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SUBJECT: Describes evaluations & training for plant personnel
 performed for each design or procedural mod made to address
 potential pressure locking or thermal binding concerns.

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Arizona Public Service

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102-03749-WLS/AKK/RJR

August 6, 1996

WILLIAM L. STEWART
EXECUTIVE VICE PRESIDENT
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- References:
- 1) Letter, dated June 27, 1996, "Request for Additional Information- Generic Letter 95-07, 'Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves', for Palo Verde Nuclear Generating Station," from USNRC, to W. L. Stewart, APS
 - 2) Letter No. 102-03725, dated June 28, 1996, "PVNGS Units 1, 2, and 3, NRC Generic Letter No. 95-07, 180-Day response Additional Information," from W. L. Stewart, APS, to USNRC

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
NRC Generic Letter No. 95-07, Request for Additional Information**

In Reference 1, the NRC staff requested additional information to address the Generic Letter 95-07 Pressure Locking and Thermal Binding (PLTB) issues. Specifically, APS was asked to describe the evaluations and training for plant personnel performed for each design or procedural modification made to address potential pressure locking or thermal binding concerns.

General information on pressure locking and thermal binding were included in Industry Events training for plant personnel. This included information on what the issues were and, in general, why it was a concern, and what was being done at PVNGS. Additionally, specific training was provided as a described below.

Safety related valves were screened by a multi-discipline team in accordance with Generic Letters 89-10 and 95-07 "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves" to identify each valve that could be susceptible to pressure locking or thermal binding. Once identified, corrective actions were assessed. This assessment determined if procedural controls or modifications would be best to

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eliminate the potential problem. The corrective actions to eliminate thermal binding and pressure locking were developed based on additional reviews by a multi-discipline team including Engineering, Operations, and Maintenance personnel. When determining which corrective action should be implemented, considerations by the team included the multi-functional requirements of the specific valves, past operating experience, industry lessons learned, availability of parts, operator impact, design basis system calculations, stress analysis, and code requirements.

During final engineering of the modifications and/or procedural changes multi-discipline impact reviews were performed to identify any additional design requirements, system and component analysis, and configuration control impacts. 10 CFR 50.59 Safety Evaluations were completed for the proposed changes. Associated impacted documents were identified and change documentation developed and scheduled for implementation.

The identified impacts included identification and scheduling of ASME Section XI and 10 CFR 50, Appendix J leak tests, additional surveillance tests, operational procedure changes, and appropriate operator and technical support training.

As a result, the team determined that procedure changes could be implemented for valves that were identified as susceptible to thermal binding. Since a procedural limitation existed to maintain RCS temperature less than 300 degrees Fahrenheit to protect Low Pressure Safety Injection pump seal integrity when securing shutdown cooling (SDC) during startup, this limitation was revised to include a caution that exceeding 300 degrees Fahrenheit could cause thermal binding of SDC valves. A procedural step directing closure of affected valves before exceeding 300 degrees Fahrenheit was also added. These procedure changes were made in accordance with the PVNGS procedure change process which contains requirements for reviews to identify impacts and training needs. Operator training was presented on these changes and the required reading list was also updated.

Modifications have been proposed by the team for valves susceptible to pressure locking. To date, three of the four Train A and B Shutdown Cooling System/Reactor Cooling System (SDCS/RCS) isolation valves have been modified in Units 2 and 3 and are scheduled for modification in Unit 1 during the upcoming fall 1996 refueling outage. These modifications included the installation of a bonnet relief valve on the first isolation valves and a bonnet bypass on the second isolation valve between the SDCS/RCS to preclude the potential for the development of pressure locking conditions.

These modifications were also developed and reviewed by a multi-discipline team including representatives from Operations, Equipment Qualification, Systems, Civil,

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Mechanical, Safety Analysis, and Valve Engineering. 10 CFR 50.59 Safety Evaluations were performed. In addition the vendor was contacted to determine the impact of the modification on valve qualification. Impact reviews were performed for training, simulator, inservice testing, and operating procedures. Training was identified and updated to include discussions of pressure locking, thermal binding, and the modifications that have been implemented.

Subsequent modifications will follow a similar process, as described above, during the development, review, final engineering, and implementation. Existing program reviews will continue to assure additional training needs are identified and implemented.

Should you have any additional questions, please contact Scott A. Bauer at (602) 393-5978.

Sincerely,

A handwritten signature in dark ink, appearing to read "W.L. S. Bauer", is written over the typed name "W.L. S. Bauer".

WLS/AKK/RJR/rv

cc: L. J. Callan
K. E. Perkins
J. W. Clifford
K. E. Johnston

