Palo Verde Nuclear
Generating Station

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102-05221-CDM/TNW/GAM
March 4, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN 50-528, 50-529, and 50-530
90-Day Response to NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

In Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," the NRC requested information to be provided by licensees within 90 days of the date of the NRC safety evaluation providing guidance for performing evaluations related to pressurized water reactor sump performance. The NRC safety evaluation was issued on December 6, 2004. The information requested in GL 2004-02 in the 90-day response for PVNGS is provided in Enclosure 2 to this letter. Enclosure 3 contains a list of regulatory commitments being made in this letter. Enclosure 1 is the notarized affidavit required by 10 CFR 50.54(f).

If you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

David Mauldin

CDM/TNW/GAM

Enclosures: 1. Notarized Affidavit
2. APS' 90-Day Response to NRC Generic Letter 2004-02
3. List of Regulatory Commitments

cc: B. S. Mallett NRC Region IV Regional Administrator
M. B. Fields NRC NRR Project Manager
G. G. Warnick NRC Senior Resident Inspector for PVNGS

A116

Enclosure 1
Notarized Affidavit

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, David Mauldin, represent that I am Vice President Nuclear Engineering and Support, 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.

David Mauldin

Sworn To Before Me This 4th Day Of March, 2005.

Susie Lynn Ergish
Notary Public

OFFICIAL SEAL
Susie Lynn Ergish
NOTARY PUBLIC - STATE of ARIZONA
MARICOPA COUNTY
MY COMM. EXPIRES July 14, 2007

Notary Commission Stamp

Enclosure 2

Arizona Public Service Company's 90-Day Response to NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

NRC Generic Letter (GL) 2004-02 90-day Information Request:

Within 90 days of the date of the safety evaluation report providing guidance for performing the requested evaluation, addressees are requested to provide information regarding their planned actions and schedule to complete the requested evaluation. The information should include the following:

a) A description of the methodology that is used or will be used to analyze the susceptibility of the ECCS and CSS recirculation functions for your reactor to the adverse effects identified in this generic letter of post-accident debris blockage and operation with debris laden fluids identified in this generic letter. Provide the completion date of the analysis that will be performed.

b) A statement of whether you plan to perform containment walkdown surveillance in support of the analysis of the susceptibility of the ECCS and CSS recirculation functions to the adverse effects of debris blockage identified in this generic letter. Provide justification if no containment walk down surveillance will be performed. If containment surveillance will be performed, state planned methodology to be used and the planned completion date.

Arizona Public Service Company's (APS') Responses for the Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3:

a) APS intends to utilize the deterministic methodology described in NEI 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology," Revision 0, December 2004 (or subsequent revisions, as appropriate), with the additional guidance provided in the NRC safety evaluation (SE) dated December 6, 2004, to analyze the susceptibility of the emergency core cooling system (ECCS) and containment spray system (CSS) recirculation functions for PVNGS Units 1, 2, and 3 to the adverse effects identified in GL 2004-02 of post-accident debris blockage and operation with debris laden fluids identified in GL 2004-02. Where the NEI 04-07 guidance varies from that in the NRC SE, the SE guidance will be used. Use of risk informed evaluation methodology (Chapter 6 of NEI 04-07) is not currently planned. The deterministic methodology may employ plant specific refinements as specifically allowed by the SE to include the following:

- Additional testing and/or evaluation of existing data relative to qualified and unqualified coatings are planned by EPRI and the Westinghouse/B&W owner groups. Plant-specific testing for PVNGS may be performed under the direction of APS staff.

- NEI 04-07 and the NRC SE do not provide specific guidance for evaluating the chemical precipitation effects. Cooperative NRC-EPRI tests for chemical precipitation are in progress. The significance of chemical precipitant and the methodology for head loss to account for the chemical precipitants is currently not developed. APS intends to use future test results, industry guidance, and NRC guidance to account for chemical precipitant in the PVNGS evaluations.

- NEI 04-07 and the NRC SE do not provide specific guidance for evaluating the downstream effects. APS will evaluate the downstream effects in two phases. Phase 1 will identify downstream components that are susceptible to blockage, identify the minimum clearance for flow through these components, and evaluate whether these components may have performance degradation due to blockage from debris that may pass through the sump strainer. In phase 2, the long term performance degradation due to wear of susceptible downstream components and sub-components will be investigated. APS intends to use future test results, Westinghouse and B&W Owners Group's guidance, and component manufacturer data to evaluate long term performance degradation due to wear caused by debris laden fluid.

- Vendor-specific proprietary information and data may be included in the evaluation.

- Plant-specific head loss testing of latent debris fiber and particulates as recommended by NRC SE Section 3.7.2.3.1.1 may be included in the evaluation.

The evaluations for PVNGS based on NEI 04-07 and the NRC SE are planned to be completed by September 1, 2005. If the test results, industry guidance, and NRC guidance to account for chemical precipitant is not available in time to support the completion of the evaluation for chemical effects and Phase 2 downstream effects by September 1, 2005, the APS submittal to NRC required by GL 2004-02 by September 1, 2005, will provide a schedule for the completion of the evaluation for chemical effects and Phase 2 downstream effects.

b) Walkdowns in support of the analysis of the susceptibility of the ECCS and CSS recirculation functions to the adverse effects of debris blockage were performed during refueling outages in PVNGS Unit 1 in fall 2002, Unit 2 in spring 2002, and Unit 3 in spring 2003. The walkdowns were performed using guidance provided in NEI 02-01, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," dated April 2002. The walkdowns included identification of latent debris, but did not quantify fiber and particulates. Latent debris walkdowns to confirm the results of the previous walkdowns will be conducted in each unit during

their next refueling outages (Unit 1 by November 30, 2005; Unit 2 by April 30, 2005; and Unit 3 by April 30, 2006).

NEI 02-01 did not provide guidance on latent debris sampling (fiber and particulates). This guidance has now been provided in NEI 04-07 and the NRC SE. Therefore, a latent debris sampling walkdown is planned for Unit 2 by April 30, 2005 (its next refueling outage). The Unit 2 latent debris sampling values will be used to estimate the Unit 1 and Unit 3 latent debris for the purpose of completing the evaluations due by September 1, 2005. Latent debris sampling walkdowns of Unit 1 and Unit 3 will subsequently be completed in their next refueling outages (Unit 1 by November 30, 2005; Unit 3 by April 30, 2006) to validate the estimates.

APS will submit to NRC the information requested by GL 2004-02 by September 1, 2005, utilizing the results of the evaluations that will be completed as described in this letter. If any additional exceptions to NEI 04-07 or the NRC SE are identified during the performance of the analysis, supplementary letters to this response will be submitted to the NRC as soon as practical.

Enclosure 3

Regulatory Commitments

The following table identifies those new actions committed to by APS in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Thomas N. Weber at (623) 393-5764.

REGULATORY COMMITMENT	DUE DATE
APS intends to utilize the deterministic methodology described in NEI 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology," Revision 0, December 2004 (or subsequent revisions, as appropriate), with the additional guidance provided in the NRC safety evaluation (SE) dated December 6, 2004, to analyze the susceptibility of the ECCS and CSS recirculation functions for PVNGS Units 1, 2, and 3 to the adverse effects identified in GL 2004-02 of post-accident debris blockage and operation with debris laden fluids identified in GL 2004-02. Where the NEI 04-07 guidance varies from that in the NRC SE, the SE guidance will be used. Use of risk informed evaluation methodology (Chapter 6 of NEI 04-07) is not currently planned. The deterministic methodology may employ plant specific refinements as specifically allowed by the SE to include the following: • Additional testing and/or evaluation of existing data relative to qualified and unqualified coatings are planned by EPRI and the Westinghouse/B&W owner groups. Plant-specific testing for PVNGS may be performed under the direction of APS staff. • NEI 04-07 and the NRC SE do not provide specific guidance for evaluating the chemical precipitation effects. Cooperative NRC-EPRI tests for chemical precipitation are in progress. The significance of chemical precipitant and the methodology for head loss to account for the chemical precipitants is currently not developed. APS intends to use future test results, industry guidance, and NRC guidance to account for chemical precipitant in the PVNGS evaluations.	September 1, 2005

REGULATORY COMMITMENT	DUE DATE
• NEI 04-07 and the NRC SE do not provide specific guidance for evaluating the downstream effects. APS will evaluate the downstream effects in two phases. Phase 1 will identify downstream components that are susceptible to blockage, identify the minimum clearance for flow through these components, and evaluate whether these components may have performance degradation due to blockage from debris that may pass through the sump strainer. In phase 2, the long term performance degradation due to wear of susceptible downstream components and sub-components will be investigated. APS intends to use future test results, Westinghouse and B&W Owners Group's guidance, and component manufacturer data to evaluate long term performance degradation due to wear caused by debris laden fluid. • Vendor-specific proprietary information and data may be included in the evaluation. • Plant-specific head loss testing of latent debris fiber and particulates as recommended by NRC SE Section 3.7.2.3.1.1 may be included in the evaluation. The evaluations for PVNGS based on NEI 04-07 and the NRC SE are planned to be completed by September 1, 2005.	
If the test results, industry guidance, and NRC guidance to account for chemical precipitant is not available in time to support the completion of the evaluation for chemical effects and Phase 2 downstream effects by September 1, 2005, the APS submittal to NRC required by GL 2004-02 by September 1, 2005, will provide a schedule for the completion of the evaluation for chemical effects and Phase 2 downstream effects.	September 1, 2005
Latent debris walkdowns to confirm the results of the previous walkdowns will be conducted in each unit during their next refueling outages.	Unit 1 by November 30, 2005; Unit 2 by April 30, 2005; and Unit 3 by April 30, 2006

REGULATORY COMMITMENT	DUE DATE
A latent debris sampling walkdown is planned for Unit 2 by April 30, 2005 (its next refueling outage).	April 30, 2005
Unit 2 latent debris values will be used to estimate the Unit 1 and Unit 3 latent debris. Subsequent sampling of Unit 1 and Unit 3 latent debris will be completed in their next refueling outages (Unit 1 by November 30, 2005; Unit 3 by April 30, 2006) to validate the estimates.	Unit 1 by November 30, 2005; Unit 3 by April 30, 2006
APS will submit to NRC the information requested by GL 2004-02 by Stember 1, 2005, utilizing the results of the evaluations that will be completed as described in this letter.	September 1, 2005
If any additional exceptions to NEI 04-07 or the NRC SE are identified during the performance of the analysis, supplementary letters to this response will be submitted to the NRC as soon as practical.	As soon as practical.