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

SUBJECT: Forwards final input to SER, Item 44 - IE Bulletin 179-27,  
 "Loss of Non-Class IE Instrumentation & Control Power Sys  
 Bus During Operation." Lists of sys required to achieve cold  
 shutdown & of power supplies affecting cold shutdown encl.

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Pennsylvania Power & Light Company

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Norman W. Curtis  
Vice President-Engineering & Construction-Nuclear  
215 / 770-5381

JUN 10 1982

Mr. A. Schwencer, Chief  
Licensing Branch No. 2  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Docket Nos. 50-387  
50-388

SUSQUEHANNA STEAM ELECTRIC STATION  
SER ITEM 44 - IE BULLETIN 79-27  
ER 100450 FILE 841-2  
PLA-1118

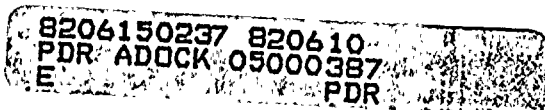
Dear Mr. Schwencer:

The purpose of this letter is to provide Pennsylvania Power & Light Company's final input concerning SER Item 44.

- A. Power distribution buses for all instrumentation and controls required to achieve cold shutdown have been identified (Table I). This includes all instrumentation required to operate those systems needed to achieve cold shutdown under unfaulted plant conditions, with MSIV's closed, plus the instrumentation required by the existing emergency operating procedures.

The power distribution buses were reviewed to identify the main control room alarms and indications (Table II) which will alert the operator to the loss of power to the bus.

- B. A review of the existing emergency procedures has been performed. As a result of this review, alarm response procedure has been revised to include the loss of the 120 V AC instrument buses. An off normal



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SSES PLA-1118  
ER 100450 File 841-2  
Mr. A. Schwencer

procedure has been written to provide additional instruction for placing the plant in cold shutdown condition without an instrument bus.

This concludes all actions on SER Item 44.

Very truly yours,



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

CTC/mks

cc: R. Perch - NRC



TABLE I

SYSTEMS REQUIRED TO ACHIEVE COLD SHUTDOWN  
ISOLATED FROM HOTWELL

Systems/Components	Needed To Support	Instrument and Control Power Supplies		
RHR Service Water	Heat Sink	1B237 1Y216	1B247 1Y226	
RHR Steam Condensing		1B216 1B236 1D614 1D644 1Y201A 1Y216	1B217 1B237 1D624 1D274 1Y201B 1Y226	1B226 1B246 1D634
RHR Shutdown Cooling		1B216 1B229 1D614 1D644 1Y201A 1Y216	1B219 1B236 1D624 1D274 1Y201B 1Y226	1B226 1B237 1D634
RHR Suppression Pool Cooling	SRV Discharge HPCI, RCIC Exhaust	1B216 1D614 1D644 1Y216	1B226 1D624 1Y226	1B236 1D634
Pressure Relief Valves	Initial Press. Reduction	1D614		
HPCI	Initial Vessel Inventory Makeup	1B237 1D254 1D614 1Y216	1D264 1D624	1D274

Systems/Components	Needed to Support	Instrument and Control Power Supplies		
RCIC	Long Term Vessel Inventory Makeup	1B246		
		1D254	1D614	1D624
		1D634	1D644	
		1Y216	1Y226	
ESW	RHR PMP Seal BRG, Motor Cooling; ECCS Room Coolers	1D614	1D624	
		1Y216	1Y226	1Y236
		1Y246		
Control Structure HVAC	Space Habitability Cool Computer		1Y236	1Y246
		1Y219	1Y236	1Y246
Reactor Bldg HVAC	Space Habitability Drywell Coolers Recirc PMP Motor Coolers			
RBCCW	Recirc, Containment Instr. Gas	1B216	1B237	
		1Y201A	1Y201B	
		1Y216	1Y629	
TBCCW	Instrument Air	1B116	1B126	
		1D110	1D614	
		1Y629		
Instrument Air	Air Operated Valves	1Y629		
Containment Instrument Gas	Air Operated Valves	1Y201A	1Y201B	
		1Y216	1Y226	1Y236
		1Y246	1Y629	
Standby Gas Treatment	HPCI Vacuum Exhaust	1Y216	1Y226	1Y236
		1Y246		
Condensate Storage Tank	HPCI, RCIC	1D614	1D624	1D645
Process Radiation	SBGTS	1D615	1D645	1D682
		1Y201A	1Y201B	
RHR Space Cooling	RHR Pumps	1B216	1B226	1B247
RCIC Space Cooling	RCIC Turb/Pumps	1B216	1B237	
HPCI Space Cooling	HPCI Turb/Pumps	1B227	1B247	
NSSSS, Primary Containment Isolation	Containment Isoln Valves	1B217	1B236	1B237
		1D614	1D624	
		1Y201A	1Y201B	
		1Y216	1Y226	



Systems/Components	Needed To Support	Instrument and Control Power Supplies	
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RPS	RPM, NSSSS, Primary Containment Isolation	1Y201A	1Y201B
Service Water	Reactor Bldg Chilled Water; Pipe Tunnel Coolers	1B246	1D625
Drywell Cooling Fans	Drywell Cooling	1B236	

ADDITIONAL INSTRUMENTATION NECESSARY

Reactor Level		1D635	1D645	
		1Y201A	1Y201B	
		1Y216	1Y218	
		1Y226	1Y236	1Y246
Reactor Pressure		1Y201A	1Y201B	
		1Y216	1Y218	
		1Y226	1Y236	1Y246
Reactor Vessel Temperature		1Y218	1Y219	
Suppression Pool Level		1Y216	1Y226	
		1Y236	1Y246	
Suppression Pool Temperature		1Y216	1Y226	
Suppression Chamber Pressure		1Y226	1Y629	
Drywell Pressure		1Y216	1Y226	
Drywell Temperature		1Y216		
Reactor Power		1D672	1D682	
		1Y201A	1Y201B	
		1Y218		



TABLE II

SUSQUEHANNA UNIT 1 - POWER SUPPLIES AFFECTING COLD SHUTDOWN IEB 79-27LOSS OF AVAILABILITY DISPLAY

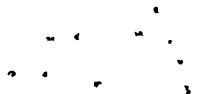
POWER SUPPLY	Q	MAIN CONTROL ROOM	LOCAL PANEL
1B116	N	OC653 - 73A 1-1 ESS 480V LC 1D210 TROUBLE	1L210 2B MCC 1B116 BKR52-21022 OPEN
1B126	N	OC653 - 73A 4-2 ESS 480V LC 1B220 TROUBLE	1L220 3B MCC 1B126 BKR 52-22014 OPEN
1B216	Q, A	OC653 - 73A 4-1 ESS 480V LC 1B210 TROUBLE	1L210 2A MCC 1B216 BKR 52-21021 OPEN
1B217	Q, A	OC653 - 73A 4-1 ESS 480V LC 1B210 TROUBLE	1L210 1C MCC 1B217 BKR 52-21013 OPEN
1B219	Q, I	1C651 - 08A 10-6 DIV I SWING BUS MG SET/TRANSFER SW TROUBLE	
1B226	Q, B	OC653 - 73A 4-2 ESS 480V LC 1B220 TROUBLE	1L220 2A MCC 1B226 BKR 52-22021 OPEN
1B227	Q, B	OC653 - 73A 4-2 ESS 480V LC 1B220 TROUBLE	1L220 1C MCC 1B227 BKR 52-22013 OPEN
1B229	Q, II	1C651 - 08A 10-7 DIV II SING BUS MG SET/TRANSFER SW TROUBLE	

## LOSS OF AVAILABILITY DISPLAY

POWER SUPPLY	Q	MAIN CONTROL ROOM	LOCAL PANEL
1B236	Q, C	OC653 - 73A 4-3 ESS 480V LC 1B230 TROUBLE	1L230 2A MCC 1B236 BKR 52-23021 OPEN
1B237	Q, C	OC653 - 73A 4-3 ESS 480V LC 1B230 TROUBLE	1L230 2C MCC 1B237 BKR 52-23012 OPEN
1B246	Q, D	OC653 - 73A 4-4 ESS 480V LC 1B240 TROUBLE	1L240 1C MCC 1B246 BKR 52-24021 OPEN
1B247	Q, D	OC653 - 73A 4-4 ESS 480V LC 1B240 TROUBLE	1L240 2C MCC 1B247 BKR 52-24022 OPEN
1D110	N	1C651 - 08A 12-1 125 V DC SYSTEM TROUBLE 1D610	1L610 2C 125V DC DIST PNL LO VOLTAGE 1D615
1D254	Q, I	1C651 - 08A 11-1 250 V DC SYSTEM TROUBLE 1D650	1L650 3A RCIC & ISO VLVS 1D254 TROUBLE
1D264	Q, II	1C651 - 08A 11-2 250 V DC SYSTEM TROUBLE 1D660	1L660 3A HPCI CNTRL CEN 1D 264 TROUBLE
1D274	Q, II	1C 651 - 08A 11-2 250 V DC SYSTEM TROUBLE 1D660	1L660 2C HPCI CNTRL CEN 1D274 TROUBLE
1D614	Q, A	1C651 - 08A 12-2 125 V DC SYSTEM TROUBLE 1D610	1L610 2B 125 V DC DIST PNL 1D614 LO VOLTAGE
1D615	N	1C651 - 08A 12-1 125 V DC SYSTEM TROUBLE 1D610	1L610 2C 125 V DC DIST PNL 1D615 LO VOLTAGE

## LOSS OF AVAILABILITY DISPLAY

POWER SUPPLY	Q	MAIN CONTROL ROOM	LOCAL PANEL
1D624	Q, B	1C651 - 08A 12-2 125 V DC SYSTEM TROUBLE 1D620	1L620 2B 125 V DC DIST PNL 1D624 LOW VOLTAGE
1D625	N	1C651 - 08A 12-2 125 V DC SYSTEM TROUBLE 1D620	1L620 2C 125 V DC DIST PNL 1D625 LOW VOLTAGE
1D634	Q, C	1C651 - 08A 12-3 125 V DC SYSTEM TROUBLE 1D630	1L630 2B 125 V DC DIST PNL 1D634 LOW VOLTAGE
1D635	N	1C651 -08A 12-3 125 V DC SYSTEM TROUBLE 1D630	1L630 2C 125 V DC DIST PNL 1D635 LOW VOLTAGE
1D644	Q, D	1C651 - 08A 12-4 125 V DC SYSTEM TROUBLE 1D640	1L640 2B 125 V DC DIST PNL 1D644 LOW VOLTAGE
1D645	N	1C651 - 08A 12-4 125 V DC SYSTEM TROUBLE 1D640	1L640 2C 125 V DC DIST PNL 1D645 LOW VOLTAGE
1D672	Q, I	1C651 - 08A 13-1 24 V DC SYSTEM A TROUBLE	1L670 1A POS BUS LOW VOLTAGE 1L670 1B NEG BUS LOW VOLTAGE
1D682	Q, II	1C651 - 08A 13-2 24 V DC SYSTEM B TROUBLE	1L680 1A POS BUS LOW VOLTAGE 1L680 1B NEG, BUS LOW VOLTAGE
1Y201A	Q,RPSA	1C651 - 05A 1-1 RX AUTO SCRAM CHANNEL A1/A2 1C610 GEN A FEED 1C610 ALT A FEED	



## LOSS OF AVAILABILITY DISPLAY

POWER SUPPLY	Q	MAIN CONTROL ROOM	LOCAL PANEL
1Y201B	Q,RPSB	1C651 - 06A 1-1 RX AUTO SCRAM CHANNEL B1/B2 1C610 GEN B FEED 1C610 ALT B FEED	
1Y216	Q, I	1C651 - 08A 12-5 INSTRUMENT AC POWER FAILURE 1Y216	
1Y218	N	1C651 - 08A 11-6 INSTRUMENT AC POWER FAILURE 1Y218/1Y219	
1Y219	N	1C651 - 08A 11-6 INSTRUMENT AC POWER FAILURE 1Y218/1Y219	
1Y226	Q, II	1C651 - 08A 12-7 INSTRUMENT AC POWER FAILURE 1Y226	
1Y236	Q, I	1C651 - 08A 12-6 INSTRUMENT AC POWER FAILURE 1Y236	
1Y246	Q, II	1C651 - 08A 12-8 INSTRUMENT AC POWER FAILURE 1Y246	
1Y629	N	1C651 - 08A 11-5 VITAL AC UPS TROUBLE/ABNORMAL	1L666 .3B SYSTEM OUTPUT BREAKER TRIP

KEY

N NON-Q POWER SUPPLY  
 Q Q-LISTED POWER SUPPLY  
 A ELECTRICAL CHANNEL A  
 B ELECTRICAL CHANNEL B  
 C ELECTRICAL CHANNEL C  
 D ELECTRICAL CHANNEL D  
 I ELECTRICAL DIVISION I  
 II ELECTRICAL DIVISION II  
 RPS REACTOR PROTECTION SYSTEM  
 POWER SUPPLIES



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