



Palo Verde Nuclear  
Generating Station

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102-05065-CDM/SAB/RJR  
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U.S. Nuclear Regulatory Commission  
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- References:
1. APS letter 102-04551-CDM/SAB/RKB, "Request for Code Alternative for the use of Mechanical Nozzle Seal Assemblies – Relief Request No. 17," dated April 1, 2001.
  2. NRC letter, "Palo Verde Nuclear Generating Station Units 1, 2, and 3 -Request for Code Alternative for the use of Mechanical Nozzle Seal Assemblies – Relief Request No. 17," dated October 10, 2001

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 3  
Docket No. STN 50-530  
Pressurizer Heater Sleeve Leak Discussion Documentation**

On February 28, 2004, Arizona Public Service Company (APS) PVNGS Unit 3 was shutdown due to a turbine generator fault. On February 29, 2004, during a required boric acid walkdown, boric acid residue was discovered on pressurizer heater A-3. A telephone call was held between the NRC staff and members of PVNGS on February 29, 2004, to inform the NRC of the leak and the pending repairs to the heater sleeve using a mechanical nozzle seal assembly (MNSA) in accordance with NRC approved Relief request No. 17 (References 1 and 2). A second telephone call was held between the NRC staff and members of PVNGS on March 1, 2004, to provide the rationale for performing the non-destructive examination (NDE) of the pressurizer heater sleeve nozzle during the next refueling outage instead of the current unplanned shutdown.

During the telephone call on Monday, March 1, 2004, APS presented three items as the bases for performing the NDE during the Unit 3 refueling outage scheduled for the fall of 2004. These three items are summarized below:

1. APS' experience with known pressurizer heater sleeve leaks of the type seen at PVNGS heater A-3 have been determined to be from axial flaws when

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characterized by eddy current examination (ET). PVNGS specific experience was with heater sleeve A-6 in U2R9 and heater sleeve A-1 in U3R10.

2. A PVNGS safety comparison was performed. This evaluation compared the plant configuration risk associated with two alternatives for performing the non-destructive examinations (NDE) of the Unit 3 A-3 Pressurizer Heater Sleeve.

The two alternatives considered were:

- Perform ET at the next refueling outage during the core offload window.
- Perform ET in the current unplanned outage in mode 5.

It is the judgment of APS that the first alternative has the lowest total risk. This judgment is based on the following considerations:

- 1) Inspection of the nozzle during the current unplanned outage would require placing the unit in reduced inventory, with the RCS breached for the duration of the inspection. Shutdown risk is higher in this condition than the condition required for installation of the mechanical nozzle seal assembly (MNSA).
- 2) No significant reduction in operating risk in the remainder of the cycle would result from completion of the inspection because:
  - a) In both alternatives the condition of the pressurizer nozzle will be the same at the end of this unplanned outage, the MNSA repair will be made to the nozzle with the known flaw. Thus the risk due to the known flaw is the same for both alternatives.
  - b) Any additional risk during the remainder of the cycle will be due to the remaining pressurizer nozzles. The remaining nozzles have been verified by inspection to have no visible leaks at this time, thus the risk of operation for the remainder of the cycle due to currently known degradation mechanisms is actually reduced compared to the risk prior to the outage.
  - c) A new, undiscovered degradation mechanism capable of causing structural failure of one of the remaining nozzles would have to exist to result in an increase in risk for the remainder of the cycle. For this increase in risk to be non-negligible, the following unlikely condition would have to exist:

A circumferential crack below the weld would have to exist. This is unlikely due to predominant stresses favoring axial crack initiation, and either i) or ii) below would also have to exist.

    - i) An extreme crack growth rate causing a nozzle to go from a no-detectable leakage condition to failure in seven months, or

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- ii) A through wall leak has existed in one of the other nozzles for an extended (multiple cycles) time period, but was not detected by the multiple bare metal visual inspections that have been performed.
- 3. The Westinghouse Owners Group (WOG) report, WCAP-16180, supports the continued operation of the CE fleet of plants. This includes the operation of PVNGS unit 3 for seven months until the next scheduled refueling outage.

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

Sincerely,



CDM/SAB/RJR/kg

cc:

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