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SUBJECT: Provides addl info re licensees participation in CEOG evaluation of Pressurizer Surge Line thermal stratification.

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October 18, 1993

WILLIAM F. CONWAY
EXECUTIVE VICE PRESIDENT
NUCLEAR

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References: 1. Letter dated July 16, 1993, "Safety Evaluation for Combustion Engineering Owners Group Report CEN-387-P, Revision 1, Pressurizer Surge Line Thermal Stratification Evaluation - Bulletin 88-11" from NRC, to W. F.Conway, Executive Vice President, Nuclear, APS

2. Letter dated April 3, 1990, "Supplemental Response to NRC Bulletin 88-11, Pressurizer Surge Line Thermal Stratification" from W. F. Conway, Executive Vice President, Nuclear, APS, to NRC

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Additional Information on APS Actions Regarding
NRC Bulletin 88-11
File: 93-055-026; 93-056-026

Arizona Public Service Company (APS) participated in the Combustion Engineering Owners Group (CEOG) evaluation of the Pressurizer Surge Line (PSL) thermal stratification. The final CEOG report was issued and submitted to the NRC in December 1991 (report CEN-387-P, Rev 1).

Action 1.d of NRC Bulletin 88-11, required APS to perform detailed stress and fatigue analyses of the PSL to demonstrate that the integrity of PSLs at PVNGS is maintained for the 40 year design life of these piping systems. The NRC issued its Safety Evaluation Report (SER) regarding the CEOG thermal stratification report, (Reference 1). This SER specifically authorized APS to use the CEOG report results as a basis for the plant specific stress and fatigue analyses required by Bulletin 88-11.

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APS has completed the plant specific stress and fatigue calculation (13-MC-ZZ-595). This calculation was based on the CEOG generated data and on the CEOG generic bounding analysis. The bounding plastic analysis performed by CE was based on PVNGS' PSL data which bounded the data from the other 14 participating plants. The results showed that the highest loads were exerted at the PSL first elbow in the vertical drop from the pressurizer. Plastic analysis shows no indication of ratcheting at this loaded elbow. Similarly, fatigue analysis of the loaded elbow showed that the maximum usage factor was 0.937. This usage factor (less than 1.0) indicate that the elbow is qualified for the 40 year life of the plant.

Therefore, APS plant specific calculation has demonstrated that the integrity of the PSLs at PVNGS is maintained for the 40 year licensed plant life. Furthermore, APS has established a periodic In Service Inspection Program (ISI) to examine critical PSL elbow components.

APS has completed Action 1.a of NRC Bulletin 88-11, which called for a visual inspection walkdown of PSL. The inspection results were documented in a letter to the NRC, (Reference 2).

Regarding Action 1.b of NRC Bulletin 88-11, APS has evaluated the impact of the revised fatigue analysis on postulated pipe break locations in the PSL. These locations are shown on Figure 3.6-13 of the UFSAR. APS analysis was conducted in accordance with General Design Criteria 4. APS analysis identified two additional postulated pipe break locations at the two elbows immediately above the hot leg. No adverse impact resulted from these two new locations as there is no plant equipment in the vicinity which affect safe shutdown equipment. The evaluation results will be documented in APS calculation (13-MC-ZZ-633), which is currently scheduled for January 31, 1994. An UFSAR change is being processed to add the two new pipe break locations to the existing five break locations on Figure 3.6-13.

The last action of Bulletin 88-11, Action 1.c, called for obtaining plant data on PSL Thermal Striping, Thermal Stratification, and Line Deflection. APS obtained this data through its participation in the CEOG efforts.

Should you have any questions, please contact Richard A. Bernier at (602) 393-5882.

Sincerely,

James M. Levine for WFC

WFC/RAB/ZJE/bcf

cc: B. H. Faulkenberry
B. E. Holian
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