

Public Service
Electric and Gas
Company

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August 2, 1985

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

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

Gentlemen:

RESULTS OF U-BOLT TEST PROGRAM
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 referenced inspection examined PSE&G's response to NRC IE Bulletins 79-02 "Pipe Support Base Plate Design Using Concrete Expansion Anchor Bolts", 79-14 "Seismic Analysis for As Built Safety Related Piping Systems", and 79-07 "Seismic Stress Analysis of Safety Related Piping". During the course of inspection two open items were identified relative to the use of U-Bolts as pipe support anchors and their ability to restrain axial and torsional loads:

Item No. 84-05-04:

The licensee performed unmonitored tests to determine the restraint capability of these components [U-Bolt Assemblies]. This test data cannot be accepted by the NRC due to the fact that it was unmonitored by quality assurance and may not have been adequately controlled. The license stated that the original tests will be rerun under controlled conditions to validate the original data.

Item No. 84-05-05:

The stiffnesses provided by U-Bolts and straps may be significantly different from those used in the piping analysis. Justification of the values is required to show that allowable stresses would not be exceeded if actual support stiffnesses are used. This item is unresolved pending NRC review of the justification.

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In our letter, dated February 10, 1984, PSE&G committed to test U-Bolt anchors in accordance with approved Quality Assurance/Quality Control surveillance practices. Our letters dated March 14 and May 2, 1984 outlined the scope of the test program. The NRC reviewed our proposed actions and concurred with the approach, as indicated in your letter dated June 15, 1984.

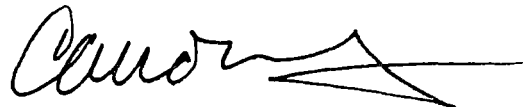
The U-Bolt test program, conducted by the Franklin Research Center in accordance with approved Quality Assurance/Quality Control practices, has been completed with satisfactory results.

The results of this program indicate that the U-Bolt anchor assemblies tested have significant axial and torsional constraint capacities, and their stiffness is large relative to their piping systems. The test data confirm that it is acceptable to model these U-Bolt anchor assemblies as full anchors in piping stress analysis. Accordingly, plant-specific piping analyses were modelled using the stiffness values developed during the program, and the stresses developed are comparable to those calculated in the original pipe stress analysis.

Attachment 1 provides a brief summary of the U-Bolt test program. The complete program report prepared by Franklin Research Center is available for your review.

PSE&G considers all open items related to this inspection to be satisfactorily closed.

Sincerely,



Attachment

C Mr. Donald C Fischer
Licensing Project Manager

Mr. Thomas J. Kenny
Senior Resident Inspector