



**PSEG** Public Service  
Electric and Gas  
Company

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Director of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
7920 Norfolk Avenue  
Bethesda, MD 20814

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

Gentlemen:

ELIMINATION OF ARBITRARY INTERMEDIATE PIPE BREAKS  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

Pursuant to D. Wagner's request for additional information to support Public Service Electric and Gas Company's request for approval to eliminate the postulation of intermediate pipe breaks as specified by SRP 3.6.2 Sections II.1 and II.2, the following justification is provided as to why the systems for which arbitrary breaks are to be eliminated are not susceptible to thermal fatigue and mixing:

For the Hope Creek Generating Station ASME B&PV Class 2 and 3 piping, the Code design allowables are intended to prevent fatigue failure. For Class 2 and 3 piping components, fatigue failure protection is provided for by the allowable stress range checks and a stress range reduction factor for thermal expansion stress. This stress is included in the break stress ratio for all non-class 1 breaks. Even after elimination of the arbitrary intermediate breaks, the cut-off for postulating mandatory breaks ("threshold") is still 80 percent of the Code allowables.

As required by ASME B&PV Code Section III, a detailed fatigue analysis is performed in all class 1 piping systems. For ASME B&PV Class 1 lines, the conservatism allowed for fatigue failure is even more obvious. The ASME Code limit for the Cumulative Usage Factor (CUF) is 1.0 to assure that pipe fatigue failure will not occur. The pipe break postulation limit is 10 percent of this number, and all of the Class 1 arbitrary intermediate break locations involve CUFs below this limit.

The Energy People

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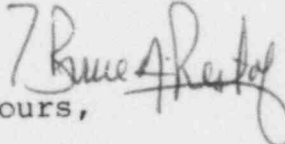
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By limiting the mixing of low velocity, low temperature water with high temperature water, cyclic thermal stresses and the resultant thermal fatigue in the Hope Creek piping systems are minimized. Thermal fatigue due to pipe temperature gradients as a result of stratified flow results from the combining of hot and cold flows at low flow velocity (laminar or transition flow) in combination with a horizontal pipe run with few valves and fittings which would promote mixing and limit stratification.

The piping systems for which arbitrary intermediate breaks are to be eliminated will not exhibit temperature gradients due to flow stratification based on a review which showed that the pipes have no flow during normal plant operation and therefore are not subject to hot/cold mixing, the piping layout consists of vertical runs or sloped horizontal runs with valves and fittings to promote mixing, and/or the piping is preheated, (e.g., HPCI/RCIC steam supply lines) to minimize thermal stresses during system initiation.

Based on the system design and layout which minimizes thermal stratification and cyclical stresses, and the analyses performed to verify the piping will experience no fatigue failure, the systems for which arbitrary breaks are to be eliminated are not susceptible to thermal fatigue and mixing.

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

R.L. Mittel   
Very truly yours,

C D. H. Wagner  
USNRC Licensing Project Manager

A. R. Blough  
USNRC Senior Resident Inspector