



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

May 10, 2005

Gregg R. Overbeck, Senior Vice
President, Nuclear
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034

**SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC INTEGRATED
INSPECTION REPORT 05000528/2005002, 05000529/2005002, AND
05000530/2005002**

Dear Mr. Overbeck:

On March 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 March 29, 2005, with you and members of your staff.

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

The report documents four NRC identified findings and one self-revealing finding. Three of these findings were evaluated under the risk significance determination process as having very low safety significance (Green). Three of the findings involved violations of NRC requirements. One of the findings was determined not to be suitable for risk significant determination, therefore management reviewed the finding and determined it had very low safety significance (Green). One finding, because it involved 10 CFR 50.59, was processed under the Enforcement Policy and is documented as a Severity Level IV violation. 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. Two licensee-identified violations, which were determined to be of very low safety significance, are listed in Section 4OA7 of this report. If you contest these 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/ GEWerner for

Troy W. Pruett, Chief
Project Branch D
Division of Reactor Projects

Dockets: 50-528
50-529
50-530

Licenses: NPF-41
NPF-51
NPF-74

Enclosure:
NRC Inspection Report 05000528/2005002,
05000529/2005002, and 05000530/2005002
w/Attachment: Supplemental Information

cc w/enclosure:
Steve Olea
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

Douglas K. Porter, Senior Counsel
Southern California Edison Company
Law Department, Generation Resources
P.O. Box 800
Rosemead, CA 91770

Chairman
Maricopa County Board of Supervisors
301 W. Jefferson, 10th Floor
Phoenix, AZ 85003

Aubrey V. Godwin, Director
Arizona Radiation Regulatory Agency
4814 South 40 Street

Phoenix, AZ 85040

Craig K. Seaman, Director
Regulatory Affairs
Palo Verde Nuclear Generating Station
Mail Station 7636
P.O. Box 52034
Phoenix, AZ 85072-2034

Hector R. Puente
Vice President, Power Generation
El Paso Electric Company
310 E. Palm Lane, Suite 310
Phoenix, AZ 85004

Jeffrey T. Weikert
Assistant General Counsel
El Paso Electric Company
Mail Location 167
123 W. Mills
El Paso, TX 79901

John W. Schumann
Los Angeles Department of Water & Power
Southern California Public Power Authority
P.O. Box 51111, Room 1255-C
Los Angeles, CA 90051-0100

John Taylor
Public Service Company of New Mexico
2401 Aztec NE, MS Z110
Albuquerque, NM 87107-4224

Cheryl Adams
Southern California Edison Company
5000 Pacific Coast Hwy. Bldg. DIN
San Clemente, CA 92672

Robert Henry
Salt River Project
6504 East Thomas Road
Scottsdale, AZ 85251

Brian Almon
Public Utility Commission
William B. Travis Building
P.O. Box 13326
1701 North Congress Avenue

Arizona Public Service Company

-4-

Austin, TX 78701-3326

Chief, Technological Services Branch
FEMA Region IX
Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Electronic distribution by RIV:
 Regional Administrator (**BSM1**)
 DRP Director (**ATH**)
 DRS Director (**DDC**)
 DRS Deputy Director (**KSW**)
 Senior Resident Inspector (**GXW2**)
 Branch Chief, DRP/D (**TWP**)
 Senior Project Engineer, DRP/D (**GEW**)
 Team Leader, DRP/TSS (**RLN1**)
 RITS Coordinator (**KEG**)
 DRS STA (**DAP**)
 J. Dixon-Herrity, OEDO RIV Coordinator (**JLD**)
RidsNrrDipmlipb
 Assisting PV Site Secretary (**VLH**)
 W. A. Maier, RSLO (**WAM**)

SISP Review Completed: __GEW__ ADAMS: / Yes No Initials: __GEW__
 / Publicly Available Non-Publicly Available Sensitive / Non-Sensitive

R:_PV\2005\AN2005-02RP-GXW.wpd

RIV:RI:DRP/D	RI:DRP/D	SRI:DRP/D	C:DRS/OB
JFMelfi	PLBenvenuto	GGWarnick	ATGody
T to TWPrueett	T to TWPrueett	T to TWPrueett	/RA/
05/05/2005	05/05/2005	05/05/2005	05/05/2005
C:DRS/PSB	C:DRS/EMB	C:DRS/PEB	C:DRP/D
MPShannon	JAClark	LJSmith	TWPrueett
LTRicketson for	/RA/	NO'Keefe for	GEWerner for
05/06/2005	05/06/2005	05/5/2005	05/10/2005

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets: 50-528, 50-529, 50-530
Licenses: DPR-41, NPF-51, NPF-74
Report: 05000528/2005002 05000529/2005002, 05000530/2005002
Licensee: Arizona Public Service Company
Facility: Palo Verde Nuclear Generating Station, Units 1, 2, and 3
Location: 5951 S. Wintersburg
Tonopah, Arizona
Dates: January 1 through March 31, 2005
Inspectors: P. Benvenuto, Resident Inspector
G. George, Reactor Inspector
J. Kramer, Nuclear Reactor Regulation
R. Lantz, Senior Emergency Preparedness Inspector
T. McConnell, Resident Inspector
J. Melfi, Resident Inspector
C. Paulk, Senior Reactor Inspector
W. Sifre, Reactor Inspector
T. Stetka, Senior Operations Engineer
B. Tharakan, Health Physicist
G. Warnick, Senior Resident Inspector
Approved By: Troy W. Pruett, Chief, Project Branch D
Division of Reactor Projects

Enclosure

CONTENTS

SUMMARY OF FINDINGS	1
REACTOR SAFETY	1
1R04 <u>Equipment Alignment</u>	1
1R05 <u>Fire Protection</u>	2
1R06 <u>Flood Protection Measures</u>	3
1R11 <u>Licensed Operator Requalification Program</u>	3
1R12 <u>Maintenance Implementation</u>	4
1R13 <u>Maintenance Risk Assessments and Emergent Work Control</u>	5
1R14 <u>Operator Performance During Nonroutine Plant Evolutions and Events</u>	6
1R15 <u>Operability Evaluations</u>	8
1R16 <u>Operator Work-Arounds</u>	10
1R17 <u>Permanent Plant Modifications</u>	12
1R19 <u>Postmaintenance Testing</u>	14
1R20 <u>Refueling and Outage Activities</u>	15
1R22 <u>Surveillance Testing</u>	16
1R23 <u>Temporary Plant Modifications</u>	17
1EP1 <u>Exercise Evaluation</u>	17
1EP6 <u>Drill Evaluation</u>	23
RADIATION SAFETY	23
2OS1 <u>Access Control to Radiologically Significant Areas</u>	23
2OS2 <u>ALARA Planning and Controls</u>	24
OTHER ACTIVITIES	26
4OA1 <u>Performance Indicator Verification</u>	26
4OA2 <u>Identification and Resolution of Problems</u>	27
4OA3 <u>Event Followup</u>	29
4OA4 <u>Crosscutting Aspects of Findings</u>	31
4OA5 <u>Other Activities</u>	31
4OA6 <u>Meetings, Including Exit</u>	32
4OA7 <u>Licensee-Identified Violations</u>	33
ATTACHMENT: SUPPLEMENTAL INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF DOCUMENTS REVIEWED	A-3
LIST OF ACRONYMS	A-10

SUMMARY OF FINDINGS

IR 05000528/2005002; 05000529/2005002; 05000530/2005002; 1/1/05 - 3/31/05; Palo Verde Nuclear Generating Station, Units 1, 2 and 3; Integrated Resident and Regional Report; Nonroutine Evaluations, Operations Evaluations, Operator Work-Arounds, Exercise Evaluations, and Other Activities.

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified as a result of the licensee's failure to correct a condition adverse to quality following the loss of a charging pump during the July 14, 2004 reactor trip event. Specifically, the licensee failed to correct the basis for operating charging pumps and the boric acid makeup pump from the refueling water tank. Consequently, on February 9, 2005, operators aligned the charging pumps in a similar configuration to the July 14, 2004, event and Charging Pumps B and E tripped. This issue involved problem identification and resolution crosscutting aspects associated with the failure to implement timely corrective actions. This issue was entered into the corrective action program as Condition Report/Disposition Request 2776236.

The finding is greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability and availability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the third charging pump and both boric acid makeup pumps were available to perform the emergency borate safety function (Section 1R14).

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.a for failing to follow a maintenance procedure and associated engineering specification governing scaffold erection near safety-related components. Specifically, the licensee built approximately 85 scaffolds within the 2-inch clearance requirement and did not obtain

Enclosure

engineering approval for the scaffolding installed in close proximity to safety-related equipment, as specified in Engineering Design Change 2000-00463. This issue involved human performance crosscutting aspects associated with not following work instructions. This issue was entered into the corrective action program as Condition Report/Disposition Request 2779469.

The finding is determined to be greater than minor because if left uncorrected, the finding would become a more significant safety concern in that improperly installed scaffolding could impact the availability of mitigating equipment. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and all subsequent engineering evaluations determined that there was no adverse affect to the mitigating equipment (Section 1R15).

- Green. The inspectors identified a finding for the failure to follow administrative guidelines provided to operations personnel for identifying, documenting, and tracking main control room deficiencies. Specifically, approximately 75 control room instrument and control room meter face plates in Units 1, 2, and 3 were degraded and were not individually tracked in the control room discrepancy log. Furthermore, discrepancy labels containing the control room discrepancy log number and description of the discrepancy were not placed adjacent to or as close as possible to each affected device. This issue involved problem identification and resolution crosscutting aspects associated with identifying and trending equipment deficiencies. This issue was entered into the corrective action program as Condition Report/Disposition Request 2782501.

The finding is determined to be greater than minor because if left uncorrected, it could become a more significant safety concern in that the condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with multiple human performance actions. Based on management review, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and there was no adverse impact to plant equipment (Section 1R16).

- SLIV. The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the failure to obtain a license amendment for changes to all six station emergency diesel generators. The licensee implemented two modifications on each emergency diesel generator jacket water system that replaced the automatic fill and low level alarm for the surge tank with a manual operator action that was not equivalent to the original design.

The finding is more than minor because it affected the mitigating systems cornerstone attribute of equipment performance, reliability, and capability, which could impact the ability of the emergency diesel generators to respond to an initiating event. The issue was determined to result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the Updated Final Safety Analysis Report. This was because the changed equipment was no longer capable of warning of, or compensating for, a large spectrum of leaks previously within the design. Thus, a license amendment was required. In accordance with the NRC Enforcement Manual, violations of 10 CFR 50.59 are not processed directly through the significance determination process. Therefore, this issue was considered applicable to traditional enforcement.

In addition, a Significance Determination Process Phase 1 screening was performed and the finding was determined to have very low safety significance (Green) because there was no actual loss of the mitigating system safety function. Based on discussions with Office of Nuclear Reactor Regulation staff, the inspectors determined that, because a request for approval would likely have been granted, the finding is also of very low safety significance (Severity Level IV). The licensee entered this issue into its corrective action program as Condition Report/Disposition Request 2781196 (Section 4OA5).

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a noncited violation of 10 CFR 50.54(q). The licensee failed to correct a practice, which could result in an evacuation protective action recommendation for segments of the population that would not benefit from evacuation, contrary to federal guidance. This issue involved problem identification and resolution crosscutting aspects associated with implementing effective corrective actions. The licensee entered this issue into its corrective action program as Condition Report/Disposition Request 2780513.

This finding is more than minor because it was associated with a cornerstone attribute and affected the emergency preparedness cornerstone objective to ensure the adequate protection of the public health and safety. This finding is of very low safety significance because this practice could result in an increased dose to the evacuating public by evacuating some areas unnecessarily, but would not prevent the notification of appropriate protective action recommendations to those members of the public who did require evacuation (Section 1EP1).

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 (Section 4OA7).

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at essentially full power until February 9, 2005, when the unit was shutdown to perform repairs to normal offsite power supply Bus NAN-S06. Following repairs the unit was returned to full power on February 21, 2005. On March 18, 2005, the unit was shutdown to perform required postmaintenance testing following emergency diesel generator (EDG) Train A governor repairs. The governor testing was completed and Unit 1 returned to full power on March 22, 2005, and remained there for the duration of the inspection period.

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

Unit 3 operated at essentially full power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors (1) walked down portions of the five 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 corrective action program to ensure problems were being identified and corrected.

C January 26, 2005, Unit 3 EDG Train A

C February 10, 2005, Unit 3 auxiliary feedwater (AFW) system Train B

C February 14, 2005, Units 2 and 3 electrical alignment for offsite power to emergency buses while Unit 1 Electrical Bus NAN-S06 was out of service to repair faulted breaker

C March 3, 2005, Unit 1 high pressure safety injection (HPSI) Train B while HPSI Train A was out of service

C March 18, 2005, Unit 1 EDG Train B while EDG Train A was out of service due a governor failure

The inspectors completed five samples.

Enclosure

.2 Complete Walkdown

The inspectors (1) reviewed plant procedures, drawings, the Updated Final Safety Analysis Report, Technical Specifications, and vendor manuals to determine the correct alignment of the system; (2) reviewed outstanding design issues, operator work arounds, and corrective action program documents to determine if open issues affected the functionality of the system; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

C March 9, 2005, Unit 1 emergency core cooling system

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Routine Inspection

The inspectors walked down the six below listed plant areas to assess the material condition of active and passive fire protection features, their operational lineup, and their operational effectiveness. 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; (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 (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

C January 28, 2005, Unit 2 auxiliary building, all accessible elevations

C February 10, 2005, Unit 1 EDG building, all accessible elevations

C February 17, 2005, fire pump rooms

C February 18, 2005, Unit 2 EDG building, all accessible elevations

C February 26, 2005, Unit 3 EDG building, all accessible elevations

C March 16, 2005, Unit 1 main steam structure, all accessible elevations

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 Updated Final Safety Analysis Report, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving external flooding; (2) reviewed the corrective action program to determine if the licensee identified and corrected flooding problems; (3) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (4) walked down the below listed area to verify the adequacy of (a) equipment seals located below the floodline, (b) floor and wall penetration seals, and (c) watertight seals.

C February 16, 2005, Unit 3 EDG fuel oil storage tank vault Train B

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator critique. The training scenario involved a steam generator tube leak that developed into a tube rupture following a loss of offsite power and plant trip.

- March 22, 2005, Scenario SES 0-04-01, "SGTL / Loss of NNN-D16 (Trip Initiator) / SGTR," revision date March 9, 2005

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Implementation

.1 Maintenance Effectiveness Baseline Review (71111.12)

a. Inspection Scope

The inspectors reviewed the two below listed maintenance activities to (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded 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, Appendix B of 10 CFR Part 50, and Technical Specifications.

- March 23-24, 2005, Unit 1 replacement of 4160 volt cable splice to spray pond pump Train B due to low insulation resistance per Work Order (WO) 2731780
- March 29-31, 2005, Unit 3 HPSI pump Train B oil samples

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

.2 Maintenance Effectiveness Biennial Review (71111.12B)

a. Inspection Scope

The inspectors reviewed the last two Maintenance Rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants") periodic assessments. In addition, the inspectors reviewed the licensee's overall implementation of the Maintenance Rule. As part of the inspection, the inspectors reviewed the licensee's maintenance rule scope, (a)(1) determinations, performance criteria, program definitions, use of industry operating experience, and Maintenance Rule-related self assessments. The inspectors verified the establishment of appropriate goals, corrective actions, and the impact of risk monitoring. The inspectors reviewed the conclusion reached by the licensee with regard to the balance of reliability and unavailability for specific maintenance rule functions. Inspection Procedure 71111.12B specifies that the minimum sample for the biennial inspection is four SSCs or functions that have suffered degraded performance or conditions. The inspectors selected the following five problematic systems for a detailed review:

- Safety Injection System - Shutdown Cooling Train A

- Safety Injection System - Safety Injection Tank Vents
- Gas Turbine Generators
- Auxiliary Feedwater Control System
- Battery Powered Emergency Lighting

The inspectors completed 5 samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

Risk Assessment and Management of Risk

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

- January 26, 2005, Unit 3 online outage for EDG, essential chilled water, essential cooling water, essential spray pond, and containment spray systems Train B
- March 2, 2005, Unit 1, HPSI system Train B online outage

The inspectors completed two samples.

Emergent Work Control

The inspectors (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not

place the plant in an unacceptable configuration; and (3) reviewed the corrective action program to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- January 9, 2005, Unit 3 AFW pump Train A steam admission bypass valve failure as described in Condition Report/Disposition Request (CRDR) 2763809
- February 7, 2005, licensee's efforts to restore Unit 1 normal offsite power supply Bus NAN-S06 switchgear following failure of Breaker NAN-S06J
- February 9, 2005, evaluation of Units 2 and 3 electrical power alignment due to loss of protective relaying to Unit 1 Transformer X01 as described in CRDR 2775972
- March 17, 2005, Unit 1 EDG Train A governor failure
- March 19, 2005, evaluation of the failure of the Unit 2 AFW pump Train A electronic governor module power supply for all three units
- March 24, 2005, evaluation of troubleshooting efforts and restoration of Unit 1 spray pond pump Train B following identification of low cable insulation results per CRDR 2784074

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Nonroutine Plant 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 nonroutine events and transients; (2) verified that the operator response was in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolutions sampled.

- On January 31, 2005, while moving spent fuel assemblies, operators observed that the underload light on the control console of the spent fuel handling machine in Unit 1 was flickering on and off when the bridge was operated at very low speeds. The spent fuel machine issue was corrected by implementing maintenance in accordance with WO 2748034.

Enclosure

- On February 6, 2005, a loss of off-site power occurred on Unit 1 Train B when a fault associated with normal offsite power supply Bus NAN-S06 caused 13.8 kV Breakers NAN-S06H, NAN-S06K, and NAN-S06J to trip on overcurrent. This event was documented in CRDR 2775015.
- On February 9, 2005, Unit 1 performed a Technical Specifications (TS) required shutdown to perform repairs to normal offsite power supply Bus NAN-S06. The shutdown was complicated in that various loads were transferred from electrical Bus NAN-S01 to Bus NAN-S03. The transfer of house loads was performed to help minimize the impact to the primary and secondary plants when the main turbine generator was tripped since the Train B offsite power supply was unavailable due to the electrical fault that occurred on February 6, 2005.

The inspectors completed three samples.

b. Findings

Introduction. A Green self-revealing noncited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified as a result of the licensee's failure to identify and correct a deficiency in the method of operating the charging pumps.

Description. On February 9, 2005, operations personnel performed a planned Unit 1 downpower and reactor trip. With two charging pumps and a boric acid makeup (BAM) pump inservice, operations personnel realigned the charging pump suction from the volume control tank to the refueling water tank (RWT). This lineup resulted in a trip of charging Pumps B and E on low suction pressure. The loss of the charging pumps ultimately resulted in securing the running reactor coolant pumps due to having to isolate all reactor coolant pump seal bleedoffs using the common containment isolation valve (the plant electrical lineup prevented closing the individual seal bleedoff valves to the secured reactor coolant pumps).

A similar event occurred on July 14, 2004, when Unit 2 experienced a turbine trip and reactor trip. During the post-trip recovery with two charging pumps and a BAM pump inservice, operators realigned the charging pump suction from the volume control tank to the RWT, and one of the charging pumps tripped on low suction pressure. The licensee initiated CRDR 271635 to evaluate the reactor trip and general plant performance. The licensee initiated condition report action item (CRAI) 2741025 to perform further analysis of Calculation 13-MC-CH-202, "Evaluation of Charging Pump NPSHA [net positive suction head available] During Parallel Suction Alignment of the BAM Pumps from the RWT."

The inspectors reviewed CRAI 2741025 and discussed Calculation 13-MC-CH-202 with engineering personnel. The CRAI identified additional factors that affected the charging pump NPSHA that were not addressed in the calculation. The calculation documented that the minimum NPSHA for two charging pump operation concurrent with a BAM pump operation was 21.5 feet (9.3 psia) and concluded that adequate suction head was

Enclosure

available to the charging pumps in this configuration. The calculation did not include acceleration head loss and did not recognize that the setpoint for the low suction pressure trip was 12.2 psia. Although documented in the CRAI, the licensee did not address the inaccurate assumptions of Calculation 13-MC-CH-202 that were used as a basis for plant operations and Emergency Operating Procedure 40EP-9EO07, "Loss of Offsite Power/Loss of Forced Circulation," Revision 12, prior to the February 9, 2005 event.

Analysis. The performance deficiency associated with this finding was the failure to correct a condition adverse to quality. The finding is greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the reliability and availability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the third charging pump and both boric acid makeup pumps were available to perform the emergency borate safety function. This issue involved problem identification and resolution crosscutting aspects associated with the failure to implement timely corrective actions.

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 the above, the licensee failed to correct a condition adverse to quality following the loss of a charging pump during the July 14, 2004 reactor trip event. Specifically, the licensee failed to correct the basis for operating charging pumps and the BAM pump from the RWT. Consequently, on February 9, 2005, operators aligned the charging pumps in a similar configuration to the July 14, 2004 event and Charging Pumps B and E tripped. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as CRDR 2776236, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000528/2005002-01, "Failure to Correct a Condition Adverse to Quality."

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 Updated Final Safety Analysis Report 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 Technical Specifications; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- January 11, 16, and 23, 2005, Operability Determination (OD) 289 - Units 2 and 3 potential air entrainment in unvented portions of safety injection system
- January 22, 2005, OD 291 - Units 1, 2, and 3 safety-related Rosemount transmitters with nonconforming conduit plugs
- February 1, 2005, Deficiency WO 2772893 - Unit 1 spent fuel handling machine failure
- February 2, 2005, CRDR 2766592 - Unit 2 evaluation of variable overpower pretrips
- February 2, 2005, OD 292 - Units 1, 2 and 3 NAMCO limit switch cover assemblies with incorrect screws
- February 25, 2005, CRDR 2779469 - Units 1, 2, and 3 engineering evaluations for inadequate clearance between safety-related components and scaffolding
- March 5-25, 2005, OD 294 - Units 1, 2 and 3 backup pressurizer heater capacity required to offset ambient heat losses
- March 19, 2005, OD 296 - service life for Unit 3 AFW pump governor dropping Resistor R-17

The inspectors completed eight samples.

b. Findings

Introduction. A Green NCV of Technical Specification 5.4.1.a was identified for failing to follow a maintenance procedure and associated engineering specification governing scaffold erection near safety-related components.

Description. On February 25, 2005, during a tour of the Unit 3 auxiliary building, the inspectors identified inadequate clearances between scaffolding and numerous safety-related SSCs. Procedure 03DP-9WP11, "Scaffolding Instructions," Revision 13, Step 3.2.6 stated, in part, that, "All scaffolding erected/modified shall conform to applicable specifications, regulations, and standards." One of the specifications listed in Step 3.2.6 is Specification 13-CN-380, "Installation Manual for Category IX Scaffolding." Specification 13-CN-380 included Engineering Design Change (EDC) 2000-00463 which stated that, "The minimum horizontal clear distance that must be maintained between tie-back scaffolding and safety-related piping is 2 inches or as approved by engineering." This minimum clearance accounts for thermal growth and dynamic expansion for safety-related piping systems. The inspectors identified numerous scaffold installations that did not meet the 2-inch requirement and had not been evaluated as acceptable by engineering.

The licensee subsequently identified an additional 85 instances where the scaffolding specifications were not met. Engineering evaluations of these conditions determined that the existing clearances were adequate.

A similar NCV violation (05000528; 05000529; 050030/200003-02) was previously identified, on January, 28, 2000, when NRC inspectors questioned the clearance requirements for the separation between scaffolding and safety-related piping. The licensee entered the concern in the corrective action program as CRDR 116095. The licensee initiated EDC 2000-00463 as a corrective action to clarify the scaffold specification clearance requirements. However, the added clearance criteria was not adequately communicated to the work group, in that, maintenance personnel referenced Specification 13-CN-380 as required, but failed to implement the EDC 2000-00463 specification during scaffold erection.

Analysis. The performance deficiency associated with this finding was the failure to erect scaffolding in accordance with the maintenance procedure. This finding is determined to be greater than minor because if left uncorrected, the finding would become a more significant safety concern in that improperly installed scaffolding could impact the availability of mitigating equipment. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and all subsequent engineering evaluations determined that there was no adverse affect to mitigating equipment. This issue involved human performance crosscutting aspects associated with not following work instructions.

Enforcement. Technical Specification 5.4.1.a requires written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, Item 9A, requires maintenance that can affect safety-related equipment be properly preplanned and performed in accordance with written instructions appropriate to the circumstances. Contrary to the above, the licensee failed to follow the requirements of Procedure 30DP-9WP11, "Scaffolding Instructions," Revision 13, that required either a 2-inch clearance or engineering approval for scaffolding built in close proximity to safety-related structures, systems, and components. Because the finding is of very low safety significance and has been entered into the corrective action program as CRDR 2779469, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2005002-02, "Scaffolding Erected with Inadequate Clearances and No Engineering Evaluation."

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

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

Enclosure

implement abnormal or emergency operating procedures; and (3) verify that the licensee has identified and implemented appropriate corrective actions associated with operator workarounds.

- March 16, 2005, Work Mechanism (WM) 2551002 - Units 1, 2, and 3 temporary note (T-Note - temporary clarifying note for control board indicators/switches) to identify numerous curling/feathering/faded indicators in the control room

The inspectors completed one sample.

b. Findings

Introduction. The inspectors identified a Green finding for the failure to follow administrative guidelines provided to operations personnel for identifying, documenting, and tracking operator challenges and discrepancies associated with instruments and controls.

Description. On August 16, 2003, while running the circulating water pump on essential chiller Train A, a temperature difference was noticed between the outlet temperatures of Train A and B essential chillers. The reactor operator tapped the essential chiller Train A outlet temperature Meter ECN-TI-11 twice, and indicated temperature increased by 10°F. Inspection of the meter showed that the meter scale markings were peeling off and curling. The indication arrow was held in place by the markings and only changed after the meter face was tapped twice. The licensee documented the issue on CRDR 2628558 and included the following operator observation, "Operators are trained to believe their indications until proven incorrect. This condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required." The licensee initiated WM 2551002 to track replacement of the degrading meter face plates.

On March 16, 2005, the inspectors performed a walkdown of the Unit 2 control boards and noted a T-note on one of the panels that did not appear to be associated with any instrument or control meter face plate. The T-note described the problem with curling/feathering/faded indicators in the control room, and referenced WM 2551002 for more information. The inspectors noted that the Unit 2 T-note was the tool used to identify 167 instrument or control meter face plates in Units 1, 2, or 3, that were either faded, curling, or had some other discrepant condition. Of those 167 meter face plates, 90 had been replaced; 52 remained with faded scales; 24 remained with meter scale markings that were curling and/or peeling off; and one remained that had the wrong scale. Of the 24 meters that had curling/peeling scale markings, the licensee identified 10 meter faces that had the potential to impact operations, and of those, only three affected mitigating equipment. One of the gauges was for essential service water pump discharge flow and the other two were for fuel building charcoal filtration differential temperatures. The inspectors determined that these indications alone would not be enough for an operator to inappropriately secure the equipment.

The inspectors determined that a T-note was not the correct tracking mechanism specified by Procedure 40DP-9OP15, "Operator Challenges and Discrepancy Tracking," for the degraded meter face plate conditions. Procedure 40DP-9OP15 required that discrepancies which cause significant impact to the daily operation in the control room and constituted operator challenges be individually tracked in the control room discrepancy log. Furthermore, a discrepancy label containing the control room discrepancy log number and description of the discrepancy should be placed adjacent to or as close as possible to each affected device.

Analysis. The performance deficiency associated with this finding was the failure to follow administrative requirements for control room discrepancy tracking. This finding is associated with the mitigating systems cornerstone. The finding is determined to be greater than minor because if left uncorrected, it could become a more significant safety concern in that the condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with numerous equipment issues and associated human performance aspects that might impact equipment operation. Based on management review, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and there was no adverse impact to plant equipment. This issue involved problems identification and resolution crosscutting aspects associated with identifying and trending equipment deficiencies.

Enforcement. No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because the administrative procedure to track control room discrepancies is not required by Technical Specifications. This finding has been entered into the corrective action program as CRDR 2782501. This finding is identified as FIN 05000528; 05000529; 05000530/2005002-03, "Failure to Track Control Room Discrepancies."

1R17 Permanent Plant Modifications (71111.17B)

a. Inspection Scope

The procedure requires the review of a minimum of five permanent plant modifications. The inspectors reviewed five permanent plant modification packages and associated documentation, including safety evaluation screenings, safety evaluations, and calculations to verify that they were performed in accordance with plant procedures. The inspectors also reviewed the procedures governing plant modifications to evaluate the effectiveness of the programs for implementing modifications to risk-significant SSCs, such that these changes did not adversely affect the design and licensing basis of the facility. As part of this review, the inspectors reviewed modification packages and safety evaluations associated with the Unit 1 steam generator replacement. Credit for this review may be taken for part of NRC Inspection Procedure 50001, "Steam Generator Replacement."

The inspectors interviewed the cognizant design and system engineers for the identified modifications as to their understanding of the modification packages.

The inspectors evaluated the effectiveness of the licensee's corrective action process to identify and correct problems concerning the performance of permanent plant modifications. In this effort, the inspectors reviewed 11 corrective action documents and the subsequent corrective actions pertaining to licensee-identified problems and errors in the performance of permanent plant modifications.

b. Findings

Introduction: An unresolved item was identified to allow further assessment of the methodology the licensee engineers use in establishing setpoints.

Description: During the review of Calculation 13-JC-RC-0212, "Pressurizer Pressure Instrument (RCN - P-100X & Y) Setpoint and Uncertainty Calculation," Revision 5, the inspectors noted the high pressure setpoint may not alarm prior to exceeding the TS limit when the uncertainties were applied. The licensee engineers calculated that there was a -8.3 psia margin for the Barton transmitters and a -12.6 psia margin for the Rosemount transmitters.

The licensee engineers included the following notes to Table 23, "LSp, DSp Determination," Section 5.7, for the Barton transmitters:

- "a. The process limits are the Technical Specification LCO [limiting condition for operation] values as read on Indicators Rcx-PI-101x (xA, B, C, D); those instruments are covered in Calculation 13-JC-RC-207. Ideally the alarms would always occur before there is indication that the LCO has been reached. However, in cases where the alarm occurs late (at an actual pressure of 2295 psia) and the indicator is reading high (therefore, above the approximately 2295 psia actual) the indicated LCO could be exceeded before the alarm occurs. While this would mean entering an Action statement, there is still sufficient margin to the applicable analytical limit which is higher to allow for measurement uncertainties. In other cases (e.g., alarm early with indicator low) the alarm would give warning before the LCO is reached."
- "c. The nominal margin is negative for notifying the operator that the TS LCO Action statement has been potentially entered; however, the likelihood is high that process variations would be sufficient to trigger the alarm long before the 2 hour restoration requirement is exceeded."

The notes to Table 46, "LSp, DSp Determination," in Section 11.7, for the Rosemount transmitters are the same as above.

In addition to the potential for the pressurizer pressure alarms not identifying that a TS Limiting Conditions for Operation (LCO) was being approached or exceeded, the

inspectors noted that the pressurizer high level alarm was set above the LCO. The pressurizer level is required to be maintained less than 56 percent. However, the high level alarm is set at 60 percent.

For each of these parameters, the licensed operators are required to monitor the parameters every 12 hours, ± 3 hours. This means that an operator could read the pressure and level indicators at 0001 hours, with the indications within the Technical Specifications. And, hypothetically, the parameters could exceed the limit at 0002 hours. Because the operators are not required to monitor these parameters for 12 ± 3 hours, the LCO could be exceeded until 1501 hours without any operator action to restore the parameters to within allowable limits.

The inspectors found that the methodology used to establish the pressurizer high pressure alarm was nonconservative, in that, under certain circumstances, the reactor coolant pressure could exceed the TS limit of 2295 psia without the operators being aware of the condition. The inspectors noted that, with uncertainties considered, the high pressure alarm may not be actuated until the actual pressure is as high as 2303.3 psia with a Barton transmitter, or as high as 2307.9 psia with a Rosemount transmitter.

During interviews, the inspectors learned that the operators considered the alarm function as an "aid." However, in Procedure 40AL-9RK4A, "Panel B04A Alarm Responses," Revision 13, the operators' responses do not require the comparison with the indication from the P-101 indicators (i.e., the indicators used for verifying compliance with the Technical Specifications). Without verifying the pressure, the operators would not know if they were in violation of the TS. And, without reviewing the pressure history from the P-101 channels, the operators would not know how long they had been above the TS allowed value; therefore, they could have exceeded the allowed action times.

In order to assess whether or not a violation of regulatory requirements has occurred and what significance this finding may have, additional information was requested and will be reviewed. Therefore, this finding is identified as unresolved (URI 05000528; 05000529; 05000530/2005002-04). The licensee has entered this issue into its corrective action program as CRDR 2781795.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the six 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

Enclosure

properly controlled; the test data results were complete and accurate; the test equipment was removed; the system was properly realigned; and deficiencies during testing were documented. The inspectors also reviewed the corrective action program to determine if the licensee identified and corrected problems related to postmaintenance testing.

- January 3, 2005, WO 2764544 - Unit 2 repair of emergency diesel generator Train A jacket water header
- January 9, 2005, WO 2647952 - Unit 2 battery charger Train B amplifier board replacement
- January 21, 2005, WM 2743283 - Unit 1 fuel building crane drum lubrication and break pad retest
- February 3, 2005, WO 2744635 - Unit 2 essential cooling water surge Tank A fill valve cutout and replacement
- February 14, 2005, WOs 2776428 and 2776727 - Unit 1 normal offsite power supply Bus NAN-S06
- March 18 - 19, 2005, WOs 2782723 and 2782993 - Unit 1 emergency diesel generator Train A governor replacement

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

For the below listed outage, the inspectors reviewed the following risk significant outage activities to verify defense in depth commensurate with the outage risk control plan and compliance with the TS: (1) the risk control plan, (2) tagging/clearance activities, (3) reactor coolant system instrumentation, (4) electrical power, (5) decay heat removal, (6) reactivity control, (7) heatup and cooldown activities, and (8) licensee identification and implementation of appropriate corrective actions associated with outage activities.

- February 15, 2005, Unit 1 short notice outage to repair normal offsite power supply Bus NAN-S06

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 Updated Final Safety Analysis Report, procedure requirements, and TS to ensure that the five below listed surveillance activities demonstrated that the SSC's 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 demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- January 15, 2005, Unit 3 Procedure 39MT-9ZZ32, "Motor Operated Valve Diagnostic Testing," Revision 3, for AFW discharge Valve 3JAFUUV0037
- February 8, 2005, Unit 3 Procedure 43ST-3ZZ02, "Inoperable Power Sources Action Statement," Revision 30
- February 25, 2005, Unit 3 Procedure 73ST-9CL03, "Containment Airlock Door Seal Leak Test," Revision 14
- March 3, 2005, Unit 1 Procedure 73ST-9SI10, "HPSI Pumps Miniflow - Inservice Test," Revision 30
- March 7-8, 2005, Unit 2 Procedure 73ST-9SI10, "Main Steam and Pressurizer Safety Valve Set Pressure Verification," Revision 19

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

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

- January 5, 2005, Unit 3 Temporary Modification 2766227, jumper out pressurizer heater element from proportional heater Bank 2 and substitute with Heater A11
- February 14, 2005, Unit 1 Temporary Modification 2775284, temporary power to administrative Building E and the Technical Support Center during switchgear Breaker NAN-S06J rework

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2005 Biennial Emergency Preparedness Exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario included onsite and offsite electrical power failures, a large break loss of reactor coolant, fuel damage, and a rupture of the containment structure. These events resulted in a significant radioactive steam release to the environment and recommendations for evacuation out to 10 miles from the site. The licensee activated all of their emergency facilities to demonstrate their capability to implement the emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of classification, notification, protective action recommendations, and assessment of offsite dose consequences in the simulator control room and the following emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed personnel recognition of abnormal plant conditions, the transfer of emergency responsibilities between facilities, communications, protection of emergency workers, emergency repair capabilities, and the overall implementation of the emergency plan to verify compliance with the requirements of 10 CFR 50.47(b), 10 CFR 50.54(q), and Appendix E to 10 CFR Part 50.

The inspectors attended the post-exercise critiques in each of the above emergency response facilities to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended the formal presentation of critique items to plant management. The inspectors completed one sample during the inspection.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR 50.54(q) , associated with emergency preparedness planning standard 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, Section IV.F.2.g, for failure to follow the emergency plan. Specifically, the licensee failed to correct a practice for development of protective action recommendations which could result in a recommendation to evacuate some areas of the population that did not warrant evacuation, contrary to federal guidance.

Description. On March 1, 2005 during the Biennial Emergency Preparedness full scale exercise, the inspectors observed the licensee implement their emergency plan and implementing procedures in response to simulated accident conditions.

A General Emergency was declared March 1, 2005, at 11:22 a.m. based on a loss of the containment and reactor coolant system fission product barriers, and a potential loss of the reactor cladding barrier. Although a small release of radioactivity was in progress, field monitoring teams near the site boundary and dose assessments based on field and plant data confirmed that there was no significant fission product release to the environment in progress at the time of the General Emergency declaration. The emergency coordinator, in consultation with the radiation protection manager, performed notifications to the state and local authorities of the declaration of the general emergency and a protective action recommendation to evacuate all of the public within 2 miles of the site, and 5 miles for the three wind-affected sectors, based on plant conditions, as required and defined in Emergency Preparedness Implementing Procedure (EPIP)-99, Appendix B, "Protective Action Recommendations." The Palo Verde Nuclear Generating Station plume exposure pathway emergency planning zone is

divided into 16 radial 22.5 degree sectors, labeled A - H, J - N, P - R. For the wind direction at the time of the general emergency declaration, the affected sectors were G, H, and J.

Due to a significant increase in the radioactive release rate, the dose assessment completed at 11:52 a.m. also indicated the need to evacuate the public within 2 miles of Palo Verde Nuclear Generating Station, and 5 miles for the three wind-affected sectors, which had not changed. Therefore, the protective action recommendation was only modified to add the recommendation to consider use of potassium iodide, consistent with EPIP-99, Appendix B.

At approximately 12:00 p.m., a wind shift occurred that affected the adjacent Sector F, and no longer affected Sector J. The dose assessment completed at 12:01 p.m. did not indicate the need for evacuation beyond 5 miles. The emergency coordinator and radiation protection manager began preparing the notification form to revise the protective action recommendation to also evacuate Sector F out to 5 miles. At approximately 12:10 p.m., the radiation protection manager discussed the rising trend in dose assessments with the emergency coordinator and determined that an escalation of the protective action recommendation to evacuate the wind affected sectors to 10 miles was prudent, based on potentially exceeding the threshold of 25 rem committed dose equivalent thyroid at the site boundary if the radioactive release continued at the current rate. Based on this discussion, the emergency coordinator revised the protective action recommendation to evacuate all of the public within 5 miles of the site, consistent with EPIP-99, Appendix B, and also Sectors F, G, H, and J out to 10 miles.

The inspectors observed the licensee critique of performance of the emergency response organization during the 2005 biennial exercise and noted that no performance deficiency was critiqued concerning the protective action recommendation for evacuation of Sector J out to 10 miles.

The inspectors reviewed the emergency preparedness exercise reports for all exercises conducted since January 1, 2004, in conjunction with the evaluation of the drill and exercise performance indicator (Section 40A1). During review of the February 11, 2004, exercise, the inspectors noted a similar set of circumstances as in the 2005 biennial exercise, in that four sectors were recommended for evacuation, even though the current wind affected sectors were only three sectors as prescribed in EPIP-99, Appendix B. In the February exercise, during a site area emergency with a steam generator tube rupture, the wind shifted one sector to exclude Sector F. Approximately 15 minutes later, a significant fuel failure resulted in a general emergency declaration, and a protective action recommendation to evacuate the public within 2 miles of the Palo Verde Nuclear Generating Station, and 5 miles for the three wind-affected sectors and Sector F. The critique of the February exercise noted that EPIP-99, Appendix B, was unclear in its direction to include all prior affected sectors on the current protective action recommendation, and CRDR 2691641 was written to evaluate the critique comment. Condition Report/Disposition Request 2691641 was closed to CRDR 2691931, and was resolved by revising the wording in EPIP-99, Appendix B, to state that, "Updates/changes to an existing protective action recommendation should include

both the newly affected sectors and any previous sector(s) in which a protective action recommendation applied.” The previous revision stated that, “Updates/changes to an existing protective action recommendation should include both the newly affected sectors and any previously affected sector(s).” The drill report stated that the procedure had been misinterpreted to require that all previous radiologically affected sectors be maintained in subsequent protective action recommendation updates. The intent of the procedure change was to ensure that any previous protective action recommendation was neither removed nor reduced during protective action recommendation changes. The drill report also evaluated the evacuation of Sector F during the February 2004 exercise as an appropriate and conservative action for the protection of public health and safety.

During review of the June 30, 2004 exercise, the inspectors noted another similar example of protective action recommendation. During a site area emergency with a steam generator tube rupture, a wind shift occurred to the next adjacent sector. Approximately 38 minutes later, a dose assessment resulted in declaration of a general emergency, and a protective action recommendation to evacuate all of the public within 5 miles of the site, out to 10 miles for the three current wind affected sectors, and also to 10 miles for the sector that had not been affected by the wind shift for over 30 minutes.

The inspectors questioned the licensee concerning application of EPIP-99, Appendix B, for each of these three exercises. In each case, the licensee stated that the procedure was interpreted to require that all previous radiologically affected sectors be maintained on the protective action recommendation notification form, and the current protective action recommendation applied to all of those sectors as a conservative measure for protection of the public. In each of the exercises, a radioactive release was in progress prior to the wind shifts, and therefore all previous radiologically affected sectors were kept and any dose assessment related protective action recommendation was applied to those sectors as well as the current wind-affected sectors.

The inspectors reviewed federal guidance associated with protective action recommendations. NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1, Supplement 3, states that, “The preferred initial action to protect the public from a severe reactor accident is to evacuate immediately about 2 miles in all directions from the plant and about 5 miles downwind from the plant. . . . Plant and offsite officials should continue assessment action based on additional plant information, dose projections, and field monitoring results. After performing the initial early evacuation near the plant, licensee . . . should modify the protective action recommendations as necessary based on . . . field monitoring . . . and dose projections, which indicate that EPA protective action guide doses may be exceeded. . . . On the basis of this information, plant . . . officials may expand the evacuations to encompass other areas. . . .” Procedure EPA-400, “Manual Of Protective Action Guides And Protective Actions For Nuclear Incidents,” Revision 92-001, states that, “The PAGs [Protective Action Guide] . . . are the approximate [risk] levels at which the associated protective actions are justified. . . . the

risk avoided is usually much greater than the risk from evacuation itself. However, EPA recognizes the uncertainties associated with quantifying risks . . . as well as, the variability of risks associated with evacuation under differing conditions.” The NRC issued Regulatory Issue Summary 2003-12, “Clarification of NRC Guidance For Modifying Protective Actions,” dated June 24, 2003. Regulatory Issue Summary 2003-12 noted that “Implementation of a protective action that provides less of a dose savings than other available protective actions is generally not advisable.”

The inspectors concluded that the licensee had failed to correct a practice for development of protective action recommendations that could result in a reduction of dose savings to the public during a radiological reactor accident. In each of the three exercises discussed above, the inspectors concluded that the licensee had recommended evacuation of the public in one radial sector not affected by the current wind direction. Based on the uncertainties created by a low wind speed and small change in wind direction, the inspectors determined that the evacuation recommendation was inappropriate. Neither the exercise participants or the facility emergency preparedness staff provided an adequate justification during the exercise or as documented in the exercise reports for acceptance of the protective action recommendation as accurate. The justification given in each of the three exercises was that the evacuation was a conservative decision since the sector had been previously affected radiologically and therefore the sector was carried forward on the protective action recommendation notification, consistent with procedure guidance. However, procedural guidance did not direct evacuation of a fourth downwind sector without additional consideration of meteorological conditions and potential dose savings to that sector of the public. Also, the corrective action from the February 2004 exercise emphasized that previous sectors that had been issued a protective action recommendation must be maintained, not those who were only previously affected radiologically. In the three exercises described above, the inspector concluded an appropriate protective action recommendation decision was made, but not for the correct reasons. If the same reasoning was applied to a more significant wind shift, the resulting protective action recommendation could have resulted in unnecessary evacuations, potentially causing a higher dose to the population that was unnecessarily evacuated.

Analysis. 10 CFR Part 50, Appendix E, Section IV.F.2.g, requires that, “All . . . exercises shall provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected.” Emergency planning standard 10 CFR 50.47(b)(14) states, in part, “... deficiencies identified as a result of exercises or drill are (will be) corrected.” Section 6.6.2 of the Palo Verde Nuclear Generating Station Emergency Plan requires that, “Protective Action Recommendations include sheltering or evacuation based on consideration of the relative benefits of each action. The action which affords the higher level of dose avoidance, when offsite doses are expected to exceed Protective Action Guides, is preferred.”

The licensee failed to correct a weakness in the implementation of EPIP-99, Appendix B, which was identified following the February 11, 2004, emergency

preparedness exercise. The issue is a performance deficiency in that the licensee failed to follow the emergency plan, in that, the licensee did not correct a practice which could result in issuance of protective action recommendations for segments of the population where a dose assessment did not indicate that EPA Protective Action Guides would be exceeded, potentially resulting in a reduction in dose avoidance. The finding is more than minor because it is related to the Emergency Preparedness cornerstone attribute of Response Organization Performance, and affects the cornerstone objective in that evacuation of segments of the population where EPA Protective Action Guides are not exceeded could result in a higher dose to some members of the population, as well as a reduction in dose savings to other members of the population. The issue involved problem identification and resolution crosscutting aspects associated with implementing affective corrective actions. (See Section 40A2).

This finding was evaluated using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix B, Sheet 1 - Failure to Comply. The finding is associated with a failure to correct an identified implementation problem associated with development of protective action recommendations consistent with federal guidance and is therefore a planning standard (10 CFR 50.47(b)(14)) problem. The finding did not represent a function failure of the planning standard since, for the exercises observed, the protective action recommendation development resulted in appropriate protective action recommendations, consistent with federal guidance. Therefore, the significance of the finding is Green.

Enforcement. 10 CFR 50.54(q) provides in part that, "[a] licensee authorized to possess and operate a nuclear power reactor shall follow . . . emergency plans which meet the standards in [section] 50.47(b) and the requirements in Appendix E of this part." 10 CFR 50.47(b) requires that the onsite emergency response plans for nuclear power reactors must meet each of 16 planning standards, of which, standard (14) states, in part, ". . . deficiencies identified as a result of exercises or drills are (will be) corrected." 10 CFR Part 50, Appendix E, Section IV.F.2.g, requires that, "All . . . exercises shall provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected."

Contrary to the above, from February 2004 to present, the licensee failed to correct an identified deficiency associated with risk significant planning standard 10 CFR 50.47(b)(10) and with implementation of EPIP-99, Appendix B, "Protective Action Recommendations," which could potentially result in development of protective action recommendations not in accordance with federal guidance. In February 2004 the licensee revised EPIP-99, Appendix B to clarify that a revised protective action recommendation was to include sectors that previously had been affected by a protective action recommendation, and that maintaining a sector solely based on it being previously affected radiologically was not adequate justification. In exercises conducted in June 2004 and March 2005 evacuation protective action recommendations were developed based on the sector being previously affected radiologically, contrary to EPIP-99, Appendix B.

Because the failure to correct the protective action recommendation development process finding was of very low safety significance and has been entered into the licensee's corrective action program as CRDR2780513, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000528; 05000529; 05000530/2005002-05, "Failure to correct the Development of Protective Action Recommendations not in accordance with Federal Guidelines."

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

For the below listed drill and simulator-based training evolution contributing to drill/exercise performance and emergency response organization performance indicators, the inspectors (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and protective action recommendations development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the NEI 99-02 document's acceptance criteria.

- February 17, 2005, Unit 1 simulator, Drill 05-D-FAC-0203, "Loss of Offsite Power and Security Event"

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

To review and assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and locked high radiation areas, the inspectors interviewed radiation workers and radiation protection personnel involved in high dose rate and high exposure jobs. The inspectors discussed changes to the access control program with the radiation protection manager. The inspectors also conducted plant walkdowns within the radiologically controlled area and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements:

- Area postings and other access controls for airborne radioactivity areas, radiation areas, locked high radiation areas, and very high radiation areas
- Access controls, radiation work permits, and radiological surveys involving airborne radioactivity areas and high radiation areas
- Locked high radiation area key controls
- Internal dose assessment for exposures exceeding 50 mrem Committed Effective Dose Equivalent (No opportunities for review were identified.)
- Setting, use, and response of electronic personal dosimeter alarms
- Conduct of work by radiation protection technicians and radiation workers in areas with the potential for high radiation dose (No opportunities were provided to observe radiological significant work during the inspection week.)
- Dosimetry placement when work involved a significant dose gradient
- Controls involved with the storage of highly radioactive items in the spent fuel pool
- Quality Assurance Surveillance Report QS-2003-ANO-031, "Access Controls to Radiologically Significant Areas"
- A summary of access controls and high radiation area work practice related corrective action documents (condition reports) written since April 2002 and selected specific examples

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by TS as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Current 3-year rolling average collective exposure
- Site specific trends in collective exposures, plant historical data, and source-term measurements

- Site specific ALARA procedures
- Five work activities of highest exposure significance completed during the last outage
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, chemistry, radiation protection, maintenance, maintenance planning, scheduling, and engineering groups
- Integration of ALARA requirements into work procedure and radiation exposure permit documents
- Dose rate reduction activities in work planning
- Postjob (work activity) reviews
- Assumptions and basis for the current annual collective exposure estimate, the methodology for estimating work activity exposures, the intended dose outcome, and the accuracy of dose rate and man-hour estimates
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection

The inspectors completed 11 of the required 15 samples and 4 of the optional samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Emergency Preparedness Cornerstone

a. Inspection Scope

The inspectors sampled submittals for the performance indicators listed below for the period from January 1 through December 31, 2004. The definitions and guidance of Nuclear Engineering Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 2, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period.

- Drill and exercise performance
- Emergency response organization participation
- Alert and notification system reliability

The inspectors reviewed a 100 percent sample of drill and exercise scenarios, licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspectors reviewed documentation related to actual emergency declarations of Notice of Unusual Event and Alert, related to the loss of all offsite power event on June 14, 2004. The inspectors reviewed the qualification, training, and drill participation records for a sample of 10 emergency responders. The inspectors reviewed alert and notification system maintenance records and procedures, and a 100 percent sample of siren test results. The inspectors also interviewed licensee personnel that were responsible for collecting and evaluating the performance indicator data. The inspectors completed three samples during this inspection.

b. Observations and Findings

No findings of significance were identified.

The inspectors identified three instances where the notification form had the incorrect time of event declaration following a new protective action recommendation development. In each case, the time on the notification form was changed to the time of the new protective action recommendation development. The licensee indicated that the notification form would be evaluated for a revision to allow recording of the event declaration time and new protective action recommendation time, and training conducted to ensure proper use of the notification form by the emergency response organization.

Additionally, based on the finding described in Section 1EP1 in this report, the inspectors determined that during the February 11 and June 30, 2004, and March 1, 2005, exercises, three protective action recommendation developments did not have

sufficient information documented to determine if the justification to evacuate 4 sectors based on a dose assessment was adequate. In each case, the fourth sector could have been justified for an evacuation recommendation based on a combination of instability of the plume, low wind speeds, and a small wind shift. Development of a correct protective action recommendation, but for the incorrect reasons, is evaluated as a successful opportunity; however, the performance deficiency must be recognized and corrected.

The licensee evaluated the potential effect on the drill and exercise performance indicator if each of these three opportunities were changed from success to missed, and determined that the reported drill and exercise performance indicator color was not affected and remained Green.

4OA2 Identification and Resolution of Problems (71152)

.1 Daily Reviews

In order to help identify repetitive equipment failures or specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing daily CRDR summary reports and attending CRDR review meetings.

.2 Annual Sample Review

a. Inspection Scope

The inspectors chose two issues for more in depth review to verify that licensee personnel had taken corrective actions commensurate with the significance of the issues. The issues and their bases for their selection is described below:

- CRDR 2774469, potential single failure vulnerability on the essential buses from a review of Industry Operating Experience
- Significant Root Cause Investigation Report for CRDR 2754444, "Fuel Assembly Improperly Seated in Reactor Vessel," Revision 0

When evaluating the effectiveness of the licensee's corrective actions for these issues, the following attributes were considered:

- Complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery
- Evaluation and disposition of operability and reportability issues
- Consideration of extent of condition, generic implications, common cause, and previous occurrences

- Classification and prioritization of the resolution of the problem commensurate with its safety significance
- Identification of root and contributing causes of the problem for significant conditions adverse to quality
- Identification of corrective actions which are appropriately focused to correct the problem
- Completion of corrective actions in a timely manner commensurate with the safety significance of the issue

b. Findings

No findings of significance were identified.

.3 Biennial Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed selected corrective action documents listed in the attachment associated with maintenance rule related issues. The inspectors verified that the licensee took or planned appropriate corrective measures for identified issues.

b. Findings

No findings of significance were identified.

.4 ALARA Planning and Controls Trend Review

a. Inspection Scope

Section 2OS2 evaluated the effectiveness of the licensee's problem identification and resolution processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. The inspectors reviewed the corrective action documents listed in the attachment against the licensee's problem identification and resolution program requirements.

b. Findings

No findings of significance were identified.

.5 Crosscutting Issues Followup Inspections

The inspectors reviewed CRDRs 2780273 and 2780286, which document the NRC's identification of substantive crosscutting issues in the human performance and problem identification and resolution areas, respectively. The substantive crosscutting issues

were documented in Report 05000528; 05000529; 05000530/2005001, "Annual Assessment Letter - Palo Verde Nuclear Generating Station." The inspectors discussed preliminary results of ongoing common cause evaluations performed by the licensee and action plan development to correct the identified issues.

.6 Safety Conscious Work Environment Followup Inspections

The inspectors reviewed the preliminary results of the Palo Verde Nuclear Safety Culture Assessment dated March 22, 2005. This assessment constituted the site survey that was discussed in the meeting conducted at the Region IV Office on January 14, 2004, and in Report 05000528; 0500029; 0500030/2005001, "Annual Assessment Letter - Palo Verde Nuclear Generating Station." No significant findings or observations were identified through this review.

.7 Cross-References to PI&R Findings Documented Elsewhere

Section 1R14 describes a finding that involved untimely correction for a condition adverse to quality.

Section 1R16 describes a finding that involved poor identification and tracking of equipment deficiencies.

The inspectors identified two examples of ineffective corrective action in that protective action recommendations made by the licensee to offsite authorities during the June 2004 and March 2005 emergency preparedness exercises were not in accordance with Emergency Preparedness Implementing Procedure (EPIP)-99, Appendix B, "Protective Action Recommendations," Revision 2. Emergency Preparedness Implementing Procedure 99, Appendix B, had been revised in February 2004 as a corrective action for previous licensee problems with protective action recommendations evaluated in Condition Report/Disposition Requests 2691931 and 2691641 (Section 1EP1).

4OA3 Event Followup (71153, 71111,14)

.1 Loss of Offsite Power Caused by Electrical Bus Fault

a. Inspection Scope

The inspectors evaluated plant conditions, equipment performance, and licensee actions related to an electrical fault associated with Unit 1 normal offsite power supply Bus NAN-S06.

b. Findings

The inspectors evaluated this event in detail and the results are documented in Section 1R14. No findings of significance were identified.

.2 Startup Transformer Supplying Electrical Power with No Protective Relaying

a. Inspection Scope

The inspectors evaluated plant conditions, licensee actions, and electrical distribution vulnerabilities related to the identification that protective relaying for startup Transformer X01 had been lost due to the electrical fault associated with Unit 1 normal offsite power supply Bus NAN-S06 (Units 1, 2, and 3).

b. Findings

The inspectors evaluated this event in detail and the results are documented in Sections 1R13 and 1R14. No findings of significance were identified.

.3 (Closed) LER 05000528/2004003-00, "Manual Reactor Trip In Response to Slipped Control Element Assembly"

On May 8, 2004, Unit 1 experienced a slipped control element assembly while performing low power physics testing in Mode 2. Control Element Assembly (CEA) 89 slipped from 136 inches withdrawn to 129.6 inches. This resulted in a deviation of 7.4 inches. Procedure 40AO-9ZZ11, "CEA Malfunctions" requires the operators to trip the reactor if one CEA deviates from its group by more than 6.6 inches. Based on the identified condition, the operators manually tripped the reactor. The inspectors reviewed the root cause investigation report CRDR 2707423. The licensee determined that the slipped element was the result of a known design weakness in which friction can develop in the gripper assemblies at the pivot point which is formed at the connection of the latch and link. The licensee plans to replace the control element drive mechanism with an upgraded control element drive mechanism at the next refueling outage. No findings of significance were identified. This LER is closed.

.4 (Closed) LER 05000528/2004004-00, "Technical Specification Violation for Failure to Perform Required Temperature Detector Calibration Surveillance"

This issue was previously dispositioned as NCV 05000528, 05000529, 05000530/2004003-06, "Failure to Perform Complete SDC Heat Exchanger Temperature Loop Channel Calibration." The inspectors reviewed the LER and found no additional concerns. This LER is closed.

.5 (Closed) LER 05000530/2004002-00, "Main Turbine Control System Malfunction Results in Automatic Reactor Trip on Low DNBR"

On June 7, 2004, Unit 3 experienced a malfunction in the main turbine speed control circuit. This malfunction initiated a reactor power cutback that caused the steam bypass control valves to open and control element assembly Groups 4 and 5 to insert into the core as designed, and reactor power was reduced to 57 percent. Approximately 10 seconds after the reactor power cutback, a reactor trip occurred due to a low departure from nucleate boiling ratio (DNBR) trip generated in the core protection

calculators. The core protection calculators provided the low DNBR reactor trip due to some overly conservative settings for azimuthal tilt and rodded radial peaking factors. The inspectors reviewed the licensee's root cause investigation documented in CRDR 2714544. The licensee reduced the azimuthal tilt values in each unit's core protection calculators to gain DNBR margin. The licensee continues to evaluate reduction of radial peaking factors. The licensee also repaired the main turbine speed control circuit. No findings of significance were identified. This LER is closed.

40A4 Crosscutting Aspects of Findings

Section 1R15 describes a finding where maintenance personnel erecting scaffolding near safety-related equipment did not follow work instructions.

40A5 Other Activities

(Closed) Unresolved Item 05000528; 05000529; 05000530/2004006-01, "Permanent Modification to Station EDGs Jacket Water Cooling Without Prior NRC Approval"

Introduction. A Severity Level IV noncited violation was identified for the failure to obtain NRC approval prior to implementing a modification to the EDG jacket water surge tanks.

Description. During the biennial inspection of problem identification and resolution, under the above report, NRC inspectors reviewed CRDR 130208. The CRDR request was generated to abandon the jacket water surge tank automatic makeup valves on both EDGs of all three units. Also, in 2003, the licensee implemented a modification that removed the jacket water surge tank low level alarms. The basis for alarm removal included the determination that the alarms only served to warn of automatic fill malfunction, and was therefore no longer necessary.

The licensee replaced the automatic fill and alarm with manual operator action to fill the surge tank, as necessary, every 12 hours during rounds. The manual method would be unable to assure mitigation of leaks above 1.6 gallons per hour in the jacket water system. Prior to the change, the automatic fill system could supply on the order of 80 gallons per minute makeup to the system. This resulted in a 99.9 percent reduction in mitigation for leakage from the original systems. The overall effect of these changes was the addition of more than a minimal likelihood of a malfunction of the equipment, with a concurrent reduction in system reliability and capability. The inspectors questioned whether this modification required prior NRC approval, under both 10 CFR 50.59, "Changes, Tests, and Experiments," guidance at the time, or with current guidance. The issue was therefore characterized as an unresolved item pending review with Office of Nuclear Reactor Regulation (NRR) staff.

Analysis. The issue was determined to be more than minor, through Inspection Manual Chapter 0612, Appendix B, in that, it affected the mitigating systems cornerstone attribute of equipment performance, reliability, and capability, which could impact the ability of the emergency diesel generators to respond to an initiating event. After review of this issue, Regional and NRR staff determined that the abandonment of the jacket

water surge tank automatic makeup valves constituted an increase in the probability of a malfunction of equipment described in the Updated Final Safety Analysis Report. Specifically, under the 10 CFR 50.59 guidance at the time of the original change, the effects of loss of mitigation, reliability, and capability would be considered an unresolved safety question. Under current guidance, the change resulted in the addition of more than a minimal likelihood of a malfunction of the equipment, with a concurrent reduction in system reliability and capability. Therefore, the licensee was required, in accordance with 10 CFR 50.59, to request approval from the NRC prior to implementing the changes. The failure to request approval prior to changing the systems is considered a violation of NRC requirements. In accordance with the NRC Enforcement Manual, violations of 10 CFR 50.59 are not processed directly through the significance determination process. Therefore, this issue was considered applicable as traditional enforcement.

Although the significance determination process is not designed to assess significance of violations that potentially impact or impede the regulatory process, the technical result or condition of a 10 CFR 50.59 violation can be assessed through the significance determination process. The inspectors and the Region IV senior reactor analyst discussed the significance of this finding. A Significance Determination Process Phase 1 screening was performed and the finding was determined to have very low safety significance because there was no actual loss of the mitigating system safety function. Based on discussions with NRR staff, the inspectors determined that, because a request for approval would likely have been granted, the finding is of low safety significance (Severity Level IV).

Enforcement. 10 CFR 50.59 states that prior NRC approval is required for changes resulting in more than a minimal increase in the likelihood of occurrence of a malfunctions of SSCs important to safety previously evaluated in the final safety analysis report (as updated). Contrary to this, the licensee implemented two modifications to the emergency diesel jacket water system without obtaining prior NRC approval. Because this failure to comply with 10 CFR 50.59 is of very low safety significance and has been entered into the corrective action program as CRDR 2781196, this violation is being treated as a noncited Severity Level IV violation, consistent with Section VI.A of the NRC Enforcement Policy: (NCV 05000528; 05000529; 05000530/2005002-06), "Permanent Modification to Station Emergency Diesel Generators Jacket Water Cooling Without Prior NRC Approval."

40A6 Meetings, Including Exit

On January 14, 2005, the inspectors presented the results of the ALARA planning and controls inspection to Mr. G. Overbeck, Senior Vice President, Nuclear, and other members of the licensee management. The licensee acknowledge the findings presented.

On March 11, 2005, the inspectors presented the results of the biennial maintenance rule and permanent plant modification inspections to Mr. D. Mauldin, Vice President, Engineering and Support, and other members of the licensee management. The licensee acknowledge the findings presented.

On March 18, 2005, the inspectors presented the results of the biennial emergency preparedness exercise inspection to Mr. G. Overbeck, Senior Vice President, and other members of licensee management. Licensee management acknowledged the inspection findings.

On March 29, 2005, the resident inspectors presented the inspection results of the resident inspections to Mr. G. Overbeck, Senior Vice President, Nuclear, and other members of the licensee management. The licensee acknowledged the findings presented.

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

40A7 Licensee-Identified Violations

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

- 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, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

On July 18, 2001, as noted in CRDR 2407009, the licensee measured a low electrical insulation resistance on the electric cabling to the Unit 1 spray pond pump Train B. Licensee investigation found water in a manhole that included this electric cable, and that moisture entered into an electrical splice on this cable due to an inadequate heat shrink on the insulating sleeve around the splice. This condition caused the low insulation resistance reading. The licensee removed the water and replaced the electrical splice. Contrary to the above, in July 2001, the replacement electrical splice was incorrectly installed and as a result, on March 22, 2005, the licensee again noted a low insulation resistance in the cabling to the Unit 1 spray pond pump Train B due to moisture entering the insulation sleeve around the same splice due to inadequate heat shrink. This event is documented in the licensee's corrective action program as CRDR 2784074. This finding is only of very low safety significance because the insulation resistance had not degraded to a point where there was an actual loss of safety function for the spray pump.

- During the Unit 3 core offload, the licensee identified in CRDR 2665024 that visual inspections were signed as completed for six failed fuel assemblies, when no visual examination had been performed. Instructions in Material Balance Area Transfer Package 3-11-2 instructed the responsible individual to sign when an action was verified complete. Signing for an action when not complete was a failure to follow "Procedure Adherence and Temporary Change Control" as referenced in Appendix A of Regulatory Guide 1.33, Revision 2, 1978. Technical Specification 5.4.1.a. requires that procedures be properly developed, implemented, and maintained. Contrary to this, the failure to follow the procedure was considered a noncited violation of Technical Specification 5.4.1.a. The significance of this violation was considered to be more than minor because, if left uncorrected, it could have become a more significant safety concern. The significance was determined to be very low (Green) because other examinations (ultrasonic) were used for proper classification of the fuel assemblies. This issue was the subject of Investigation Report 4-2004-020 to determine if willfulness was involved and the Office of Investigation did not substantiate this concern.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Bauer, Department Leader, Regulatory Affairs
P. Borchert, Director, Work Management
J. Bungard, Section Leader, Radiation Protection
R. Buzard, Sr. Consultant, Regulatory Affairs
D. Carnes, Director, Nuclear Assurance
P. Carpenter, Unit Department Leader, Operations
C. Churchman, Director, Steam Generator Replacement
K. Coon, Technical Management Assistant, Radiation Protection
S. Coppock, Department Leader, System Engineering
D. Fan, Department Leader, Design Mechanical Engineering
M. Fladager, Operations Department Leader, Radiation Protection
J. Gaffney, Director, Radiation Protection
T. Gray, Radiological Services Department Leader, Radiation Protection
D. Hautala, Senior Engineer, Regulatory Affairs
J. Hesser, Director, Emergency Services
K. Linares, Senior Radiation Protection Technician, Radiation Protection
D. Marks, Section Leader, Regulatory Affairs - Compliance
M. McGhee, Unit Department Leader, Operations
D. Mauldin, Vice President, Engineering and Support
G. Overbeck, Senior Vice President, Nuclear Operations
M. Radsprinner, Section Leader, Systems Engineering
T. Radtke, Director, Operations
F. Riedel, Director, Nuclear Training Department
C. Seaman, Director, Regulatory Affairs
M. Shea, Director, Maintenance
D. Smith, Plant Manager, Production
M. Sontag, Department Leader, Nuclear Assurance
D. Straka, Senior Consultant, Regulatory Affairs
J. Taylor, Department Leader, Operations Support
M. Wagner, Unit 3 Section Leader, Radiation Protection
T. Weber, Section Leader, Regulatory Affairs
M. Winsor, Director, Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000528; 05000529; URI Potentially Non-Conservative Setpoints (Section 1R17)
05000530/2005002-04

Opened and Closed

05000528/2005002-01	NCV	Failure to Correct a Condition Adverse to Quality (Section 1R14)
05000528; 05000529; 05000530/2005002-02	NCV	Scaffolding Erected with Inadequate Clearances and No Engineering Evaluation (Section 1R15)
05000528, 05000529; 05000530/2005002-03	FIN	Failure to Track Control Room Discrepancies (Section 1R16)
05000528; 05000529; 05000530/2005002-05	NCV	Failure to Correct the Development of Protective Action Recommendations not in Accordance with Federal Guidance (Section 1EP1)
05000528; 05000529; 05000530/2005002-06	NCV	Permanent Modification to Station Emergency Diesel Generators Jacket Water Cooling Without Prior NRC Approval (Section 4OA5)

Closed

05000528/2004003-00	LER	Manual Reactor Trip In Response to Slipped Control Element Assembly (Section 4OA3.3)
05000528/2004004-00	LER	Technical Specification Violation for Failure to Perform Required Temperature Detector Calibration Surveillance (Section 4OA3.4)
05000530/2004002-00	LER	Main Turbine Control System Malfunction Results in Automatic Reactor Trip on Low DNBR (Section 4OA3.5)
05000528, 05000529; 05000530/2004006-01	URI	Permanent Modification to Station Emergency Diesel Generators Jacket Water Cooling Without Prior NRC Approval (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

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

Section 1R04: Equipment Alignment

Procedures

40OP-9DG01, "Emergency Diesel Generator A," Revision 36
40ST-9AF03, "Auxiliary Feedwater Pump AFB-P01 Monthly Valve Alignment," Revision 3
40OP-9SI02, "Recovery from Shutdown Cooling to Normal Operating Lineup," Revision 57

Drawings

01-M-SIP-001, "Safety Injection and Shutdown Cooling System," Revision 30
01-M-SIP-002, "Safety Injection and Shutdown Cooling System," Revision 24
01-M-SIP-003, "Safety Injection and Shutdown Cooling System," Revision 9

Section 1R05: Fire Protection

Miscellaneous

Permit 2771365
PVNGS Pre-Fire Strategies Manual, Revision 15

Drawings

13-A-ZYD-031, "Fire Protection, Diesel Generator Building Floor Plan at Elevation 100'-0" to 115'-0", Level , Sheet 1 of 3, Revision 1

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

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

Section 1R06: Flood Protection Measures

CRDR

2763326

Work Order

2763623

Miscellaneous

Operability Determination 285, Revision 2
Updated Final Safety Analysis Report Section 3.4.1

Section 1R12: Maintenance Implementation

Miscellaneous

July 13, 1999	Maintenance Rule Expert Panel Meeting Minutes #199
September 11, 2002	Unit 1 Tenth Refueling Outage Shutdown Risk Assessment Rev 0
September 27, 2002	U1R10 Outage Manager's Log
September 28, 2002	Outage 1R10 Turnover Sheets-Day and Night Shift
September 28, 2002	Scheduler's Log 1R10 Refueling Outage
September 28, 2002	Unit 1 Operational Logs
January 28, 2003	Reportability Review for CRDR 2557486
March 2, 2005	Report "Returned to (a)(2) Monitoring"
March 2, 2005	Report "Items in (a)(1) Monitoring"

Procedures

30DP-9MT03	Assessment and Management of Risk When Performing Maintenance in Modes 1-4	Revision 10
70DP-0EE01	Equipment Root Cause Of Failure Analysis	Revision 13
70DP-0MR01	Maintenance Rule	Revision 10
70DP-0RA01	Shutdown Risk Assessment	Revision 4
71DP-0EM01	Risk Management Program Expert Panel	Revision 7
73ST-9XI02	SG#2 Containment Isolation Valves-Inservice Test	Revision 33
73ST-9XI22	CH Valves-Inservice Test	Revision 11
81-DP-0ZZ01	Civil System, Structure, and Component Monitoring Program	Revision 11

81DP-0CC28	Classification of SSC's	Revision 7
90DP-0IP10	Condition Reporting	Revision 20

CRDR's Reviewed

2560126	2590586	2593558
2594990	2596894	2601724
2612302	2616853	2619389
2619663	2654236	2655188
2658718	2658814	2661184
2658718	2516816	2759239
2682543	2686972	2699150
2682543	2669828	2619663
2720228	2693655	2735895
2740774	2740777	2744641
2763051	2764120	2557846
2774999	2774949	

Work Orders

ENG 21789	EMS 2365740	EMS 090478
EMS 2427302	EMS 253841	ELEC 253842

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Nuclear Administrative and Technical Manual 32MT-9ZZ91, "Inspection/Cleaning of 13.8 KV and 4.16 KV Switchgear," Revision 12

Miscellaneous

- Fragnet for Unit 3 B train online outage for January 25, 2005
- Schedulers evaluation for Palo Verde Unit 3, week of January 24-30, 2005
- List of Unit 3 High Impact Work for January 25, 2005
- Schedulers evaluation for Palo Verde Unit 1 for the week of February 28 through March 5, 2005
- Unit 3 Fragnet, U3SIBUV0615 UT.mpp
- EEQ-R369-002, Summary of Qualification, Tab B, Revision 9

Section 1R15: Operability Determination

CRDRs

2577861
2766592
2771052

Miscellaneous

Letter, 162-11168-AMT, Investigate CENTS Runs to evaluate Auxiliary Spray Leak-by on Control Room Fire Depressurizing Event, dated March 17, 2005

NUREG 0737, TMI Action Plan

73HF-2RC08, RCS Heat Loss Measurement, Revision 0

Various Trend Plots from June 14, 2004, Loss of Offsite Power

Section 1R19: Postmodification Testing

CRDRs

2777098
2770513
2770721

Work Orders

00881669
2331224
2611567
2717421
2733585
2775284
2776409
2776426
2776727
2774950

Drawings

2-M-EWP-001, P&ID: Essential Cooling Water System, Revision 25

2-E-EWB-002, Elementary Diagram, Essential Cooling Water System Essential Cooling Water Surge Tank Fill Valve, Revision 2

2-J-EWL-001, Control Logic Diagram, Essential Cooling Water Pumps and Surge Tank Fill Valves, Revision 2

01-M-DGP-001, P&ID: Diesel Generator System, Sheet 1 of 9, Revision 45

01-M-DGP-001, P&ID: Starting Air, Diesel Generator System, Sheet 6, Revision 45

01-M-DGP-001, P&ID: Control Air, Diesel Generator System, Sheet 8, Revision 45

Miscellaneous

Vendor Technical Document VTD-G080-0394
System Health Report 2004-4Q

Section 1R22: Surveillance Test

CRDRs

2767788
2770471
2770693
2770693
2770707
2771442

Work Order

DFWO 2769980

Miscellaneous

10 CFR 50.59 Screening S-05-0013, "Conditional Release Disposition to Accept As-left Close

Spring Pack Displacement at TST Out of the Setpoint Range for MOV Diagnostic Testing on
3JAFAUV0037," Revision 0

TSCRR 2770573

Section 1R23: Temporary Modifications

CRDR

2773869

Miscellaneous

13-E-MAA-001, Revision 21

01-E-NAA-001, Revision 16

01-E-NAA-002, Revision 15

01-E-MAA-002, Revision 5

Pressurizer Heater Capacity Study, Contract No PV86-10712, Job Number 75, December 19, 1989

Section 1EP1: Exercise Evaluation

Procedures

EPIP-01, "Satellite Technical Support Facility," Revision 18
EPIP-03, "Technical Support Center Actions," Revision 35
EPIP-04, "Emergency Operations Facility Actions," Revision 35
EPIP-08, "Emergency Planning Administration," Revision 13
EPIP-59, "Emergency Planning Training Program Description," Revision 0
EPIP-99, "Standard Appendices," Appendix A, "Emergency Action Levels," Revision 2
EPIP-99, "Standard Appendices," Appendix B, "Protective Action Recommendations," Revision 2
16DP-OEP19, "Performance Indicator Emergency Preparedness Cornerstone," Revision 2

Miscellaneous

Emergency Plan Exercise Reports: February 11, 2004; March 17, 2004; June 14, 2004 Loss of Offsite Power Alert; June 30, 2004; January 25, 2005.

Self Assessment Report EP-03-04, "Procedure Effectiveness," February 11 through March 24, 2004

Emergency Plan, Revision 31

Section 2OS2: ALARA Planning and Controls

CRDRs

2750844
2754558
2754576

Radiation Exposure Permits

1-1346B, 3-1007B, 3-1325C, 3-1349A, 3-3013A, 3-3045B, 3-3047A, 3-3306F, 3-3400B, 3-3502G, 3-3508G

Procedures

75DP-0RP01, RP Program Overview, Revision 4
75DP-0RP03, ALARA Program Overview, Revision 2
75DP-0RP06, ALARA Committee, Revision 3
75DP-9RP01, Radiation Exposure and Access Control, Revision 6
75RP-9RP02, Radiation Exposure Permits, Revision 17

75RP-9RP10, Conduct of Radiation Protection Operations, Revision 13
75RP-9RP12, ALARA Reports, Revision 1

Audits and Self-Assessments

Radiation Safety Audit 2004-013
Self-Assessment, "EPD Dose Rate Alarm Response and Adjustments to Dose Rate Set-points"

Miscellaneous

Two declared pregnant worker records

Section 4OA2: Identification and Resolution of Problems

Drawing

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

LIST OF ACRONYMS

ALARA	as low as is reasonably achievable
AFW	auxiliary feedwater
BAM	boric acid makeup
CEA	control element assembly
CFR	<i>Code of Federal Regulations</i>
CRAI	condition report action item
CRDR	drill/exercise performance
DNBR	departure from nucleate boiling ratio
EDC	engineering design change
EDG	emergency diesel generator
EPIP	emergency preparedness implementing procedure
HPSI	high pressure safety injection
LCO	limiting condition for operation
LER	licensee event report
NCV	noncited violation
NPSHA	net positive suction head available
NRR	Nuclear Reactor Regulation
OD	operability determination
RWT	refueling water tank
SSC	structure, system, and component
WM	work mechanism
WO	work order