UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

February 9, 2006

James M. Levine, Executive Vice
President, Generation
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000528/2005005, 05000529/2005005; AND 05000530/2005005

Dear Mr. Levine:

On December 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility. The enclosed integrated report documents the inspection findings, which were discussed on January 4, 2006, with Mr. C. Eubanks, Vice President of Nuclear Operations, and other members of your staff.

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

The report documents four NRC identified findings. Three of these findings were evaluated under the risk significance determination process as having very low safety significance (Green). One finding was not suitable for evaluation under the significance determination process; however, it was determined to be of very low safety significance (Green) by NRC management review. Three findings involved violations of NRC requirements. Because of the very low safety significance of these violations and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, the report documents one additional example of an NRC identified violation documented in NRC Supplemental Inspection Report 05000528; 05000529; 05000530/2005012. Three licensee identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. If you contest these noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at Palo Verde Nuclear Generating Station, Units 1, 2, and 3, facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Troy W. Pruett, Chief
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Division of Reactor Projects

Dockets: 50-528
50-529
50-530

Licenses: NPF-41
NPF-51
NPF-74

Enclosure:
NRC Inspection Report 05000528/2005005, 05000529/2005005, and 05000530/2005005
w/Attachment: Supplemental Information

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SUNSI Review Completed: __TWP ADAMS: / Yes ☐ No Initials: _TWP_____
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R:_REACTORS_PV\2005\PV2005-005RP-GGW.wpd

RIV:RI:DRP/D	RI:DRP/D	SRI:DRP/D	C:DRS/PEB
JFMelfi	PLBenvenuto	GGWarnick	LJSMITH
T-TWP	**T-TWP**	**T-TWP**	**/RA/**
02/3/06	02/3/06	02/3/06	02/6/06

C:DRS/PSB	C:DRS/OB	C:DRS/EMB	C:DRP/D
MPShannon	AGODY	JCLARK	TWPruett
/RA/	**/RA/**	**/RA/**	**/RA/**
02/8/06	02/8/06	02/7/06	02/9/06

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-528, 50-529, 50-530
Licenses:	NPF-41, NPF-51, NPF-74
Report:	05000528/2005005, 05000529/2005005, 05000530/2005005
Licensee:	Arizona Public Service Company
Facility:	Palo Verde Nuclear Generating Station, Units 1, 2, and 3
Location:	5951 S. Wintersburg Tonopah, Arizona
Dates:	October 1 through December 31, 2005
Inspectors:	G. Warnick, Senior Resident Inspector J. Melfi, Resident Inspector P. Benvenuto, Resident Inspector C. Osterholtz, Senior Resident Inspector J. Drake, Operations Engineer, Operations Branch C. Young, Project Engineer, Project Branch D G. George, Reactor Inspector, Engineering Branch 1 S. Graves, Reactor Inspector, Engineering Branch 1 J. Adams, Reactor Inspector, Engineering Branch 1 D. Livermore, Reactor Inspector, Engineering Branch 1 G. Johnston, Senior Operations Engineer B. Baca, Health Physicist, Plant Support Branch C. Paulk, Senior Reactor Inspector, Engineering Branch 1 W. Sifre, Reactor Inspector, Engineering Branch 1
Approved By:	Troy W. Pruett, Chief, Project Branch D Division of Reactor Projects

CONTENTS

SUMMARY OF FINDINGS

IR 05000528/2005005, 05000529/2005005; 05000530/2005005; 10/01/05 - 12/31/05; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Integrated Resident and Regional Report; Flood Protection Measures, Maintenance Effectiveness, Operability Evaluations, Identification and Resolution of Problems.

This report covered a 3-month period of inspection by four resident inspectors, six reactor inspectors, two operations engineers, one health physicist, and one project engineer. The inspection identified four noncited violations. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to correct a condition adverse to quality involving the refueling water tank instrument pit. Specifically, in August 2003, the licensee inadvertently cancelled the work orders to correct deficiencies associated with flooding of the refueling water tank instrument pit. This error was identified by the licensee in October 2004; however, corrective actions were inadequate to ensure timely correction of the adverse condition. Additionally, two of the three work orders were inappropriately closed with no work performed following the inspectors' identification of the issue in August 2005. After identification by the inspectors, the licensee installed temporary modifications to prevent water intrusion into the pit. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2838845.

  The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding required a Phase 3 analysis by a senior reactor analyst, since the finding was potentially risk significant due to external initiating event core damage sequences. A senior reactor analyst performed a qualitative assessment and concluded that the finding had very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that corrective actions lacked timeliness, adequacy, and thoroughness (Section 1R06).

- Green. The inspectors identified a noncited violation of 10 CFR 50.65(a)(2) for the failure to demonstrate that the performance or condition of three reactor coolant system resistance temperature detectors had been effectively controlled and monitored against

licensee-established goals. Specifically, the licensee failed to identify, and properly account for, three detector functional failures occurring from May 31, 2004 to June 23, 2005. Consequently, the licensee did not establish appropriate goal setting and monitoring for the detectors. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2856282.

The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not represent an actual loss of safety function. The cause of the finding is related to the crosscutting element of problem identification and resolution in that the licensee failed to identify the need to perform a maintenance rule functional failure review for failed resistance temperature detectors (Section 1R12).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to correct a condition adverse to quality involving the use of Maintenance Department Guidelines. Specifically, instrumentation and controls personnel did not complete actions used as a basis for closure for Condition Report/Disposition Request 2715129. In addition, the extent of condition review did not identify the continued active use of Maintenance Department Guidelines to perform quality related activities. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2830633.

  The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not result in the loss of safety function of any component, train, or system. The cause of the finding is related to the crosscutting element of problem identification and resolution in that maintenance personnel did not implement timely corrective actions and performed a poor extent of condition review (Section 4OA2).

- SLIV. The inspectors identified a noncited Severity Level IV violation of 10 CFR 50.73 for the failure to submit a licensee event report within 60 days to report the completion of a plant shutdown required by the Technical Specifications. A second similar example of a violation of the same regulation was identified by the licensee. Specifically, the licensee was required to submit a licensee event report by May 17, 2005, to report the completion of a plant shutdown required by the Technical Specifications that occurred on March 18, 2005. This licensee event report was submitted on November 7, 2005. Additionally, the licensee was required to submit a licensee event report by April 10, 2005, to report the completion of a plant shutdown that occurred on February 9, 2005. A revised licensee event report was submitted on January 6, 2006. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2829976 and 2844019.

The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform this regulatory function was potentially impacted by the licensee's failure to report the event. The finding was determined to be a Severity Level IV violation in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that the transportability review, conducted by regulatory affairs personnel, failed to identify an additional example of a missed reportable event that was subsequently identified by the NRC (Section 4OA2).

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 actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at essentially full power until October 8, 2005, when the unit was shutdown for the twelfth refueling outage. The outage was completed on December 23. The unit reached 32 percent power on December 25 and remained there for the duration of the inspection period due to vibration limitations on shutdown cooling suction Valve 1JS1AUV0651.

Unit 2 operated at essentially full power until October 11, 2005, when the unit was shutdown as required by Technical Specification (TS) 3.0.3 since the licensee was unable to demonstrate that the emergency core cooling system (ECCS) could perform its safety function under certain postulated loss of coolant accident scenarios. Following resolution of the ECCS issue, the unit returned to essentially full power on October 22 and remained there for the duration of the inspection period.

Unit 3 operated at essentially full power until October 2, 2005, when the unit was shutdown due to an equipment issue with an reactor coolant pump oil seal. Following repairs to the oil seal, the unit returned to essentially full power on October 8 and remained there until October 11, when the unit was shutdown as required by TS 3.0.3 since the licensee was unable to demonstrate that the ECCS could perform its safety function under certain postulated loss of coolant accident scenarios. Following resolution of the ECCS issue, the unit returned to essentially full power on October 22 and remained there for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Readiness for Seasonal Susceptibilities

The inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving extreme low temperatures. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report (UFSAR), and TSs to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the system listed below to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures, temporary chillers, etc...) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program (CAP) to determine if the licensee identified and corrected problems related to adverse weather conditions.

C December 6, 2005, Units 1, 2, and 3, implementation of Procedure 40OP-9ZZ17, "Cold Weather Protection," Revision 28, for the emergency core cooling, emergency diesel generator (EDG), and spray pond (SP) systems

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown

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

C October 25, 2005, Unit 1, **spent fuel pool** cooling system following core offload

- **October 25, 2005, gas turbine generator Train 1**

- **October 26, 2005, gas turbine generator Train 2**

C November 22, 2005, Unit 1, **spent fuel pool** cooling Train A while Train B was out of service

Documents reviewed by the inspectors included:

Procedures
40OP-9PC01, "Fuel Pool Cooling," Revision 5
55OP-0GT01, "Gas Turbine Generator 1 Operating Instruction," Revision 43
55OP-0GT02, "Gas Turbine Generator 2 Operating Instruction," Revision 41
WROP-8FS01, "WRF Fuel System Operating Procedure"

Drawing
01-M-PCP-001, "Fuel Pool Cooling & Cleanup System," Revision 24

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Quarterly Inspection

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

- October 25, 2005, gas turbine generator Trains 1 and 2
- October 26, 2005, Unit 1, containment building, all elevations
- October 27, 2005, Unit 1, auxiliary building 88-foot, 70-foot, 52-foot, and 40-foot elevations
- December 5, 2005, Unit 3, condensate storage pump house and tunnel
- December 14, 2005, Unit 2, auxiliary feedwater pump rooms
- December 14, 2005, Unit 3, auxiliary feedwater pump rooms

Documents reviewed by the inspectors included:

Procedure
PVNGS Pre-Fire Strategies Manual, Revision 15

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

Annual External Flooding

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

C December 6, 2005, Units 1, 2, and 3, refueling water tank (RWT) instrument pit

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

Semi-annual Internal Flooding

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

C December 13-14, 2005, Units 1, 2, and 3, auxiliary feedwater pump rooms

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction. A Green noncited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure to correct a condition adverse to quality involving the RWT instrument pit.

Description. While reviewing corrective action documents related to flood protection measures, the inspectors noted that Condition Report/Disposition Request (CRDR) 2548036 dated August 13, 2002, documented the licensee's review of industry operating experience Report OE-14417. As a result of the review, the licensee concluded that the RWT instrument pit was designed to remain dry; however, inspections in each unit identified evidence of water intrusion. The licensee determined that asphalt had been installed adjacent to the instrument pit in each unit which negated the effectiveness of the concrete curb installed to prevent water runoff from entering the pit. The licensee also identified that holes in the pit covers allowed rainwater to directly enter the instrument pit. Water entering the instrument pit could potentially cause a common mode failure of all four plant protection system recirculation actuation signal channels. Additionally, flooding of the instrument pit could cause multiple channel grounds and multiple channel trips in other plant protection system parameters (e.g., low departure from nucleate boiling and high local power density), resulting in a reactor trip.

The licensee initiated requests to develop Work Orders (WOs) to modify the berm surrounding the instrument pit and seal the openings in the pit covers to correct the adverse condition in December 2002. CRDR 2548036 was closed in February 2003 following initiation of the WOs. Because of a personnel error, the WOs were inappropriately cancelled on August 26, 2003, without performing any work. On October 15, 2004, the licensee identified the error and initiated CRDR 2746319 to correct the condition. Corrective maintenance WOs 2745724 (Unit 1), 2745728 (Unit 2), and 2745730 (Unit 3) were initiated to develop the tasks. The inspectors reviewed the WOs in August 2005, and observed that the documents were still in the early development stages with only a problem description identified, and that essentially no work had been completed since October 2004. The WOs had been assigned a priority code of 3, which is for actions required to improve the efficiency of power production, complete required routine activities, or meet external commitments with flexible due dates. The inspectors determined that corrective actions for the identified adverse conditions were not completed in a timely manner. Following identification of the corrective action timeliness issues to the licensee in August 2005, the corrective maintenance WOs were further planned and developed.

On October 18, 2005, the inspectors questioned operations personnel on the basis for operability with the identified degraded condition. The control room reviewed the condition and made a log entry documenting the justification for operability; however, the justification was based on inaccurate information regarding the completion of the WOs to correct the degraded condition. Specifically, the inspectors reviewed the status of the WOs and identified that two of the three WOs were inappropriately closed with no work performed. The planner, during a pre-job walkdown, incorrectly determined that no work was needed on Units 1 and 2 and only left WO 2745730 open for implementation. The inspectors informed the shift technical advisor that the log entry to address system operability contained inaccurate information, and that the work had not been completed

as indicated. The operability justification was corrected on October 20, 2005, in the unit logs. Additionally, new WOs were generated for Units 1 and 2. The inspectors confirmed that all work to correct the asphalt and associated water runoff problems were corrected by December 22, 2005. Temporary flashing installation was completed on October 27, 2005, to seal the holes in the pit covers to prevent direct entry of rainwater. An engineering modification is in development to install permanent flashing.

The licensee initiated CRDR 2839150 to determine why corrective maintenance WOs for Units 1 and 2, which were linked to CRDR 2746319 as corrective actions, were closed without the required work being performed. Immediate corrective actions to prevent inappropriately cancelling or changing the priority of a WO were taken by the licensee. Specifically, shift manager review was required to change the priority of a WO, and unit department leader review was required to cancel a WO. However, the inspectors observed that the actions were inadequate to prevent a WO from being closed with no work performed as identified on October 18, 2005. Following identification of this oversight, Procedure 30DP-9WP02, "Work Document Development and Control," was revised to correct the condition.

On October 28, 2005, the inspectors observed that CRDR 2843484, related to an issue identified with the RWT instrument pit hatch, went to the control room for review. Operations personnel inappropriately evaluated the condition using the inaccurate information documented in the log entry from October 18, 2005. The inspectors observed that the corrective actions associated with the inaccurate information in the log entry from October 18 were not adequate. Consequently, the log entry was inappropriately used to justify operability of a degraded structure, system, and component (SSC). Operators re-performed the control room review for CRDR 2843484 using the accurate information from the corrected log entry.

Analysis. The performance deficiency associated with this finding involved the failure to correct a condition adverse to quality in a timely manner. The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding required a Phase 3 analysis by a senior reactor analyst, since the finding is potentially risk significant due to external initiating event core damage sequences. A senior reactor analyst reviewed the finding for significance, and two sequences were identified that could contribute to a change in the baseline core damage frequency:

(1) A large rainfall floods the instrument pit and renders all instruments nonfunctional. Then, during a potential 8-24 hour period before plant operators would detect and correct this situation, a loss of coolant accident occurs requiring the RWT for injection. After depletion of the RWT, a recirculation actuation signal would not be processed, requiring manual actions by operators to restore suction (from the containment sump) to the ECCS pumps. If the manual actions failed, a core damage event could occur.

(2) A seismic event causes a breach of the non-seismic hold up tank (HUT) as well as a stuck open power operated relief valve or safety relief valve, resulting in a loss of coolant accident. The water from the HUT floods the RWT instrument pit and disables the instrumentation. The remainder of the sequence is as in (1) above.

The analyst considered sequence (1) to be very unlikely because of the infrequency of large rainfall events at the plant site combined with a very small probability of an unrelated loss of coolant accident occurring at the same time. Likewise, sequence (2) was considered to be very unlikely because of the low seismicity of the region and the fact that the ground contours would cause the water from the HUT to drain in the opposite direction of the RWT instrument pit.

Based on this qualitative assessment, the analyst concluded that the finding had very low safety significance (Green). The cause of the finding is related to the crosscutting element of problem identification and resolution in that corrective actions lacked timeliness, adequacy, and thoroughness.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, are promptly identified and corrected. Contrary to this, between December 2002 and October 2005, the licensee did not implement corrective actions for a condition adverse to quality. Specifically, in August 2003, the licensee inadvertently cancelled the WO's to correct deficiencies associated with flooding of the RWT instrument pit. This error was identified by the licensee in October 2004; however, corrective actions were inadequate to ensure timely correction of the adverse condition. Additionally, two of the three WOs were inappropriately closed with no work performed following the inspectors' identification of the issue in August 2005. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2838845, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2005005-01, "Failure to Promptly Correct an Adverse Condition with the RWT Instrument Pit."

1R08 Inservice Inspection Activities (71111.08)

.1 Performance of Nondestructive Examination (NDE) Activities Other Than Steam Generator Tube Inspections, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

a. Inspection Scope

The inspection procedure required the review of a sample of two or three types of NDE activities (surface, volumetric, and visual). The inspectors observed one surface examination in the form of a magnetic particle examination and 11 volumetric examinations utilizing ultrasonics. The examinations observed by the inspectors are listed in the attachment.

During the review of these examinations, the inspectors verified that the correct NDE procedure was used, examinations and conditions were as specified in the procedures, and test instrumentation or equipment was properly calibrated and within the allowable

calibration period. The inspectors also reviewed the documentation to determine if indications revealed were compared against the American Society of Mechanical Engineers (ASME) Code specified acceptance standards, and that the indications were appropriately dispositioned. The NDE certifications of personnel observed performing examinations or identified during review of completed examination packages were reviewed by the inspectors.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 Reactor Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

The inspectors reviewed video tape documentation of the licensee's inspection of the reactor vessel upper head penetrations. The inspectors also reviewed the procedures governing these activities.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control Inspection Activities (Pressurized Water Reactors)

a. Inspection Scope

The inspectors performed a review of the licensee's boric acid walkdown of the Unit 1 reactor containment as documented on August 12, 2005. The inspectors verified that the visual inspections emphasized locations where boric acid leaks can cause degradation to safety significant components. The inspectors also reviewed one condition report and associated WOs which documented the boric acid leaks identified during the walkdown.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The inspection procedure requires this section to be performed on existing steam generators. However, the licensee replaced the steam generators during this outage, and the inspections required by the inspection procedure were not performed.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspection procedure requires review of a sample of problems associated with inservice inspections documented by the licensee in the CAP for appropriateness of the corrective actions.

The inspectors reviewed 18 corrective action reports which dealt with inservice inspection activities and found the corrective actions were appropriate. From this review the inspectors concluded that the licensee had an appropriate threshold for entering issues into the CAP and has procedures that direct a root cause evaluation when necessary. The licensee also had an effective program for applying industry operating experience.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

Following the completion of the annual operating examination testing cycle, which ended the week of September 23, 2005, the inspectors reviewed the overall pass/fail results of the annual individual job performance measure operating tests, and simulator operating tests administered by the licensee during the operator licensing requalification cycle. Twenty separate crews participated in simulator operating tests, and job performance measure operating tests, totaling 103 licensed operators. All 20 crews evaluated passed the simulator portion of the annual operating test. One of the 103 licensed operators failed the job performance measure operating test. The individual was successfully remediated. These results were compared to the thresholds established in Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- September 4, 2005, Unit 2, high pressure safety injection Pump 2MSIBP02 inboard bearing oil leak documented in CRDR 2828195

- December 20, 2005, Units 2 and 3, hot leg resistance temperature detector failures that occurred between May 2004 and November 2005

- December 22, 2005, Unit 1, inverter failure and identification of non-conforming capacitors as described in CRDRs 2842547 and 2843070

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50.65(a)(2) for failure to demonstrate the performance or condition of reactor coolant system hot leg resistance temperature detectors (RTDs) was being effectively controlled. Specifically, the licensee did not evaluate maintenance rule functional failures of the RTDs; effectively, missing the opportunity to place the RTDs into 10 CFR 50.65(a)(1) status.

Description. The inspectors reviewed condition reports related to five failures of RTDs, in Units 2 and 3. The RTDs that failed are:

- Unit 3 RTD 3JRCCTE0122HC on May 31, 2004
- Unit 2 RTD 2JRCBTE0122HB on May 22, 2005
- Unit 2 RTD 2JRCDTE0112HD on June 23, 2005
- Unit 3 RTD 3JRCDTE0122HD on October 24, 2005
- Unit 2 RTD 2JRCDTE0112HD on November 24, 2005, recurrent failure

Each RTD is an input to core protection calculator (CPC) channels of the reactor protection system. Each failure caused its respective CPC channel to send a reactor trip signal, as designed; however, a reactor trip did not occur because the CPC channel trip was not coincident with an additional CPC channel trip. In each case, the licensee determined that the cause of the RTD failures were due to a loss of insulation resistance internal to the RTDs. In addition, each failure was exclusive to the same model RTD.

Through discussions with licensee staff, the inspectors determined that the failed RTDs are maintenance rule components. Accordingly, each RTD failure must be evaluated as a maintenance rule functional failure. The functional failures should be compared against licensee-established performance criteria or goals for reliability to determine its maintenance rule status. The inspectors identified that the May 2004, May 2005, and June 2005 RTD failures were not evaluated as maintenance rule functional failures. In addition, the licensee did not establish performance criteria or goals to which the RTDs could be compared to determine their transition from maintenance rule status (a)(2) to (a)(1). Therefore, no decision was made to place the RTDs into (a)(1) status.

After the most recent November 2005 failure, which was a recurrence of the June 2005 failure, licensee staff placed each affected RTD into (a)(1) status due to system unavailability. The inspectors determined that the RTDs could have been placed into (a)(1) status, prior to December 14, 2005, if the licensee had established performance criteria to demonstrate the condition of the RTDs were effectively controlled through maintenance. The licensee staff will be determining performance criteria for future RTD maintenance rule functional failures.

Analysis. Failure to evaluate RTD functional failures and place the components into (a)(1) status is a performance deficiency because the licensee failed to meet the requirements of 10 CFR 50.65(a)(2). The finding is greater than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not represent an actual loss of safety function. The cause of the finding is related to the crosscutting element of problem identification and resolution in that the licensee failed to identify the need to perform a maintenance rule functional failure review for failed RTDs.

Enforcement. 10 CFR 50.65(a)(1), requires, in part, that the holders of an operating license shall monitor the performance or condition of SSCs within the scope of the rule as defined by 10 CFR 50.65(b), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs, are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety.

10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to the above, prior to December 14, 2005, the licensee failed to demonstrate that the performance or condition of three RTDs had been effectively controlled and monitored against licensee-established goals. Specifically, the licensee failed to identify, and properly account for, three RTD functional failures, occurring from May 31, 2004, to June 23, 2005, which resulted in a failure to appropriately handle the degraded RTD performance or condition to identify that goal setting and monitoring was required. Because this finding is of very low safety significance and has been placed in the

licensee's CAP as CRDR 2856282, the violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000529; 05000530/2005005-02, "Failure to Demonstrate Effective Maintenance of Hot Leg Resistance Temperature Detectors."

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

a. Inspection Scope

Risk Assessment and Management of Risk

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

- November 30, 2005, Unit 2, evaluation of the risk management action levels during a Train B outage of the EDG, emergency cooling water, essential chilled water, spray pond, and safety injection systems

- December 12, 2005, Unit 2, auxiliary feedwater Pump AFA-P01 was taken out of service for scheduled maintenance including Valve AFA-HV32 static lube test

Emergent Work Control

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

- October 31, 2005, Unit 1, failure of Class 1E Inverter 1EPNBN12 as described in CRDR 2842547

- November 4, 2005, Units 2 and 3, visual inspection of all class instrument inverter AC output capacitors to verify that non-conforming output capacitors were not installed

- November 22, 2005, Unit 1, inspection of balance of plant engineered safety features actuation system cabinet to verify that the appropriate integrated chip relay drivers were installed per WO 2847974

- December 6-9, 2005, Unit 1, removal of the vortex prevention plate from the shutdown cooling system Train A suction piping, including implementation of foreign material exclusion procedures

- December 6, 2005, Unit 2, lower than design flow identified on EDG exhaust fan Train B as described in CRDR 2850999

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed seven samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts for the below listed evolutions to evaluate operator performance in coping with non-routine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the non-routine evolution sampled.

- On October 11, 2005, Units 2 and 3 conducted plant shutdowns as required by TS 3.0.3. The shutdowns occurred due to the licensee's inability to demonstrate that the ECCS suction line would remain water filled following uncovery of the RWT vortex breakers. The licensee made this determination following a review of the issue after a question regarding the design of the ECCS was raised by the inspectors. This event was documented in CRDRs 2836335 and 2836359. Observation and findings associated with the potential design issue, and the impact on ECCS operability, are documented in NRC Supplemental Inspection Report 05000528; 05000529; 05000530/2005012.

Documents reviewed by the inspectors included:

CRDR
2838368

Miscellaneous
Calculation MISC-REC-249, "ECCS Piping Interface Requirement per Outstanding CESSAR Review Matter, Number 38"

Calculation FAI/05-106, "Technical Assessment of the Check Valve Response for the Refueling Water Tank Suction Line," Revision 0

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- October 12, 2005, Units 2 and 3, RWT to safety injection suction isolation check Valves CHA-V0306 and CHB-V0305 may not remain closed under all circumstances as described in Operability Determination (OD) 302

- November 1-5, 2005, Units 2 and 3, evaluation of degraded and non-conforming capacitors installed in the class instrument AC inverters described in CRDR 2843070

- December 1, 2005, Unit 2, EDG Train B essential exhaust fan identified with lower than design flow as documented in CRDRs 2843079 and 2850999

- December 12, 2005, Unit 2, assessment of potential non-conforming component in charging pump Train A

- December 15, 2005, Unit 2, incorrect oil found in containment spray pump Train B as documented in CRDR 2854017

- December 14, 2005, Units 1, 2, and 3, potential non-conforming condition involving condensate storage tank level instrumentation separation described in CRDR 2856264

- December 22, 2005, Units 1 and 2, steam generator movement and impact to operability as documented in CRDR 2856439

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed seven samples.

b. Findings

Introduction. The inspectors identified an additional example of the Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," described in NRC Supplemental Inspection Report 05000528; 05000529; 05000530/2005012, for the failure to establish an adequate procedure and implement existing procedures involving implementation of the OD process. The inspectors also identified examples where information provided to operations from engineering was not sufficiently accurate or complete to support operational decision making with respect to capacitor service life and the overall impact of the identified degraded or non-conforming capacitors.

Operability Determination Process

Description. On November 1, 2005, the inspectors attended a meeting that was held with engineering, operations, and operations management representatives to discuss the potential operability impact of a degraded equipment condition. The licensee identified the degraded condition while troubleshooting a Class 1E inverter failure. Specifically, the measured capacitance for the DC input capacitors associated with the inverters was found significantly lower than the rated value.

The inspectors observed confusion regarding the applicability of the OD process during the course of the meeting. The confusion centered around Step 3.1.2 of Procedure 40DP-9OP26, "Operability Determination," Revision 14, which stated, in part, that entry into the OD process is not required for degraded or non-conforming conditions that do not impact a specified safety function. However, Section 1.2 of the Procedure 40DP-9OP26 and the NRC Part 9900 Guidance, "Operability Determination Process," stated that the OD process should be entered when there is a question regarding the ability of an SSC to perform its specified safety function. It was evident that licensee personnel questioned whether the degraded capacitor condition impacted the specified safety function based on the considerable amount of time discussing the degraded condition to determine whether there was an impact on operability. In fact, the licensee utilized Procedure 40DP-9OP26, Appendix D - Immediate Operability Determination (IOD) Checklist, during the meeting to evaluate the degraded condition's impact on operability. The licensee concluded that the degraded capacitor condition did not impact the specified safety function of the inverters. This conclusion was the basis for the determination that an OD was not applicable per Step 3.1.2, and that the CAP, through CRDR 2843070, was the appropriate tool to follow-up on outstanding questions and further evaluate the degraded condition.

Following the meeting, the inspectors expressed concern over the licensee's process and commented that it appeared that an IOD was performed to conclude that an OD was not applicable. The inspectors further questioned operations personnel on whether the outstanding questions and further evaluation should be pursued using the OD process. Consistent with the NRC Part 9900 Guidance, a prompt operabilty determination rather than the CRDR process, should have been used to ensure that the timeliness of the additional follow-up was commensurate with the safety significance of the issue.

The inspectors performed an abbreviated extent of condition review by interviewing operations personnel and sampling log entries between October 24 and November 10, 2005, and concluded that the confusion related to OD applicability was widespread. In conclusion, the inspectors determined that the procedural guidance was inadequate and misleading with respect to when an IOD and prompt operability determination were necessary. Following the inspectors' observations, on November 18, 2005, the licensee revised Procedure 40DP-9OP26 to clarify OD applicability and to conform with NRC Part 9900 Guidance.

Accuracy of Output Capacitor Information

In November 2005, the licensee initiated CRDR 2842818, indicating that the 120 VAC Inverter PNB-N12 on Unit 1 had failed. The inverter was manufactured by ELGAR (INV 253-1-101), and uses 15 General Electric (GE) manufactured 150 micro-farad capacitors to provide filtering of the output AC voltage for use in the Class 1E Instrument and Power system. Preliminary troubleshooting indicated a failure in the capacitor output filtering circuit may have caused the inverter to trip. During further review, the licensee discovered that inverter maintenance documents indicated a part number for the capacitors that did not match the as-found condition in the PNB-N12 inverter, and that other inverters in Units 1, 2, and 3, used the same model of capacitor. Licensee engineering personnel submitted an email request to GE for additional information about the inverter filter capacitors, including: 1) information on the compatibility of the as-found capacitors with the capacitor part numbers listed in the inverter technical manual; and 2) operating service life data for the as-found capacitors.

GE responded to the request with an email providing the following information: 1) the as-found capacitors were electrically equivalent, but mechanically different from those listed in the ELGAR technical manual; 2) the equipment manufacturer is responsible for determining useable component service life based upon their specific application; and 3) general rules for temperature derating of the capacitors, including several data points for temperature versus service life derating factors. The email directed the licensee to a graph on Page 12 of an attached catalog, "CPD 513, Capacitors for High Current, Power Semiconductor, and DC Applications," Revision B. This graph is titled "Correction Factor For Ambient Temperature," and provides a root-mean-squared (RMS) current correction factor for a range of ambient temperatures. This correction factor is used to uprate the allowable RMS current in the capacitor based on ambient temperature values. Engineering personnel subsequently used this data in the calculation of capacitor service life, and provided the information to operations personnel for the OD of the inverters.

The inspectors questioned the validity of using this graph and data in the capacitor service life calculation and the adequacy of the associated OD for the non-conforming condition. Licensee personnel were reluctant to contact GE for further clarification of this issue, and indicated, after review, that the vendor must have concluded a direct correlation could be made between ambient temperature, RMS current rating factors, and acceptable service life of the capacitors. The inspectors contacted GE directly to confirm the correlation and determined that the information provided to the licensee was

misleading and could not be used to determine acceptable service life. Subsequently, GE communicated the error to engineering personnel, who informed operations of the inaccurate information. The OD was revised to document an appropriate justification for the acceptable service life of the capacitors.

Accuracy of Input Capacitor Information

The ELGAR inverter uses a pre-charge circuit of 20 horizontally-mounted 5400 micro-farad aluminum electrolytic capacitors. The capacitors perform two functions in the inverter: 1) maintain a charge voltage equal to the DC input potential for initial inverter starting; and 2) filter transients from the input on the DC bus. Once the inverter is online, the pre-charge function is no longer used and the capacitors provide limited filtering. The filtering function is based, in part, on the capacitance of the capacitor. Licensee personnel considered the failure of the input pre-charge capacitors in their troubleshooting phase, and completed a search of operating experience for similar failures across the industry. Based on this information, a number of capacitors were removed from the inverter and tested, and licensee personnel discovered several that yielded significantly lower than rated capacitive values. When the capacitors were placed in the vertical position, capacitance values slowly returned to rated values. The licensee concluded that the degradation in capacitance was associated with the horizontal orientation.

On November 1, 2005, the licensee conducted a meeting with engineering, operations, and operations management representatives to discuss the potential operability impact of a degraded equipment condition. The discussion focused on the degraded condition's impact to the pre-charge function of the capacitors. Based on input from engineering, the filtering aspect was not considered a valid failure mechanism. The licensee concluded that the degraded capacitor condition did not impact the specified safety functions of the inverters. This conclusion was the basis for the determination that an OD was not applicable and that the CAP was the appropriate tool to follow-up on outstanding questions and further evaluate the degraded condition. Further investigation of the capacitor mounting issue through available operating experience identified that the inability to adequately filter transients from the input on the DC bus due to the degraded capacitance was the cause of various component failures in the industry. Based on this additional information, the licensee appropriately entered the OD process to evaluate the condition.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to establish an adequate station equipment OD procedure and properly implement the OD process. The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because subsequent evaluations verified that safety functions were not lost in any of the examples. The cause of the finding is related to the crosscutting element of human performance in that communications between the engineering and operations organizations was inadequate.

Enforcement. 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. Procedure 40DP-9OP26, "Operability Determination," Revision 14, Section 1.2, and the NRC Part 9900 Guidance, stated that the OD process should be entered when the ability of an SSC to perform its specified safety function is questioned. The Part 9900 Guidance also stated that, "A prompt determination is warranted when additional information, such as supporting analysis, is needed to confirm the immediate determination." Contrary to the above, on November 1, 2005, the licensee inappropriately determined that the OD process was not applicable for a degraded capacitor condition that had the potential to impact Class 1E inverter operability. Consequently, the degraded condition was evaluated outside the OD process. Because the finding is of very low safety significance and has been entered into the CAP as CRDR 2838626, this violation is being treated as an NCV, and represents an additional example of NCV 05000528/2005012-04, "Failure to Properly Implement Station Procedure for Equipment Operability," documented in NRC Supplemental Inspection Report 05000528; 05000529; 05000530/2005012.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

Selected Review of Operator Workarounds

The inspectors reviewed the below listed operator workaround to: (1) determine if the functional capability of the system or human reliability in responding to an initiating event is affected; (2) evaluate the effect of the operator workaround on the operator's ability to implement abnormal or emergency operating procedures; and (3) verify that the licensee has identified and implemented appropriate corrective actions associated with operator workarounds.

- December 21, 2005, Unit 1, collect vibration data from data acquisition system for Valve 1JS1AUV0651

Documents reviewed by the inspectors are as follows:

Procedures
40DP-9OP14 "Operator Work Arounds," Revision 23
40DP-9OP15 "Operator Challenges and Discrepancy Tracking," Revision 15

The inspectors completed one sample.

Cumulative Review of the Effects of Operator Workarounds

The inspectors reviewed the cumulative effects of operator workarounds to determine: (1) the reliability, availability, and potential for misoperation of a system; (2) if multiplemitigating systems could be affected; (3) the ability of operators to respond in a

correct and timely manner to plant transients and accidents; and (4) if the licensee has identified and implemented appropriate corrective actions associated with operator workarounds. Documents reviewed by the inspectors included:

Procedure
40DP-9OP15, "Operator Challenges and Discrepancy Tracking," Revision 16

Miscellaneous
Operator Challenges Tracking Form

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed key affected parameters associated with energy needs, materials/replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flowpaths, pressure boundary, ventilation boundary, structural, process medium properties, licensing basis, and failure modes for the two modifications listed below. The inspectors verified that: (1) modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to a loss of key safety functions; (2) post-modification testing maintained the plant in a safe configuration during testing by verifying that unintended system interactions will not occur, SSC performance characteristics still meet the design basis, the appropriateness of modification design assumptions, and the modification test acceptance criteria has been met; and (3) the licensee has identified and implemented appropriate corrective actions associated with permanent plant modifications.

- Design Modification Work Order (DMWO) 2693912, "Instrument Air Compressor Replacement," Revision 0

- DMWO 2754516, "Mitigate Unit 1 Shutdown Cooling Line Vibration," Revision 0

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

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

- **October 13, 2005, Unit 3, retest of essential room cooler in containment spray pump room Train B per WO 2835787**

- November 29, 2005, Unit 1, design validation test per Procedure 40TI-9ZZ02, "Shutdown Cooling Vortex Test," Revision 1, following installation of the vortex plate

- December 9, 2005, Unit 1, Procedure 40ST-9SI12, "Shutdown Cooling Flow Verification," Revision 3, following removal of the vortex plate

  The licensee installed a vortex suppression plate in the shutdown cooling suction line per DMWO 2754516, "Mitigate Unit 1 Shutdown Cooling Line Vibration," to reduce flow induced vibrations caused by reactor coolant system flow across the pipe opening and temperature stratification. During design validation testing with shutdown cooling in operation, the pressure drop across the plate was excessive and would have impeded shutdown cooling operation. The vortex suppression plate was removed prior to restart.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the following risk significant refueling items or outage activities to verify defense in depth commensurate with the outage risk control plan, compliance

with the TSs, and adherence to commitments in response to Generic Letter 88-17, "Loss of Decay Heat Removal:" (1) the risk control plan; (2) tagging/clearance activities; (3) reactor coolant system instrumentation; (4) electrical power; (5) decay heat removal; (6) spent fuel pool cooling; (7) inventory control; (8) reactivity control; (9) containment closure; (10) reduced inventory or mid-loop conditions; (11) refueling activities; (12) heatup and cooldown activities; (13) restart activities; and (14) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities. The inspectors' containment inspections included observations of the containment sump for damage and debris; and supports, braces, and snubbers for evidence of excessive stress, water hammer, or aging. Steam generator outage activities are included in NRC Inspection Report 05000528/2005008.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- October 18, 2005, Unit 3, Procedure 40ST-9SI04, "Containment Spray Valve Verification," Revision 5

- November 10, 2005, Unit 2, Procedure 40ST-9HJ01, "Control Room Essential Filtration System Test," Revision 2

- November 11, 2005, Unit 1, local leak rate testing of containment Penetration 40 per Procedure 73ST-9CL01, "Containment Leakage Type 'B' and 'C' Testing," Revision 27, Section 8.18

- November 22, 2005, Unit 1, electrical Penetration Z70 per Procedure 73ST-9CL01, "Containment Leakage Type 'B' and 'C' Testing," Revision 27

- November 23, 2005, Unit 1, Procedure 73ST-9DG01, "Class 1E Diesel Generator and Integrated Safeguards Test, Train A," Revision 9

- December 8, 2005, Unit 3, Procedure 73ST-9XI14, "Train B HPSI Injection and Miscellaneous Safety Injection Valves Inservice Test," Revision 22

- December 9, 2005, Unit 1, EDG Trains A and B testing per Procedure 73ST-9DG01, "Class 1E Diesel Generator and Integrated Safeguards Test, Train A," Revision 9, and 73ST-9DG02, "Class 1E Diesel Generator and Integrated Safeguards Test, Train B," Revision 11

- December 12, 2005, Unit 3, Procedure 73ST-9AF02, "AFW-P01 Inservice Test," Revision 33

- December 12, 2005, Unit 1, testing of refueling equipment per Procedures 78ST-9FH01, "Refueling Machine Load Test," Revision 8, and 78OP-9FX01, "Refueling Machine Operations," Revision 27

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed nine samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

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

- December 14, 2005, Unit 1, completed review of the maintenance and troubleshooting of control element Assembly 89 following slippage during rod movement that occurred in May 2004

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

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

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of five radiation, high radiation, and potential airborne radioactivity areas
- Radiation exposure permit, procedure, and engineering controls and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Barrier integrity and performance of engineering controls in four potential airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.
- Self-assessments and audits related to the access control program since the last inspection
- Corrective action documents related to access controls

- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation exposure permit briefings and worker instructions
- Adequacy of radiological controls such as required surveys, radiation protection job coverage, and contamination controls during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following items:

- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Licensee event reports, and special reports related to the access control program since the last inspection
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem Committed Effective Dose Equivalent

Documents reviewed by the inspectors are listed in the attachment.

The inspector completed 21 of the required 21 samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspector sampled licensee submittals for the performance indicators (PIs) listed below for the period from April 1, 2004, through September 30, 2005. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 3, were used to verify the basis in reporting for each data element.

Occupational Radiation Safety Cornerstone

- Occupational Exposure Control Effectiveness

Licensee records reviewed included corrective action documentation that identified occurrences of locked high radiation areas (as defined in the licensee's TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02). Additional records reviewed included As Low As Reasonably Achievable (ALARA) records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the PI data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled.

Public Radiation Safety Cornerstone

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

Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded PI thresholds and those reported to the NRC. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the PI data.

Documents reviewed by the inspector are listed in the attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Daily Reviews

In order to identify repetitive equipment failures or specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily CRDR summary reports. The inspectors also reviewed daily summaries of work mechanisms initiated to determine whether CRDRs were generated as appropriate to properly evaluate potential maintenance rule impact, operability issues, and reportable conditions.

No findings of significance were identified.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the four below listed issues for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration

of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- CRDR 2831313, Site Work Management System (SWMS) characteristics screen discrepancies
- CRDR 2715129, Maintenance Department Guidelines were not properly maintained
- CRDR 2812449, translation of the preventive maintenance bases into preventive maintenance task documents
- CRDR 2829976, review of potential reportable events for the calendar year to determine the extent of condition associated with an identified reporting failure

Documents reviewed by the inspectors are listed in the attachment.

b. Observations and Findings

1. Site Work Management System Vulnerabilities

The inspectors interviewed licensee personnel and determined that the information contained in the SWMS Characteristics Screen is considered to be correct by engineering personnel. The assumption is that any information listed in SWMS matches design output documents (such as vendor manuals, drawings and calculations). Any discrepancies identified in the SWMS data are corrected using the Pending Change Process (PCP) of Procedure 87DP-0CC017, "Control of Engineering Data in SWMS." The inspectors determined that the control of PCPs has not met station expectations and that a backlog of over 1300 unresolved PCPs exists. The licensee has hired a contractor to work down the backlog of existing PCPs. This backlog, along with other weaknesses, contributed to the decision to place Procurement Engineering on the station-wide Top Ten List as described in CRDR 2831313, written on September 21, 2005.

The inspectors observed that setpoint information for safety-related equipment is not normally contained in SWMS. Safety-related setpoints are more typically contained in calculations or other design output documents. In these cases, the "Comment" field on the SWMS Design Component Information Screen is used to record the location of the setpoint data. The inspectors were able to verify that this practice is used throughout the SWMS database. The licensee performed a query of the SWMS database to determine if there were any quality-related instruments for which the setpoint data fields were populated. This query identified that a large number of safety-related instruments contained both the standard comment described above and specific setpoint data in the applicable fields on the characteristics screen. This situation created the potential for a loss of configuration control in that the instrumentation and control (I&C) design engineering personnel who perform setpoint calculations assume that no setpoint information is populated in the SWMS system, and do not normally compare their revised calculation with the SWMS screens. I&C maintenance planners; however, regularly check the SWMS Characteristics Screen to look for setpoint information. Since SWMS is considered a design output document, the I&C planners considered any information

discovered in the SWMS Characteristic Screen to be correct and may not go to the source calculation to determine if the calculation and the characteristics screen match. The licensee initiated CRDR 2831585 on September 22, 2005 to evaluate this issue. The licensee completed the review during this inspection period and did not identify any specific configuration errors that were a result of this process weakness.

The inspectors performed an independent extent of condition review to identify differences between the SWMS Characteristic Screen and applicable setpoint calculations. A query of 9010 quality-related instruments identified approximately 2000 instruments that contained setpoint data in the applicable characteristic screen fields. The inspectors performed a five percent sample and identified only one minor discrepancy. Calculation 13-JC-RC-027, "Pressurizer Pressure (PPS High) Instrument (RCx-P-101x; x=A, B, C, D) Uncertainty and Setpoint Calculation," Revision 10, stated that the pre-trip setpoint for the pressurizer pressure high trip bistables is 2357 psia. However, the characteristic screen specified that the pre-trip setpoint for these bistables is 2359 psia. Based on this sample, the inspectors determined that the inadequate configuration control of setpoint calculations and setpoint information populated in SWMS has resulted in discrepancies that need to be resolved through the licensee's corrective action process. In response to this concern, the licensee indicated that further review of the issue would be performed per CRDR 2831585. No findings of significance were identified.

2. Maintenance Department Guidelines

Introduction. A Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure to correct a condition adverse to quality involving the use of Maintenance Department Guidelines (MDGs).

Description. MDGs were created when the former Maintenance Standards Group was disestablished in the mid-1990s and the functions of this group were dispersed to individual departments. MDGs were intended to provide "desktop" guidance for routine functions that did not rise to the level of quality-controlled procedures.

CRDR 2715129 was written on June 10, 2004, to document that MDGs had not been maintained in a current state and that ownership of MDGs was not clear. Similar conditions were reported in Condition Report Action Items (CRAIs) 90874 and 90877, both written in 1998. In the evaluation attached to CRDR 2715129, four corrective actions were proposed and used as justification to close the CRDR. As of September 23, 2005, there was no clear indication that any of the actions were ever assigned or completed. Furthermore, the inspectors determined that the conditions discussed in the proposed corrective actions were still present at the facility. In addition, the extent of condition review performed for CRDR 2715129 failed to identify the continued active use of MDGs by several other departments.

The following are representative examples of safety-related procedures and calculations that still referenced the MDGs.

(1) Section 3.4 of Calculation 13-JC-SP-0201, for quality-related essential spray pond flow instrumentation setpoints, directed that, "The required actions of this section must be made for this calculation to be valid..." Section 3.4.5 subsequently stated

that, "Calibration of the loops is to be according to the 'Standard' method as described in 'Calibration of Instrument Loops,' Maintenance Department Guide 36PRG-005."

(2) Work Scope Library 252329, is a loop calibration procedure for Instrument JEWNTLOOP0083, a quality-related indication which provides control room indication for the essential cooling water Train A pump outlet temperature. This procedure directed the maintenance personnel to review MDG-36INS-003 for information concerning calibration of the thermocouple temperature loops.

CRDR 2830633 was initiated on September 16, 2005, to document that MDGs are still in use in some departments. The inspectors were informed that the licensee intends to eliminate the use of MDGs onsite and replace them with controlled documents. The licensee created a number of CRAIs on September 28, 2005, to determine the extent of condition, determine if other procedures have been created that could replace the MDGs, screen MDGs for any quality-related guidance that may have been improperly controlled, and search calculation and training documents for MDG references.

Analysis. The performance deficiency associated with this finding involved the failure to identify and correct an adverse condition related to the maintenance and controls for Management Department Guidelines. The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not result in the loss of safety function of any component, train, or system. The cause of the finding is related to the crosscutting element of problem identification and resolution in that maintenance personnel did not implement timely corrective actions and performed a poor extent of condition review.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to this, between June 2004 and September 2005, the I&C department did not implement corrective actions for a condition adverse to quality. Specifically, I&C personnel did not complete actions used as a basis for closure for CRDR 2715129. In addition, the extent of condition review performed for CRDR 2715129 did not identify the continued active use of MDGs to perform quality related activities. Because the finding is of very low safety significance and has been entered into the licensee's CAP as CRDR 2830633, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2005005-03, "Failure to Correct an Identified Adverse Condition Associated with Maintenance Department Guidelines."

3. Preventive Maintenance Bases

Procedure 30DP-9MP08, "Preventative Maintenance Program," Revision 11, dictated that Preventative Maintenance Bases (PMBs) shall be developed for SSCs requiring preventative maintenance activities. Paragraph 3.2.6 of Procedure 30DP-9MP08 also required that, "The maintenance activities contained within the PMBs shall be implemented and scheduled....within the requirements of Procedure 30DP-9MP09...",

Procedure 30DP-9MP09, "Preventative Maintenance Process," Revision 13, directed that the requirements of PMBs be translated into preventative maintenance (PM) task documents, but did not specify a timeliness requirement. Contrary to this, the PMBs for all Category 1 and Category 2 air operated valves (AOVs) were changed in 2004 and new PM tasks had not been created as required by Procedure 30DP-9MP09. As defined in Procedure 39DP-9ZZ02, "Air Operated Valve Program," Revision 9, Category 1 and 2 AOVs include all safety-related, active AOVs. The revised PMBs added additional maintenance requirements for all safety-related AOVs at Palo Verde.

The inspectors selected one safety-related valve and reviewed the applicable documentation. For Unit 1 reactor drain tank outlet containment isolation Valve 1JCHAUV0560, the current PMB is PMB 248730, which was revised on June 18, 2004, to add additional maintenance requirements. An action (ACT) form was generated in SWMS to document the discrepancies between the new PMB and the existing PM tasks and request the work planner to generate the new PM tasks. ACT 2716599 was created on June 17, 2004, to document five actions necessary to bring the existing PM tasks into compliance. As of September 22, 2005, the ACT was still in the WORKING status with no indications that the PM tasks had been completed. The assigned due date for the ACT to be completed was August 4, 2005. The inspectors reviewed ACT 2716599 and determined that the actions were enhancements to the existing PM program for Valve 1JCHAUV0560 and were not required to establish valve operability. Consequently, the lack of timeliness associated with not translating the PMBs into PM task documents for this valve had minor safety significance.

Due to the design of the SWMS screens, any maintenance advisor referencing the existing routine tasks associated with this valve would not know that an ACT existed against the PM tasks, and that some recommended maintenance may be missed. The inspectors determined that the ACT forms for the AOV tasks are being converted into "Lessons Learned" forms in SWMS so that the maintenance advisor will see that Lessons Learned exist prior to performing the task (when Lessons Learned are attached to a maintenance task, a red box appears on the screen to encourage the maintenance advisor to read the Lessons Learned before performing the task). The process of converting the ACT documents to Lessons Learned began in September 2005 and is still in progress. As of the end of the inspection period, conversion of the ACT forms for the AOV tasks to Lessons Learned forms was 86 percent complete.

The inspectors interviewed engineering and maintenance personnel, who provided management oversight of the reliability centered maintenance (RCM) project, to discuss the identified deficiencies associated with RCM process implementation. As of December 31, 2005, a total of 1206 discrepancies between the PMBs and PM task documents were tracked in the form of Open Items, ACTs, or Lessons Learned. The licensee is taking actions through the corrective action process to reduce the backlog as required by Procedure 30DP-9MP09, and improve the overall RCM process.

4. Failure to Submit Licensee Event Report (LER) For Reportable Events

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.73 for the failure to submit an LER within 60 days to report the completion of a plant shutdown required by the plant's TSs. A second similar example of a violation of the same regulation was identified by the licensee.

Description. On February 6, 2005, a fault associated with the normal offsite power supply Switchgear NAN-S06 occurred, which resulted in a plant shutdown of Unit 1 on February 9, 2005, as required by TS 3.8.1 for one of two required offsite power circuits being inoperable for greater than the allowed outage time of 72 hours. LER 50-528/2005-001 was submitted by the licensee on April 6, 2005, which reported the valid actuation of EDG Train B that occurred on February 6 as a result of the loss of power to the safety bus. This LER did not report the subsequent plant shutdown that was required by TS 3.8.1.

On March 18, 2005, a plant shutdown of Unit 1 occurred as required by TS 3.8.1 based on the inability to restore EDG Train A to an operable status within the allowed outage time of 72 hours following a failed routine surveillance test. On September 14, 2005, the licensee identified that an LER had not been submitted as required to report this shutdown. CRDR 2829976 was initiated, with an action to generate the required report, which was submitted on November 7, 2005, as LER 50-528/2005-006. A transportability review was completed via CRDR 2829976, which did not identify any additional missed reportable events for 2005.

On November 3, 2005, the inspectors performed an independent transportability review and identified that the shutdown of February 9 was never reported as required by 10 CFR 50.73, and informed the licensee. The licensee initiated CRDR 2844019 on November 3 with an action to issue a supplement to LER 50-528/2005-001 to include reporting of the shutdown. The licensee issued the supplement on January 6, 2006.

Analysis. The performance deficiency associated with this finding involved the failure to submit an LER to report the completion of a plant shutdown required by the plant's TSs. The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform is regulatory function was potentially impacted by the licensee's failure to report the event. The finding was determined to be a Severity Level IV violation in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that the transportability review, conducted by regulatory affairs personnel in conjunction with CRDR 2829976, failed to identify an additional example of a missed reportable event that was subsequently identified by the NRC.

Enforcement. 10 CFR 50.73(a) requires, in part, that the licensee shall submit an LER to report the completion of any nuclear plant shutdown required by the plant's TSs within 60 days after the discovery of the event. Contrary to this, on two occasions, the licensee failed to submit an LER to report the completion of a plant shutdown required by the plant's TSs within 60 days after the discovery of the event. Specifically, the licensee was required to submit an LER by May 17, 2005, to report the completion of a plant shutdown required by the plant's TSs that occurred on March 18, 2005. This LER was submitted on November 7, 2005. Additionally, the licensee was required to submit an LER by April 10, 2005, to report the completion of a plant shutdown that occurred on February 9, 2005. This LER was received on January 6, 2006. Because these findings are of very low safety significance and have been entered into the licensee's CAP as CRDRs 2829976 and 2844019, these violations are being treated as NCVs consistent

with Section VI.A of the Enforcement Policy: NCV 05000528; 05000529; 05000530/2005005-04, "Failure to Submit LER to Report Shutdown Required By Technical Specifications."

5. Access Control to Radiologically Significant Areas Trend Review

a. Inspection Scope

Section 2OS1 evaluated the effectiveness of the licensee's problem identification and resolution processes regarding access controls to radiologically significant areas and radiation worker practices. The inspector reviewed selected corrective action documents for root cause/apparent cause analysis against the licensee's problem identification and resolution process.

b. Findings

No findings of significance were identified.

6. Crosscutting Issues Follow-up Inspections

The inspectors conducted periodic discussions with licensee management to monitor their progress in addressing the substantive crosscutting concerns and Performance Improvement Plan development. The substantive crosscutting areas of human performance and problem identification and resolution have not seen the level of performance improvement expected. Palo Verde staff has invested considerable resources evaluating the concerns in these areas and corrective actions are being implemented to improve performance. The licensee completed development of the Performance Improvement Plan in November 2005 and planned to "roll out" the plan to station personnel in January and February 2006. As of the end of the inspection period, the licensee's corrective actions for the substantive crosscutting issues had not been completed. As highlighted in the analysis section of the identifying findings, several additional crosscutting issues were identified during the inspection period. These examples indicate that the licensee's corrective actions in response to the substantive crosscutting issues have not eliminated human performance and problem identification and resolution issues.

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

Section 1R06 describes a finding where corrective actions lacked timeliness, adequacy and thoroughness.

Section 1R12 describes a finding where the licensee failed to identify the need to perform a maintenance rule functional failure review for failed RTDs.

Section 4OA2.2.2 describes a finding where engineering and work control personnel did not implement timely corrective actions.

Section 4OA2.2.4 describes a finding where the transportability review, conducted by regulatory affairs personnel in conjunction with CRDR 2829976, failed to identify an additional example of a missed reportable event that was subsequently identified by the NRC.

4OA3 Event Follow-up (71153)

(Closed) LER 05000528; 05000529; 05000530/2004006-01, "Loss of Offsite Power - Three Unit Trip"

On June 14, 2004, at approximately 07:41 MST, a ground fault occurred on the Western Area Power Authority, 230kV Liberty Substation to Westwing substation line (approximately 47 miles from the Palo Verde Nuclear Generating Station). Due to a failure in the protective relaying, the ground fault was not isolated from the local grid, allowing it to cascade into the protective tripping, causing a Loss of Offsite Power (LOOP) at the Palo Verde switchyard. As a consequence all three units tripped as expected. This event was reported in LER 05000528/2004006-00, which the inspectors reviewed and closed in NRC Augmented Inspection Team Followup Report 05000528; 05000529; 05000530/2004013. The licensee reported the violation of TS 3.7.1 for the failure to reset the Variable Overpower Trip (VOPT) in the LER. The inspectors noted that the licensee correctly stated the reporting requirement per 10 CFR 50.73(a)(2)(i)(B), but failed to discuss the cause of the TS violation and any corrective actions. Upon NRC inquiry, the licensee submitted LER 05000528/2004006-01, dated October 13, 2005, to provide the required information.

The performance deficiency associated with this finding involved the failure to reset the VOPT high setpoint as required by TS 3.7.1. The finding is greater than minor because it is associated with the Human Performance cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance (Green) because it only affected the mitigating systems cornerstone and did not result in the loss of safety function of a single train or system. The enforcement aspects of the violation are discussed in Section 4AO7. This LER is closed.

4OA6 Meetings, Including Exit

On October 21, 2005, the radiation protection inspector presented the access controls and a portion of the performance verification inspection results to Mr. J. Levine, Executive Vice President of Generation, and other members of his staff who acknowledged the findings.

On November 4, 2005, the operations inspectors discussed the results of the requalification inspection with Mr. John Wood, Licensed Operator Requalification, and other members of the licensee's management. The licensee acknowledged the findings presented.

On November 17, 2005, the reactor inspectors presented the results of the engineering inspection to Mr. D. Mauldin, Vice President Engineering and Support, and other members of licensee management. The licensee acknowledged the inspection findings presented.

On January 4, 2006, the resident inspectors presented the integrated inspection results to Mr. C. Eubanks, Vice President of Nuclear Operations, and other members of licensee management. The licensee acknowledged the findings presented.

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

4OA7 Licensee-Identified Violations

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

- TS 5.7.2. states, in part, that areas accessible with radiation levels such that an individual could receive in 1 hour a dose greater than 1000 millirem shall be provided with locked or continuously guarded doors to prevent unauthorized entry. In addition, these areas shall be conspicuously posted with the entrance controlled by a Radiation Exposure Permit. Contrary to this TS, on April 6, 2005, a radiation technician identified a TS 5.7.2. high radiation area while performing radiological surveys inside each of the Unit 2 reactor head stud holes. In addition, the work crew had commenced installing the stud hole plugs; therefore, the area was not controlled or posted in accordance with TSs. This event was documented in CRDR 2788450. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

- TS 5.7.1. states, in part, that areas with radiation intensity greater than 100 millirem per hour but less that 1 Rem per hour shall be barricaded and conspicuously posted as a high radiation area and the entrance controlled by a Radiation Exposure Permit. Contrary to this TS, on May 15, 2005, a hot spot on the bottom of the "B" suction strainer for Unit 1 was identified with a reading of 3 Rem per hour on contact and 500 millirem per hour at 30 centimeters. A follow-up investigation determined the area was unposted and uncontrolled for approximately 17 hours following a lineup evolution for switching the cask load pit source to the spent fuel pool. This event was documented in CRDR 2800534. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

- TS 3.7.1 requires that when one or more main steam safety valves are inoperable, the VOPT high setpoint must be reduced in accordance with Table 3.7.1-1. The completion time for this TS is 12 hours. Contrary to the above, on June 14, 2004, when the Unit 2 personnel declared the main steam safety valves inoperable, operators failed to reduce the setpoint within the required 12 hours. The cause for failing to reset the VOPT was found to be human error. The VOPT is only required to be operable in Modes 1 and 2, however, TS 3.7.1 is applicable in Modes 1, 2, and 3. All personnel involved with the TS non-compliance were advised on the issue and the requirement to comply with TSs was re-emphasized. Additionally, the licensee recently obtained approval from the NRC, to remove the VOPT reset requirement in Mode 3, since no overpower event can be initiated

from Mode 3 with the reactor trip switchgear breakers open. This finding was documented in CRDRs 2715709, 2715727, and 2715659, and LERs 05000528; 05000529; 05000530/2004006-00 and 2004006-01 (See section 4AO3).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
S. Bauer, Department Leader, Regulatory Affairs
P. Borchert, Director, Work Management
R. Buzard, Senior Consultant, Regulatory Affairs
D. Carnes, Director, Nuclear Assurance
P. Carpenter, Unit Department Leader, Operations
C. Churchman, Director, Engineering
S. Coppock, Department Leader, System Engineering
C. Eubanks, Vice President, Nuclear Operations
D. Fan, Department Leader, Design Mechanical Engineering
J. Gaffney, Director, Radiation Protection
D. Hautala, Senior Compliance Engineer
J. Hesser, Director, Emergency Services
P. Kirker, Unit Department Leader, Operations
D. Marks, Section Leader, Regulatory Affairs - Compliance
D. Mauldin, Vice President, Engineering and Support
M. McGhee, Unit Department Leader, Operations
M. Muhs, Department Leader, Maintenance
E. O'Neil, Department Leader, Emergency Preparedness
M. Radsprinner, Section Leader, System Engineering
T. Radtke, Director, Operations
F. Riedel, Director, Nuclear Training Department
J. Scott, Section Leader, Nuclear Assurance
C. Seaman, General Manager, Regulatory Affairs and Performance Improvement
M. Shea, Director, Maintenance
D. Smith, Plant Manager, Production
M. Sontag, Department Leader, Nuclear Assurance
D. Straka, Senior Consultant, Regulatory Affairs
R. Stroud, Senior Consultant, Regulations Affairs
J. Taylor, Department Leader, Operations Support
T. Weber, Section Leader, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000528; 05000529; 05000530/2005005-01	NCV	Failure to Promptly Correct an Adverse Condition with the Refueling Water Tank Instrument Pit (Section 1R06)
05000529;05000530/ 2005005-02	NCV	Failure to Demonstrate Effective Maintenance of Hot Leg Resistance Temperature Detectors (Section 1R12)
05000528; 05000529; 05000530/2005005-03	NCV	Failure to Correct an Identified Adverse Condition Associated with Maintenance Department Guidelines (Section 4OA2.2.2)

05000528; 05000529; 05000530/2005005-04	NCV	Failure to Submit LER to Report Shutdown Required By Technical Specifications (Section 4OA2.2.4)

Closed

05000528; 05000529; 05000530/2004006-01	LER	Loss of Offsite Power - Three Unit Trip (Section 4OA3)

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

Section 1R01: Adverse Weather Protection

CRDRs
2-8-0010, 2548036, 2839150, 2838845, 2843484, 2746319

Work Orders
2745730, 2745728, 2745724, 2630435

Miscellaneous
Updated Final Safety Analysis Report, Section 9.4

Section 1R06: Flood Protection Measures

Procedures
40DP-9WP01, "Operations Processing of Work Orders," Revision 1
01DP-0AP02, "PVNGS Priority System," Revision 0
40DP-9ZZ17, "Control of Doors, Hatches, and Floor Plugs," Revision 28
40AL-9RK-2B, "Panel B02B Alarm Responses," Revision 48

Miscellaneous
Updated Final Safety Analysis Report, Sections 2.4.3 and 3.4.1

Section 1R08: Inservice Inspection Activities

CRDRs
2785036, 2788550, 2789713, 2789735, 2791190, 2792201, 2792405, 2793806, 2796325
2796600, 2800993, 2823646, 2827838, 2827845, 2827846, 2828927, 2845364, 2845469

Procedures
73DP-0EE16, "Qualification and Certification of NDE Personnel," Revision 6

73TI-9RC09, "Bare Metal Visual Examination of Reactor Vessel Upper Head," Revision 0

73TI-9RC10, "Bare Metal Visual Examination of Reactor Vessel Bottom Head," Revision 0

73TI-0ZZ13, "Radiographic Examination," Revision 11

73TI-9ZZ05, "Dry Magnetic Particle Examination," Revision 11

73TI-9ZZ07, "Liquid Penetrant Examination," Revision 10

73TI-9ZZ09, "Ultrasonic Examination of Pipe and Vessel Welds," Revision 12

73TI-9ZZ10, "Ultrasonic Examination of Welds in Ferritic Compounds," Revision 10

73TI-9ZZ12, "Ultrasonic Examination of Nozzle Inner Radius Areas," Revision 8

73TI-9ZZ14, "Ultrasonic Examination of Bolting," Revision 10

73TI-9ZZ17, "Visual Examination of Welds, Bolting, and Components," Revision 8

73TI-9ZZ18, "Visual Examination of Support Components," Revision 9

73TI-9ZZ78, "Visual Examination for Leakage," Revision 6

73TI-9ZZ79, "ASME Section XI, Appendix VIII Ultrasonic Examination of Ferritic Piping," Revision 4

73TI-9ZZ80, "ASME Section XI, Appendix VII Ultrasonic Examination of Austenitic Piping," Revision 4

73TI-9ZZ81, "Ultrasonic Examination of Dissimilar Metal Piping Welds," Revision 0

WCAL-002, "Pulser Receiver Linearity Calibration Procedure," Revision 5

WDI-SSP-240, "Reactor Vessel Head Penetration Inspection Tool Operation For Palo Verde Unit 1 - ROSA," Revision 0

WDI-STD-001, "IntraSpect Eddy Current Procedure for inspection of Reactor Vessel Head Penetrations," Revision 8

WDI-STD-002, "IntraSpect NDE Procedure for Inspection of Reactor Vessel Head Vent Tubes," Revision 8

WDI-STD-010, "IntraSpect Eddy Current Inspection of J-Groove Welds in Vessel Head Penetrations," Revision 6

WDI-STD-041, "IntraSpect Eddy Current Analysis Guidelines," Revision 9

WDI-STD-055, "IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations, Time of Flight Ultrasonic, Longitudinal, Wave & Shear Wave," Revision 11

WDI-STD-070, "IntraSpect UT Analysis Guidelines," Revision 9

WDI-STD-101, "RVHI Vent Tube J-Weld Eddy Current Examination," Revision 5

WDI-STD-120, "RPV Head CRDM Penetrations EC Examinations for Wastage Detection Procedure," Revision 6

Magnetic Particle Examinations
MT-05-147

Ultrasonic Examinations
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32MT-9ZZ58, "Maintenance of Inverters," Revision 23
40OP-9PN02, "120V AC Class 1E Instrument Channel B," Revision 3
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40DP-9OP06, "Operations Department Repetitive Task Program," Revisions 43, 44

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13-J-ZZS-161, "Instrument Mounting Assembly Rosemount Transmitter Models 1152, 1153," Revision 4

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02-M-HDP-001, "HVAC Diesel Generator Building," Revision 8

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33TJ-9HD01, "Diesel Generaor Building HVAC (HD) System Performance Testing," Revision 1
43AL-3RK1A, "120VAC IE PNL D27 Inverter C TRBL," Revision 32

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Calculation 13-MC-HD051, "Diesel Generator Building - HD System Heat Load and Equipment Adequacy Calculation - Essential Conditions," Revision 3

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73ST-9XI33, "HPSI Pump and Check Valve Full Flow Test," Revision 33
40OP-9SI01, "Shutdown Cooling Initiation," Revision 36
40TI-9ZZ07, "Shutdown Cooling Vortex Test," Revision 0

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13-MN-1002-A00044, "Elementary Diagram Instrument & Service Air System Master Controller 3J-IAN-PC-265," Revision 0

03-E-IAF-003, "Control Wiring Diagram Instrument & Service Air System Air Compressor 3M-IAN-C01A," Revision E

13-MN-1002-A00003, "Decal. Wiring Schematic Fv. Lvm. Poro. Rem Alarm. AB Starter," Revision B

03-M-IAP-001, "P & ID Diagram Instrument & Service Air System, Revision B

13-MN-1002-A00002, "Diagram Process and Instrumentation WC Aftercooler-115," Revision B

03-J-01D-305, "Turbine Building Instrument Air Compressor Control System," Revision E

13-E-QMB-006, "Containment Hydrogen Control," Revision 0

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13-MS-B046, "Experimental Investigation of Acoustic Coupling of the PVNGS Unit 1 SDC Suction Line," Revision 0

E-05-0033, "10CFR 50.59 Screening/Evaluation: Installation of a Welded Attachment in Unit 1 SDC Suction Line Nozzle to Suppress Vortex Generated Acoustic Vibration," Revision 0

13-JC-RC-0219, "Pressurizer Level Instrument (RCN-L-0103) Setpoint and Uncertainty Calculation," Revision 5

13-MC-SI-0015, "Shutdown Cooling System (SDCS) Interface Requirements and System Performance Analysis," Revision 2

N001-0607-00415, "Design Report - Palo Verde Nuclear Generating Station - SDC Nozzle Acoustic Pressure Suppression Device," Revision 0

FAI/05-93, Test Report For Palo Verde Shutdown Cooling (SDC) System Hotleg Nozzle Vortex Testing," Revision 0

DAR-PS-05-31, "Effect of PVNGS Shutdown Cooling Suction Line Modification on Line Losses for SDCS Relief Flow Path," Revision 0

LTR-CI-05-95, "Structural Evaluation of the Impact on RVI Components of Vortex Suppression Plate for Palo Verde SDC Suction Nozzle," Revision 0

LTR-OA-05-67, "Assessment of the Impact of a Vortex Suppression Plate on the Best Estimate RCS Flow Rate for Palo Verde Unit 1," Revision 0

LTR-OA-05-70, "Assessment of Determination of LOCA Blowdown Loading on a Vortex Suppression Plate in the PVNGS Unit 1 SDC Suction Nozzle," Revision 0

LTR-PS-05-63, "Review of Vortex Suppression Plate for Palo Verde SDC Suction Nozzle - Impact on RVI Components and Hot Leg Instrumentation," Revision 0

PCT-05-836, "Structural Evaluation of the Impact on Fuel Components of a Vortex Suppression Plate for Palo Verde Unit 1 SDC Suction Nozzle," Revision 0

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Section 1R19: Postmaintenance Testing

CRDRs
2843079, 2841753, 2811750

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33DP-0AP02, "HVAC System Performance Testing Program," Revision 1
73ST-9EC01, "Essential Chilled Water Pumps - Inservice Test," Revision 15

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CRDR
2830186

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72IC-9RX03, "Core Reloading," Revision 29
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40ST-9ZZ09, "Containment Cleanliness Inspection," Revision 11
40OP-9ZZ01, "Cold Shutdown to Hot Standby Mode 5 to Mode 3," Revision 31
40OP-9ZZ04, "Plant Startup Mode 2 to Mode 1," Revision 49
40OP-9ZZ06, "Mode 5 Operations," Revision 15
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40OP-9ZZ10, "Mode 3 to Mode 5 Operations," Revision 44
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121927, 118017, 122681, 115010, 119325, 122520, 108973, 118100

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CRDRs
2838314, 2841664

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2846561, 2702746, 2846561

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73ST-9CL01, "Containment Leakage Type ‘B’ and ‘C’ Testing," Revision 27

73ST-9DG01, "Class 1E Diesel Generator and Integrated Safeguards Test, Train A," Revision 9

73ST-9DG02, "Class 1E Diesel Generator and Integrated Safeguards Test, Train B," Revision 11

78ST-9FH01, "Refueling Machine Load Test," Revision 8

78OP-9FX01, "Refueling Machine Operations," Revision 27

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CRDR
2759421, 2707423, 2780489

Work Orders
2707422, 2710630

Procedure
36MT-9SF15, "CEDMCS CEA Coil Traces at Power Operations," Revision 10

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2OS1: Access Control To Radiologically Significant Areas

CRDRs
2693950, 2741375, 2744458, 2745893, 2746037, 2746459, 2760615, 2772559, 2781340, 2782009, 2788450, 2790905, 2790999, 2791336, 2800534, 2800549, 2801850, 2807904, 2808100, 2808206, 2809056, 2809066, 2817008, 2820753, 2823535, 2824067, 2835818, 2836341, 2839056

Procedures
60DP-0QQ19, "Internal Audits," Revision13

75DP-0RP01, "RP Program Overview," Revision 4

75DP-0RP02, "Radioactive Contamination Control," Revision 6

75DP-0RP04, "Radiological Reports," Revision 6

75DP-9RP01, "Radiation Exposure and Access Control," Revision 6

75RP-9OP02, "Control of Locked High Radiation Areas and Very High Radiation Areas," Revision 16

75RP-0RP01, "Radiological Posting and Labeling," Revision 20

75RP-9RP02, "Radiation Exposure Permits," Revision 17

75RP-9RP05, "Contamination Dose Evaluation," Revision 4

75RP-9RP07, "Radiological Surveys and Air Sampling," Revision 11

75RP-9RP10, "Conduct of Radiation Protection Operations," Revision 15

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1-1349A, "Reactor Vessel Head Vent Line Flow Orifice Modification"
1-3045C, "Reactor Vessel Head Penetration Inspection"
1-3047B , "Reactor Vessel Head Insulation Modification and Inspection"
1-3400A, "Pressurizer Heater Sleeve Cut Out and Replacement"
1-3521A, "Large Bore Safety Injection System Valve and Flange Intrusive Disassembly/Inspection/Repair Greater Than 8 inches Diameter"
1-6006A, "Steam Generator Replacement Primary Side Work"
1-6010A, "Steam Generator Replacement Pipe End Decontamination"

IP 71151: Performance Indicator Verification

CRDRs
2741375, 2746037, 2772559, 2788450, 2790905, 2800534, 2808100, 2823535, 2824067

Procedures
74DP-9CY08, "Radiological Monitoring Program," Revision 13

75DP-0RP04, "Radiological Reports," Revision 6

75DP-9RP01, "Radiation Exposure and Access Control," Revision 6

75RP-0LC01, "Performance Indicator Instruction Guideline Occupational Radiation Safety Cornerstone," Revision 0

75RP-0LC02, "Performance Indicator Public Radiation Safety Cornerstone," Revision 0

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Section 4OA2: Identification and Resolution of Problems

CRDRs
2716357, 2717431, 2830837, 2831585, 2715129, 2830633, 116651, 2637563, 2740995, 2370404, 2711402

Procedures
01DP-0CC01, "Configuration Control," Revision 0
90DP-0AP01, "Configuration Control," Chapter 5
81DP-0CC26, "Impact Procedure," Revision 9
87DP-0CC17, "Control of Engineering Data in SWMS," Revision 10
MDG-36PRG-005, "Calibration of Instrument Loops," Revision 0
90DP-0IP10, "Condition Reporting," Revision 19
30DP-9MP08, "Preventative Maintenance Program," Revision 11
30DP-9MP09, "Preventative Maintenance Processes and Activities," Revision 13
39DP-9ZZ02, "Air Operated Valve Program," Revision 9

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2734102, 2731886, 90874, 90877, 2764255

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Applied Template Basis Report for 1JCHAUV0560**VALVOP
Template ID ERET / 2826813
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01-J-ZZI-006, "Controlled Air Operated Valve Setpoint Database," Revision 4

LIST OF ACRONYMS

ACT	SWMS action
ALARA	as low as reasonably achievable
AOV	air operated valves
CAP	corrective action program
CFR	*Code of Federal Regulations*
CPC	core protection calculators
CRAI	condition report action item
CRDR	condition report/disposition request
DMWO	design modification work order
ECCS	emergency core cooling system
EDG	emergency diesel generator
GE	General Electric
HPSI	high pressure safety injection
HUT	hold up tank
I&C	instrumentation and control
IOD	immediate operability determination
LER	licensee event report
LOCA	loss of coolant accident
LOOP	loss of offsite power
MDG	maintenance department guidelines
NCV	noncited violation
NDE	non-destructive examination
NRC	Nuclear Regulatory Commission
OD	operability determination
PARS	publicly available records
PCP	pending change process
PI	performance indicators
PM	preventive maintenance
PMB	preventative maintenance bases
UFSAR	updated final safety analysis report
RCM	reliability centered maintenance
RMS	root-mean-squared
RTD	resistance temperature detector
RWT	refueling water tank

SSC	structures, systems, and components
SWMS	Site Work Management Systems
TS	technical specifications
VOPT	variable overpower trip
WO	work order