



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

August 16, 2004

Gregg R. Overbeck, Senior Vice  
President, Nuclear  
Arizona Public Service Company  
P.O. Box 52034  
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**SUBJECT: PALO VERDE NUCLEAR GENERATING STATION - NRC PROBLEM  
IDENTIFICATION AND RESOLUTION INSPECTION  
REPORT 05000528/2004006, 05000529/2004006, AND 05000530/2004006**

Dear Mr. Overbeck:

On May 21, 2004, the NRC completed an inspection at your Palo Verde Nuclear Generating Station. The enclosed report documents the inspection findings, which were discussed on July 2, 2004, with you and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

On the basis of the samples selected for review, the team determined that in general the corrective action program was appropriately implemented; thresholds for identifying issues remained appropriately low and corrective actions were adequate to address conditions adverse to quality. Although, a few examples were noted where problems were not properly identified, evaluated or corrected and operating experience reviews and actions were often extended. The team also concluded that a positive safety conscious work environment exists at the Palo Verde Nuclear Generating Station.

There were two findings identified during this inspection. These findings were determined to be violations of NRC requirements. However, each finding was of very low safety significance and because they have been entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A of the Enforcement Policy. If you deny the violations or significance of 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,

Arizona Public Service Company

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Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Palo Verde Nuclear Generating Station 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 will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records 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//**

Linda Joy Smith, Chief  
Plant Engineering Branch  
Division of Reactor Safety

Dockets: 50-528  
50-529  
50-530  
Licenses: NPF-41  
NPF-51  
NPF-74

Enclosure:  
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07/ 26 /04	07/ 26 /04	07/ 27 /04	07/ 26 /04	07/ 26 /04	07/ 29 /04
C:DRP/A	C:DRP/D	C:DRS/PEB			
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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Dockets: 50-528, 50-529, 50-530  
Licenses: NPF-41, NPF-51, NPF-74  
Report No: 05000528/2004006, 05000529/2004006, and 05000530/2004006  
Licensee: Arizona Public Service Company  
Facility: Palo Verde Nuclear Generating Station, Units 1, 2, and 3  
Location: 5951 S. Wintersburg  
Tonopah, Arizona  
Dates: May 3 - July 2, 2004  
Inspectors: R. Mullikin, Senior Reactor Inspector, Plant Engineering Branch  
J. Clark, Senior Project Engineer, Project Branch D  
J. Melfi, Resident Inspector, Project Branch D  
G. Miller, Resident Inspector, Project Branch A  
Accompanying Personnel: R. Wise, Senior Allegations Coordinator, Region IV  
Approved By: Linda Joy Smith, Chief  
Plant Engineering Branch  
Division of Reactor Safety

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## SUMMARY OF FINDINGS

IR 05000528/2004006; 05000529/2004006; 05000530/2004006; 5/3 - 7/2/04; Palo Verde Nuclear Generating Station, Units 1, 2, and 3; Identification and Resolution of Problems

The inspection was conducted by a senior reactor inspector, a senior project engineer, and two resident inspectors. In addition, the Region IV senior allegations coordinator reviewed the safety conscious work environment. One Severity Level IV noncited violation and one Green noncited violation were identified. The significance of most findings is indicated by their color (green, white, yellow, red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "green" or assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### Identification and Resolution of Problems

- The team concluded that the licensee was generally effective at identifying problems and processing them through the corrective action program. The licensee effectively prioritized and evaluated issues with a few exceptions. Although, operating experience reviews and actions were often extended. The team identified one example where the licensee had not evaluated identified issues for proper compliance with 10 CFR 50.59 requirements. Licensee audits and assessments were found to be effective except for one example involving maintenance rule application to radiation monitors.

The team concluded that a positive safety conscious work environment exists at the Palo Verde Nuclear Generating Station. The team determined that workers at the site felt free to input safety findings into the corrective action program.

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

### **Cornerstone: Initiating Events**

- The team identified a Severity Level IV noncited violation of 10 CFR 50.59 requirements for failing to evaluate a modification to spent fuel storage in the spent fuel pools. The team reviewed CRDR 2524176, regarding the lack of a criticality analysis to support the use of rod capture tubes, which hold individual harvested fuel pins, in the spent fuel rack. The team reviewed the licensee's process of storing individual fuel pins, removed from a parent fuel assembly, and placed in rod capture tubes to be located in guide tubes of another host assembly. This resulted in a component that had nuclear fuel pins, of varying enrichment and depletion, stored as a regular fuel assembly in the spent fuel pool. The team noted that Section 9.1 of the Updated Final Safety Analysis Report specifically described the storage of spent fuel in regions based upon fuel assembly initial enrichment, actual burnup, and actual decay time. The Updated Final Safety Analysis Report does not describe the storage of individual pins in these regions. The licensee previously interpreted this as meaning the Updated Final Safety Analysis Report did not prohibit such storage, and would not require consideration of enrichment, burnup, and decay of individual pins. The licensee failed to provide an evaluation of a

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change to the facility as described in the Updated Final Safety Analysis Report, under 10 CFR 50.59 requirements. The licensee subsequently performed an analysis of the criticality under station Procedure 72DP-9NF01, "Control of SNM Transfer and Inventory," and the result was satisfactory.

The licensee failed to properly evaluate a change to the facility. This finding was determined to be more than minor, through Inspection Manual Chapter 0612, Appendix B, in that it affected the initiating events cornerstone attribute of human performance, and could have represented a more significant issue if left uncorrected. In accordance with the NRC Enforcement Manual, violations of 10 CFR 50.59 are not processed through the significance determination process. Therefore, this finding was considered applicable to traditional enforcement. Although the significance determination process is not designed to assess significance of violations that potentially impact or impede the regulatory process, the result of a 10 CFR 50.59 violation can be assessed significance through the significance determination process. 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 barrier integrity function. The licensee entered this finding into their corrective action program as CRDR 2711241 (Section 4OA2e.).

- Green. A self-revealing noncited violation of Technical Specification 5.4.1(a) was identified for failure to establish an adequate procedure for performing pressurizer spray valve maintenance. The procedure was not adequate since the valve failed shortly after maintenance on the valve and valve positioner. The licensee determined that the root cause of the failure was inadequate work instructions.

This finding was more than minor since it affected the likelihood of an initiating event to upset plant stability and challenge critical safety functions. A significance determination process phase 1 screening was performed and the finding was determined to have very low safety significance, since it did not inhibit the performance of a mitigating system and did not increase the likelihood of a loss of coolant accident (Section 4OA5a.).

#### B. Licensee-Identified Violations

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



## REPORT DETAILS

### 4 OTHER ACTIVITIES (OA)

#### 4OA2 Identification and Resolution of Problems

##### a. Effectiveness of Problem Identification

##### (1) Inspection Scope

The team reviewed items selected across the seven cornerstones to determine whether problems were being properly identified, characterized, and entered into the corrective action program. Specifically, the team's review included a selection of approximately 140 condition report/disposition requests (CRDRs) that were opened or closed from February 2002 through May 2004. The team also reviewed a sample of licensee audits and self assessments, trending reports, system health reports, and various other reports and documents related to the problem identification and resolution program. The audits and self-assessment results were compared with the self-revealing and NRC-identified issues to determine the effectiveness of the audits and self assessments.

The team interviewed station personnel and evaluated corrective action documentation and maintenance work orders to determine the licensee's threshold for identifying problems and entering them into the corrective action program.

In addition, the team reviewed the licensee's evaluation of selected industry experience information, including NRC Information Notices and industry provided information, to assess if issues applicable to the Palo Verde Nuclear Generating Station were appropriately addressed.

A listing of specific documents reviewed during the inspection is included in the attachment to this report.

##### (2) Assessment

The team found that, in general, problems were adequately identified and entered into the corrective action program. The threshold for entering issues into the corrective action program was appropriately low. However, the team identified two examples of issues that were not appropriately identified in the licensee's corrective action program. These examples include a minor violation and a previously identified NRC violation. Normally, minor and previously NRC identified violations would not be documented in an NRC inspection report. These issues are documented in this report due to the value added to an overall assessment of the licensee's effectiveness in problem identification and resolution.

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**Example 1 - Minor Violation: Failure to Identify Inaccurate Information Provided in Licensee Event Report (LER) 05000530/2003001-00**

The team determined that problem identification was inadequate based on the licensee's failure to identify that inaccurate information was provided to the NRC in the submittal of Licensee Event Report (LER) 05000530/2003001-00. The LER reported the incorrect cause of a Unit 3 main steam safety valve having an as-found lift pressure above the Technical Specification limit. The team determined that the incorrect information did not have any safety significance, would not have resulted in different action taken by the NRC, and was not deliberate. The licensee entered this finding into their corrective action program as CRDR 2711304. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

**Example 2 - Apparent Violation 05000529/2004009-02: Failure to Promptly Identify and Correct an Incompatibility between Steam Generator Nozzle Dams and the Locking Rings**

NRC Inspection Report 05000529/2004009 documented that licensee personnel failed to identify, prior to putting the Unit 2 steam generators in service, that the nozzle dams used for allowing examination of the tubes would not fit properly in the new locking rings.

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

The team reviewed condition report/disposition requests (CRDRs), and supporting documentation, including root cause evaluations, to ascertain whether the licensee identified and considered the full extent of conditions, generic implications, common causes, and previous occurrences. In addition, the team reviewed licensee evaluations of selected industry operating experience information, including operating event reports and NRC and vendor generic notices, to assess if issues applicable to the Palo Verde Nuclear Generating Station were appropriately addressed. The team also reviewed a sample of licensee audits and self assessments, trending reports, system health reports, and various other reports and documents related to the problem identification and resolution program. The audits and self-assessment results were compared with the self-revealing and NRC-identified issues to determine the effectiveness of the audits and self assessments. The team observed management oversight of the corrective action program including one CRDR Review Committee meeting.

During the inspection, the team performed a problem identification and resolution review of refueling activities covering the last five years to determine whether the licensee had appropriately addressed historical issues that might be age dependent.

(2) Assessment

The team concluded that problems were generally prioritized and evaluated in accordance with the licensee's corrective action program and NRC requirements. However, the team identified three examples of issues that were not appropriately evaluated in the licensee's corrective action program. These examples are NRC identified violations and minor violations. The minor violations are documented in this report due to the value added to an overall assessment of the licensee's effectiveness in problem identification and resolution.

**Example 1 - Severity Level IV Noncited Violation 05000528,529,530/2004006-02: Failure to Fully Evaluate a Modification to Spent Fuel Storage in the Spent Fuel Pools**

The team determined that problem evaluation was inadequate based on the licensee's failure to fully evaluate a modification to spent fuel storage in the spent fuel pools. The team reviewed CRDR 2524176, regarding the lack of a criticality analysis to support the use of rod capture tubes, which hold individual harvested fuel pins, in the spent fuel racks. The team reviewed the licensee's process of storing individual fuel pins, removed from a parent fuel assembly, and placed in rod capture tubes to be located in guide tubes of another host assembly. This resulted in a component that had nuclear fuel pins, of varying enrichment and depletion, stored as a regular fuel assembly in the spent fuel pools. (This issue is discussed in more detail in Report Section 4OA2e.)

**Example 2 - Minor Violation: Failure to Fully Evaluate Radiation Monitors Maintenance Rule Criteria during Audit**

The team determined that problem evaluation was inadequate based on the licensee's failure to properly calculate unavailability hours in determining the maintenance rule performance criteria for radiation monitors. The team noted that, during the review of an internal Maintenance Rule Program audit performed on February 19, 2004, the audit failed to fully evaluate a finding and did not identify that the licensee had been incorrectly calculating the unavailability for the radiation monitoring system. The team determined that a performance criterion had not been exceeded. The licensee entered this finding into their corrective action program as CRDR 2708983. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

**Example 3 - Minor Violation: Failure to Fully Evaluate Main Steam and Feedwater Isolation System Circuit Card Temporary Modification**

The team determined that problem evaluation was inadequate based on the licensee's failure to fully evaluate and document physical changes made to a safety-related circuit board. The team determined that the licensee screened the modification as not requiring a 10 CFR 50.59 evaluation. However, the team found that only the electrical circuit analysis was addressed in this review, and did not cover any potential effects of the physical changes to the circuit board, such as seismic concerns. The licensee

subsequently provided information demonstrating that the change represented no more than minimal effects to the circuit board. The licensee entered this finding into their corrective action program as CRDR 2711275. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

c. Effectiveness of Corrective Actions

(1) Inspection Scope

The team reviewed condition report/disposition requests (CRDRs), audits, assessments, and trending reports to verify that corrective actions related to the issues were identified and implemented in a timely manner commensurate with safety, including corrective actions to address common cause or generic concerns.

In addition, the team reviewed the licensee's evaluation of selected industry experience information, including NRC Information Notices and industry provided information, to assess if issues applicable to the Palo Verde Nuclear Generating Station were appropriately addressed.

During the inspection, the team performed a problem identification and resolution review of refueling activities covering the last five years to determine whether the licensee had appropriately addressed historical issues that might be age dependent.

(2) Assessment

The team concluded that conditions adverse to quality were effectively resolved. However, the team observed examples where corrective actions were either not timely or fully documented. Normally, observations would not be documented in an NRC inspection report. These issues are documented in this report due to the value added to an overall assessment of the licensee's effectiveness in problem identification and resolution.

**Example 1 - Observation: Operating Experience Timeliness**

The team noted that operating experience reviews and actions were often extended. The overall review time was not meeting the licensee's expectations. As discussed with plant management, the team agreed that this appeared to be from a general backlog of corrective actions due to a fall Unit-2 outage and steam generator replacement, followed by a spring Unit-1 outage.

**Example 2 - Observation: CRDR Closure not Documenting Resolution of the Issue**

The team identified examples where the stated problem in the CRDR was either not addressed in the closure statement(s), or merely repeated the problem statement in some fashion. However, adequate corrective actions were taken. An example was CRDR 2636079 which documented that a radiation monitor flow controller failed. The

cause was concluded to be the failure to control flow. The team believed that this part of the CRDR process could be enhanced.

**Example 3 - Noncited Violation 05000529/2004009-03: Failure to Enter a Nonconformity Report from the Steam Generator Fabricator into the Palo Verde Nuclear Generating Station Corrective Action Program**

NRC Inspection Report 05000529/2004009 documented that adequate corrective action was not taken as a result of a nonconformity report which was written in October 2001 at the steam generator manufacturer's site identifying a tube that had been punctured by a packaging crate screw. This condition was noticed during fabrication of Steam Generator 22. Steam Generator 21, the affected (leaking) steam generator, had all of the tubes installed at that time. The team was informed that the section of damaged tube was sent back to the tube manufacturer. The team did not identify any other corrective actions taken by either the licensee's quality assurance inspector or the fabricator's personnel to ascertain whether the tubes already installed in Steam Generator 21 or 22 could similarly be affected.

d. Assessment of Safety Conscious Work Environment

(1) Inspection Scope

The team interviewed more than 75 individuals from the licensee's staff, representing a cross-section of functional organizations and supervisory and non-supervisory personnel. The interviews were conducted either individually or in group settings depending on the preference of those interviewed. These interviews were to assess whether conditions existed that would challenge the establishment of a safety conscious work environment.

The team also reviewed the NRC March 3, 2004, letter to the licensee entitled "Subject: Annual Assessment Letter - Palo Verde Nuclear Generating Station (NRC Report 05000528/2004001; 05000529/2004001; 05000530/2004001)." This letter documented the results of the January 14, 2004, public meeting to discuss aspects of the Palo Verde safety conscious work environment. The letter stated that the licensee's independent assessment, as well as NRC reviews, indicated that staff members feel free to raise safety issues to Palo Verde management. The licensee's assessment indicated a number of areas that required attention. These areas included employee awareness and familiarity with the Employee Concerns Program and Differing Professional Opinions Process, as well as the effectiveness of Management Issues Tracking Resolution Program in resolving non-nuclear issues. Additionally, it appeared that interview data obtained by the NRC during December 2003, regarding the degree to which instrumentation & controls personnel have used, or feel free to use, the condition reporting process to identify and document problems may not have been fully consistent with statistical data presented at the meeting.

(2) Assessment

The team concluded that a positive safety conscious work environment exists at the Palo

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Verde Nuclear Generating Station. The results of interviews conducted during this inspection were that previous concerns provided to the NRC during December 2003, were isolated cases. Individuals were generally knowledgeable of the CRDR process and the Employee Concerns Program.

The licensee completed training in "Managing Employee Concerns" for managers and supervisors in 2003. In addition, the licensee is currently conducting training (scheduled for completion in September 2004) in "Issue Resolution Training" on the Integrated Issues Resolution Process for all front line employees, in part, to address employee awareness and familiarity issues that were discussed during the January 14, 2004, meeting.

However, the team received a number of remarks during interviews which indicated that training and communication were lacking in some areas. For example, training was needed for individuals who infrequently use the corrective action process. Some were unaware on how to track a particular CRDR or had the perception that if a CRDR initiator does not supply a suggested solution, then the CRDR is closed to trend. Additionally, some individuals stated that licensee management needed to communicate: (1) the results of outside consultants' evaluations of management's performance; (2) Human Resources responsibilities and functions; (3) the results of safety culture surveys and surveys conducted by the Nuclear Assurance Division to survey participants; (4) the difference between a successful outage and outage timeliness goals; and (5) how budgetary considerations affect the scheduling of equipment maintenance.

e. Specific Issues Identified During This Inspection

(1) Inspection Scope

During this assessment the team performed the inspections scoped in Section 40A2b.(1).

(2) Finding Details

**Unresolved Item 05000528,529,530/2004006-01 Concerning a Permanent Modification to All Six Station Emergency Diesel Generators Made Without Prior NRC Approval**

The team identified an unresolved item (URI) concerning a permanent modification to all six station emergency diesel generators related to compliance with 10 CFR 50.59 requirements. Condition Report/Disposition Request (CRDR) 130208, which was written in 1993, directed the abandonment of the jacket water surge tank automatic makeup valves on both emergency diesel generators of all three units. The licensee replaced the automatic fill with a manual operator action to fill the surge tank, as necessary, every 12 hours during rounds

In performing their 10 CFR 50.59 screening and evaluation, the licensee concluded that the change did not introduce more than a minimal increase in the likelihood of a

malfunction of a system or component important to safety and therefore could be implemented without prior NRC approval. The team was concerned that the likelihood of a malfunction had increased more than minimally, because the new design was inherently less reliable.

- The original automatic makeup design was capable of making up jacket cooling water for a significantly larger leakrate.
- The original automatic makeup design relied upon a safety-related power source and would function automatically throughout the mission time of the emergency diesel generators, without needing operator attention.
- Engineered automatic functions are usually more reliable than operator actions.

The team reviewed the Updated Final Safety Analysis Report and found that the automatic jacket water surge tank makeup was shown in the Updated Final Safety Analysis Report. Whether or not this change to the safety analysis report should have had prior NRC approval is unresolved and will be further reviewed with representatives from the Office of Nuclear Reactor Regulation. Pending completion of that review, this issue is characterized as an unresolved item: URI 05000528,529,530/2004006-01, Permanent Modification to Station Emergency Diesel Generators Jacket Water Cooling Without Prior NRC Approval. The licensee entered this finding into their corrective action program CRDR 2711244.

**Severity Level IV Noncited Violation 05000528,529,530/2004006-02: Failure to Fully Evaluate a Modification to Spent Fuel Storage in the Spent Fuel Pools**

Introduction. The team identified a Severity Level IV noncited violation of 10 CFR 50.59 requirements for failing to evaluate a modification to spent fuel storage in the spent fuel pools.

Description. The team reviewed CRDR 2524176, regarding the lack of a criticality analysis to support the use of rod capture tubes, which hold individual harvested fuel pins, in the spent fuel racks. The team selected the CRDR for review based upon the risk of a potentially unanalyzed criticality situation in the spent fuel pools. The team reviewed the licensee's process of storing individual fuel pins, removed from a parent fuel assembly, and placed in rod capture tubes to be located in guide tubes of another host assembly. This resulted in a component that had nuclear fuel pins, of varying enrichment and depletion, stored as a regular fuel assembly in the spent fuel pools.

The team noted that Section 9.1 of the Updated Final Safety Analysis Report specifically described the storage of spent fuel in regions based upon fuel assembly initial enrichment, actual burnup, and actual decay time. The Updated Final Safety Analysis Report does not describe the storage of individual pins in these regions. The licensee previously interpreted this as meaning the Updated Final Safety Analysis Report did not prohibit such storage, and would not require consideration of enrichment, burnup, and decay of individual pins. The licensee failed to provide an evaluation of a change to the

facility as described in the Updated Final Safety Analysis Report, under 10 CFR 50.59 requirements. The licensee subsequently performed an analysis of the criticality under station Procedure 72DP-9NF01, "Control of SNM Transfer and Inventory," and the result was satisfactory. In addition, the licensee moved the fuel rod capture tubes to an unused portion of the spent fuel pool.

Analysis. The licensee failed to properly evaluate a change to the facility. This finding was determined to be more than minor, through Inspection Manual Chapter 0612, Appendix B, and Supplement I.E of the NRC Enforcement Policy, in that it affected the initiating events cornerstone attribute of human performance, could have represented a more significant issue if left uncorrected, and there was a reasonable likelihood that the change would require Commission review and approval prior to implementation. In accordance with the NRC Enforcement Manual, violations of 10 CFR 50.59 are not processed through the significance determination process. Therefore, this finding was considered applicable to traditional enforcement. Although the significance determination process is not designed to assess significance of violations that potentially impact or impede the regulatory process, the result of a 10 CFR 50.59 violation can be assessed significance through the significance determination process. 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 barrier integrity function. The licensee entered this finding into their corrective action program as CRDR 2711241.

Enforcement. Paragraph (c)(1) of 10 CFR 50.59 states that a licensee may make changes to the facility as described in the final safety analysis report without obtaining a license amendment only if the change, test, or experiment does not meet any of the criteria in paragraph (c)(2) of this section. Paragraph (d)(1) states that the licensee shall maintain records of changes to the facility made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for determination that the change does not require a license amendment. Contrary to the above, the licensee failed to perform and document an evaluation of the use of rod capture tubes and the storage of individual fuel pins in the spent fuel pools without a criticality evaluation. The team determined this to be a Severity Level IV noncited violation of NRC requirements in accordance with Section VI.A of the NRC Enforcement Policy: NCV 05000528,529,530/2004006-02, Failure to evaluate a modification to spent fuel storage in the spent fuel pools.

#### 40A3 Event Followup

- a. (Closed) LER 05000528/2004002-00: Technical Specification Violation - Exceeded 20 Percent Rated Thermal Power with LCO not Met

The discussion of this event is described in Section 40A7b. This LER is closed.



- b. (Closed) LER 05000529/2003001-00: Reactor Trip with Loss of Forced Circulation Due to Failed Pressurizer Main Spray Valve

The discussion of this event is described in the closure of Unresolved Item 05000529/2003004-01 in Section 40A5a. This LER is closed.

- c. (Closed) LER 05000530/2003002-00: Reactor Coolant System Pressure Boundary Leakage Caused by Degraded Inconel Alloy 600 Components

The discussion of this event is described in Section 40A7c. This LER is closed.

- d. (Closed) LER 05000530/2003004-00: Reactor Trip with Loss of Forced Circulation due to Electrical Grid Disturbance

On July 28, 2003, the Unit 3 reactor automatically tripped due to a low departure from nucleate boiling ratio signal caused by loss of reactor coolant pumps, which were powered from the nonsafety 13.8 kV buses that de-energized. The loss of power to these nonsafety buses was caused by a main turbine generator trip and failure to complete a fast bus transfer from the normal auxiliary transformer supply to the alternate offsite startup transformer supply. The normal auxiliary transfer supply was unavailable because the main turbine generator tripped due to operation of subsynchronous oscillation relays. The trip was caused by a grid disturbance. The fast bus transfer did not occur because the undervoltage relay detected that voltage had not recovered from the voltage transient. This is a design feature which prevents a fast bus transfer to a dead bus or otherwise damaged power supply. The cause of the grid disturbance was a three-phase bolted ground on the offsite Hassayampa 525 kV line, which is approximately 1.5 miles from Palo Verde. The ground was caused by a maintenance error in the Hassayampa switchyard. The licensee documented this problem in CRDR 2623273. The team reviewed the licensee's root cause analysis and did not identify any finding of significance. This LER is closed.

#### 40A5 Other Activities

- a. (Closed) Unresolved Item 05000529/2003004-01: Unit 2 Pressurizer Spray Valve Failure

Introduction. A Green self-revealing noncited violation was identified for failure to comply with Technical Specification 5.4.1.a, relating to the maintenance done on Unit 2 Pressurizer Spray Valve RCE-PV100F.

Description. On July 29, 2003, a self-revealing finding occurred, having a potential safety significance greater than very low safety significance, relating to Pressurizer Spray Valve RCE-PV100F failing open and causing a reactor coolant system transient. The pressurizer spray valves are controlled by the pressurizer pressure control system to help maintain reactor coolant system pressure within specified limits. The pressurizer pressure control system uses spray valves to reduce pressure and pressurizer heaters to raise pressure around a desired pressure setpoint. To reduce reactor coolant system pressure, somewhat cooler water is sent from the discharge of the reactor coolant

pumps to the steam space on top of the pressurizer through the spray valves.

About 35 minutes after returning spray Valve RCE-PV100F to service, this valve failed open, resulting in a reactor coolant system depressurization. Attempts from the control room failed to close the valve, and the reactor was manually tripped about 15 minutes later. After the trip, all reactor coolant pumps were stopped to limit the depressurization, however an automatic safety injection signal occurred since the reactor coolant system pressure reached a value of approximately 1792 pounds per square inch absolute (psia), when the minimum safety injection setpoint was 1837 psia. At the conclusion of the previous inspection report, it was not known if this valve failing open was due to inadequate maintenance or a failed part in the valve.

The licensee determined that the root cause of the failure was inadequate work instructions. The instructions did not include a check to ensure that a portion of the controller called the balance beam was secured on the pivot, introducing a failure mode that was not identified during post-maintenance testing. The balance beam slipped off of the pivot after the spray valve had been cycled several times.

Analysis. The team determined that the finding was associated with the initiating events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. Therefore, the finding was greater than minor. A significance determination process phase 1 screening was performed and the finding was determined to have very low safety significance, because it did not increase the likelihood of a loss of coolant accident initiator, and did not increase the likelihood of both a reactor trip and unavailability of mitigation equipment.

Enforcement. Technical Specification 5.4.1.a requires that written procedures be established, implemented and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A (1978). Regulatory Guide 1.33, Appendix A, requires that maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Because this failure to have adequate instructions is of very low safety significance and has been entered into the corrective action program as CRDR 2624427, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000529/2004006-03, Inadequate procedure for pressurizer spray valve maintenance. This will also close the applicable Licensee Event Report 05000529/2003-001-00.

b. (Closed) Unresolved Item 05000530/2003011-01: RCP 2A Seal Failure Root Cause Evaluation

On July 28, 2003, in response to a grid disturbance, Unit 3 experienced a loss of nonvital power which resulted in the loss of all four reactor coolant pumps. Following the loss of the reactor coolant pumps, operators identified reactor coolant system leakage of approximately 1.7 gallons per minute due to a third stage seal failure on Reactor Coolant Pump RCP 2A. The licensee established plant conditions to terminate the leak and replace the degraded seal package. The equipment issue has been

Enclosure

entered into the corrective action program as CRDR 2627059. This unresolved item was initiated pending a review of the root cause evaluation for the pump seal failure.

The licensee's root cause analysis determined that the O-ring in the third stage that seals the gap between the carrier and the stationary seal ring diameters was extruded when controlled bleedoff was isolated during the event. The O-ring extruded due to a marginal design of the gap which became unacceptably large due to the combination of initial size, applied pressure, and temperature. The licensee's corrective action was to work with the vendor to develop a modification to seal design to prevent future occurrences. The team reviewed the licensee's root cause analysis and did not identify any finding of significance. This unresolved item is closed.

#### 40A6 Exit Meeting

The team discussed the findings with Mr. G. Overbeck, Senior Vice-President, and other members of the licensee's staff on July 2, 2004. Licensee management did not identify any materials examined during the inspection as proprietary.

#### 40A7 Licensee Identified Violations

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

- a. Technical Specification 3.9.3(c)(2) states that each penetration providing direct access from the containment atmosphere to the outside atmosphere be, in part, closed by a manual or automatic isolation valve, blind flange, or equivalent. A note to this condition further states that penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls. Procedure 40ST-9ZZ08 was the Regulatory Guide 1.33 referenced procedure of Technical Specification 5.4.1(a), for equipment control, that was designated to ensure compliance with Technical Specification 3.9.3. Contrary to the above, on April 21 and 22, 2003, the licensee failed to properly implement or maintain a Technical Specification 5.4.1(a) procedure, which would have ensured penetrations were closed or under administrative controls while tests were in progress that cycled isolation valves for those penetrations. This finding was documented in CRDR 2599250. This finding had a very low safety significance because the licensee determined that no actual pathway through containment was initiated during the testing.
- b. Technical Specification 3.0.4 requires that "When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time." The "Applicability" for the LCO 3.2.5 is Mode 1 with thermal power greater than 20 percent rated thermal power. The associated actions to be entered if the LCO is not met do not permit continued operation in the specified condition for an unlimited period of time. Contrary

to the above, on February 8, 2004, during power ascension in Unit 1, power was raised above 20 percent rated thermal power without meeting the limiting condition for operation for axial shape index. This finding was documented in CRDR 2682312 and LER 05000528/2004002-00. This finding had a very low safety significance because the licensee determined that the safety function to protect fuel design limits remained fulfilled.

- c. Technical Specification Limiting Condition for Operation 3.4.14 states that reactor coolant system pressure boundary leakage shall be limited to no pressure boundary leakage. Condition B requires, for the existence of pressure boundary leakage, that the plant be in Mode 5 within 36 hours. On March 29, 2003, licensee engineering personnel, while performing post shutdown inspections on Unit 3, discovered boric acid residue on a reactor coolant system hot leg instrument nozzle and pressurizer heater sleeve. Upon discovery, the licensee entered Limiting Condition for Operation 3.4.14, Condition B, at 11:50 a.m. on March 29. The licensee exited the Limiting Condition for Operation on March 30, at 8:45 a.m. The licensee determined the cause of the leakage to be axial cracks in the nozzle and sleeve from primary water stress corrosion cracking of the Inconel Alloy 600 material. The licensee replaced all hot leg instrument nozzles in Unit 3 with nozzles constructed from Alloy 690, which has not shown susceptibility to primary water stress corrosion cracking. The leaking pressurizer heater sleeve was repaired with a mechanical nozzle seal assembly clamp. Additional corrective actions, completed or planned, included replacing all hot leg instrument nozzles in Units 1 and 2 with Alloy 690 nozzles, and the replacement of all pressurizer heater sleeves in all three units with sleeves constructed from Alloy 690. Since primary water stress corrosion cracking is temperature dependent, the cracks most likely formed while the plant was operating in Mode 1 at normal temperature and pressure. The plant entered Mode 5 at 8:45 a.m. on March 30, approximately 32 hours after exiting Mode 1. Since the quantity of boric acid was readily visible and the size of the cracks were small, the team determined that the cracks would have formed greater than 4 hours prior to commencing plant shutdown. Thus, the licensee was in violation of Technical Specification Limiting Condition for Operation 3.4.14 in that pressure boundary leakage existed for greater than 36 hours prior to the plant entering Mode 5. This finding was documented in CRDRs 25949999 and 2595001, and LER 05000530/2003002-00. This finding had a very low safety significance based on the cracks being axial in nature (does not contribute substantially to a loss of coolant accident) and the leaks resulted in a buildup of only minor boric acid residue indicative of only trace amounts of through wall leakage, which was less than the Technical Specification limits for identified leakage.

## ATTACHMENT

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

G. Andrews, Section Lead, Reactor Engineering  
B. Bandera, Department Lead, Nuclear Fuels  
D. Carnes, Director, Regulatory Affairs and Nuclear Assurance  
J. Copse, Fitness for Duty Program Coordinator  
D. Crozier, Group Leader, Emergency Preparedness  
E. Dutton, Section Leader, Performance Improvement  
D. Hautala, Senior Engineer, Regulatory Affairs  
M. Hodge, Section Lead, Engineering  
D. Marks, Section Leader, Nuclear Regulatory Affairs - Compliance  
D. Mauldin, Vice President, Engineering and Support  
G. Overbeck, Senior Vice President, Nuclear  
F. Riedel, Director, Nuclear Training Department  
M. Sontag, Department Lead, Nuclear Assurance Department  
M. Radspinner, Section Leader, System Engineering  
T. Radtke, Director, Operations  
G. Reeves, Maintenance Rule Coordinator  
C. Seaman, Director, Nuclear Fuels  
M. Van Dop, Department Leader, System Engineering  
D. Vogt, Station Leader, Operations  
T. Weber, Section Leader, Regulatory Affairs  
R. Wilferd, Engineer, Regulatory Affairs  
L. Woolington, Senior PRA Expert Panel Chairman

#### Others

F. Gowers, Site Representative, El Paso Electric  
R. Henry, Site Representative, Salt River Project

#### NRC

N. Salgado, Senior Resident Inspector  
L. Smith, Branch Chief, Plant Engineering Branch

ITEMS OPENED AND CLOSED

Opened and Closed

05000528,529,530/ 2004006-01	URI	URI 05000528,529,530/2004006-01, Permanent Modification to Station Emergency Diesel Generators Jacket Water Cooling Without Prior NRC Approval. (Section 4OA2e.).
05000528,529,530/ 2004006-02	NCV	Failure to evaluate a modification to spent fuel storage in the spent fuel pools (Section 4OA2e.).
05000529/2004006-03	NCV	Inadequate Procedure for Pressurizer Spray Valve Maintenance (Section 4OA5).

Closed

05000528/2004002-00	LER	TS Violation - Exceeded 20% Rated Thermal Power with LCO Not Met (Section 4OA3a.).
05000529/2003001-00	LER	Reactor Trip with Loss of Forced Circulation Due to Failed Pressurizer Main Spray Valve (Section 4OA3b.).
05000530/2003002-00	LER	Reactor Coolant System Pressure Boundary Leakage Caused by Degraded Inconel Alloy 600 Components (Section 4OA3c.).
05000530/2003004-00	LER	Reactor Trip - Switchyard Perturbations (Section 4OA3d.).
05000529/2003004-01	URI	Unit 2 Pressurizer Spray Valve Failure (Section 4OA5a.).
05000530/2003011-01	URI	RCP 2A Seal Failure Root Cause Evaluation (Section 4OA5b.).

DOCUMENTS REVIEWED

PROCEDURES

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01DP-0EM10	Fitness for Duty Program	15
01DP-0EM11	Behavior Observation Program	7
40ST-9ZZ08	Containment Building Atmospheric Penetrations Weekly Surveillance	20
60DP-0QQ02	Trend Analysis and Coding	12
70DP-0EE01	Nuclear Administrative and Technical Manual - Equipment Root Cause of Failure Analysis	12
70DP-0MR01	Maintenance Rule	8
73ST-9DG01	Class 1E Diesel Generator and Integrated Safeguards Test Train A	8
73ST-9ZZ18	Main Steam and Pressurizer Safety Valve Set Pressure Verification	18
81DP-0DC13	Deficiency (DF) Work Order	14
90DP-01P10	Condition Reporting	17

DRAWINGS

<u>Number</u>	<u>Title</u>	<u>Revision</u>
01-P-SIF-105	Safety Injection System	18
02-P-SIF-105	Safety Injection System	5
13-E-ZCC-025	Containment Building Conduit & Tray Sections& Details, Sht 1	21

CONDITION REPORT/DISPOSITION REQUESTS (CRDRs)

34979	2517133	2570443	2612092	2650209
36464	2517334	2570582	2613688	2651121
95997	2517616	2571116	2614903	2651121
970182	2518034	2571204	2614903	2651255
106562	2518578	2571570	2615480	2651332
2317329	2521037	2574231	2619724	2651750
2334607	2521282	2576372	2622935	2654642
2334607	2524176	2579110	2622935	2654704
2339412	2524176	2580978	2622935	2655779
2376822	2528581	2581921	2624427	2656324
2377444	2528710	2589790	2624427	2656606
2405644	2529117	2592898	2625346	2658929
2423603	2529253	2594001	2625918	2659328
2430998	2531393	2594001	2627059	2664690
2432485	2531477	2594999	2632267	2665024
2450676	2538279	2595001	2632445	2667754
2466252	2538842	2595809	2633017	2669973
2468573	2544262	2595961	2634708	2682312
2481479	2545889	2596238	2635683	2685249
2489498	2546026	2596389	2636079	2686436
2490373	2546355	2596715	2636173	2689086
2492855	2548125	2597894	2637135	2692227
2497495	2554773	2597930	2637633	2692430
2507653	2557486	2597984	2639407	2693588
2507738	2558930	2598003	2639895	2699434
2508360	2559927	2599250	2640195	2700170
2512241	2559965	2600115	2645016	
2512278	2560944	2600678	2645823	
2512955	2566813	2601002	2648990	
2514201	2566870	2605848	2649928	
2516416	2569888	2608171	2650009	
2516816				

TEMPORARY MODIFICATIONS

2348452  
2352067  
2405671  
2566727



WORK ORDERS

218864  
2417085  
2417096  
2559632  
2566472  
2576370  
2627461  
2659140

CHANGE REQUESTS

99-00199  
99-00200  
99-00201  
99-00202  
2470294  
2569349  
2004-00324

SELF ASSESSMENTS/AUDITS

Chemistry/Radiological Monitoring Audit Number 2002-002  
Corrective Action Program Audit 2002-011  
Corrective Action Audit 2004-005  
Emergency Planning Audit 2002-009  
Emergency Planning Audit 2004-001  
Equipment Root Cause of Failure Analysis Program, February 7, 2003  
Fitness for Duty Audit 2004-002  
Fitness for Duty Audit 2003-003  
Integrated Self Assessment on Radioactive Material Control, February 1, 2002  
Incorporation of ALARA Principles into Plant Modification, February 28, 2003  
Maintenance Audit Number 2002-012  
Maintenance Rule Integrated Self-Assessment Audit Number 2002-001  
Maintenance Rule Program Audit- Site Integrated Self-Assessment 2004-004  
Movement of Radioactive Material Outside of RCAs, August 10, 2003  
Radiation Safety Audit 2002-008  
Radiation Worker Error Tracking and Trending, July 30, 2003  
Radiological Records and Reports, November 22, 2002

MISCELLANEOUS

CRDR Program Report September - October 2003

CRDR Program Report November - December 2003

Nuclear Assurance CRDR Processing Guideline, Revision 4

Off-Site Safety Review Committee Meeting Minutes for February 26, April 26, August 16, September 26, November 20, and December 13, 2002, March 14, July 25, August 29, 2003, January 23, 2004

Performance Improvement/Nuclear Assurance CRDR Processing Guideline, Revision 5

SUPPLEMENTAL INFORMATION REQUESTED

**Information Request 1  
PVNGS PIR Inspection (IP 71152)  
Inspection Report 50-528/04-06; 50-529/04-06; 50-530/04-06)**

This inspection request will cover the period of February 2002 - March 2004. All requested information should be limited to this period unless otherwise specified. If possible, please provide all information in electronic format, preferably on CDs.

Please provide the following information to Ray Mullikin in the Region IV Arlington office by March 8, 2004:

1. Summary list of all currently open/active items for:
  - CRDRs of significant conditions adverse to quality
  - operator work-arounds
  - engineering review requests
  - maintenance requests/work requests
  - temporary modifications
  - procedure change requests
  - training needs request/evaluation
  - control room and safety system deficiencies
  
2. Summary list of all items completed/resolved/closed since February 1, 2002 for:
  - CRDRs of significant conditions adverse to quality
  - operator work-arounds
  - engineering review requests
  - maintenance requests/work requests
  - temporary modifications
  - procedure change requests
  - training needs request/evaluation
  - control room and safety system deficiencies
  
3. Summary list of all CRDRs generated during the specified period and sorted by:
  - chronology
  - initiating organization
  - responsible organization
  
4. A list of all CRDRs that "roll-up" one or more smaller issues for the period
  
5. List of all root cause analyses completed during the period
  
6. List of root cause analyses planned, but not complete at the end of the period
  
7. All quality assurance audits and surveillances of corrective action activities since February 1, 2002.

Attachment

8. All corrective action activity and functional area self-assessments and Non-NRC third party assessments since February 1, 2002.
9. Corrective action performance trending/tracking information generated since February 1, 2002 and broken down by functional organization.
10. Current revision (and all revisions since February 1, 2002) of the procedures governing initiation and processing of CRDRs, potential conditions adverse to quality, and root cause analysis.
11. Any additional governing procedures/policies/guidelines for:
  - Condition Reporting
  - Corrective Action Program
  - Root Cause Evaluation/Determination
  - Operator Work-Arounds
  - Work Requests
  - Engineering Requests
  - Temporary Modifications
  - Procedure Change Requests
  - Deficiency Reporting and Resolution
  - Training Needs Request/Evaluation
12. A listing of all external events evaluated for applicability at Palo Verde since February 1, 2002
13. CRDRs which document the review of the following:
  - Part 21 Reports 2001-030 through 2004-003
  - NRC Information Notices 2001-014 through 2004-001
  - All LERs issued since February 1, 2002.
  - All NCVs and Violations issued since February 1, 2002.
14. Current system health reports or similar system information
15. Listing of plant safety issues generated through the employee concerns program since February 1, 2002
16. Listing of action items generated by the plant safety review committee since February 1, 2002
17. Current predictive performance summary reports

**Information Request 2  
PVNGS PIR Inspection (IP 71152)  
Inspection Report 50-528/04-06; 50-529/04-06; 50-530/04-06)**

This inspection request will is based on a review of the information provided in our first request. If possible, please provide all information in electronic format, preferably on CDs.

Please provide the following information to Ray Mullikin in the Region IV Arlington office by April 26, 2004:

1. Full electronic copy of all CRDRs with root cause analyses (significant CRDRs) listed in Information Request 1, Item 5.
2. Full electronic copy of all CRDRs with root cause analyses (significant CRDRs) closed since the response to Information Request 1, Item 5.
3. Full electronic copy of all CRDRs that “roll-up” one or more smaller issues which were listed in Information Request 1, Item 4.
4. Full electronic copy of all CRDRs that “roll-up” one or more smaller issues which were opened since the response to Information Request 1, Item 4
5. Full electronic copy of the CRDRs which document the review of the following:
  - Part 21 Reports
    - 2001-10
    - 2001-24
    - 2001-27
    - 2002-09
    - 2002-11
    - 2002-20
    - 2002-33
    - 2002-35
    - 2002-36
    - 2003-01
    - 2003-03
    - 2003-05
    - 2003-09
    - 2003-14
    - 2003-20
    - 2003-26
    - 2003-27
    - 2003-30
    - 2004-02

- All LERs issued since February 1, 2002.
  - All NCVs and Violations issued since February 1, 2002.
6. List of all CRDRS with short descriptions for a 5-year period from January 1, 1999 to the present for the following:
- Fuel handling
  - Spent fuel pool
  - Fuel analysis

**Information Request 3  
PVNGS PIR Inspection (IP 71152)  
Inspection Report 50-528/04-06; 50-529/04-06; 50-530/04-06)**

This information request consists of additional information required and questions brought up during our in-office review.

Please provide the following information to the team as early during the week of May 3-7 as possible.

REQUEST FROM RAY MULLIKIN

1. Summary list of closed CRDRs (with title description) and sorted on the CRDR field "Regulatory Requirement" for the period from February 2002 to April 2004.
2. Summary list of open CRDRs (with title description) and sorted on the CRDR field "Regulatory Requirement" for the period from February 2002 to April 2004.

REQUEST FROM JEFF CLARK

1. Additional Procedures:

Those governing 10 CFR 50.59 (screening/evaluation)

2. Other Documents:

- Temporary Modification Work Order (TMWO) 2405671 (11-2-01)  
Summary of problem and actions taken to date.
- Temporary Modification Work Order (TMWO) 2566727 (11-26-03)  
Summary of problem and actions taken to date.
- Temporary Modification Work Order (TMWO) 2348452 (4-10-01)  
Summary of problem and actions taken to date.
- Temporary Modification Work Order (TMWO) 2352067 (2-23-01)  
Summary of problem and actions taken to date.
- CRDR 2544262 (7-26-02)  
Corrective actions developed and implementation schedule.
- CRDR 2554773 (9-24-02)  
Corrective actions developed and implementation schedule.
- CRDR 2580978 (1-31-03)  
Corrective actions developed and implementation schedule.
- CRDR 2597894 (5-08-03)  
Corrective actions developed and implementation schedule.

- CRDR 2544262 (7-26-02)  
Corrective actions developed and implementation schedule.
- CRDR 2496874 (4-02-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2512003 (4-30-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2510148 (4-25-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2669973 (2-06-04)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2579291 (2-06-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2582956 (2-06-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2665674 (1-20-04)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2635278 (9-19-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2596268 (4-08-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2595191 (4-02-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2648990 (10-31-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2547324 (8-09-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2532225 (6-28-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2575739 (12-31-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2580246 (1-29-03)  
Corrective actions taken. Operability and reportability sections.



- CRDR 2650859 (11-12-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2664690 (1-15-04)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2632300 (9-12-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2540877 (7-30-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 253728 (8-28-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 256626 (11-20-02)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2613894 (6-27-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2630068 (8-29-03)  
Corrective actions taken. Operability and reportability sections.
- CRDR 2481817 (3-13-02)  
Corrective actions taken. Operability and reportability sections.

REQUEST FROM GEOFF MILLER

1. Full electronic copy of the following CRDRs:  
2405644  
2558930  
2570443  
2571204  
2571570  
2574231  
2598003  
2601002  
2632445  
2659328  
2669973  
CRDR written for LER 2-03-001

2. Electronic copy of the following Temp Mods:  
2559632  
2576370  
2566472  
2627461  
2659140
3. Hardcopy isometric drawing for U1 safety injection line (the vibrating one). Also isometric for same line in U2.