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Public Service  
Electric and Gas  
Company

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October 10, 1985

Dr. Thomas E. Murley, Administrator  
U. S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region I  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

Dear Dr. Murley:

SIGNIFICANT CONSTRUCTION DEFICIENCY  
BAILEY CONTROLS - 862 LOGIC MODULES  
HOPE CREEK GENERATING STATION

On September 9, 1985, a verbal report was made to Region I, Office of Inspection and Enforcement representative, Mr. R. Fuhrmeister, advising of a significant construction deficiency concerning misoperation of the Bailey Controls Company 862 System Logic Module (SLM) logic memories during environmental qualification testing. The following final report is provided in accordance with 10CFR50.55(e).

Description of the Deficiency

During seismic and environmental qualification of the Bailey Controls Company 862 System Logic Module (SLM), misoperation of the two SLM logic memories was noted at a relative humidity (RH) as low as 60%. Per the SLM product specifications, this module is designed to operate at 80% RH continuously and between 80% and 90% RH non-condensing for 24 hours.

Bailey Controls has determined that the misoperation is caused by electrical leakage currents between the printed circuit board pads for the front panel set/reset toggle switches. The physical separation of these pads is insufficient to prevent current leakage during conditions of high humidity. This leakage current can cause the two logic memories to assume an incorrect logic state or to fail to respond to set or reset commands either from an external source or from the front panel set/reset toggle switches.

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Corrective Action

Bailey Controls has advised that the corrective action required to prevent the electrical leakage is to increase the gap between the pads by removing a portion of each pad followed by a general cleaning of the immediate area on the printed circuit board. Bailey Controls verified that the above corrective action eliminates the noted misoperation during the repeated qualification test at 80% and 90% RH.

All Bailey Controls Company 862 SLMs located in assemblies 1A, B, C, DC652, 1A, B, C, DC653, and 10C663 (plus approximately 200 spares) will be modified in accordance with Bailey Controls instructions at the Hope Creek jobsite.

Safety Analysis

The 862 SLM provides the interface between the low voltage (24VDC) Main Control Room control switches and the output driver relays that actuate plant equipment. The SLM logic memories are utilized in safety-related circuits to provide maintained outputs from the SLM due to momentary commands from the Main Control Room control switches. Misoperation of the SLM logic memories could adversely impact safe operation/shutdown of the plant. We therefore consider the deficiency to be reportable in accordance with 10CFR50.55(e).

Very truly yours,



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Division of Reactor Construction Inspection  
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