Palo Verde Nuclear
Generating Station

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Reference: 1. Letter dated October 4, 2000, "Error in Containment Heat Sink Data Used in LOCA/ECCS Performance Evaluation Models, 30 Day 10 CFR 50.46 Report," from David Mauldin, APS to USNRC

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Response to Request for Additional Information on
LOCA/ECCS Performance Evaluation Models

In Reference 1, Arizona Public Service (APS) provided notification to the NRC of an error discovered in the plant design input data for the large break loss of coolant accident (LBLOCA) analysis which calculates performance of PVNGS emergency core cooling systems (ECCS). On January 24, 2001, APS and the NRC staff conducted a phone call to further clarify information provided in Reference 1. On February 1, 2001, the NRC sent questions to APS concerning the October 4, 2000 letter (reference 1). The following is APS' response to those questions.

NRC question:

1. An area of confusion remains concerning the change in the LOCA analysis assumption related to the number of plugged SG tubes. The discussion in your letter suggests to us that this assumption change had a significant effect on reducing the calculated PCT [peak clad temperature] below 2200°F.

A) Please define your assumption used in the LOCA analyses for the number of plugged SG [steam generator] tubes. Describe where else the plugging limit is used in licensing analyses and how that value is controlled (e.g., TS, COLR, FSAR).

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B) Confirm that the analysis value bounds the existing licensing basis values.

APS response:

A) The current assumption used for the number of plugged SG tubes in the LBLOCA analyses is 3500 tubes total for both steam generators. This represents a reduction of 2000 plugged tubes from that assumed in the previous LBLOCA analysis (prior to Sept. 2000), which was 2750 tubes per SG. The small break LOCA analyses, LOCA Long Term Cooling (LTC) analyses, and Non-LOCA analyses use different numbers of plugged SG tubes which were not changed by the September 2000 re-analysis. In all cases, the analytical assumptions for plugged tubes bound the actual number of plugged tubes in the PVNGS units.

   Plugging limits are used in the LBLOCA analyses, small break LOCA analyses, LOCA LTC analyses, and Non-LOCA analyses. The PVNGS Nuclear Fuels Management (NFM) design control process and impact review process, along with the vendor (Westinghouse) design control process and impact review process, controls these values. The limit on the number of plugged tubes for LBLOCA is also reported in Section 6.3.3 of the PVNGS Updated Final Safety Analysis Report (UFSAR).

B) The existing LBLOCA analytical value for the number of plugged steam generator tubes is 3500 tubes for both steam generators. This is the value that will be found in Section 6.3.3 of the UFSAR following the next required update. The actual number of plugged tubes for our most limiting unit, which is Unit 2, is 2677 tubes (total for both steam generators). Therefore, the analytical or licensing basis value (3500 plugged tubes) bounds the actual number of plugged tubes (2677).

NRC question:

2. Is there a new LBLOCA analysis of record? Where is this controlled?

APS response:

   There is a new LBLOCA analysis of record for the 0.6 DEG/PD (Double Ended Guillotine break in Pump Discharge) "limiting break analysis," not for the "break

conclusion of the "break spectrum analysis."

The use of this analysis of record is controlled by NFM through their design control process and impact review process. For example, a design basis change has been issued for the Safety Analysis Basis Document (SABD), Section 3.6.6, "LBLOCA," identifying the new analysis of record and an upper limit of 3500 total plugged steam generator tubes. In addition, the LOCA checklist for reload analysis has been revised to incorporate the revised LBLOCA tube plugging limit. The SABD and reload checklists provide the design basis and control process for reload core designs.

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 D. Mauldin

CDM/TNW/JAP/kg

cc: E. W. Merschoff
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