Palo Verde Nuclear
Generating Station

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102-05374-CDM/TNW/GAM
November 10, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
11555 Rockville Pike
Rockville, Maryland 20852

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Comments on Draft Safety Evaluation Related to Proposed Amendment in Support of Units 1 And 3 Steam Generator Replacement and Power Uprate

By letter dated November 2, 2005, the NRC provided to Arizona Public Service Company (APS) for technical review a draft Safety Evaluation (SE) related to APS' proposed PVNGS Operating License amendment in support of Units 1 and 3 steam generator replacement and power uprate. The NRC requested that any comments regarding the factual accuracy of the draft SE be submitted by November 11, 2005.

APS has reviewed the draft SE and is providing comments in Enclosure 2. Westinghouse Electric Corporation has also reviewed the draft SE and has determined that no proprietary information has been included.

No commitments are being made to the NRC by this letter. If you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

David Mauldin

CDM/TNW/GAM/ca

Enclosures:
1. Notarized affidavit
2. APS Comments on Draft Safety Evaluation Related to Proposed Amendment in Support of Units 1 And 3 Steam Generator Replacement and Power Uprate

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

A001

ENCLOSURE 1

AFFIDAVIT

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, David Mauldin, represent that I am Vice President, Nuclear Engineering, 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 10th Day Of November, 2005.

Notary Public

SUSIE LYNN ERGISH
Notary Public - Arizona
Maricopa County
My Comm. Expires Jul 14, 2007

Notary Commission Stamp

ENCLOSURE 2

ARIZONA PUBLIC SERVICE COMPANY
COMMENTS ON DRAFT SAFETY EVALUATION RELATED TO PROPOSED AMENDMENT IN SUPPORT OF UNITS 1 AND 3 STEAM GENERATOR REPLACEMENT AND POWER UPRATE

Draft SE Letter

1. Please change first paragraph of the letter to indicate that two letters were sent to the NRC on July 19, 2005 and an additional letter on October 28, 2005.

Draft SE Section 4.2.2, Loss-of-Coolant Accident Containment Analysis

2. The fifth paragraph from the end states that "The licensee indicated that UFSAR Table 6.2.1-6 is incorrect and the error would be corrected during the next update...". The Table was corrected in Revision 13 to the UFSAR. The paragraph should be deleted from the draft SE.

Draft SE Section 4.3.2, Decrease of Heat Removal by the Secondary System

3. The second to the last paragraph needs to be corrected, "2733 psia" should be "2739 psia". Also, the last paragraph needs to be corrected, "1399 psia" should be "1389 psia". Reference letter 102-05847, dated 10/11/2002. Note these values were also incorrectly stated in the Unit 2 SE.

Draft SE Section 4.3.7.3, Station Blackout

4. Please delete the second and third paragraphs since the discussion on Station Blackout in Section 6.11.4 is a more complete discussion.

Draft SE Section 6.1, Balance of Plant Components

5. The fourth paragraph states: "...steam quality (from 0.25 percent to 0.1 percent) to offset the increase in steam flow under the PUR conditions. The licensee stated that the improved steam quality is a performance criterion for the RSGs, and the steam quality will be measured during the post-PUR startup test program. The licensee also stated that the measured steam quality...". The three statements "steam quality" should be *moisture carryover.* The 0.25 percent is the amount of moisture carried over into the turbine systems. Note that this was also incorrectly stated in the Unit 2 SE.

Draft SE Section 6.11.1.4, Auxiliary Power System

6. The next to the last sentence in the first paragraph states: "...non-Class 1E buses lowers this value about 4 V...". The statement should read, non-Class 1E buses lowers this value about 4 *kV.*

Draft SE Section 6.11.4, Station Blackout

7. The third paragraph states: "... the licensee agreed to change the offsite power design characteristic group for PVNGS from P1 to P3 because of the June 14, 2004, event." However, APS does not agree that offsite power design characteristic group for PVNGS is being changed from P1 to *P3 because of the June 14, 2004, event.* Instead APS' October 28, 2005 letter states: "Arizona Public Service Company (APS) has agreed to revise the PVNGS SBO coping duration from four hours to 16 hours to gain margin relative to nuclear safety.

   Recommend changing the sentence to: "... *the licensee agreed to change the coping period for PVNGS from 4 hours to 16 hours in order to gain margin relative to nuclear safety.*"

   The next to the last paragraph under section 6.11.4 states: "Therefore, the staff finds the licensee's proposed PUR acceptable based on the licensee's commitment to complete its evaluations and analyses for coping with an SBO for 16 hours." However, as stated in the previous paragraph in section 6.11.4, APS submitted the evaluations and analysis for coping with an SBO for 16 hours in a letter dated October 28, 2005. The previous paragraph in section 6.11.4 and the next sentence in this paragraph describe APS' proposed license condition, submitted in a letter dated October 21, 2005, to implement the 16 hour coping changes within six months following NRC approval of the changes.

   Recommend changing the sentence to: "Therefore, the staff finds the licensee's proposed PUR acceptable based on the licensee's commitment to *implement the changes needed to revise from a four hour SBO coping duration to a 16 hour coping duration within six months following the NRC approval of the proposed coping changes.*"

Draft SE Section 6.11.6, Miscellaneous Electrical Reviews Conclusion

8. The last sentence in Section 6.11.6 states: "However, it should be noted that approval of the licensee's proposed PUR is contingent upon the NRC staff's approval of the licensee's evaluations and analyses for coping with an SBO for 16 hours that will be submitted by October 31, 2005." This statement is contrary to the conclusions in Section 6.11.4 of the draft SE, as clarified in comment 7 above. Recommend changing the sentence to:

   "However, it should be noted that approval of the licensee's proposed PUR is contingent upon *adding a license condition to the amendment pages for all three PVNGS units incorporating the licensee's commitment to implement the changes needed to revise from a four hour SBO coping duration to a 16 hour coping duration within six months following the NRC approval of the proposed coping changes."*

Draft SE Section 6.12.2, Instrumentation Setpoint Methodology

9. The two paragraphs before the last paragraph in section 6.12.2 are identified as Note 1 and Note 2 that APS proposed to add to the Technical Specifications in the submittal letter dated September 29, 2005. However, the notes are not the same as the notes proposed by APS in the September 29, 2005 submittal.

   Recommend changing the Notes to read the same as APS proposed in the September 29, 2005 letter, which is:

   "Note 1: If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predetermined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable."

   "Note 2: The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the UFSAR Trip Setpoint, or within the as left tolerance of a setpoint that is more conservative than the UFSAR Trip Set Point; otherwise the channel shall be declared inoperable. The UFSAR Trip Setpoint and the methodology used to determine 1) the UFSAR Trip Setpoint, 2) the predetermined as found acceptance criteria band, and 3) the as-left setpoint tolerance band are specified in the UFSAR."

Draft SE Section 7.1, Post-Loss-of-Coolant Accident Hydrogen Generation

10. The last sentence in the last paragraph in section 7.1 states: "The NRC staff finds the licensee's analysis acceptable since: (1) the core oxidation following a LOCA is less than 1 percent, (2) the hydrogen concentration in the main containment volume remains less than 4 percent and the gas plume from the Reactor Drain Tank room is below the combustible limit when analyzed at the higher power, and (3) acceptable methods were used to perform these analyses." With regard to the statement that "the Reactor Drain Tank room is below the combustible limit when analyzed at the higher power," in the letter dated June 17, 2005, that is referenced in section 1.0 of the draft SE, APS provided a clarification to the results of the Reactor Drain Tank room hydrogen concentration analysis.

    Based on the June 17, 2005 letter, recommend changing the sentence to:

    "The NRC staff finds the licensee's analysis acceptable since: (1) the core oxidation following a LOCA is less than 1 percent, (2) the hydrogen concentration in the main containment volume remains less than 4 percent and the gas plume from the Reactor Drain Tank room *of up to 4.5 percent* is *well below the increased hydrogen concentration limit of 6 volume percent discussed in*

Regulatory Guide 1.7 when analyzed at the higher power, *there is no ignition source in the room, and the plume exiting the roof of the room mixes quickly with containment atmosphere*, and (3) acceptable methods were used to perform these analyses."

Draft SE Section 7.6, Human Factors Considerations

11. The seventh paragraph in Section 7.6 states: "For Item 1 above, in PURLR Section 9.12.2, the licensee states that an assessment of the expected plant response indicated that minor EOP/Abnormal Operating Procedures (AOP) changes are expected which would not affect operator actions or mitigation strategies that are taken credit for in accident analyses. The licensee explained that the PUR results in changes in operating procedures, such as surveillance tests, normal operating, general operating, and/or alarm response procedures. The procedure changes will be incorporated before operation of Unit 2 at the higher power levels of the PUR."

    This proposed amendment will authorize power uprate in Units 1 and 3. Therefore, recommend changing the last sentence in this paragraph to:

    "The procedure changes will be incorporated before operation of *Units 1 and 3* at the higher power levels of the PUR."

    The ninth paragraph in Section 7.6 states: "For Items 3 and 4, in PURLR Section 9.12.1, the licensee states that the PUR will have a limited impact on the operator interfaces for control room displays, controls, and alarms. There will be a few alarm setpoints and indicators changed in the control room because of the PUR. The Qualified Safety Parameter Display System will be modified for the larger SGs that will be installed in the Fall 2003 refueling outage along with the PUR. In all cases, operators are to be trained on the changes before operation at the higher power levels of the PUR. Administrative control procedures provide for such training."

    Section 9.12.3 in APS' July 9, 2004 PURLR submittal stated: "The Safety Parameter Display System (SPDS) will be modified for the larger Steam Generators (SGs) (i.e., larger RCS volume, larger SG volume, etc.). Operators will be trained on these plant changes before operation at PUR per the requirements of administrative control procedures. There are no changes required to the Qualified Safety Parameter Display System (QSPDS) as a result of PUR in any of the PVNGS Units." Therefore, recommend changing the third sentence in this paragraph to:

    "The Safety Parameter Display System will be modified for the larger SGs that will be installed in the *Unit 1 Fall 2005 refueling outage and Unit 3 Fall 2007* refueling outage along with the PUR. *There are no changes required to the Qualified Safety Parameter Display System (QSPDS) as a result of PUR."*

The ninth paragraph in Section 7.6 states: "For Item 5, in PURLR Sections 9.12.3 and 9.12.4, the licensee states that because the simulator is modeled after Unit 1, a separate software model will be developed for the Unit 2 changes to plant responses to transient and accident scenarios because of the PUR and larger SGs to support the licensed operator training for Unit 2. The licensee states that this new model will not replace the Unit 1 model for normal examination and evaluation, and that the simulator fidelity will not be affected. The operators for Unit 2 are to be trained on the modifications, Technical Specification changes, procedural changes, and the changes in the Unit 2 response to transients and accident scenarios because of the PUR."

There are two simulators in use at PVNGS. Both simulators have been revised to reflect PUR conditions. The non-PUR simulator software is being retained for use in training specific to the remaining non-PUR unit, Unit 3, until PUR is implemented in that unit in Fall 2007. With respect to operator training, the PVNGS licensed operators are trained for all three units and all have received training on the PUR changes since implementation in Unit 2 in Fall 2003. Therefore, recommend changing the ninth paragraph in Section 7.6 to:

> "For Item 5, *the licensee states that both simulators have been revised to reflect PUR conditions. The non-PUR simulator software is being retained for use in training specific to the remaining non-PUR unit (Unit 3) after Fall 2005, until PUR is implemented in that unit in Fall 2007. The operators are trained on the modifications, Technical Specification changes, procedural changes, and the changes in the Units' response to transients and accident scenarios because of the PUR.*"