REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8401160101 DOC.DATE: 84/01/11 NOTARIZED: NO DOCKET #
FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
AUTH.NAME AUTHOR AFFILIATION
CURTIS,N.W. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. 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.

DISTRIBUTION CODE: B001S COPIES RECEIVED:LTR 1 ENCL 0 SIZE: 3
TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

NOTES:1cy NMSS/FCAF/PM. LPDR 2cys. 05000387
1cy NMSS/FCAF/PM. LPDR 2cys. 05000388

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	NRR/DL/ADL	1	0	NRR LB2 BC	1	0
	NRR LB2 LA	1	0	PERCH,R. 01	1	1
INTERNAL:	ELD/HDS4	1	0	IE FILE	1	1
	IE/DEPER/EPB 36	3	3	IE/DEPER/IRB 35	1	1
	IE/DEQA/QAB 21	1	1	NRR/DE/AEAB	1	0
	NRR/DE/CEB 11	1	1	NRR/DE/EHEB	1	1
	NRR/DE/EQB 13	2	2	NRR/DE/GB 28	2	2
	NRR/DE/MEB 18	1	1	NRR/DE/MTEB 17	1	1
	NRR/DE/SAB 24	1	1	NRR/DE/SGEB 25	1	1
	NRR/DHFS/HFEB40	1	1	NRR/DHFS/LQB 32	1	1
	NRR/DHFS/PSRB	1	1	NRR/DL/SSPB	1	0
	NRR/DSI/AEB 26	1	1	NRR/DSI/ASB	1	1
	NRR/DSI/CPB 10	1	1	NRR/DSI/CSB 09	1	1
	NRR/DSI/ICSB 16	1	1	NRR/DSI/METB 12	1	1
	NRR/DSI/PSB 19	1	1	NRR/DSI/RAB 22	1	1
	NRR/DSI/RSB 23	1	1	REG FILE 04	1	1
	RGN1	3	3	RM/DDAMI/MIB	1	0
EXTERNAL:	ACRS 41	6	6	BNL(AMDTS ONLY)	1	1
	DMB/DSS (AMDTS)	1	1	FEMA-REP DIV 39	1	1
	LPDR 03	2	2	NRC PDR 02	1	1
	NSIC 05	1	1	NTIS	1	1
NOTES:		3	3			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 57 ENCL ~~50~~ 0

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

B001
1/0

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:

- 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.

- 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.

- 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.

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

Very truly yours,

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

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