

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8310180480 DOC. DATE: 83/10/14 NOTARIZED: NO DOCKET # 05000387  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania  
 AUTH. NAME: CURTIS, N.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.  
 RECIP. NAME: SCHWENCER, A. RECIPIENT AFFILIATION: Licensing Branch 2

SUBJECT: Forwards Rev 1 to "Control Sys Power Supply & Sensor Malfunction Study." Existing sys adequately controls facility.

DISTRIBUTION CODE: B001S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 2+170  
 TITLE: Licensing Submittal: PSAR/FSAR Amdts & Related Correspondence

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

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RECIPIENT ID CODE/NAME	COPIES LTTR	ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	ENCL
NRR/DL/ADL	1	0	NRR LB2 BC	1	0
NRR LB2 LA	1	0	PERCH, R.	1	1
INTERNAL: ELD/HDS4	1	0	IE FILE	1	1
IE/DEPER/EPB 36	3	13	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/HFEB 40	1	1	NRR/DHFS/LGB 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	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:

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1. The first step is to identify the problem. This involves understanding the situation and the goals that need to be achieved.

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Category	Item	Quantity	Unit	Value
Fruit	Apples	100	lb	10.00
	Bananas	50	lb	5.00
	Oranges	75	lb	7.50
	Pears	60	lb	6.00
	Plums	40	lb	4.00
	Raspberries	30	lb	3.00
	Strawberries	20	lb	2.00
	Blackberries	15	lb	1.50
	Cherries	10	lb	1.00
	Blueberries	5	lb	0.50
Vegetables	Corn	100	lb	10.00
	Carrots	50	lb	5.00
	Broccoli	30	lb	3.00
	Cauliflower	20	lb	2.00
	Spinach	15	lb	1.50
	Kale	10	lb	1.00
	Brussels Sprouts	5	lb	0.50
	Asparagus	10	lb	1.00
	Green Beans	20	lb	2.00
	Onions	15	lb	1.50
Dairy	Milk	100	gal	10.00
	Cheese	50	lb	5.00
	Butter	30	lb	3.00
	Eggs	20	doz	2.00
	Yogurt	10	gal	1.00
	Cream	5	gal	0.50
	Ice Cream	10	lb	1.00
	Cottage Cheese	5	lb	0.50
	Whipped Cream	5	lb	0.50
	Butterfat	5	lb	0.50
Bakery	Bread	100	lb	10.00
	Cakes	50	lb	5.00
	Pastries	30	lb	3.00
	Pies	20	lb	2.00
	Cookies	15	lb	1.50
	Cupcakes	10	lb	1.00
	Muffins	5	lb	0.50
	Donuts	10	lb	1.00
	Cinnamon Rolls	5	lb	0.50
	Bagels	5	lb	0.50



# 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

OCT 14 1983

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

SUSQUEHANNA STEAM ELECTRIC STATION  
CONTROL SYSTEM POWER SUPPLY AND  
SENSOR MALFUNCTION STUDY  
ER 100450 FILE 841-2  
PLA-1894

Docket No. 50-387

Dear Mr. Schwencer:

As requested by your Staff, enclosed is a copy of the report entitled "Control System Power Supply and Sensor Malfunction Study" for Susquehanna SES Unit 1. As stated in our previous letter, PLA-1733 dated July 7, 1983,:

"A review was conducted to identify any power sources or sensors which provide power or signals to two or more control systems, and to demonstrate that failures or malfunctions of these power sources or sensors will not result in consequences outside the bounds of the Chapter 15 analyses or beyond the capability of operators or safety systems. PP&L has completed this study and has found no failures which result in consequences not bounded by Chapter 15 or are not within the capabilities of the operator or safety systems.

The study did identify one commonality which requested detailed analysis. It was found that if bus 1D635 were lost the B feedwater flow instrument would indicate no flow in that feedwater path. This would result in a high reactor water level due to a false feedwater flow vs. steam flow mismatch. If the reactor water level were to increase past the Level 8 trip a main turbine and reactor feed pump turbine (RFPT) trip should occur followed by a subsequent reactor trip. The study indicated that RFPT "C" would not trip since bus 1D635 also powers the trip circuit for that pump turbine. In order to analyze this condition a RETRAN computer code was used to simulate this condition. The following summarizes the results of bus 1D635 failing.

The first RETRAN run was performed simulating the loss of one feedwater flow element. This run indicated that the reactor water level would rise to 53.3 inches in 50 seconds and then become stable. While this level is below the 54 inch Level 8 setpoint it is close enough that normal

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Mr. A. Schwencer

instrument drift could cause trips. A second RETRAN run was done to examine the effects of a Level 8 trip. The code was modified to force a trip at 53.3 inches and to force a minimum feedwater injection rate of 25%. This transient run indicated that the event is bounded by FSAR Chapter 15 events for thermal limit considerations, and therefore does not violate the safety limit CPR. The run did show a steadily increasing water level due to the 25% assumed feedwater injection rate. This assumption later proved to be incorrect and over conservative. This is due to the fact that when the "B" RFPT trips the false feedwater flow vs. steam flow mismatch is corrected and the feedwater controller will attempt to control reactor water level to the controller setpoint. Even with a feedwater pump running the controller has the ability to terminate feedwater injection. Actual feedwater injection will terminate at approximately 70 to 90 seconds after the turbine trip. This results from a feedwater controller setpoint setback to 18 inches which is initiated by the low water level condition this transient produces. The RETRAN code did not model the setpoint setback feature of the feedwater controller.

The analysis summarized above shows that control system commonality found at bus 1D635 is bounded by the Chapter 15 analyses and that existing systems can adequately control the plant. The operator has more than adequate time to recover from this condition by manually tripping the "C" RFPT, which does not require bus 1D635, or by putting the pump in a startup feed path."

If you have any questions or comments, please contact us.

Very truly yours,



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

Enclosure

cc: R. L. Perch      NRC



10-11-68

1. The first part of the report discusses the general situation of the project and the progress made during the last period. It also mentions the results of the field work and the analysis of the data collected.

2. The second part of the report describes the methods used for the collection and analysis of the data. It includes a detailed description of the field work and the laboratory tests performed.

3. The third part of the report presents the results of the field work and the laboratory tests. It includes a detailed description of the data collected and the analysis of the results.

4. The fourth part of the report discusses the conclusions drawn from the results of the field work and the laboratory tests. It also mentions the recommendations for further work.

5. The fifth part of the report contains the references and the appendix. The references list the sources of information used in the report. The appendix contains the data collected during the field work and the laboratory tests.