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Mr. E. E. Van Brunt, Jr.
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Dear Mr. Van Brunt:

Subject: Request for Additional Information - Palo Verde Auxiliary Pressurizer Spray System

During the staff's review of the need for providing a rapid depressurization capability in current CE designed plants without PORVs (e.g., Palo Verde), single failure vulnerabilities have been identified in the auxiliary pressurizer spray (APS) systems which may render the systems unable to meet their design function. As a result, the staff has identified the need for additional information in order to resolve this concern about single failure vulnerability.

The specific information needed is discussed in the enclosure. We ask that you respond to the enclosed request. Also, within two weeks of receipt of this letter, we request that you inform us as to when your response will be submitted.

If you have any questions regarding this request, you should contact Manny Licitra, the Licensing Project Manager.

Sincerely,

ORIGINAL SIGNED BY

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

Enclosure: As stated

cc: See next page

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CE System 80, Palo Verde 1, 2 and 3, WNP 3

Request for Additional Information
On Single Failure Vulnerabilities In APS Design

In the staff review of the need for providing a rapid depressurization capability in current CE design plants without PORVs, potential single failure vulnerabilities were identified in the auxiliary pressurizer spray (APS) systems which may render the systems unable to meet their design function. The configurations of the APS for CE System 80 plants (Palo Verde 1, 2 and 3, WNP-3) are shown in Figures 2.1-4 and 2.1-5 of CEN 239. The APS flow is initiated from the control room by opening one of the redundant auxiliary spray valves (CH-203 or CH-205) and closing the loop charging valve (CH-240). A check valve has been provided in the main spray piping to prevent APS flow back into the main spray line in case of a single active failure of the main spray valve. The charging pumps are manually initiated after they are automatically loaded to the diesels. The loop charging valve (CH-240), which must be fully closed in order to get full APS flow, is air operated with a Class IE solenoid. The valve is designed to fail closed on loss of air and loss of power to the solenoid. However, if the valve (CHO-240) mechanically stuck open, insufficient APS flow toward the pressurizer could result.

Another potential single failure in the APS on the CE System 80 plants may be the isolation valve at the reactor coolant pump seal injection header off of the charging line. This valve, should it fail to close, would divert APS flow from the pressurizer, but possibly only a relatively small amount. However, the consequences of this potential APS flow diversion have not been verified by CE. The above staff concern was not addressed in the CEOG responses to staff questions relative to the CE/PORV issue.

Pages 9 and 25 of the CE System 80 natural circulation report submitted to the staff by CE letter dated August 12, 1983, indicated that the APS is used for plant depressurization to achieve cold shutdown. BTP RSB 5-1, position A.1 states that the reactor should be capable of being brought from normal operating conditions to cold shutdown with safety related systems. However, in accordance with the recommended implementation on BTP RSB 5-1 for class 2 plants (CE System 80 plants are class 2 plants), the compliance of the APS design with respect to single failure is not required if a) manual actions inside containment after an SSE or single failure or b) remaining at hot standby until manual actions or repairs are complete is found to be acceptable for the individual plant. No information has been submitted to show conformance with either of these positions in light of the APS single failure problem.

Also, Section 15D.2, Table 15D-1 and Figures of the CE System 80 SGTR analysis report submitted to the staff by CE letter dated July 22, 1983 indicated that the CE System 80 plants use APS for depressurization following a SGTR accident.

The staff defines systems or equipment as safety-related if they are required to function in order for the plant to meet any one of the three criteria specified in Parts (III)(c)(1) through (III)(c)(3) of Appendix A to 10FCR100. We assume that the depressurization function is necessary to maintain the radiological consequences of the SGTR accident below the guideline values of 10 CFR 100. Therefore, we consider the APS to be safety-related and should be designed to safety grade criteria, including the single failure criterion.

Provide information that addresses the above staff concerns. Specifically, you should provide justification sufficient to demonstrate that your APS design meets the criteria of BTP RSB 5-1 for class 2 plants, and the criteria for systems required for SGTR accident mitigation. Discuss what provisions are made available to ensure the availability of the APS during post-SGTR operation relative to single failure.

Alternately, show that the APS is not necessary for meeting the functional requirements of RSB BTP 5-1 for class 2 plants, and that mitigation of the design basis SGTR does not require the APS system.

If you cannot show that the APS meets the staff criteria as discussed above, justification of the acceptability of the system design must be provided. This should include, but not be limited to: (1) an assessment of the reliability of the APS systems under a variety of conditions, (2) justification for not making improvements in the system necessary to make the system fully single failure proof, and (3) measures (such as surveillance, technical specifications requirements) that will improve the reliability of the APS.