



**PSEG**

REGULATORY DOCKET FILE COPY

Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

January 10, 1978

Director of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Mr. George Lear, Chief  
Operating Reactors Branch No. 3  
Division of Operating Reactors



Gentlemen:

STEAM GENERATOR FEEDWATER WATER HAMMER  
NO. 1 UNIT  
SALEM NUCLEAR GENERATING STATION

Ref. 1: LETTER DATED JUNE 22, 1977 FROM G. LEAR, USNRC  
TO F. P. LIBRIZZI, PSE&G, THIS SUBJECT

Ref. 2: LETTER DATED SEPTEMBER 2, 1977 FROM G. LEAR, USNRC  
TO F. P. LIBRIZZI, PSE&G, THIS SUBJECT

We have reviewed the referenced letters regarding the subject of water hammer in the Salem No. 1 Unit Plant. The Reference 2 letter requests a description and evaluation of the measures which we are implementing to minimize the probability of a detrimental water hammer in the Salem No. 1 Unit Feedwater System. The Reference 1 letter requests certain modifications to and the clarifications of a test program which we proposed to demonstrate the efficacy of these measures and justify removal of our rate of level recovery license restriction.

This letter is intended to both provide you with the description and evaluation which you requested in the Reference 2 letter and to inform you that we do not presently anticipate carrying out the proposed test program discussed in the Reference 1 letter.

Design Measures to Minimize Potential for Water Hammer

The entire subject of steam generator feedwater water hammer has been closely followed by Public Service since its inception as a generic concern, especially with regard to the design of the Salem units. Upon identification by the industry of measures commonly accepted as effective in reducing the potential for water hammer events, these design measures were incorporated into the Salem design. Specifically:

The Energy People

780130022

1. All bottom discharge holes in the feedwater spargers were plugged. J-tubes were installed to provide "top discharge" capability,
2. the effective length of the horizontal runs of feedwater pipe adjacent to all steam generator inlet nozzles were shortened by the installation of a "loop seal" piping arrangement to ensure that the pipe length which could be drained through the sparger was minimized,
3. a rate of steam generator level recovery restriction of 1.2" per minute was imposed when the level was below the sparger and additionally,
4. the Salem design provides for automatic initiation of auxiliary feedwater.

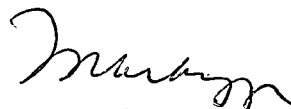
Details of items 1 and 2 were previously transmitted to you as the response to Question 10.18 in the Salem Plant FSAR.

It is felt that these measures, which are in full accord with the recommendations of the Creare Report (enclosed with the Reference 2 letter), provide adequate assurance that the feedwater lines and spargers will remain full during normal and transient operating conditions, and that the potential for the destructive water hammer at the Salem Plant is at a minimum.

#### Water Hammer Testing

The topic of conducting a water hammer test of the feedwater system for the purpose of removing the license restriction on the rate of steam generator level recovery has been thoroughly evaluated, and we choose not to perform such a test at this time. Subjecting the system to the conditions required in such a test does not appear to be warranted in light of the benefits involved at the present time.

Very truly yours,



F. P. Librizzi  
General Manager -  
Electric Production