



*Reactor Facility
Branch*

Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/622-7000

June 10, 1976

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. O'Reilly:

PRESSURIZER SNUBBER MALFUNCTION
PRESSURIZER SAFETY AND RELIEF VALVE PIPING
NO. 1 UNIT
SALEM NUCLEAR GENERATING STATION
DOCKET NO. 50-272

Supplementary to our letter of April 2, 1976, submitted herewith is our concluding report on the subject equipment malfunction in accordance with 10CFR50.55(e).

ANALYSIS

The original deficiency discovered during Hot Functional Test, SUP 50.0 involved removal of twelve (12) snubber units, ten (10) of which were restricting thermal pipe movements and two (2) which were removed for evaluation purposes. Subject units were returned to the manufacturer, International Nuclearsafeguards (INC) for operational load testing and disassembly inspection which was witnessed by PSE&G QA Engineer. The results of the retest and disassembly indicated the following:

1. Five units functioned within required operational load limits and disassembly was not performed. These units were identified as: Size No. 1, S/N 271 and S/N 273; Size No. 2, S/N 75 and S/N 118; and Size No. 3, S/N 002281.
2. Seven units were disassembled on the basis of the unit being either completely jammed or showing operational load values that exceeded manufacturer's specifications during retest. The completely jammed units that were disassembled on the basis of excessive operations loading during retest are: Size No. 2, S/N 73, 74*, 78 and Size No. 3, S/N 002276**.

* Typographical error on report of 4/1/76, which listed this as S/N 47 on Page 1, Par. 4.

** Erroneously reported as S/N 002281 on report of 4/1/76 (second reference only) on Page 2, Par. 1.

The Energy People

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Results of the investigation of disassembled units revealed the following: four (4) units malfunctioned due to heavy corrosion buildup on the units' internal components. These were all Size No. 2, S/N 92, 110 and 111 (all three were completely jammed) and S/N 78 which displayed heavy corrosion primarily on the needle thrust bearing surfaces. The remaining three (3) units of the seven (7) units disassembled were Size No. 2, S/N 73 and 74; and Size No. 3, S/N 002276, none of which visually displayed any obvious reason for malfunction.

Five of the twelve units were installed with the shipping preset screw left in place. These screws sheared during Hot Functional Test were on Size No. 1, S/N 271; Size No. 2, S/N 74, 78 and 118; and Size No. 3, S/N 002281. The fact that these units were installed with the preset screw in place has lead PSE&G Engineering to conclude that this factor was not a major contributing cause of the malfunctions. This conclusion was reached on the basis that three units remained operable after removal from the Salem Site, (Size No. 1, S/N 271; Size No. 2, S/N 118; and Size No. 3, S/N 002281) and the other two units malfunctioned due to other obvious reasons; Size No. 2, S/N 78 for heavy corrosion on the thrust bearing and Size No. 2, S/N 74 for heavy hammer marks on Housing OD inflicted during the removal operation which affected alignment and operational retest values.

SUMMARY AND CORRECTIVE MEASURES

PSE&G Energy Laboratory conducted a chemical analysis and evaluation of the heavy corrosion compounds removed from the internal parts of Unit S/N 111. The Energy Laboratory's report identifies the source of corrosion of the carbon steel internals as possible from rainwater containing carbon dioxide that entered the unit between the travel screw and the housing bushing. Access of water to the snubber internals was attributed to the vertical position of the snubber as installed.

Replacement units consisted of: A. Redesigned INC units that have corrosive resistant hardened stainless steel wear surfaces and other features which will prohibit water entry and, B. Pacific Scientific Corporation (PSA) units Sizes 1, 3, 10 and 35. The Pacific Scientific units have been subjected to extensive physical and environmental tests by the manufacturer and have been evaluated acceptable by PSE&G Co. for the intended service.

The corrective action taken for the original sixty-three (63) (INC) snubbers with carbon steel internals is as follows:

- 9 Units have been replaced with Pacific Scientific Units
- 54 Units are being replaced with a combination of redesigned (INC) units and Pacific Scientific Units.

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Any additional snubbers which may be required for No. 1 Unit will be of the redesigned (INC) units or Pacific Scientific Units.

The replacement installations will be completed by July 15, 1976.

Snubbers to be used for No. 2 Unit will be based on the performance of No. 1 Unit snubbers.

SAFETY IMPLICATIONS

We are continuing our investigation of the restraining effects on the pressurizer piping system due to malfunctioning snubbers during hot functional test heat up period. From our analysis it appears that no damage to the piping system occurred during this event. We are however continuing our investigation through the use of Ultrasonic Testing of areas of interest in the subject piping and will compare these results with the data from the previously completed preservice Ultrasonic Test history. Positive results from this test will further verify that the piping is acceptable and consequently the system will be approved for service and no further reports will be made. This investigation will be completed by July 5, 1976 and the results will be available at the plant site.

If additional information is desired, we will be pleased to discuss it with you.

Very truly yours,



E. N. Schwalje
Manager of Quality Assurance
Engineering and Construction
Department

CC Dr. Ernest Volgenan
Bethesda, Md.



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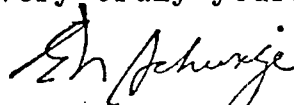
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