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November 8, 1982

Mr. R. H. Engelken, Regional Administrator  
U.S. Nuclear Regulatory Commission, Region V  
1450 Maria Lane, Suite 210  
Walnut Creek, CA 94596-5368Re: Docket No. 50-323  
Diablo Canyon Unit 2  
10 CFR 50.55(e) Report -  
Water Hammer Phenomenon in ASW System

Dear Mr. Engelken:

On October 8, 1982, Mr. D. F. Kirsch of your office was notified by telephone of a water hammer phenomenon in the Auxiliary Saltwater (ASW) System of Diablo Canyon Unit 1. Mr. J. D. Shiffer's letter of the same date to Mr. R. H. Engelken confirmed our telephone notification and was submitted pursuant to Technical Specification 6.9.1.12.i for Unit 1 and 10 CFR 50.55(e) for Unit 2. This submittal represents the final report on the subject for Unit 2.

The ASW System design is essentially identical for both Units 1 and 2; therefore the same water hammer phenomenon is expected in Unit 2. Testing performed on the ASW system for Unit 1 has shown that the system is susceptible to water hammer effects during anticipated operational transients. These transients include pump trip and restart sequences such as would occur following a loss of offsite power. While the peak pressure observed during this testing exceeded the system design pressure of 100 psig specified in the FSAR, no system failure or degradation was observed which would have prevented the system from performing its intended safety function.

A test to definitely establish the cause of the water hammer was performed. An isolatable vacuum breaker was added to the ASW system as a method of eliminating the water hammer effect in the system. The results of the test indicated that 1) without the vacuum breaker installed, water column separation-recombination caused a detectable water hammer, and 2) with the vacuum breaker installed, no water hammer or excessive pressure transients were observed.

A determination was made that installation of the vacuum breaker would eliminate the water hammer effect from the ASW System. The addition of the vacuum breaker will not degrade the safety function of the system. A design change is being prepared to install the vacuum breaker on the ASW system piping. This is expected to be implemented prior to Unit 2 fuel loading.

Very truly yours,

*for Richard F. Locke*  
Philip A. Crane, Jr.

cc: Mr. George W. Knighton, Chief  
Licensing Branch No. 3  
Division of Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Service List