



**PSE&G** Public Service  
Electric and Gas  
Company

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Robert L. Mittl General Manager  
Nuclear Assurance and Regulation

August 5, 1985

Director of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Bethesda, Maryland 20814

Attention: Mr. Walter Butler, Chief  
Licensing Branch 2  
Division of Licensing

Gentlemen:

RESPONSE TO PVORT OPEN ITEM 1.b  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

Pursuant to the NRC PVORT/SQRT audit held at the Hope Creek Generating Station on May 7-10, 1985, Public Service Electric and Gas Company (PSE&G) hereby submits response to PVORT Open Item 1.b - Service Water Pump (AD-502) Functionality. This issue concerns demonstrating that the service water pumps can perform their safety related function given the present cyclone separator system design.

The response to the remaining concern associated with this issue regarding adequacy of pump instrumentation, will be submitted to the NRC by August 31, 1985.

Should you have any questions in this regard, please contact us.

Very truly yours,

R. L. Mittl / B. A. Pustay

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Attachment  
The Energy People

Director of Nuclear  
Reactor Regulation

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8/05/85

C D.H. Wagner  
USNRC Licensing Project Manager

A.R. Blough  
USNRC Senior Resident Inspector

## ATTACHMENT

PVORT AUDIT OPEN ITEM 1.b  
SERVICE WATER PUMP (AD-502) FUNCTIONALITY

### Equipment Safety Requirements

The service water pumps are designed for Delaware River water. An analysis of water in the area of Artificial Island was provided to the pump manufacturer prior to purchase.

The service water pumps are designed to accept lube water from the pump discharge header. Two 50% cyclone separators have been provided by the pump manufacturer to filter silt particles from the water and ensure clean flow to the pump bearings and stuffing box. It is likely that a pump with only one cyclone separator in service will overheat causing the loss of the pump from service. A discussion of degraded modes of operation is found below under "System Safety Requirements".

The cyclone separators were designed and furnished by the manufacturer's of the service water pumps. We have provided the required inlet pressure, flow rates and water quality to assure that the pump lubrication water can meet their cyclone separator outlet water quality of 100 microns (max.). The cyclone separators are designed for an inlet water quality of 250 microns, which is equivalent to the service water strainer outlet water quality. In addition, the Service Water Hypochlorination System provides protection against biofouling.

The startup program will provide verification that the equipment will properly operate as designed.

### System Safety Requirements

During normal plant operation, two service water pumps (one in each loop) are required. The second pump in each loop is on standby and starts when the operating pump in that loop fails.

During a normal shutdown, all four service water pumps initially supply cooling water to the four SACS and two RACS heat exchangers. For long term normal shutdown, only two service water pumps are required to cool two SACS and two RACS heat exchangers. Unavailability of one service water loop will extend the required shutdown time, but the remaining loop is sufficient to bring the plant to cold shutdown.

In the event of loss of offsite power (LOP) without LOCA, four service water pumps will start to cool all SACS and RACS heat exchangers. In the event of one loop failure, only one service water loop with two pumps is required.

In the event of a LOCA, all four service water pumps provide flow through the redundant loops to provide cooling water to the SACS heat exchangers. Only one service water pump in each system loop is required to satisfy minimum cooling requirements of the SACS heat exchangers in the initial phase when RHR heat exchangers are not in service. During the long-term containment-cooling mode, one loop with two service water pumps operating provides sufficient cooling to satisfy the minimum requirements of the SACS heat exchangers. In this phase only one SACS loop is needed.

The Service Water System design provides redundancy against loss of function due to a single active or passive component failure, during post loss of coolant accident (LOCA), and/or LOP thus assuring that its safety related function can be performed.