PSE&G

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038

Nuclear Department

February 10, 1984

U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Mr. Thomas T. Martin, Director
Division of Engineering and Technical Programs

Gentlemen:

RESPONSE TO INSPECTION TEAM FINDINGS
NRC COMBINED INSPECTION 50-272/84-05 AND 50-311/84-05
SALEM GENERATING STATION, UNITS NO. 1 AND 2
DOCKET NOS. 50-272 AND 50-311

The subject inspection was conducted from January 30 to February 3, 1984. This inspection examined the program implemented at the Salem Generating Station in response to IE Bulletins No. 79-02, "Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts", and 79-14, "Seismic Analysis for As-Built Safety-Related Piping Systems". The program implemented in response to IE Bulletins No. 79-07, "Seismic Stress Analysis of Safety-Related Piping" and No. 79-04, "Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation", because of their relationship to the other two bulletins, were also evaluated. During the course of this inspection, several open items were identified by the inspection team. For two of these items, we committed to providing additional information. Accordingly, our response to these two concerns is provided below.

One of the team's concerns was related to the use of U-bolts as pipe support anchors. Of specific concern was the ability of the double U-bolt design employed at Salem to adequately restrain torsional and axial loads. PSE&G had analytically demonstrated that with sufficient pre-tension on the U-bolts, loads would be adequately restrained. This analytical model was verified by an independent vendor. We had also performed testing to confirm our analytical approach, but this testing was not a quality controlled program. We will expand our original test

program to verify our U-bolt analytical model. The test/verification program will include the following elements:

1. Perform a test to confirm load-bearing capacity of typical "U" bolt configurations utilized as anchors in Salem Generating Station and to establish appropriate stiffness parameters.

2. The stiffness parameters determined by testing will be utilized in sample stress calculations to demonstrate adequate consistency with current program modeling.

3. The testing will be performed in accordance with approved QA/QC surveillance practices.

4. A sample torque test will be performed on actual assemblies of existing anchors in a manner consistent with Tech Spec operational requirements.

5. The program procedure will be submitted to the NRC by March 15, 1984, prior to implementation. A program report together with an engineering evaluation will be submitted to the NRC upon completion of the program.

The second concern involved the usage of the PSE&G document entitled "Criteria for Calculating Expansion Bolt Loads with Flat Plate Supports." The document was presented to the inspection team in response to questions on criteria used for certain calculations. Although appearing to be a general design criteria document (i.e., a document used to convey design information for use by others) subject to rigorous distribution control, it is actually the criteria section of a single controlled calculation set (i.e. a document used to record design information). Thus, it was not subject to requirements imposed on documents conveying information. This calculation set was prepared by a small close-knit group (approximately 5 persons) located in the same general work vicinity and under direct supervision of a single individual. The document was not intended for nor did it receive distribution for use beyond this group or task. As such, the document control requirements for criteria documents promulgated for general use were neither invoked nor necessary, and no procedure non-compliance occurred.

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We hope this information is sufficient to resolve your concerns. Should you have any questions do not hesitate to contact us.

Sincerely,

E. A. Liden
Manager - Nuclear
Licensing and Regulation

TLP:ljs
cc: Mr. Donald C. Fischer
Licensing Project Manager

Mr. James Linville
Senior Resident Inspector

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