31, 2010, although some examples expanded beyond those dates where the scope of the trend warranted. The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

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

b. Findings

No findings were identified.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

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

- October 12-13, 2010, Unit 3, seven containment spray nozzles partially obstructed with boric acid residue

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

These activities constitute completion of one in-depth problem identification and resolution samples as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.5 In-depth Review of Operator Workarounds

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: (1) identifying operator workaround problems at an appropriate threshold; (2) entering them into the CAP; and (3) identifying and implementing appropriate corrective actions. The review included walkdowns of the control room panels, interviews with licensed operators and reviews of the control room discrepancies log, the lit annunciators' log, the operator workaround list, the operator burdens list, operations concerns list, the operator challenges tracking system, and site performance metrics for operator burdens, lit annunciators, control room discrepancies, and long term tagouts

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

b. Findings

No findings were identified.

**40A3 Event Follow-up (71153)**

.1 The inspectors reviewed the below listed event for plant status and mitigating actions to: (1) collect information necessary to communicate event details to NRC management for determination of the appropriate agency response; (2) observe plant system parameters and status; (3) evaluate licensee actions; and (4) confirm that the licensee properly classified the event in accordance with emergency action level procedures and made timely notifications to NRC and state/governments, as required.

- September 15, 2010, Unit 2 emergency diesel generator train A fuel oil transfer pump failure
- October 12, 2010, Units 1, 2, and 3 response to suspicious device in vehicle entering site property at Security Owner Controlled Area checkpoint
- November 8, 2010, Units 1, 2, and 3 site card reader computer system failure

**40A5 Other Activities**

.1 Temporary Instruction 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds" (Closed)

Temporary Instruction 2515/172 was previously performed at Palo Verde Nuclear Generating Station, Unit 3, during Refueling Outage U3R14. The results of that inspection are documented in Inspection Report 05000530/2009003.

a. Inspection Scope

Portions of Temporary Instruction 2515/172 were performed at Palo Verde Nuclear Generating Station, Unit 3, during Refueling Outage U3R15. Specific documents reviewed during this inspection are listed in the attachment. This unit has the following dissimilar metal butt welds.

- Two 12-inch pressurizer surge line nozzles, one each on the pressurizer and hot leg sides. Both were mitigated during previous outages using a weld overlay process and both were categorized as Category F following the weld overlay process
- Four 8-inch pressurizer safety nozzles all mitigated during previous outages using a weld overlay process and classified as Category F after the weld overlay
- Two 16-inch shutdown-cooling nozzles, both of which were mitigated using a weld overlay process during the previous outage and classified as Category F after the weld overlay
- Four 14-inch safety injection nozzles classified as Category E. These nozzles have not been mitigated. No plans have been made to mitigate these nozzles at this time
- One 4-inch pressurizer spray nozzle and two 3-inch pressurizer spray nozzles. The two 3-inch nozzles are categorized as Category K. The 4-inch nozzle was mitigated using a weld overlay process during a previous outage and is Category F
- Three 2-inch drain line nozzles, each classified as Category K
- Two additional 2-inch line nozzles, one for letdown and one for charging, each classified as Category K

i. Licensee's Implementation of the Materials Reliability Program (MRP-139) Baseline Inspections (03.01)

- (a) MRP-139 baseline inspections: This portion of Temporary Instruction 2515/172 was documented in NRC Integrated Inspection Report 05000530/2009003 in Section 4OA5.2 for the pressurizer and hot leg welds. Specific documents reviewed for this portion are listed in the attachment to the above inspection report. The inspectors observed performance and reviewed records of nondestructive examination activities associated with dissimilar metal butt welds exposed to temperatures equivalent to the cold leg during Refueling Outage U3R15. The baseline inspections of the pressurizer dissimilar metal butt welds were completed prior to the December 2007 deadline.

- (b) The licensee did not take any deviations from the baseline inspection requirements of MRP-139, and all other applicable dissimilar metal butt welds were scheduled in accordance with MRP-139 guidelines.

ii. Volumetric Examinations (03.02)

- (a) The inspectors directly observed and reviewed records of nondestructive examinations performed on the Unit 3 mitigated pressurizer surge line, one pressurizer safety valve, and the two shutdown cooling nozzles in NRC Integrated Inspection Report 05000530/2009003 Section 4OA5.2. Documents reviewed for the inspection can be found in the attachment to the above inspection report. The inspectors directly observed and reviewed records of nondestructive examinations performed on the Unit 3 safety injection nozzles during Refueling Outage U3R15. The inspectors concluded that the ultrasonic examination for these welds were done in accordance with ASME Code, Section XI, Supplement VIII Performance Demonstration Initiative requirements regarding personnel, procedures, and equipment qualifications. No relevant conditions were identified during those examinations.
- (b) Inspectors directly observed and reviewed records of nondestructive examination performed on the Unit 3 mitigated pressurizer surge line and one pressurizer safety valve in NRC Integrated Inspection Report 05000530/2009003 Section 4OA5.2. Documents reviewed for the inspection can be found in the attachment to the above inspection report. Inspectors directly observed and reviewed records of nondestructive examination performed on the mitigated Loop 1 shutdown-cooling nozzle during Refueling Outage U3R15. Inspection coverage met the requirements of MRP-139 and no relevant conditions were identified.
- (c) Inspectors reviewed the certification records of examination personnel for those personnel that performed the examinations of the nozzles. All personnel records showed that they were qualified under the EPRI Performance Demonstration Initiative. For the pressurizer surge line and one safety valve, this review was documented in NRC Integrated Inspection Report 05000530/2009003.
- (d) No deficiencies were identified during the nondestructive examinations for the pressurizer surge line and safety nozzle as documented in NRC Integrated Inspection Report 05000530/2009003. No deficiencies were identified during the nondestructive examinations for the shutdown cooling nozzles or the safety injection nozzles.

iii. Weld Overlays (03.03)

Weld overlays on the Unit 3 shutdown cooling nozzles on the hot legs were performed during Refueling Outage U3R14 in the spring 2009. This portion of the temporary instruction was completed and documented in NRC Integrated

Inspection Report 05000530/2009003, Section 4OA5.2. Documents reviewed for the inspection can be found in the attachment to the above inspection report.

iv. Mechanical Stress Improvement (03.04)

The licensee did not employ a mechanical stress improvement process.

v. Inservice Inspection Program (03.05)

The licensee's MRP-139 program is part of their Alloy 600 program and future inspections of the various dissimilar metal butt welds are in accordance with the MRP-139 requirements. All the welds in the MRP-139 in-service inspection program are appropriately categorized in accordance with MRP-139. The in-service inspection frequencies are consistent with the in-service inspection frequencies called for by MRP-139.

b. Findings

No findings were identified.

.2 (Open) NRC Temporary Instruction 2515/177, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)

As documented in Sections 1R04, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of Temporary Instruction 2515/177 which will be closed in a later inspection report.

.3 (Open) Unresolved Item Related to Fire Damper Surveillance Frequencies

a. Inspection Scope

The inspectors performed an in-office inspection of the licensee's active fire protection features to verify that automatic gaseous suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association (NFPA) code of record or approved deviations. The inspectors reviewed the surveillance requirements for carbon dioxide (CO<sub>2</sub>) and Halon® flooding systems.

b. Findings

Introduction. The inspectors identified an unresolved item associated with the acceptability of a change made by the licensee to the approved fire protection program. Specifically, the licensee made changes to the NRC-approved gaseous fire suppression system damper surveillance frequencies by increasing the period between surveillance testing from 18 months to 54 months. This unresolved item will address: (1) the acceptability of using statistical or performance-based analysis methodologies at a plant licensed under deterministic rule (10 CFR 50.48(b)) using the provisions for a self-approved change under the standard license condition; and (2) the technical bases used

by the licensee to conclude that the change did not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Description. In November 2009, the licensee initiated a change to the Technical Requirements Manual (TRM) surveillance requirements (TSR) associated with fire dampers in CO<sub>2</sub> and Halon® gaseous fire suppression systems (TSR 3.11.103.5 and TSR 3.11.106.5, respectively). These systems were used to protect 11 fire areas in each unit. The change to the surveillance requirements extended the functional testing frequencies for the ventilation dampers and their associated actuation devices from 18 months, as approved by the NRC, to 54 months.

License Condition 2.C.(7), 2.C.(6), and 2.F for Units 1, 2, and 3, respectively, allows the licensee to make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Licensing Document Change Request 09-R003, "Revise TRM surveillance requirements for fire damper testing," contained the Fire Protection Change Regulatory Review Checklist and an evaluation of the proposed change performed under the guidance of Generic Letter 86-10, "Implementation of Fire Protection Requirements." The checklist contained screening questions used by the licensee to determine the impact of a potential change on their approved fire protection program, and whether these potential changes would require prior NRC approval before implementation, including whether the proposed change would adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Engineering Evaluation 3304353 documented the technical basis for the surveillance frequency extensions. As part of the evaluation, the licensee used some of the guidance in Electric Power Research Institute (EPRI) Technical Report 1006756, "Fire Protection Equipment Surveillance Optimization and Maintenance Guide," as a basis for the change. The inspectors determined that the methodology contained in this EPRI technical report have not been endorsed by the NRC. Using the statistical analysis methods of the EPRI technical report, the licensee concluded that the change did not have a statistically significant impact on the failure rates of the damper systems, did not adversely affect the ability to achieve and maintain safe shutdown, and, therefore, could be made without NRC approval.

The inspectors identified the following concerns regarding the technical bases used by the licensee to conclude that the change did not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire:

1. The methodology in EPRI Technical Report 1006756 was intended to establish a performance-based maintenance and testing program for fire protection systems. However, the licensee did not adopt important portions of the EPRI program that made it performance-based. Specifically, the licensee did not establish a monitoring program to identify whether the expected (i.e., extrapolated) reliability was being met after extending the testing interval, nor was any action threshold

established to address unacceptable reliability identified by future testing as described in the EPRI technical report.

2. The licensee's evaluation did not address the potential increase in the probability of non-suppression for a fire in one of the areas protected by these gaseous suppression systems caused by the increased probability of one or more dampers failing to close created by the change to the test frequency. Failure of a damper to close and isolate the fire could prevent reaching a high enough concentration of CO<sub>2</sub> or Halon® to suppress a fire. Specifically, the licensee's historical data demonstrated 99 percent reliability for dampers associated with the gaseous suppression systems, but the change in question established the new testing frequency based on an extrapolated 95 percent reliability. The evaluation credited manual suppression by the fire brigade, but the inspectors questioned how the fire brigade would know the fire was not suppressed, since the areas would be inaccessible, and entry to check for the continued presence of a fire would further reduce the concentration of suppressant. The failure to address the change in non-suppression probability impacted the bases for the NRC approving a deviation:
  - The licensee's fire confinement evaluation stated that an unsuppressed fire in either Fire Zone 10A or Fire Zone 10B could challenge the 2-hour rated fire wall separating the rooms that was an NRC-approved deviation from the requirement to have a 3-hour fire-rated wall. The two rooms are in different fire areas and contain equipment from different safe shutdown trains, so challenging that fire barrier could result in loss of safe shutdown capability. The inspectors were concerned that the evaluation did not address failure of a fire damper resulting in insufficient concentrations of Halon® for the gaseous suppression system to suppress the fire.
  - The licensee did not consider an updated plant analysis which may have invalidated the basis for a deviation identified in the original fire protection program. The NRC accepted a fire wall with a 2-hour rating between Fire Zone 10A and Fire Zone 10B based, in part, on the fire loading in both fire zoned being moderate. Reanalysis of combustible loading reclassified Fire Zone 10B to have a high fire loading.
  - Further, this deviation was approved with consideration that the associated gaseous suppression systems were being tested at the NRC approved frequency. National Fire Protection Association (NFPA) codes NFPA-12-1973, "Carbon Dioxide Extinguishing Systems," Section 171 and NFPA 12A-1973, "Halogenated Fire Extinguishing Agent Systems – Halon 1301," Section 1710 require that these systems shall be thoroughly inspected and tested annually for proper operation. The NRC, as the authority having jurisdiction under NFPA codes, approved a code alternative to perform this testing at 18-month intervals as part of the approved fire protection program.

3. The licensee did not extend testing incrementally to verify that the expected reliability was being met prior to extending the test frequency to the full 54 months.

In addition to the above concerns, the inspectors questioned the acceptability of using statistical or performance-based analysis methodologies at a plant licensed under a deterministic rule (10 CFR 50.48(b)) using the provisions for a self-approved change under the standard license condition. Specifically, the staff questioned the technical basis for the method used to extrapolate equipment reliability based on an assumed extended test frequency. Further, the licensee's historical data demonstrated 99 percent reliability for dampers associated with the gaseous suppression systems, but the change in question established the new testing frequency based on an extrapolated 95 percent reliability. Neither the licensee's change evaluation nor the EPRI technical report provided a basis for why this value was acceptable or met the requirements of the approved fire protection program. This change appeared to be a reduction in the margins that could affect safe shutdown capability, but was not assessed as such in the change evaluation.

Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Revision 2, Regulatory Position 1.8.1.2 states in part that the phrase "not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire," means to maintain sufficient safety margins. It goes on to state that with sufficient safety margins, codes and standards or their alternatives approved for use by the NRC are met, and safety analyses acceptance criteria in the licensing basis are met or proposed revisions provide sufficient margin to account for analysis and data uncertainty. The inspectors were concerned that the reduction of safety margins could invalidate the basis for deviations accepted in the approved fire protection program.

The licensee documented this issue in CRDR 3493945. This issue is unresolved pending review by the staff to assess whether this type of change is permitted under the standard fire protection license condition. It is also unresolved pending additional information from the licensee on items 1-3 above. Therefore, this issue is being treated as an unresolved item: URI 05000528/05000529/05000530-2010005-05, "Assess Acceptability of Licensee-Approved Change to Fire Damper Test Frequency."

## **40A6 Meetings**

### Exit Meeting Summary

On October 15, 2010, the inspectors presented the inspection results of the review of in-service inspection activities to Mr. J. Hesser, Vice President Engineering, and other members of the licensee staff. The licensee acknowledged the issues presented. All proprietary information was returned or disposed of upon completion of the inspection.

The inspectors discussed the results of the licensed operator requalification program inspection with Mr. J. Waid, Director of Operations Training, and other members of the licensee's staff on September 10, 2010. The lead inspector obtained the final biennial examination results and telephonically exited with Mr. R. Bement, Vice President of Nuclear Operations, on

December 14, 2010. The licensee representatives 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.

On January 5, 2011, the inspectors presented the inspection results to Mr. D. Mims, Vice President, Regulatory Affairs and Plant Improvement, and other members of the licensee staff. The licensee acknowledged the issues presented. All proprietary information was returned or disposed of upon completion of the inspection.

On January 7, 2011, the inspectors presented the inspection results to Ms. M. Lecal, General Manager Emergency Services and Support, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

#### **40A7 Licensee-Identified Violations**

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section 2.3.2 of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as noncited violations.

- Title 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 are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, on October 6, 2010, the licensee did not preclude repetition of the failure of valve 3SI-V-0672 to fully open. A licensee valve services technician heard an unexpected noise when stroking open containment spray valve 3JSI-V-0672 and the attempt to open the valve was aborted. Subsequent inspection of the valve body and internals revealed that previous corrective actions implemented between April 16, 2009 and May 18, 2009 had been inadequate to prevent recurrence of the valve's failure to fully open. This finding was entered into the licensee's corrective action program as PVAR 3548317. This finding is of very low safety significance because it did not result in a loss of safety function, and actual loss of safety function of a single train for greater than it technical specification allowed outage time, or screen as potentially risk significant due to seismic, flooding, or severe weather initiating event.
- Title 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 are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, between December 5, 2007, and October 13, 2010, the licensee did not preclude repetition of a significant condition adverse to quality. Specifically, corrective actions to prevent recurrence of seven Unit 3 containment spray nozzles obstruction due to boric acid residue were inadequate. This finding was entered into the licensee's corrective action program as PVAR 3548317. This finding is of very low safety significance because it did not result in a loss of safety function, and actual loss of safety function of a single train for greater than it technical specification allowed

outage time, or screen as potentially risk significant due to seismic, flooding, or severe weather initiating event.

- Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, the licensee failed to ensure that activities affecting quality were prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances. Specifically, in May 2009, work instructions used to implement design modifications and conduct design validation testing for auxiliary spray valve auxiliary spray valve 3J-CHB-HV-0203 were inadequate. In October 2010, the auxiliary spray valve control circuit was restored to plant design and retested satisfactorily. The licensee entered the inadequate design validation testing following a design modification work order into their corrective action program as PVAR 3548317. The finding had a very low safety significance because the finding only affected the ability to achieve and maintain cold shutdown.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**  
**KEY POINTS OF CONTACT**

Licensee Personnel

R. Barnes, Director Regulatory Affairs  
B. Bement, Vice President Nuclear Operations  
M. Brannin, Engineering Programs  
J. Cadogan, Engineering Director Program and Support  
J. Clark, Project Engineer Strategic Projects  
L. Cortopasi, Plant Manager  
E. Fernandez, Engineering Programs  
J. Gaffney, Director Radiation Protection  
B. Haley, In-service Inspection Section Lead  
D. Hansen, Engineering  
J. Hesser, Vice President Engineering  
M. McGhee, Operations  
D. Mims, Vice President Nuclear Regulatory Assurance  
J. Ruoff, Engineering Programs  
B. Thiele, Department Leader Program Engineering  
T. Trieckel, Nuclear Projects  
M. Webb, Compliance Section Leader  
M. Winsor, Director Strategic Projects  
J. Waid, Director Operations Training  
G. Brown, Operations Training Section Leader  
T. Weber, Regulatory Affairs Dept. Leader  
T. Miller, Nuclear Assurance Assessor for Training Oversight  
P. McSparran, Dept. Leader Operations Training  
G. Cameron, Fire Protection Supervisor  
M. Lacal, General Manager Emergency Services and Support  
G. Michael, Licensing Engineer  
R. Stroud, Licensing Section Leader

NRC Personnel

J. Bashore, Senior Resident Inspector (Temp)  
G. Repogle, Senior Reactor Analyst, Region IV  
M. Baquera, Resident Inspector

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

05000528; 529; 530-2010-005-05	URI	Assess Acceptability of Licensee-Approved Change to Fire Damper Test Frequency (Section 40A5)
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### Opened and Closed

05000528; 529; 530/2010-005-01	NCV	Failure to Maintain Operator Licensing Examination Integrity (Section 1R11)
05000528; 529; 530/2010-005-02	NCV	Failure to Follow Procedures for Medical Examinations of Licensed Operators (Section 1R11)
05000528; 529; 530/2010-005-03	SLIV	Failure to Ensure All License Conditions Are Met for Licensed Operators (Section 1R11)
05000530/2010- 005-04	NCV	Failure to Promptly Correct a Condition Adverse to Quality for the Essential Cooling Water Room Cooler (Section 1R15)

## LIST OF DOCUMENTS REVIEWED

### **Section 1RO4: Equipment Alignment**

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9DG02	Emergency Diesel Generator B	62
73ST-9DF01	Diesel Fuel Oil Transfer Pump Inservice Test	22
40OP-9DG01	Emergency Diesel Generator A	66
40OP-9EW01	Essential Cooling Water (EW) System Train A	19
40OP-9SI01	Shutdown Cooling Initiation	45
40OP-9SI02	Recovery from Shutdown Cooling to Normal Operating Lineup	90
40OP-9SI04	Safety Injection System Venting	26

## Section 1RO4: Equipment Alignment

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40ST-9SI13	LPSI and CS System Alignment Verification	22

### PALO VERDE ACTION REQUESTS

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### DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
02-E-DFB-001	Elementary Diagram Diesel Fuel Oil & Transfer System	5
02-M-DGP-001	Diesel Generator System	52
02-M-DFB-001	Diagram Diesel Fuel Oil & Transfer System	11
01-M-DFP-001	P & I Diagram Diesel Fuel Oil & Transfer System	11
01-M-DGP-001	P & I Diagram Diesel Generator System	52
01-M-EWP-001	P & I Diagram Essential Cooling Water System	31
01-M-SIP-001	P & I Diagram Safety Injection & Shutdown Cooling System	47
01-M-SIP-002	P & I Diagram Safety Injection & Shutdown Cooling System	37
03-P-SIF-0208	Auxiliary Building Isometric Safety Injection System LPSI & Cont Spray Discharge Train B	4
13-P-SIF-0208	Aux Bldg Iso Sfty Inj Sys LPSI, Cont Spray Discharge Train B	21
LPSI-A-S-001	PVNGS Unit 3 LPSI A Suction	

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
LPSI-B-S-001	PVNGS Unit 3 LPSI B Suction	

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Updated Final Safety Analysis Report, Section 9.5	11
	Site Technical Document 177376, DGAH01 (I&C)	
	Site Technical Document 177374, DGAH01 (MECH)	
	Site Technical Document 177373, DGAh01 W/Grounds (ELEC)	
CN-SEE-III-08-36	Evaluation of Suction Side Criteria for Palo Verde Units 1, 2 and 3 to Address GL-2008-01	1
13-MS-A108	Palo Verde Nuclear Generating Station Engineering Study, Determination of Allowable Void Size and Venting Criteria for the PVNGS ECCS and CSS Pump Suctions	2
13-MS-B086	PVNGS Engineering Study, Development of ECCS Suction Side Piping Arc Lengths Associated with Calculated Max Void Volumes	0

**Section 1RO5: Fire Protection**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
14AC-0FP05	Pre- Fire Strategies Manual	21
14DP-0FP33	Control of Transient Combustibles	23

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Pre-Fire Strategies Manual Control	21
	Updated Final Safety Analysis Report Section 9.5	15
	Updated Final Safety Analysis Report, Section 9.5	11
13-MC-FP-808	Calculation Sheet Combustible Loads – Diesel Generator Bldg	August 25, 1987

**Section 1RO6: Flood Protection Measures**

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
13-MC-ZA-0809	As Built Auxiliary Building Flooding Calculation	6

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	S-09-0038 10 CFR 50.59 Screening	1
	UFSAR Section 3.6.2.1	13

**Section 1RO8: Inservice Inspection Activities**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
70TI-9ZC01	Boric Acid Walkdown Leak Detection	9
70TI-9ZC01	Boric Acid Walkdown Leak Detection	10
73DP-0AP05	Engineering Programs Management and Health Reporting	9
73DP-0EE16	Qualification and Certification of NDE Personnel	7
73DP-9EE02	Inservice Inspection Examination Activities	10

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

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
73DP-9WP01	Welder and Procedure Qualification	5
73DP-9WP04	Welding and Brazing Control	13
73DP-9WP05	Weld Filler Material Control	6
73DP-9XI03	ASME Section XI Inservice Inspection	11
73DP-9ZC01	Boric Acid Corrosion Control Program	3
73DP-9ZZ17	Repair and Replacement – ASME Section XI	20
73TI-0EE01	Ultrasonic Instrument Calibration	3
73TI-9RC01	Steam Generator Eddy Current Examinations	28
73TI-9ZZ05	Dry Magnetic Particle Examination	14
73TI-9ZZ07	Liquid Penetrant Examination	14
73TI-9ZZ09	Ultrasonic Examination of Pipe and Vessel Welds	14
73TI-9ZZ10	Ultrasonic Examination of Welds in Ferritic Components	12
73TI-9ZZ15	Back Reflection Ultrasonic Examination of Bolting	10
73TI-9ZZ79	ASME Section XI Appendix VIII Ultrasonic Examination of Ferritic Piping	6
73TI-9ZZ81	Ultrasonic Examination of Dissimilar Metal Piping Welds	1
PDI-UT-8	PDI Generic Procedure for the Ultrasonic Examination of Weld Overlaid Similar & Dissimilar Welds	F

**Section 1RO8: Inservice Inspection Activities**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SI-NDE-08	Qualification and Certification of NDE Personnel for Nuclear Applications	1

PALO VERDE ACTION REQUESTS

3314980	3317250	3534722	3326016	3545064	3542148	3543233
3453011	3489890	3511712	3522502	3535755	3496929	3450106
3450487	3450109	3450108	3450105	3447421	3447423	3445595
3445581	3445594	3445411	3445410	3487555		

CONDITION REPORTS / DISPOSITION REQUESTS

3315535	3325041	3329999	3370020	3392604	3513001	3524879
3535864						

CONDITION REPORT ACTION ITEMS

3315536	3336564	3343875	3380089	3513008	3513012	3524880
3536054						

WORK ORDERS

2923274	3326151	3445410	3453633	3490819	3497269	3317275
3375133	3317850	3332391	3375133	3534729	3535234	3534727

NONDESTRUCTIVE EXAMINATION REPORTS

10-709	10-713	10-714	10-MT-3006	10-PT-3002	10-UT-3029	10-UT-3110
10-UT-3022	10-UT-3109	10-UT-3118	10-UT-3024	10-UT-3027		

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Bottom Mounted Instrumentation Inspection Results (Video and Pictures)	
	Boric Acid Walkdown Inspection Summary and Results	January 14, 2010
	Boric Acid Walkdown Inspection Summary and Results	March 1, 2010
	Boric Acid Walkdown Inspection Summary and Results	April 3, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 4, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 8, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 16, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 18, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 23, 2010
	Boric Acid Walkdown Inspection Summary and Results	June 29, 2010
	Boric Acid Walkdown Inspection Summary and Results	July 1, 2010
	Boric Acid Walkdown Inspection Summary and Results	July 7, 2010
	Boric Acid Walkdown Inspection Summary and Results	July 8, 2010
	Boric Acid Walkdown Inspection Summary and Results	July 22, 2010
	Boric Acid Walkdown Inspection Summary and Results	July 28, 2010

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Boric Acid Walkdown Inspection Summary and Results	August 3, 2010
	Boric Acid Walkdown Inspection Summary and Results	September 1, 2010
	Boric Acid Walkdown Inspection Summary and Results	September 2, 2010
	Boric Acid Walkdown Inspection Summary and Results	September 9, 2010
	Key Area Rollup Program: Boric Acid Corrosion Control	June 30, 2010
	“Replacement” Steam Generators Analysts Guidelines Training Manual	11
	Palo Verde Nuclear Generating Station Unit 3 Inservice Inspection Report 14 <sup>th</sup> Refueling Outage	September 14, 2009
	Unit 3 Replacement Steam Generators Condition Monitoring Report April 2009	May 8, 2009
03-MS-B091	Steam Generator Operational Assessment Evaluation Unit 3 Cycle 15	July 26, 2009
13-PM-117	Design Specification for Support of ASME Section III Components for the Arizona Public Service Company Palo Verde Generating Station Units 1, 2, and 3	August 16, 1979
3524435	Simple Self-Assessment Report Template – Boric Acid Corrosion Control Program	September 10, 2010
APS-PVNGS U3R15	Bottom Mounted Instrumentation Visual Inspection Image Report	October 2010

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
B1-RSG	Analysis Technique Sheet for Bobbin Coil Manual Analysis	10
B2-RSG	Analysis Technique Sheet for Bobbin Coil ADS Analysis	10
B3-RSG	Analysis Technique Sheet for Bobbin Coil ADS Analysis (Sludge)	6
B4-RSG	Analysis Technique Sheet for Bobbin Coil Manual Analysis (Special Projects Loose Parts)	0
B5-RSG	Analysis Technique Sheet for Bobbin Coil RTAA Analysis	0
ESP09-04-001	Engineering Boric Acid Leakage Inspector Job Qualification Card	June 5, 2009
ESP11-00-007	Weld Data Sheet Approval Job Qualification Card	March 26, 2009
ESP11-05-001	Welding Program Management Job Qualification Card	July 22, 2008
ESP42-00-002	Engineering Boric Acid Leakage Evaluator Job Qualification Card	March 31, 2009
ESP65-00-001	Engineering BACCP Outside Containment Inspector Job Qualification Card	July 24, 2009
MN740-A00154	Palo Verde 1, 2, 3 RVH/CEDM: N050651-11101M03-0301B / Closure Head Final Assembly	0
NMW99-04-001	Welding Inspection Job Qualification Card	February 27, 2008
NYO99-01-009	Piping Weld Data Sheets Job Qualification Card	May 5, 2010
R2-RSG	Analysis Technique Sheet for RC Examinations of Steam Generator Tubing (Flexible or solid body probes)	9

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
R5-RSG	Analysis Technique Sheet for RC Examinations of Steam Generator Tubing (U Bend MF & HF +PT)	10
S-09-0112	10 CFR 50.59 Evaluation	0
SG-SGMP-10-20	Palo Verde Nuclear Generating Station U3R15 Outage Steam Generator Degradation Assessment October 2010	September 9, 2010
SWMS 2968935	Boric Acid Corrosion Control Program Self-Assessment Report	March 1, 2007
SWMS 3139194	Palo Verde Nuclear Generating Station Inservice Inspection (ISI) Self Assessment	September 18, 2008
SWMS 3194996	Palo Verde Nuclear Generating Station NEI 03-08 Material Initiative Program Self-Assessment	September 24, 2008
SWMS 3327153	Palo Verde Nuclear Generating Station Welding Program Self Assessment Report	July 17, 2009

**Section 1R11: Licensed Operator Requalification Program**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
15DP-OTR69	Training and Qualification Administration	34
15DP-OTR07	Training Oversight	12
40DP-9ZZ04	Time Critical Operator Actions Program	4
15TD-OOT05	NRC Exam Security	8
15DP-OOT08	Systematic Approach to Training	0
01DP-OEM13	Licensed Nuclear Operator Medical Examinations	15
LOCT-TPD	Licensed Operator Continuing Training Program	56
PV-E0115	Remediation Process	10

CONDITION REPORTS / DISPOSITION REQUESTS

3526781      3527071      3541009      3526979      3527072

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Written Exams	2010 Exam-Weeks 1-6 Biennial Exams (RO and SRO)	September 2010
JPM's	2010 Exam -Weeks 1-6	September 2010
JPM's	2009 Exam - Weeks 1-6	August 2009
LOCT Matrix	2 year Sample Plan from Vision	N/A
PV LER's	All 14 LER's from 2008-2010 for both Units	N/A
SWMS 3456996	71111.11 Readiness Assessment	August 2010
Simulator Test	Steady State 100% Power	April 2010
Simulator Test	Core Physics Test U1C16 S3R Core	April 2010
Simulator Test	Transient Test Trip of all Feed Pumps (TT2)	April 2010
Simulator Test	Slow Primary Depressurization (TT10)	April 2010
DRC-2010-2691	Simulator Closed Work Package	February 2010
DRC-2010-2770	Simulator Open Work Package	August 2010
	Licensed Operator Continuing Training Simulator Scenario NLR10S0504 01, Loss of CEDM Cooling/Blackout	November 22, 2010
	Licensed Operator Continuing Training Simulator Scenario NLR10S0505 01, Restore Off Site Power to PBA-S03 Energized from EDG B	November 23, 2010

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Form EP-0541	Palo Verde NAN Emergency Message Form	December 6, 2010
	Simulator Setup Evaluation Checklist	December 6, 2010

**Section 1R12: Maintenance Effectiveness**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
39MT-9ZZ01	Air Operated Valve Diagnostic Testing	1

PALO VERDE ACTION REQUESTS

3535816    3314991

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
13-MC-ZZ-216	Air Operated Valve Bench Set Calculation	7

WORK ORDERS

3099328    2889774    30215076    3078743    3224148    3535917    3334539  
3546717    3545764

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CRDR 3449626	Pressurizer Spray Control Valve 1-RCE-100E Packing Leak	1
CRDR 3314991	3JSIA-UV0672 Failed to Fully Open	2

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9DG02	Emergency Diesel Generator B	62
70DP-0RA05	Assessment and Management of Risk when Performing Maintenance in Modes 1 and 2	17
70DP-0RA04	Component Risk Significance Determination	2
70DP-0RA01	Shutdown Risk Assessment	34
70DP-0RA03	Probabilistic Risk Assessment Model Control	9
41ST-1ZZ02	Inoperable Power Sources Action Statement	42

PALO VERDE ACTION REQUESTS

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DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
02-M-DGP-001	Diesel Generator System	52

WORK ORDERS

3356239	3419615	3418640	3425826	3369808	3428319	3425826
3340902	3316747	3326734	3462806	3355991	3406473	3472194
3406476	3428151	3428359	3391907	3428147	3428184	3486163
3532527	3308386	3377706	3496373	3530546	3356117	3434654
3406247	3497249	3428466	3428167	3495869	3410546	3410585
3406538	3559677					

PERMITS

179138	178521	178884	179093	178963	179724	179953
179973	177374	177373	177376	179141	180279	177375
177571	177660	177664	179354	177751	179753	179214
180154	177526					

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Scheduler's Risk Evaluation for PV Units 1, 2, and 3	December 13 - 18, 2010
	Work week schedule for PV Units 1, 2, and 3	December 13 - 18, 2010
	Fragnet station blackout generator #1	Week of December 13, 2010
	Fragnet station blackout generator #2	Week of December 13, 2010
	Scheduler's Risk Evaluation for PV Unit 1	December 8 - 10, 2010
	Work week schedule for PV Unit 1	December 8 - 10, 2010
	Fragnet Unit 1 Diesel Generator "A"	December 6, 2010
	Fragnet Unit 1 Essential Chilled Water "A"	December 6, 2010
	Fragnet Unit 1 Essential Cooling Water "A"	December 6, 2010
	Fragnet Unit 1 SI Safety Injection & Shutdown Cooling	December 6, 2010
	Fragnet Unit 1 Essential Spray Pond "A"	December 6, 2010
	Unit Three Fifteenth Refueling Outage Shutdown Risk Assessment Report	0

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	3R15 Overview Schedule – Preliminary	September 3, 2010
	Status View Report PRA: U3R15 R6 4-6 Schedule: U3R15	August 11, 2010
	Scheduler's Risk Evaluation for PV Units 1and 2	November 15-20, 2010
	Work week schedule for PV Units 1and 2	November 15-20, 2010
	Impact Evaluation Form -70DP-0RA03	May 22, 2009

**Section 1R15: Operability Evaluations**

<u>PROCEDURES NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40DP-9OP26	PVAR Processing and Operability Determination/Functional Assessment	29
73ST-9XI03	ASME Inservice Inspection	11
40OP-9DG02	Emergency Diesel Generator B	62
70DP-0RA05	Assessment and Management of Risk when Performing Maintenance in Modes 1 and 2	17
73ST-9DF01	Diesel Fuel Oil Transfer Pump Inservice Test	22
40AC-0ZZ06	Locked Valve, Breaker, and Component Control	17
40DP-9OP19	Locked Valve, Breaker, and Component Tracking	116
73ST-9EW01	Essential Cooling Water Pumps – Inservice Test	22
37MT-9ZZ01	Vibration Survey	13
40DP-9OP26	Operations PVAR Processing and Operability/Functional Assessment	29

**Section 1R15: Operability Evaluations**

<u>PROCEDURES NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9SI03	Safety Injection Tank Operations	33
40AL-9RK2B	Panel B02B Alarm Responses	55

PALO VERDE ACTION REQUESTS

3484917	3395560	3534722	3553899	3553900	3554118	3517338
3527166	3529476	3551558	3559219	3202619	3351777	3168434
3161162	3558574	3423613	3209031	3209239	3055294	3563913
3564323	3565995	3566558	3570274	3198242	3562666	3395560
3567676	3568375	3511289	3511423	3498071	3498021	3498065

CONDITION REPORTS / DISPOSITION REQUESTS

3538640	2761657	3012697	31202747	3560585	3202957	3560761
3560964	3567947	3212753	3185716	3424210	3570745	3568377
3498746						

CONDITION REPORT ACTION ITEMS

3570746	3568378
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DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
13-C-ZCS-0605	Cont Internals Steam Generator Lower Support	14
MN742-A00233	Palo Verde Units 1, 2, and 3 SHA Reactor Vessel Head Isometric	52
02-M-DGP-001	Diesel Generator System	52
02-E-DFB-001	Elementary Diagram Diesel Fuel Oil & Transfer System	5

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
01-M-ECP-001	P & I Diagram Essential Chilled Water System	31
01-M-EWP-001	P & I Diagram Essential Cooling Water System	31
01-M-SIP-002	P & I Diagram Safety Injection and Shutdown Cooling System	31
01-M-GAP-001	P & I Diagram Service Gas System (N2 and H2 Supply)	17
02-E-ECF-0002	Control Wiring Diagram Essential Chilled Water System Essen CHLR AUX PWR PNL 2J-ECA-E01	5
M-723-00002	“Q” Chillers Control Diagram ECA (ECB) – E01	24

CALCULATIONS  
NUMBER

TITLE

REVISION /  
DATE

SDOC M018-00184	Engine Systems Seismic Report	3
13-CC-ZC-0140	Steam Generator Base Supports and Embeds NSSS Supports	4

WORK ORDERS

3398462	3534727	3527172	3534552	3534548	3539192	3529213
3529215	3529223	3529237	3168911	3351877	3352188	3349790
3559222	3559223	3561364	3561366	3561367	3161812	3561967
3539139	3564977	3561967	3539139	3564977	3419077	3418514
3418515	3382166	3198930	3462275	3395562	3567696	3374273
3570502	3437257	3085494	3498024	3498023		

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Deficiency Evaluation Report 86-23	
	NCR CC-5442	
	Letter V-CE-17948	
EPRI NP-5769	Degradation and Failure of Bolting in Nuclear Power Plants	April 1988
EPRI TR-1011788	Status Review of Initiation of Environmentally Assisted Cracking and Short Crack Growth	December 2005
	ASME BPVC Section XI 2001 Edition with 2003 addenda	
	ASME BPVC Section III 1998 Edition with 2000 addenda	
MN742-A00238	Palo Verde Units 1, 2, and 3 SHA Reactor Vessel Head Vent CSS Spool Assembly	1
MN742-A00353	Evaluation for the Reactor Coolant Gas Vent System for the Simplified Head Assembly	2
MN742-A00199	Reactor Vessel Gas Vent System	1
MN742-A001180	Palo Verde Units 1, 2, and 3 Reactor Vessel Head Vent Gas Vent System Piping Analysis for the Simplified Head Assembly	2
	Updated Final Safety Analysis Report, Section 9.5	11
13-EM-057	600V Control Cables	
13-EM-058	600V Power Cables	
13-EN-306	Installation Specification for Cable Splicing and Terminations	11
	Unit 3 Control Room Operations Logs	November 15 – 18, 2010
	Condition Notification Report (CNR) 4051	June 5, 2007

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Condition Notification Report (CNR) 4243	April 2, 2009
	Operability/Functionality Evaluation, Unit 3 EW Pump Room Cooling Fan 3MHAAZ005 Vibrations	0
	Adverse CRDR 3202957 Evaluation, 3MHAAZ05 Blower Bearing Fan Shaft	August 21, 2008
13-VTD-R233-00003	Rexnord Installation Instructions for Thomas Type DBZ-A, DBZ-B, Couplings	0
13-VTD-A220-0014	American Air Filter Instruction Manual for Model N Air Handling Units	0
	Measurement Exception Analysis Report	November 15, 2010
	CRDR Reclassification Form	November 30, 2010
	Operational Decision Making Issue (ODMI) U3 Safety Injection Tank 2B Pressure Leakage	0
13-VTD-C490-00006	Combustion Engineering Inc. Pressurizer Instructional Manual	5
	Operational Decision Making Issue (ODMI) – U2 Containment Hydrogen Levels in LFL Alarm	0
13-NC-ZC-0202	Post-LOCA Hydrogen Generation	13
	Control Room Operating Logs	December 16-23, 2010

**Section 1R18: Plant Modifications**

<u>PROCEDURES NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
36-MT-9RC01	Pressurizer Pressure Control System Calibration	18
31-MT-9PW02	Installation & Removal of Temporary Cooling Towers to NC Heat Exchanger for PW System Outage	8

PALO VERDE ACTION REQUESTS

3498189      3491071      3532749      3545748

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SKH-M-A204	PW Cooling Water Mod, Units 1, 2, & 3	9
03-M-PWP-001	P & I Diagram Plant Cooling Water System	003

WORK ORDERS

3494659      3848291      3525084      3525084      3545828      3429869      3429886

**Section 1R19: Postmaintenance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9DG01	Emergency Diesel Generator A	66
40ST-9DG01	Emergency Diesel Generator A Test	40
73ST-9DF01	Diesel Fuel Oil Transfer Pump Inservice Test	22
40ST-9GT04	Station Blackout Generator 1 Quarterly Test	3
40OP-9GT02	Station Blackout Generator 1 Operation	5
40OP-9GT0	Station Blackout Generator 2 Operation	5
73ST-9XI20	ADVs – Inservice Test	27
73ST-9ZZ25	Check Valve Disassembly, Inspection and Manual Exercise	11
73DP-0XI03	Check Valve Predictive Maintenance & Monitoring Program	22

**Section 1R19: Postmaintenance Testing**PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
73ST-9ZZ20	IST Program Off-Line Set Pressure Verification	29
73ST-9EW01	Essential Cooling Water Pumps – Inservice Test	22
37MT-9ZZ01	Vibration Survey	13
40ST-9ZZ20	Remote Shutdown Disconnect Switch and Control Circuit Operability	18
40AO-9ZZ19	Control Room Fire	25
31DP-9ZZ01	Lubricant Sampling	13

PALO VERDE ACTION REQUESTS

3527166	3529476	3468005	3447056	3559219	3202619	3351777
3168434	3161162	3541039	3548317	3325905	3548314	3566503

CONDITION REPORTS / DISPOSITION REQUESTS

2761657	3012697	31202747	3447433	3560585	3202957	3545005
3550938	3550939	3550940				

CONDITION REPORT ACTION ITEMS

3447434	3464057	3464059	3560761	3560964	3567947	3212753
3547969	3562206	3564666	3551004			

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
02-M-DGP-001	Diesel Generator System	52
02-E-DFB-001	Elementary Diagram Diesel Fuel Oil & Transfer System	5

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
01-M-SGP-001	P & I Diagram Main Steam System Sheet 2	64
01-M-GAP-001	P & I Diagram Service Gas Supply System (N2 and H2 Supply)	17
01-M-SGP-001	P & I Diagram Main Steam System Sheet 2	68
01-M-EWP-001	P & I Diagram Essential Cooling Water System	31
03-E-CHB-039	Elementary Diagram Chemical & Volume Control System Regenerative Heat Exchanger to Aux Spray Valve 3J-CHB-HV-203	8
03-E-CHB-039	Elementary Diagram Chemical & Volume Control System Regenerative Heat Exchanger to Aux Spray Valve 3J-CHB-HV-203	9
03-E-CHF-039	Control Wiring Diagram Chemical & Volume Control System Regenerative Heat Exchanger to Aux Spray Valve 3J-CHB-HV-203	4
03-E-CHF-039	Control Wiring Diagram Chemical & Volume Control System Regenerative Heat Exchanger to Aux Spray Valve 3J-CHB-HV-203	5
13-E022-00067	Wiring Diagrams E-ZAB-C03	22
01-M-DGP-001	P & I Diagram Diesel Generator System	52

WORK ORDERS

3527172	3534552	3343390	3539192	3356239	3419615	3418640
3425826	3369808	3428319	3425826	3340902	3316747	3326734
3462806	3355991	3570340	3397268	3468481	3440048	3268202
3415356	3368013	3465786	3477779	3566745	3168911	3351877
3352188	3349790	3559222	3559223	3561364	3561366	3561367
3161812	3541538	3352499	3329125	3329257	3329261	3549682
3428151	3428359	3391907	3428147	3428184	3486163	3532527
3308386	3377706	3496373	3530546	3356117	3428466	3428167

WORK ORDERS

3495869      3414800      3414840

PERMITS

177374      177373      177376      179141      180279      177375

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Updated Final Safety Analysis Report, Section 9.5	11
13-EM-057	600V Control Cables	
13-EM-058	600V Power Cables	
13-EN-306	Installation Specification for Cable Splicing and Terminations	11
	PVNGS Surveillance Test Package Review Sheet for SBOG #1	December 16, 2010
	PVNGS Surveillance Test Package Review Sheet for SBOG #2	December 16, 2010
	Work week schedule for PV Units 1, 2, and 3	December 13 - 18, 2010
	Fragnet station blackout generator #1	Week of December 13, 2010
	Fragnet station blackout generator #2	Week of December 13, 2010
VTD-K085-00024	Kerotest "Y" Type Check Valve With Soft MainSeat (Series 31000S) Operation and Maintenance Instructions	001
Form NV-1	N Certification Holders' Data Report For Safety and Safety Relief Valves	November 10, 2010
	Unit 3 Control Room Operations Logs	November 15 - 18, 2010
	Condition Notification Report (CNR) 4051	June 5, 2007

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Condition Notification Report (CNR) 4243	April 2, 2009
	Adverse CRDR 3202957 Evaluation, 3MHAAZ05 Blower Bearing Fan Shaft	August 21, 2008
13-VTD-R233-00003	Rexnord Installation Instructions for Thomas Type DBZ-A, DBZ-B, Couplings	0
13-VTD-A220-0014	American Air Filter Instruction Manual for Model N Air Handling Units	0
	Measurement Exception Analysis Report	November 17, 2010
13-MC-FP-0317	Engineering Calculation, 10 CFR 50 Appendix R Operational Considerations	8
13-MC-FP-0318	Engineering Calculation, 10 CFR 50 Appendix R III.G/III.L Compliance Assessment	
	Pre-Fire Strategies Manual	22
	PVNGS Updated Final Safety Analysis Report, section 7.1.1.4, Systems Required for Safe Shutdown	15
	PVNGS Updated Final Safety Analysis Report, section 7.4.1.1.10, Cold Shutdown	12
	PVNGS Updated Final Safety Analysis Report, section 9.3.4.4.4, Safe Shutdown	14
	Scheduler's Risk Evaluation for PV Unit 1	December 8 - 10, 2010
	Work week schedule for PV Unit 1	December 8 - 10, 2010
	Fragnet Unit 1 Diesel Generator "A"	December 6, 2010

## Section 1R20: Refueling and Other Outage Activities

### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9ZZ05	Power Operations	135
40OP-9ZZ07	Plant Shutdown Mode 1 to Mode 3	36
02DP-0ZZ02	PVNGS Site Tagging Standard	8
72IC-9RX03	Core Reloading	35
78OP-9FX01	Refueling Machine Operations	43
78OP-9FX03	Spent Fuel Handling Machine	56
14DP-0FP36	Hot Work Permit	17
40OP-9ZZ11	Mode Change Checklist Appendix G Mode 3 to Mode 2 Checklist	82
40OP-9ZZ11	Mode Change Checklist Appendix L Closing Reactor Trip Breakers	82
40OP-9ZZ11	Mode Change Checklist Appendix F Increasing Reactor Pressure to Greater Than or Equal to 1837 psia Checklist	82
40OP-9ZZ11	Mode Change Checklist Appendix E Mode 4 to Mode 3 Checklist	82
40OP-9ZZ11	Mode Change Checklist Appendix D Increasing Reactor Pressure to Greater Than or Equal to 1837 psia Checklist	82
40OP-9ZZ11	Mode Change Checklist Appendix C Mode 5 to Mode 4 Checklist	82
40OP-9ZZ11	Mode Change Checklist Appendix B Mode 6 to Mode 5 Checklist	82
40ST-9RC02	ERFDADS (Preferred) Calculation of RCS Water Inventory	51
40OP-9ZZ11	Mode Change Checklist Appendix A Complete Core Offload Condition to Mode 6 Checklist	82

PALO VERDE ACTION REQUESTS

3547137      3547053      3535816      3545651

CONDITION REPORTS / DISPOSITION REQUESTS

3314991      3542540      3105988      3547810

CONDITION REPORT ACTION ITEMS

3542541      3094107      3095610

WORK ORDERS

3374402      3545764      3546717      3546718      3553186      3491592      3491593  
3167372      3552433      3552435

PERMITS

175311      176147      175531      175237      177062      175921      176147

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Technical Requirements Manual, Reactor Coolant System Pressure and Temperature Limits Report (PTLR)	52
	Unit 3 Plot of RCS Average T-Cold Verses Time	Date/Time October 2, 2010 0000 to 1400

**Section 1R22: Surveillance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
73ST-9CL06	Containment Purge Supply Leak Test (42") – Penetration	56 19A
72-ST-9RX02	Moderator Temperature Coefficient at Power	25
73ST-9XI33	HPSI Pump and Check Valve Full Flow Test	51
40ST-9SI04	RAS Line Fill Check	20

**Section 1R22: Surveillance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40ST-9SI13	LPSI and CS System Alignment Verification	21
73ST-9CL01	Containment Leakage Type "B" and "C" Testing	36

PALO VERDE ACTION REQUESTS

3551524    3543390    3525081    3556750    3556751    3555499    3555737

CONDITION REPORTS / DISPOSITION REQUESTS

2809636    2374388    2830055

CONDITION REPORT ACTION ITEMS

2818767    2848764

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
03-M-RCP-001	Reactor Coolant System	32
03-M-SIP-001	P & I Diagram Safety Injection & Shutdown Cooling System	37
03-M-SIP-002	P & I Diagram Safety Injection & Shutdown Cooling System	32
D-14473-311-011	Safety Injection System ESF Pump Suction Line – Train A	01

WORK ORDERS

3551796    3194433    33429223    03352517    3349460    3349467    3350318

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	ASME OM Code ISTB	2001 edition

**Section 40A1: Performance Indicator Verification**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
70DP-0PI01	Performance Index Data Mitigating System Cornerstone	4

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Interviews with personnel	December, 20, 2010
	Control room logs	September 2009 – September 2010
	Unavailability report data	September 2009 – September 2010
	Rolling 36 Month MSPI Margin Report	

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

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40DP-9OP02	Conduct of Shift Operations	53
01DP-0AP12	Palo Verde Action Request Processing	14
01PR-0AP04	Corrective Action Program	5
01DP-0AP16	PVNGS Self Assessment and Benchmarking	7
60DP-0QQ02	Trend Analysis and Coding	22

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

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
90DP-0IP10	Condition Reporting	48
81DP-0CC04	Engineering Calculations	9
73ST-9SI02	Containment Spray Nozzle Air Test	8
40OP-9SI02	Recovery From Shutdown Cooling To Normal Operating Lineup	89
40OP-9SI02	Recovery From Shutdown Cooling To Normal Operating Lineup	90
90DP-0IP10	Condition Reporting	47
01DP-0AP12	Palo Verde Action Request Processing	14
40DP-9OPA3	Area 3 Operator Logs, Modes 1-4	70

PALO VERDE ACTION REQUESTS

3566585	3566511	3565230	3492825	3486946	3486324	3545651
3075026						

CONDITION REPORTS / DISPOSITION REQUESTS

3551377	3547810	3015327	3105988	3033216	3101108	3225237
3078462						

CONDITION REPORT ACTION ITEMS

3561164	3561168	3565203	3560969	3561167	3565206	3565209
3547811	3566997	3566913	3547811	3184672	3094107	3095610
3184667	3511161	3551000	3562378	3567077	3567079	

WORK ORDERS

3473684	3403362	3219812	3430352	3266783	3528974	3435033
3485776	3485774	3451321	3491213	3403360	3403361	3403362
3473682	3473683	3566016	3523472	3556144	3167372	3491592
3491593	3552433	3552435	3567044	3567045	3567046	3567047
3567048	3567049	3567050	3567051	3567052	3567053	3567054
3567055	3082678	3094370	3072362	3547808	3547809	

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
01-M-SIP-003	P & I Diagram Safety Injection & Shutdown Cooling	7
13-P-ZCG- 104	Containment Building Safety Injection System Containment Spray Nozzles Below El. 140'0" – Plans and Details	14
13-P-ZCG- 118	Containment Building Safety Injection System Containment Spray Nozzles Below El. 140'0" – Plans	9
13-P-ZCG- 119	Containment Building Safety Injection System Containment Spray Nozzles Below El. 140'0" – Sections	3
13-P-ZCG- 120	Lower Auxiliary Header Details	7
13-P-ZCG- 121	Supply Pipe (Loop Seals) Details	3

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Operator Challenges Summary Report,	September 30, 2010
	Control Room Deficiency Log Summary Report	September 30, 2010
	PVNGS System Health Report Executive Summary	January 1 – June 30, 2010
	Condition Reporting Trend Report 3 <sup>rd</sup> Quarter 2010	
	Condition Reporting Trend Report 2 <sup>nd</sup> Quarter 2010	

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
DSR 10-734	NAD Bi-Monthly Department Report (Maintenance)	November 10, 2010
	Maintenance Department Human Performance Improvement Plan	
	NAD Technical Specification & Administrative Control Audit 2010-007	July 22, 2010
	Maintenance COGS (Conditions, Observations, Good Sightings) Report	October, 2010
	Site Maintenance Department Performance Indicators	October, 2010
	Palo Verde Nuclear Generating Station Site Metrics	October, 2010
	Nuclear Assurance Fourth Quarter/Annual Report	February 10, 2010
	Nuclear Assurance 2010 First Cycle Report	June 10, 2010
	Adverse CRDR 3551377 Evaluation Report	0
13-NC-ZC-0232	Calculation, LOCA Pressure and Temperature Containment Analysis for Limiting Case	11
13-NC-SI-0202	Calculation, Containment Spray System Response & Header Fill Time	4
	Unit 3 Containment Spray Nozzle Obstructions Significant (SIG) CRDR Root Cause Evaluation Report	1
	Root Cause Investigation Charter & Pre-Evaluation for CRDR 3547810	October 20, 2010
	MPR Associates Inc. Engineering Evaluation for Containment Spray Nozzle Obstructions	November 30, 2010

**Section 4OA3: Event Follow-Up**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
20DP-0SK20	General Security Instructions	38
21SP-0SK11	Security Contingencies Appendix A Response Force Leader	40
21SP-0SK11	Security Contingencies Appendix B CAS/SAS Operators	40
20SP-0SK02	Security Owner Controlled Area Checkpoint	20
20SP-0SK32	Security CAS/SAS Operations	26
40AO-9ZZ06	Loss of Instrument Air - Appendix J Aligning N2 to the CTMT Instrument Air Header	32

PALO VERDE ACTION REQUESTS

3357510    3567129    3527455

CONDITION REPORTS / DISPOSITION REQUESTS

3358267    3569938

CONDITION REPORT ACTION ITEMS

3569939    3569940

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
01-M-IAP-003	P & I Diagram Instrument and Service Air System	77

WORK ORDERS

3557771    3567317    3567131    3406182

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Palo Verde Security Operations Central Alarm Station Log	October 12, 2010
	Palo Verde Security Operations Central Alarm Station Log	October 13, 2010
	Palo Verde Security Operations Central Alarm Station Log	November 8, 2010
	APS SCADA Physical Topology	November 8, 2010
	Alarm / Event Conditions Report	November 8, 2010
	EN 46329 Event Notification Worksheet	October 13, 2010
	Unit 1 Control Room Operations Log	December 11, 2010

**Section 40A5: Other Activities**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
40OP-9SI01	Shutdown Cooling Initiation	45
40OP-9SI02	Recovery From Shutdown Cooling to Normal Operating Lineup	26
40OP-9SI04	Safety Injection System Venting	90
40ST-9SI13	LPSI and CS System Alignment Verification	22

CONDITION REPORTS / DISPOSITION REQUESTS

3493945

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
01-M-SIP-001	P & I Diagram Safety Injection & Shutdown Cooling System	47
01-M-SIP-002	P & I Diagram Safety Injection & Shutdown Cooling System	37
03-P-SIF-0208	Auxiliary Building Isometric Safety Injection System LPSI & Cont Spray Discharge Train B	4
13-P-SIF-0208	Aux Bldg Iso Sfty Inj Sys LPSI, Cont Spray Discharge Train B	21
LPSI-A-S-001	PVNGS Unit 3 LPSI A Suction	
LPSI-B-S-001	PVNGS Unit 3 LPSI B Suction	

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	Alloy 600 Management Program Plan	November 24, 2009
10-PT-3002	Liquid Penetrant Examination Report - Shutdown Cooling Loop 1	October 6, 2010
10-UT-3022	Ultrasonic Examination Report - Shutdown Cooling Loop 1	October 6, 2010
10-UT-3024	Phased Array Ultrasonic Examination Record – Reactor Coolant Pump 1A Cold Leg Safety Injection Nozzle	October 12, 2010
10-UT-3027	Phased Array Ultrasonic Examination Record – Reactor Coolant Pump 1B Cold Leg Safety Injection Nozzle	October 9, 2010
10-UT-3029	Phased Array Ultrasonic Examination Record - Reactor Coolant Pump 2A Cold Leg Safety Injection Nozzle	October 12, 2010
CN-SEE-III-08-36	Evaluation of Suction Side Criteria for Palo Verde Units 1, 2 and 3 to Address GL-2008-01	1

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
13-MS-A108	Palo Verde Nuclear Generating Station Engineering Study, Determination of Allowable Void Size and Venting Criteria for the PVNGS ECCS and CSS Pump Suctions	2
13-MS-B086	PVNGS Engineering Study, Development of ECCS Suction Side Piping Arc Lengths Associated with Calculated Max Void Volumes	0
09-R003	Licensing Document Change Request to Revise TRM Surveillance Requirements for Fire Damper Testing	November 2, 2009
TRM 3.11.103	CO <sub>2</sub> Systems	September 24, 1999
TRM 3.11.106	Halon® Systems	September 24, 1999
TRM 3.11.103	CO <sub>2</sub> Systems	November 6, 2009
TRM 3.11.106	Halon® Systems	November 6, 2009
TRM 6.0.100	TRM Specification Bases	February 26, 2009
LDCR 09-R003 FPCRR 3304353	Fire Protection Change Regulatory Review  Engineering Evaluation	November 1, 2009
NUREG 0857	Safety Evaluation Report Related to the Operation of Palo Verde Nuclear Generating Station: Units 1, 2, and 3	November 1981
UFSAR APPENDIX 9B	Fire Protection Evaluation Report	June 2007
UFSAR APPENDIX 9B, Table 9B.3-1	Comparison of Palo Verde Nuclear Generating Station To Appendix A of NRC Branch Technical Position APCSB 9.5-1	June 2005
UFSAR 9.5.1	Fire Protection System	June 2007
NFPA-12	Carbon Dioxide Extinguishing Systems	1973

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
NFPA-12A	Halogenated Fire Extinguishing Agent Systems – Halon 1301	1973