



*A subsidiary of Pinnacle West Capital Corporation*

Palo Verde Nuclear  
Generating Station

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102-05480-JML/CKS/RJR  
April 28, 2006

Mr. Michael Johnson  
Director, Office of Enforcement  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

Dear Mr. Johnson:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Units 1, 2 and 3  
Docket Nos. STN 50-528, 50-529, and 50-530  
Revision to the Reply to Notice of Violation (EA-05-051), and  
Statement as to Payment of Civil Penalty**

In a letter to Arizona Public Service Company (APS) dated April 8, 2005, the NRC identified that a Severity Level III violation occurred at PVNGS in June 1992, and imposed a civil penalty of \$50,000. The Notice of Violation (NOV) (EA-05-051) required a reply within 30 days; however, in a letter to APS dated May 9, 2005, the NRC approved a request for a 30-day extension to reply to the NOV.

In APS letter 102-05289, dated June 7, 2005, APS admitted that violation EA-05-051 occurred, and elected to pay the civil penalty in the amount of \$50,000 in accordance with 10 CFR 2.205. Payment has been made by electronic transfer as described in Enclosure 4.

APS' original reply to NOV EA-05-051 identified that the root cause investigation for this violation was ongoing. Subsequently, in a letter to APS dated June 16, 2005, the NRC requested that APS provide an additional written response to the NOV when the root cause evaluation is completed describing any additional reasons for the violation and/or corrective steps that will be taken to avoid further violations. The root cause evaluation has been completed.

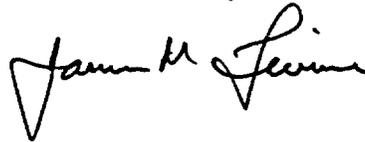
As requested by the June 16, 2005, NRC letter and pursuant to the requirements of 10 CFR 2.201 and the original Notice of Violation, EA-05-051, APS is submitting a revision to its original reply. Enclosure 1 to this letter is a new affidavit as required by the NOV. Enclosure 2 to this letter contains a restatement of the violation. The revised response

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to NOV EA-05-051 is provided in Enclosure 3 and reflects the conclusions of the evaluation. Enclosure 4 to this letter is the statement indicating the civil penalty payment method.

No commitments are being made to the NRC by this letter. This letter supersedes the original response in its entirety. Should you have questions regarding this submittal, please contact Mr. Craig K. Seaman at (623) 393-5421.

Sincerely,



JML/CKS/RJR/gt

Enclosures: 1. Affidavit  
2. Restatement of Violation, EA-05-051  
3. Revision to the Reply to NOV EA-05-051  
4. Statement Indicating Civil Penalty Payment Method

cc: T. W. Pruett Chief Project Branch D, Division of Reactor Projects,  
USNRC  
B. S. Mallett Administrator, Region IV, USNRC  
M. B. Fields Project Manager, Nuclear Reactor Regulation, USNRC  
G. G. Warnick Senior Resident Inspector, PVNGS, USNRC

**Enclosure 1**

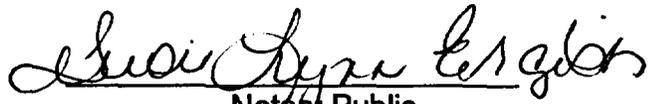
**Affidavit**

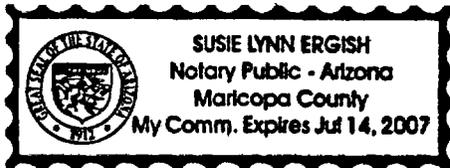
STATE OF ARIZONA        )  
  ) ss.  
COUNTY OF MARICOPA    )

I, James M. Levine, represent that I am Executive Vice President - Generation, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

  
James M. Levine

Sworn To Before Me This 28<sup>th</sup> Day Of April, 2006.

  
Notary Public



Notary Commission Stamp

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## Enclosure 2

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### Restatement of Violation, EA-05-051

During an NRC inspection completed December 8, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the NRC proposes to impose a civil penalty pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205. The particular violation and associated civil penalty are set forth below:

10 CFR 50.59(a)(1) [1992 version] states, in part, that the holder of a license authorizing operation of a production or utilization facility may: (1) make changes in the facility as described in the safety analysis report, (2) make changes in the procedures as described in the safety analysis report, and (3) conduct tests or experiments not described in the safety analysis report, without prior Commission approval, unless the proposed change, test, or experiment involves a change in the Technical Specifications incorporated in the license or an unreviewed safety question. A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question: (1) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; (2) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (3) if the margin of safety as defined in the basis for any Technical Specification is reduced.

The Palo Verde Nuclear Generating Station Updated Final Safety Analysis Report (UFSAR), Section 6.3, "Emergency Core Cooling System," states, in part, that the safety injection piping will be maintained filled with water, and that during recirculation mode, the available net positive suction head for the containment spray and high pressure safety injection pumps is 25.8 feet and 28.8 feet, respectively (values that assume the pump suction piping is filled with water).

Contrary to the above, on June 22, 1992, the licensee made a procedural change which resulted in a change to the facility as described in the UFSAR that increased the probability of a malfunction of equipment important to safety previously evaluated in the safety analysis report, and the licensee failed to perform a written safety evaluation and obtain Commission approval prior to implementing the change. Specifically, a change was made to Surveillance Procedure 41ST-1SI09, "ECCS Leak Test," which drained, and left empty, a portion of the containment sump safety injection recirculation piping at the conclusion of the leak test. This change also affected the available net positive suction head analysis described in the UFSAR for the containment spray and high pressure safety injection pumps, which are important to safety, since these analyses assumed the pump suction piping would be filled with water.

This is a Severity Level III Violation (Supplement I). Civil Penalty - \$50,000.

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**Revision to the Reply to Notice of Violation EA-05-051**

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**1. Admission or Denial of the Alleged Violation**

Arizona Public service Company (APS) admits that the alleged violation, as described in Notice of Violation, EA-05-051 occurred.

**2. The Reasons for the Violation if Admitted, And If Denied, the Reasons Why**

**Direct Causes**

**Direct Cause No. 1**

The procedure preparer for 4xST-xSI09, "ECCS Leak Test," Revision 1.03 (for the 1992 timeframe) inappropriately classified the procedure revision as a "non-intent" change. The definition of an "Intent" change, documented in 01AC-0AP02, "Review and Approval of Nuclear Administrative and Technical Procedures," Revision 2 (for the 1992 timeframe) included changes that affect the ability of a safety related system or component to perform its appropriate safety function.

**Direct Cause No. 2**

Engineers failed to initiate a Condition Report/Disposition Request (CRDR) when the dry Recirculation Actuation Signal (RAS) piping condition was questioned on June 15, 1992. Procedure 90AC-0IP04, "Condition Reporting", Revision 0 (for the 1992 timeframe) required initiation of a CRDR for any condition which may adversely affect the safe and efficient operation of the plant.

**Direct Cause No. 3**

Operations personnel failed to initiate a CRDR when the dry RAS piping condition was questioned on November 16, 1992. The November 1992 Instruction Change Request (ICR) 58646 initiator and supervisor inappropriately initiated an ICR to document a

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concern with air binding of the Containment Spray pump during a RAS if the RAS piping was left drained after performance of 43ST-3SI09. ICR procedure 03GB-0AP01, Revision 1, required that an ICR was not to be used for requests for changes that affect operability of plant systems and equipment. In addition, procedure 90AC-0IP04, "Condition Reporting", required initiation of a CRDR for any condition which may adversely affect the safe and efficient operation of the plant. Operation Standards personnel inappropriately closed the ICR concern without adequate documentation and failed to initiate a CRDR to address the "air binding of CS pump during RAS" ICR concern.

**Root and Contributing Causes**

**Root Cause No. 1**

Procedure 01AC-0AP02, "Review and Approval of Nuclear Administrative and Technical Procedures," allowed 'pre-screening' of changes (intent vs. non-intent). This procedure inadequacy allowed changes to be implemented without a 10 CFR 50.59 screening for changes to the facility as described in the licensing basis. In this case, the "non-intent" classification of the 4xST-xSI09 procedure revision resulted in no 10 CFR 50.59 screening being performed.

**Contributing Cause No. 1**

Procedure 01AC-0AP02, Revision 2 (in effect in June 1992) guidance for the technical review and cross-organizational review was weak. Specifically, the procedure did not explicitly require the technical reviewer to assess the "non-intent" determination made by the procedure preparer. In addition, the guidance provided for the cross-organizational review (review procedure action for technical impact in their functional area) lacked any specific review criteria in the procedure or on the form itself.

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#### **Root Cause No. 2**

CRDR program implementation was ineffective. The CRDR program was implemented in 1991 and required personnel to ensure CRDR conditions identified were reported. CRDR conditions were defined as those conditions which may influence in an unfavorable manner the safe, reliable operation of the plant. It was the responsibility of every individual to identify and document CRDR conditions at PVNGS. However, the program implementation was not fully incorporated into the PVNGS culture at the time of this event. During the early years of the CRDR program, personnel sometimes were not writing CRDRs for questions and issues that needed technical evaluation to determine the acceptability of identified conditions.

- System Engineering personnel failed to initiate a CRDR when questioning the acceptability of the dry RAS piping condition by verbally contacting the design engineer.
- Operations personnel failed to initiate a CRDR when questioning the dry RAS piping condition during performance of surveillance test 43ST-3SI09.
- Overlap or interface problems existed between the CRDR program, the Engineering Evaluation request (EER) program, and the ICR program such that it was unclear which process should be used to document issues.
- Site personnel were not adequately trained on recognizing a CRDR condition.

#### **Contributing Cause No. 2**

The CRDR (90AC-0IP04) and EER (70AC-0EE02) procedure guidance available in 1992 resulted in System Engineering failing to initiate a CRDR when questioning the dry RAS piping condition.

- System Engineering made a verbal request to Design Engineering (the design authority) to evaluate the existing condition to determine the basis for the plant configuration.

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- The EER procedure was used to document requests for technical clarification and/or evaluations at that time. The EER guidance included initiating an EER if the concern cannot be resolved by normal work control channels, research of previously dispositioned EERs, or review of readily available plant documents.
- The CRDR procedure was used for identification and documentation of any conditions which may adversely affect the safe and efficient operation of Palo Verde. The CRDR process was implemented in 1991. This new CRDR process was not used to obtain technical clarification at that time.
- As a result of failing to document the resolution of questions related to the dry RAS piping condition, this plant configuration was never formally evaluated and the informal evaluations which were completed were not correctly communicated or documented.

**Contributing Cause No. 3**

Operations and Engineering personnel failed to recognize the design configuration requirement to maintain the RAS piping full of water. This lack of recognition was a human performance issue associated with a mindset that the procedure revision was simply restoring the system to its as-found condition before testing and that the as-found condition was acceptable since the RAS piping was self-venting.

**Contributing Cause No. 4**

Training was weak for engineering and operations personnel. The operator's training on the safety injection system did not specifically address the condition of the RAS suction piping or any exceptions to the standard practice of keeping pump suction piping full of water. As a result, the operations staff failed to recognize the plant condition (dry RAS piping) was a degraded condition. In 1992, system engineers were allowed to sign engineering documents before completing Technical Staff Training. In addition, Design Engineering was not part of Technical Staff Training in 1992. There

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were no qualification requirements for procedure writers to ensure “intent” vs. “non-intent” classifications were being performed correctly. Procedure writers were not required to demonstrate UFSAR or licensing basis knowledge.

#### **Contributing Cause No. 5**

Procedure 03GB-0AP01, “Instruction Change Request”, Revision 1 (for the 1992 timeframe) was less than adequate.

- The ICR form used by plant personnel did not provide guidance which would prevent using the ICR for an Operability issue
- 03GB-0AP01 Revision 1 section 2.5 allowed the need for a change to be documented on an ICR. Specifically section 2.5 stated in part:
  - Originator – The individual who proposes a change to an instruction is responsible to:
    - Stop activities and seek guidance if unable to determine the correct action
    - Initiate or identify the need for, a change to the document utilizing one or more of the following methods:
      - Condition Report/Disposition Request
      - Instruction Change Request
      - Temporary Procedure Change Notice
      - Procedure Change Notice
      - Work Order Amendment
- 03GB-0AP01 Revision 1, Section 1.2.3 stated: An ICR is NOT to be used for requests for changes that affect the PVNGS licensing basis, Surveillance Test (ST) acceptance criteria, safety significant issues, operability of plant systems and equipment or that are intended to resolve procedural conflicts. These are to be identified per reference 5.2.7, 90AC-0IP04, Condition Reporting, using a CRDR (Condition Report/Disposition Request). However, a lead organization may initiate

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an ICR for internal tracking purposes upon receipt of a CRDR action item. (*The guidance from section 1.2.3 did not match the guidance given in section 2.5.*)

- Section 3.3.2.2 guidance for disagreement with the ICR suggested resolution allowed contacting either the ICR originator or the originator's supervisor for a more appropriate response.
- No specific guidance was provided for documenting the details and basis for the ICR resolution.

### **3. The Corrective Steps That Have Been Taken and the Results Achieved**

Failure to recognize an "intent change" was determined to be transportable to all three Units. To address the extent of condition, random samples of procedure revisions were reviewed to determine if other changes were made inappropriately without performing a 50.59 screening and evaluation. While some procedure revisions were identified as missing 50.59 screenings, none of the procedures reviewed identified any missed 50.59 evaluations. In addition, samples of calculation revisions were reviewed to determine if changes were made inappropriately without performing a 50.59 screening and evaluation. Although some calculation revisions were made without the required screening, no changes were found which would have required 50.59 evaluations. Additionally, the current 50.59 applicability determination process was found to be ineffective.

Other site change processes (other than calculations and procedures) were reviewed to determine the extent of the cause of the condition. These processes were reviewed to identify any vulnerability that could lead to missed 10 CFR 50.59 screenings and evaluations. Of the additional processes reviewed, 8 programs were found with weaknesses which included: Administrative Facilities Change Request, Scaffolding, Special Variances, Preventative Maintenance waiving, Preventative Maintenance Basis changes, Control of Vendor Documentation, Chemistry Control Instruction, and TAPAs

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(Temporary Approved Procedure Actions). Each program deficiency was entered into the corrective action program.

A review of other Regulations and their associated change processes was made to determine if similar vulnerabilities exist that could prohibit entry into the review process for that regulation, i.e. pre-screening. The regulations reviewed included: Emergency Plan, QA Plan, Security Plan, Fire Protection, ISI/IST (Inservice Inspection/Inservice Test), and 72.48 (ISFSI – Independent Spent Fuel Storage Installation). CRDR 2774185 previously reviewed the E-Plan and identified that Emergency Planning needed a process to control procedure changes and 10CFR50.54 reviews. CRDR 2774185 also reviewed some changes made under other programs for compliance with the respective regulations and no additional discrepancies were found. All the processes reviewed adequately include a review process to determine if prior NRC notification is required. No other program weaknesses (pre-screening) were noted in the rest of the programs.

Interviews were conducted with personnel involved in the 1992 procedure change and associated ICRs. Some of the personnel involved in 1992 are no longer available. The interview results were reviewed to understand the decisions made at that time and the impact the 1992 culture had on those decisions. These results were not conclusive. However, significant CRDRs 2780273 (Human Performance) and 2780286 (Problem Issue and Identification) are investigating these aspects of today's PVNGS culture to determine the appropriate corrective actions. The corrective actions from these other significant CRDRs will address procedure use and adherence as well as ensuring today's corrective action program will not inhibit the staff from initiating the correct document.

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**CORRECTIVE ACTIONS**

Immediate corrective actions once the voided pipe was identified in 2004 included:

1. The voided ECCS sump suction piping in all three PVNGS units were filled by August 4, 2004. This action restored the units to the intended design configuration and eliminated the unreviewed safety question and the attendant need for NRC approval.
2. Changes have been implemented in Revision 49 of procedure 40OP-9SI02, "Recovery from Shutdown Cooling to Normal Operating Lineup," to fill the ECCS suction lines with borated water prior to returning the system to a mode where it is required to be OPERABLE.
3. Procedure 40ST-9SI09, "ECCS Systems Leak Test," has been changed to add a requirement to go to procedure 40OP-9SI02 to fill the ECCS suction line with borated water following the leak test.
4. Modifications have been completed to return the ECCS sump design configuration to the intended design-ECCS sump dry and the suction lines filled with water. The modifications added additional vent, drain and fill connections on the SI piping to facilitate filling and maintaining the lines in a filled condition. Surveillance Test Procedure 40ST-9SI04, "RAS Line Fill Check," has been updated to demonstrate that the RAS line is full of water.
5. New procedure 40OP-9SI04, "Safety Injection System Venting," was initiated. This procedure will be used for the monthly venting on surveillance tests, after outages/maintenance on the system and for normal operations.
6. This violation and the design configuration issue have been widely communicated to plant personnel, and the requirement for the ECCS sump suction line to be filled has been discussed with PVNGS engineering staff in quarterly Engineering Training and

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in briefings with the operations staff. In addition, the Design Basis Manual for the safety injection system has been revised to clearly identify the requirement that the ECCS suction piping shall be filled during all modes when the ECCS is required to be operable.

Completed corrective actions to prevent recurrence include ensuring 50.59 applicability determinations correctly identify when a 50.59 screening is required. Corrective actions to prevent recurrence include:

1. 93DP-0LC07 (*10 CFR 50.59 and 72.48 Screenings and Evaluations*) was revised to provide clear applicability determination criteria.
2. The 10 CFR 50.59 applicability determination process was reviewed to identify any weaknesses that could lead to missed 10 CFR 50.59 screenings and/or evaluations. The 50.59 process was revised to require training and qualifications for personnel performing applicability determinations.
3. Weaknesses in site change programs including but not limited to Administrative Facilities Change Requests and Temporary Approved Procedure Actions were corrected by revising the programs to require 50.59 applicability determinations be completed for changes.

**RESULTS ACHIEVED**

A 50.59 monitoring program has been implemented to include reviewing the quality of applicability determinations. The reviews started in October of 2005 and as of March 1, 2006 there has been a rate of 3% failing and 97% acceptable.

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The following actions had already been taken to improve the procedure revision and CRDR processes. These actions (procedure program improvements) addressed the root causes.

1. On December 3, 1998, procedure 01DP-0AP01 (Procedure Process) was revised (Revision 7) to remove the 'pre-screening' of changes and eliminated the "intent – non-intent" decision process. Current procedure guidance (01DP-0AP01 Revision 20) for 10CFR 50.59 and 72.48 Screenings and Evaluations, requires use of the 50.59 process, 93DP-0LC07, to determine applicability or perform a screening and/or evaluation.
2. Procedure 90AC-0IP04, Revision 1 (effective 11/2/1992) clarified the definition of a CRDR condition. This revision was made in response to Corrective Action Report (CAR) 92-003 which identified a need for better written instructions including additional guidance regarding program interfaces and responsibilities.
3. Training to recognize a CRDR condition was also completed in response to CAR 92-003.
4. 90AC-0IP04, Revision 2 (effective 1/3/1994) expanded the use of a CRDR to include requests for technical clarification and/or evaluation.
5. Subsequently the EER procedure (70AC-0EE02) was cancelled in 1994 eliminating the overlap issues between these two programs.
6. Similarly, reference to the ICR process (01IG-0AP05) was removed from 01DP-0AP01 during Revision 5 on 10/14/1997.

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**4. The Corrective Steps That Will Be Taken To Avoid Further Violations**

The effectiveness of the corrective actions will be verified by performing a sample (procedure revisions, calculation revisions, etc.) of changes made after completion of the above corrective actions to ensure applicability determinations were performed correctly for the changes made.

Significant CRDR 2726509, initiated in July 2004, as a result of the RAS suction piping condition evaluates the condition of the plant failing to recognize that the RAS piping needed to be filled with water since initial plant startup and addresses the missed opportunities that were identified since startup. CRDR 2726509 is tracking the corrective actions associated with the lack of questioning attitude and technical rigor (mindset).

Significant CRDR 2780286 evaluated the Problem Identification and Resolution cross cutting issue. Ineffective CRDR program implementation was identified as a cause of the 1992 50.59 Violation. CRDR 2789716 is tracking the corrective actions associated with this investigation. The corrective actions associated with Palo Verde's P I & R program are addressed in CRDR 2780286.

Significant CRDR 2780273 evaluates the Human Performance cross cutting issue. The corrective actions associated with Human Performance identified in CRDR 2789716 (50.59 Violation) are addressed in CRDR 2780273.

**5. The Date When Full Compliance Will Be Achieved**

Full compliance was achieved when the voided ECCS sump suction piping was filled in all three PVNGS units by August 4, 2004, thereby eliminating the unreviewed safety question.

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## Enclosure 4

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**Statement Indicating Civil Penalty Payment Method**  
**Docket Nos. 50-528; 50-529; 50-530**  
**License Nos. NPF-41; NPF-51; NPF-74**  
**EA-05-051**

On Friday, June 3, 2005, a payment of \$50,000 for the civil penalty associated with NRC Notice of Violation EA-05-051 was electronically transferred to the NRC via electronic funds transfer (wire number 95001918) using the U.S. Department of Treasury Fedwire Deposit System specified as payment method 3 in NUREG/BR-0254, Revision 2.