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 AUTH. NAME: CURTIS, N.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.
 RECIP. NAME: SCHWENCER, A. RECIPIENT AFFILIATION: Licensing Branch 2

may

SUBJECT: Discusses equipment qualification of Target Rock Corp solenoid valves. Interim operation justified. History, status of qualification & justification submitted. Valve testing will be completed by 840531.

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TO THE HONORABLE MEMBERS OF THE HOUSE OF REPRESENTATIVES
 AND SENATORS OF THE SENATE OF THE UNITED STATES
 IN CONGRESS ASSEMBLED
 REPORT
 OF THE
 SECRETARY OF THE INTERIOR
 IN ANSWER TO A RESOLUTION PASSED BY THE HOUSE OF REPRESENTATIVES
 APRIL 28, 1878
 CONCERNING THE
 LANDS BELONGING TO THE UNITED STATES
 UNDER THE ACT OF APRIL 20, 1864
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 UNDER THE ACT OF APRIL 20, 1864

THE SECRETARY OF THE INTERIOR
 HAS THE HONOR TO ACKNOWLEDGE THE RECEIPT OF
 THE REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE
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Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
215/770-7501

JAN 11 1984

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
EQUIPMENT QUALIFICATION -
TARGET ROCK SOLENOID VALVES
ER 100450/100508 FILE 148-01
PLA-2037

Docket Nos. 50-387
50-388

Dear Mr. Schwencer:

This letter is provided to document discussions with Mr. R. LaGrange and H. Garg of your staff. PP&L believes that interim operation is justified for the Target Rock Corporation solenoid valves installed at SSES. To provide the basis for qualification, the history, present status, of qualification and detailed justification for operation is explained below.

Background

Target Rock Corporation had run a generic IEEE 323, 1974, qualification test on a model 77CC valve. The valve is identical to Susquehanna's tested valves. The dynamic portion of the generic test did not include higher frequency dynamic loads and as a result another test is presently under way to qualify the Susquehanna model 75KK valve to NUREG-0588 Category I with hydrodynamic loads.

The model 77CC was qualified for high temperature and high humidity loads by subjecting it to 350°F for 33 days and 55% relative humidity. During the test the inlet was pressurized to 2485 psig. The valve was cycled once each day and coil insulation resistance was measured. The valve functioned as required, demonstrating that it would not be affected by Susquehanna's HELB conditions of 300°F for 25 seconds.

Partially completed testing on the 75KK-valve included irradiation & thermal aging to 260°F for 33 days before the dynamic test. Dynamic testing included a 10 minute SRV fatigue test and phase coherent biaxial testing at 6g's for each vertical and horizontal direction. Dynamic testing was done in each of 4 orientations (two orientations across flow, with flow and against flow). Dynamic testing was sine beat at 1/3 octave frequencies and resonant frequencies with a 30 second dwell at each frequency to 100 Hz. The valve was

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SSES PLA-2037
ER 100450 File 148-01
Mr. A. Schwencer

operated at each 1/3 octave and resonant frequency while under pressure (approx. 80 tests total).

During the third orientation clanging noises were heard at the valve's electrical compartment. The test was stopped and it was observed that the terminal block which terminated the position switch wiring was broken into several pieces. The wiring was still terminated and the indication circuit was still functioning. The test was continued into the fourth orientation where the position switch circuit failed resulting in a loss of position indication. Valve operation was verified by the air pressure exhaust blast which was evident when the valve was being opened. The test was continued until the next to the last test frequency, a resonant frequency. At this time the valve could no longer be opened. The solenoid circuit connection at the terminal block failed and the valve closed. Again, closure was evidenced by the inlet pressure gauge reading. After the valve was examined for electrical component damage, the valve was remounted on the shaker table and repressurized with the valve closed. The valve remained closed (its fail-safe position) thru the last 30 second 1/3 octave test frequency.

Justification For Interim Operation

PP&L believes that operation with the installed valves is justified for the following reasons:

- o All Susquehanna valves operate to fail in the safe shutdown position on loss of coil power. Loss of electrical power is the worst result of any electrical failure in the valve. That the solenoid valve moved to its fail safe position was demonstrated by the fact that the test specimen closed during the "failed" dynamic test.
- o The only observed test failure occurred near the end of valve dynamic testing where the cumulative test effects were excessively fatiguing. Repetitive fatigue conditions experienced during SSES dynamic testing are not expected to occur in the plant operating environment. The valve operated successfully during all previous phases of the SSES test including aging and radiation.
- o Susquehanna's HELB conditions were enveloped by the heat and humidity test run on an identical valve which was tested without hydrodynamic loads. Also supportive of the valve's capability to withstand the HELB condition was the thermal aging test on the Susquehanna 75KK model valve.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both primary and secondary research techniques. The primary research involved direct observation and interviews with key stakeholders, while the secondary research focused on reviewing existing literature and reports.

The third section presents the findings of the study. It shows that there is a significant correlation between the variables being studied. The data indicates that as one variable increases, the other tends to decrease, suggesting an inverse relationship. These findings are supported by statistical analysis and are consistent with previous research in the field.

Finally, the document concludes with a series of recommendations based on the findings. It suggests that organizations should implement certain practices to improve their performance and efficiency. These recommendations are practical and can be easily adopted by a wide range of businesses.

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Mr. A. Schwencer

Testing is expected to resume at the end of January, 1984 with completion by May 31, 1984.

Very truly yours,

N. W. Curtis
for

N. W. Curtis
Vice President-Engineering & Construction-Nuclear

cc: R. L. Perch - USNRC
H. Garg - USNRC

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