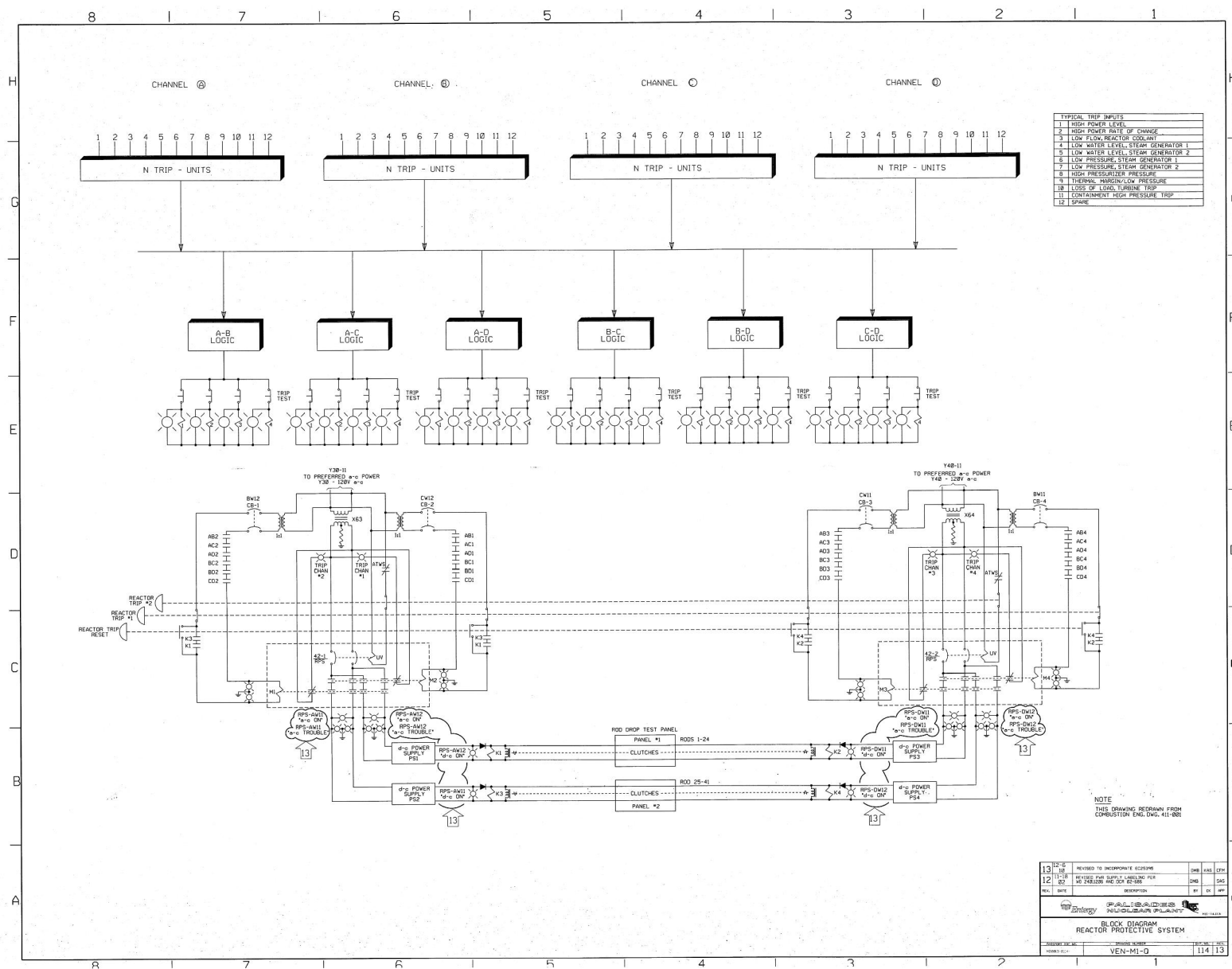
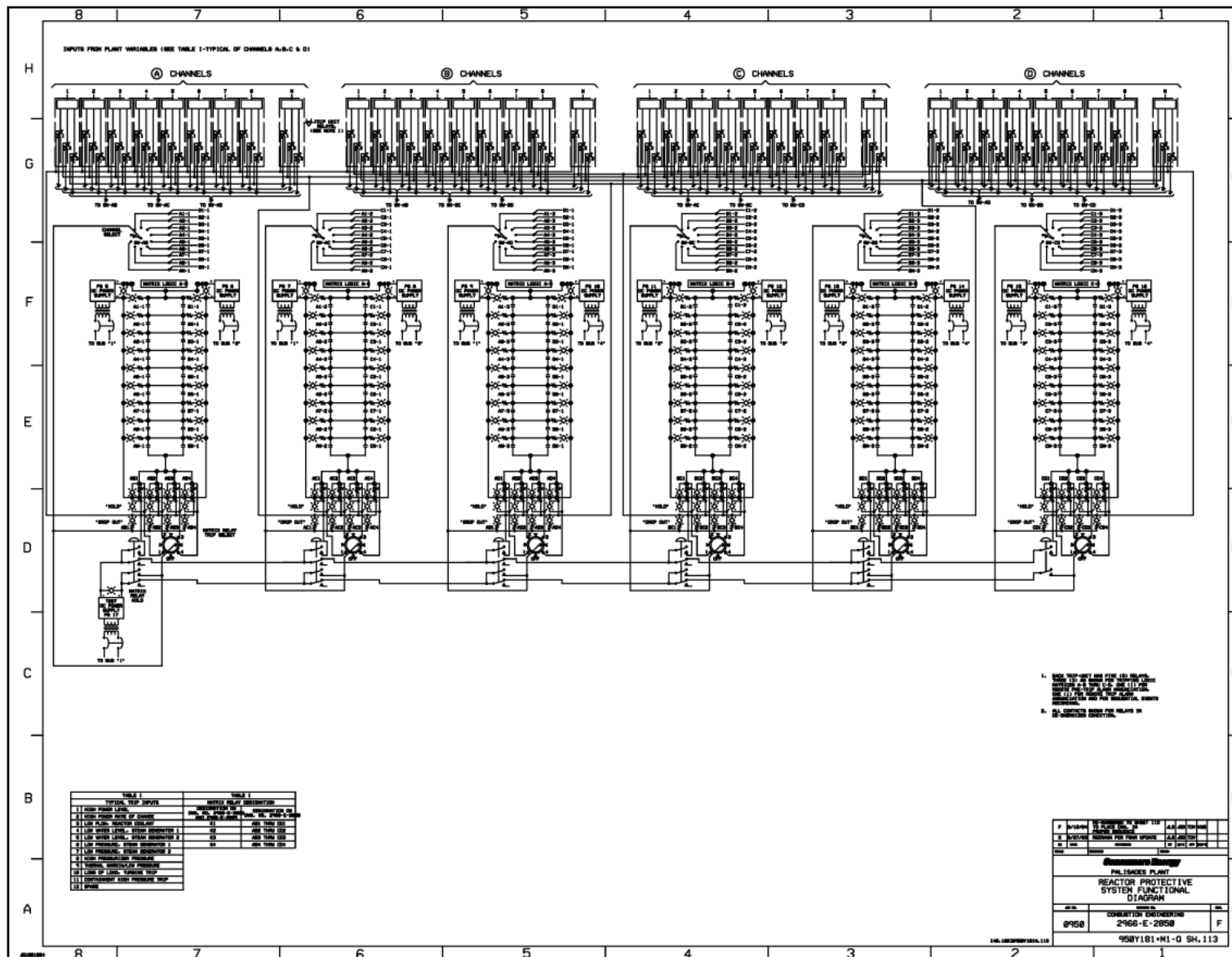


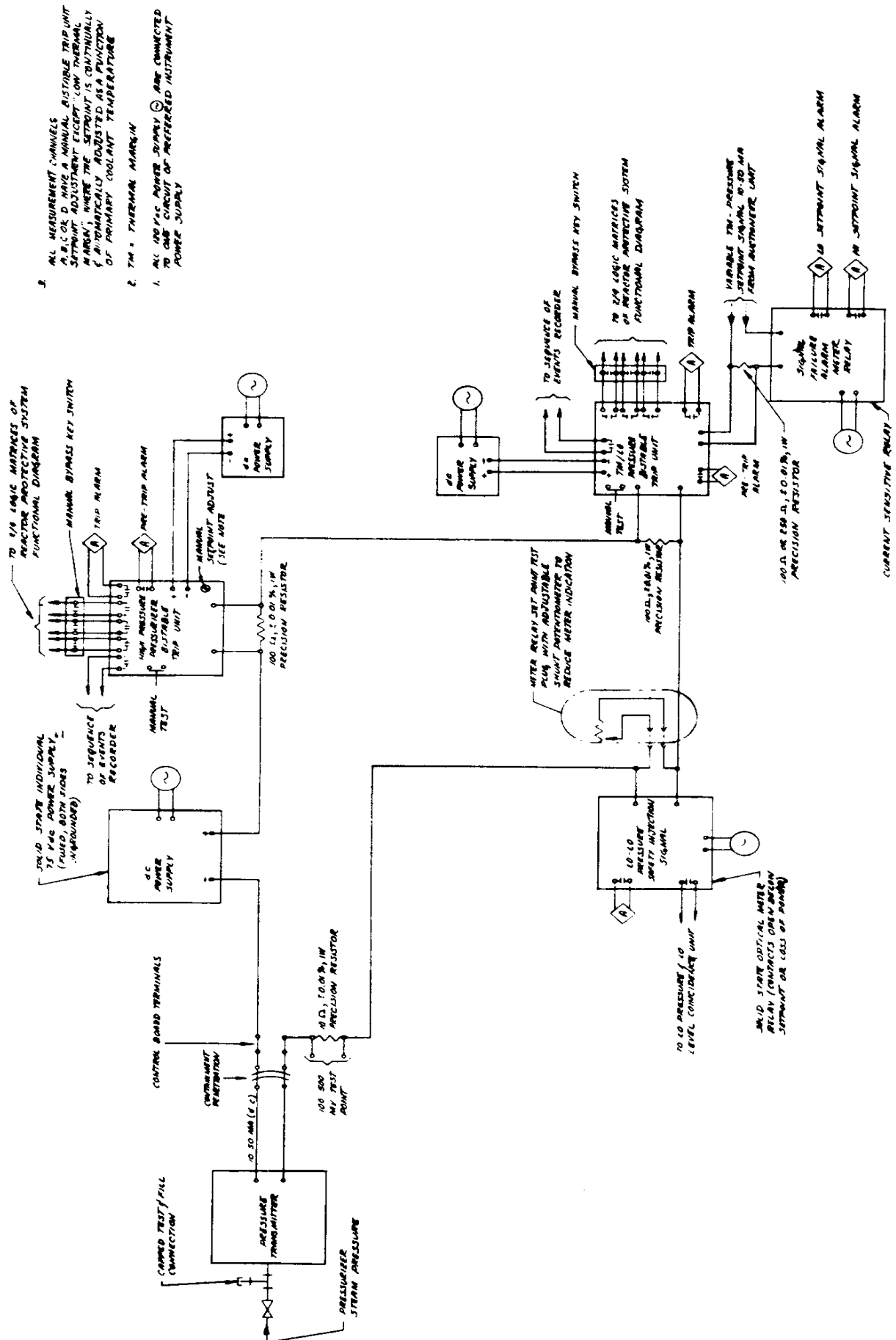
REACTOR PROTECTION SYSTEM BLOCK DIAGRAM



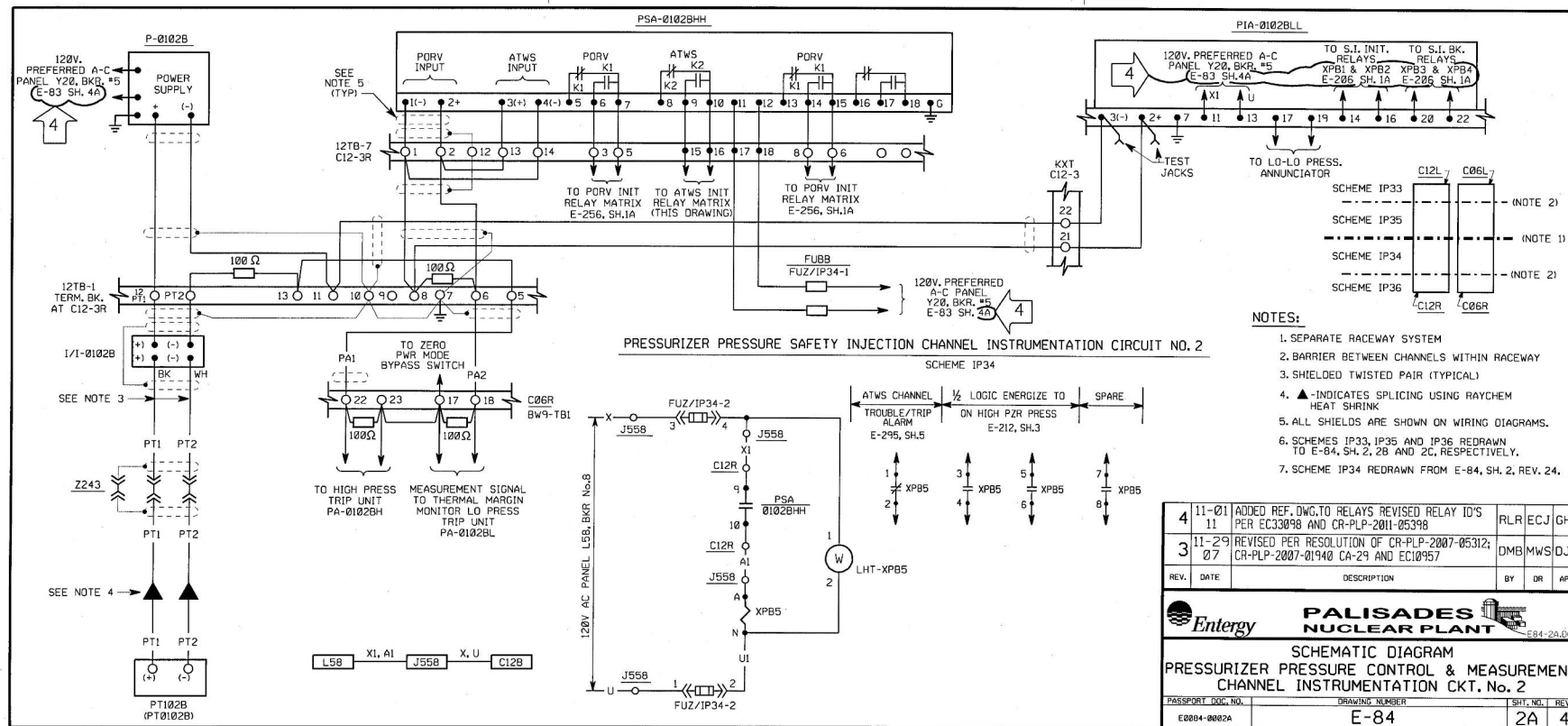
REACTOR PROTECTIVE SYSTEM FUNCTIONAL DIAGRAM



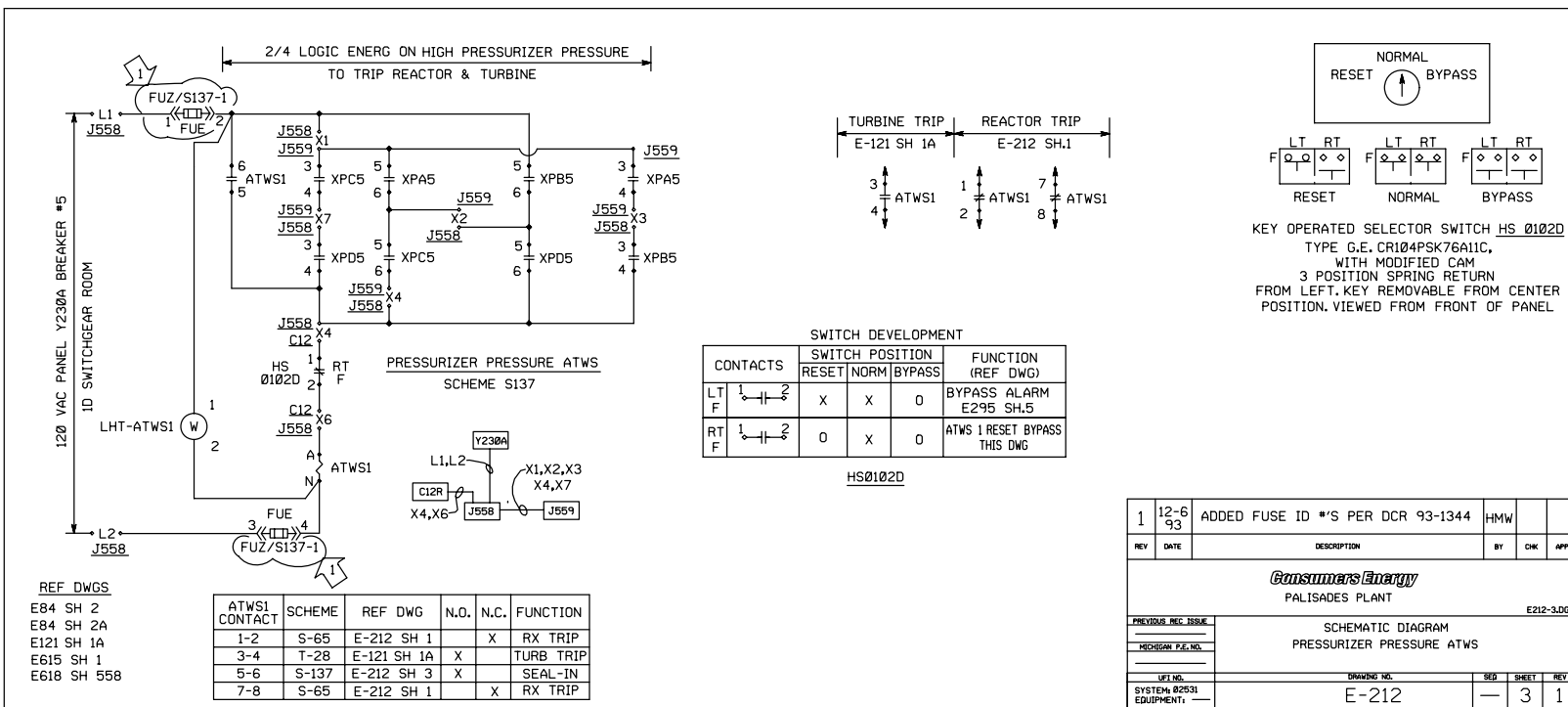
TYPICAL MEASUREMENT CHANNEL FUNCTIONAL DIAGRAM



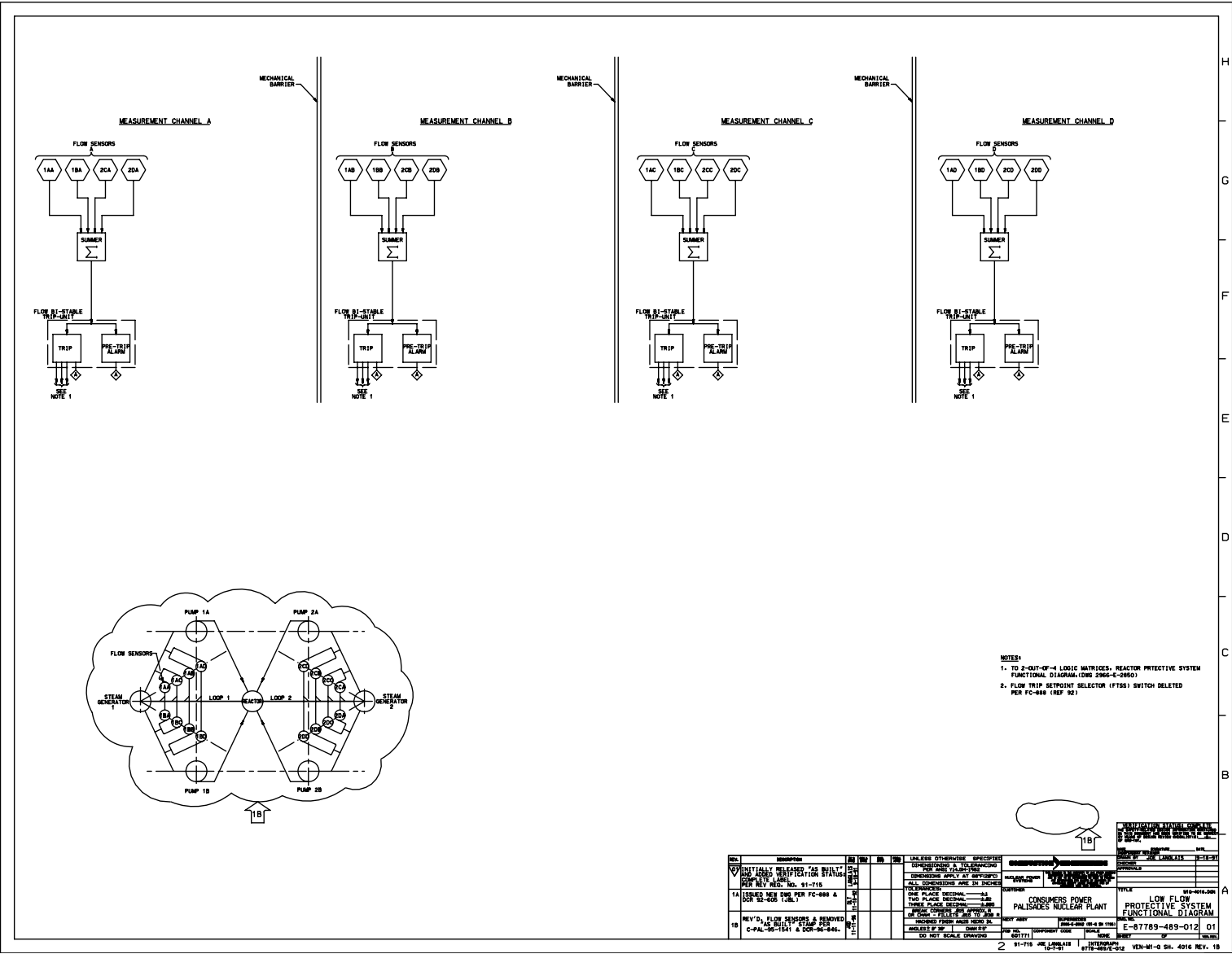
**SCHEMATIC DIAGRAM
PRESSURIZER PRESSURE ATWS**



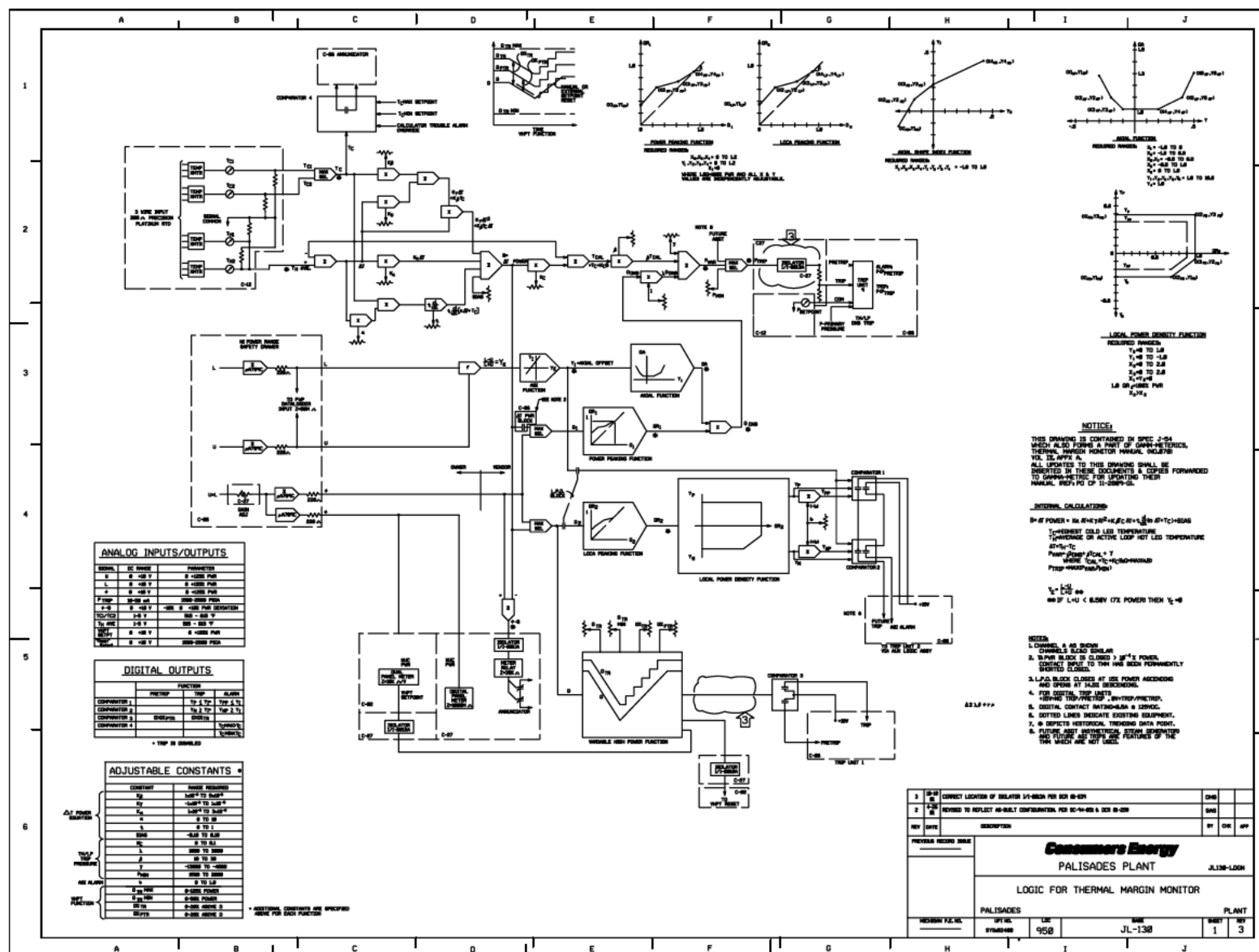
SCHEMATIC DIAGRAM



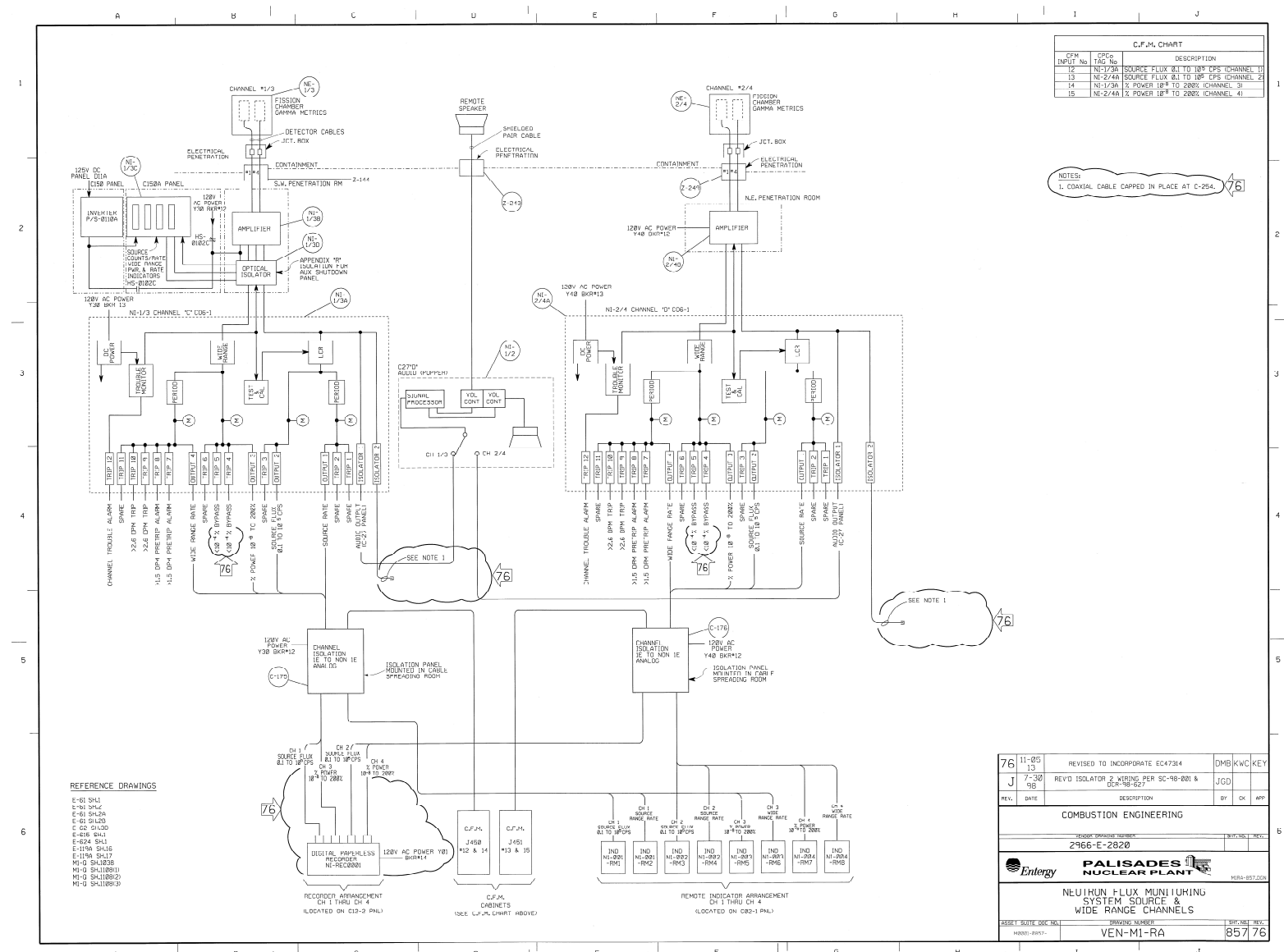
LOW FLOW PROTECTIVE SYSTEM FUNCTIONAL DIAGRAM



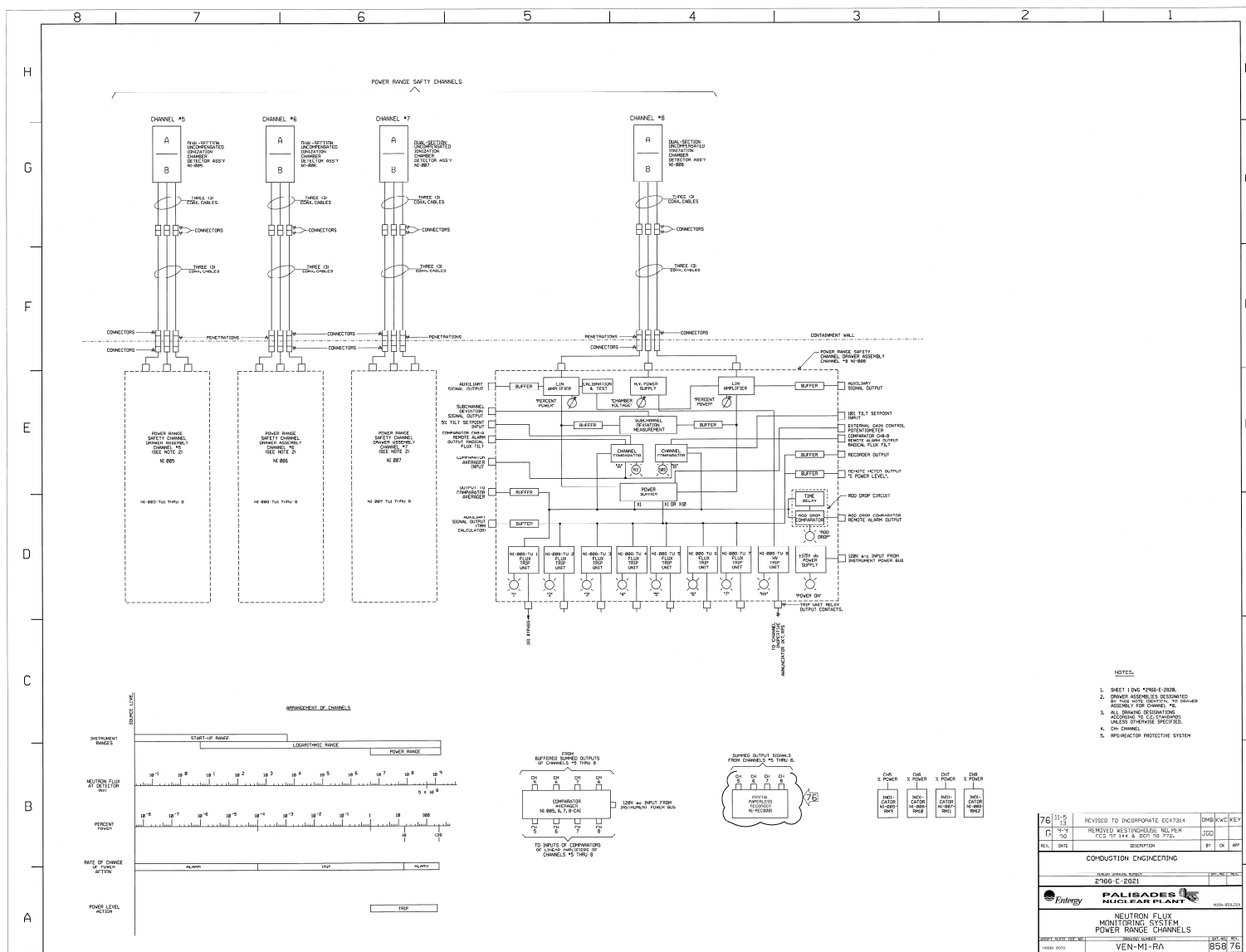
LOGIC FOR THERMAL MARGIN MONITOR



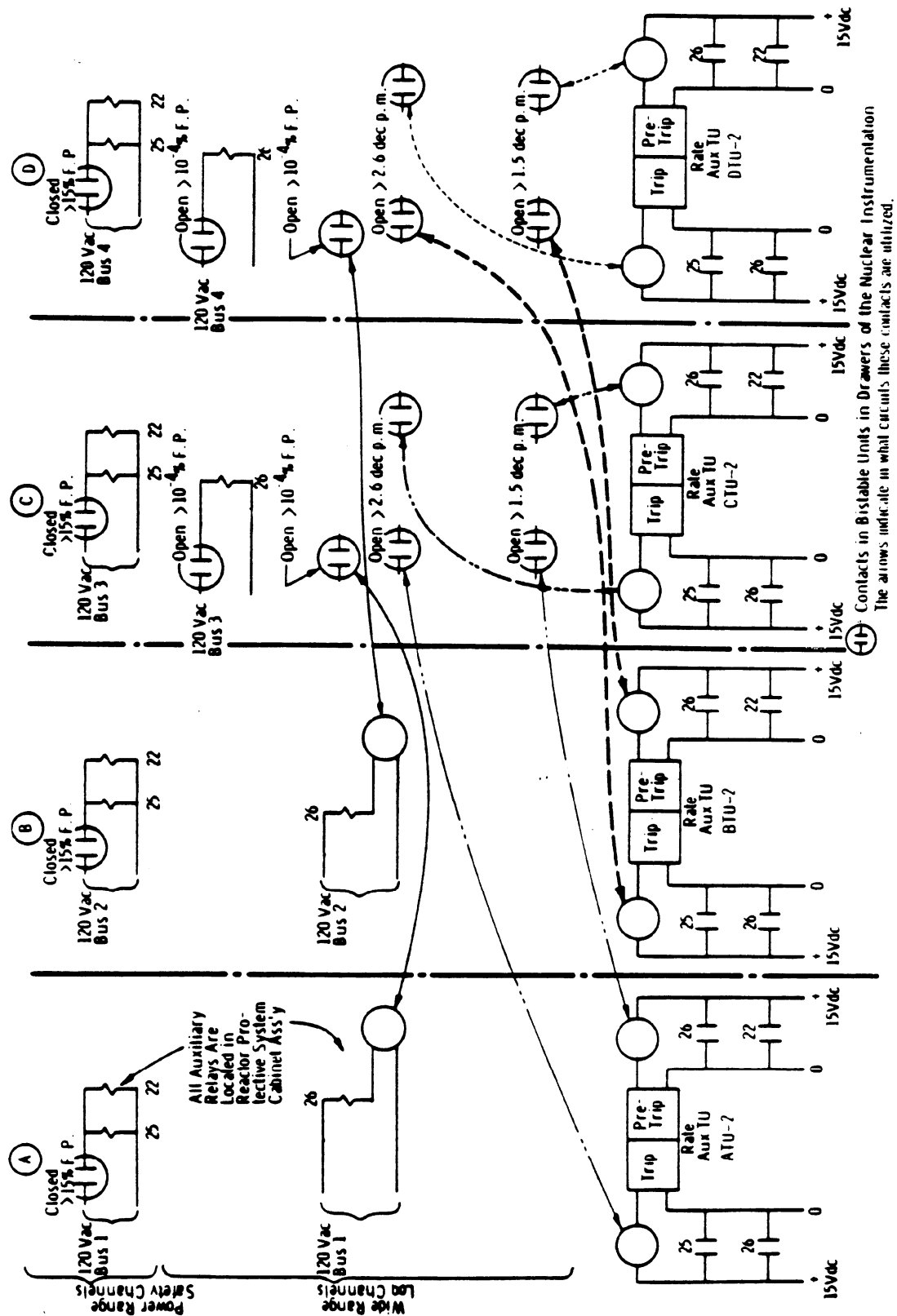
NEUTRON FLUX MONITORING SYSTEM
START-UP AND LOGARITHMIC RANGE CHANNELS



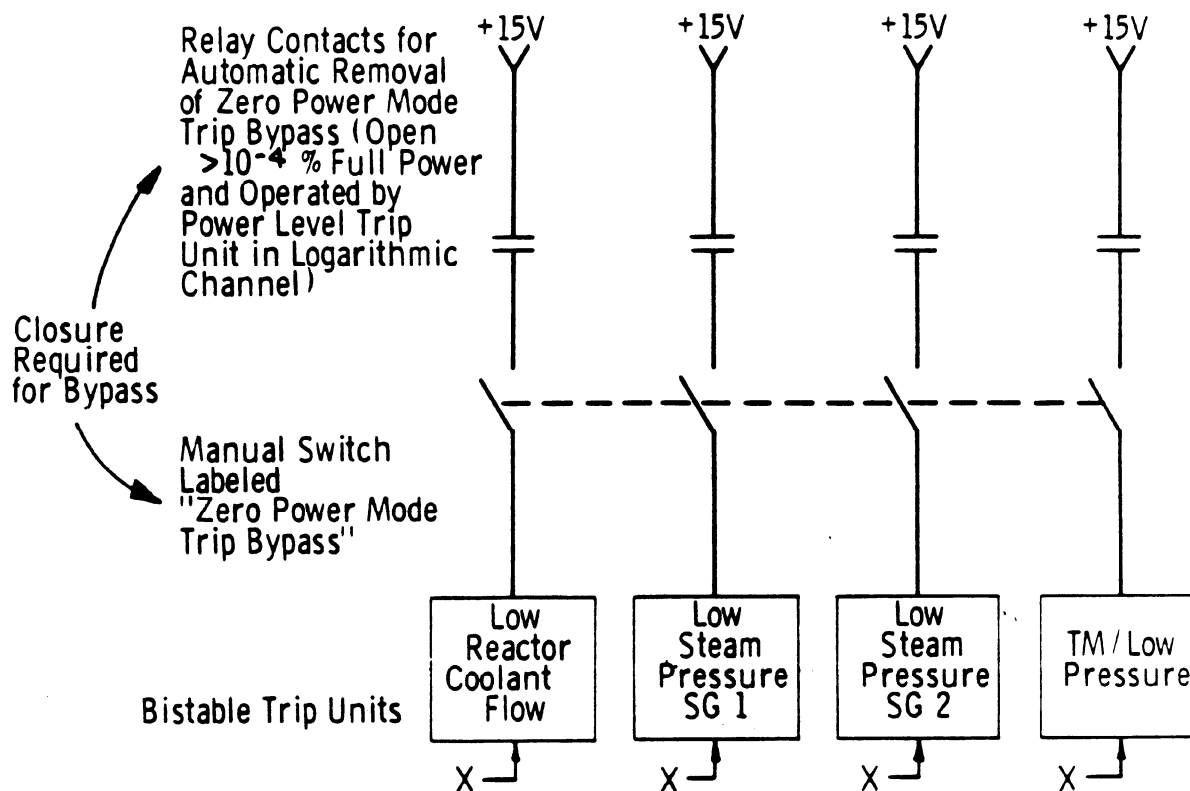
NEUTRON FLUX MONITORING SYSTEM POWER RANGE CHANNELS



POWER RATE-OF-CHANGE TRIP AND PRETRIP INTERFACE WITH RPS



ZERO POWER MODE BYPASS



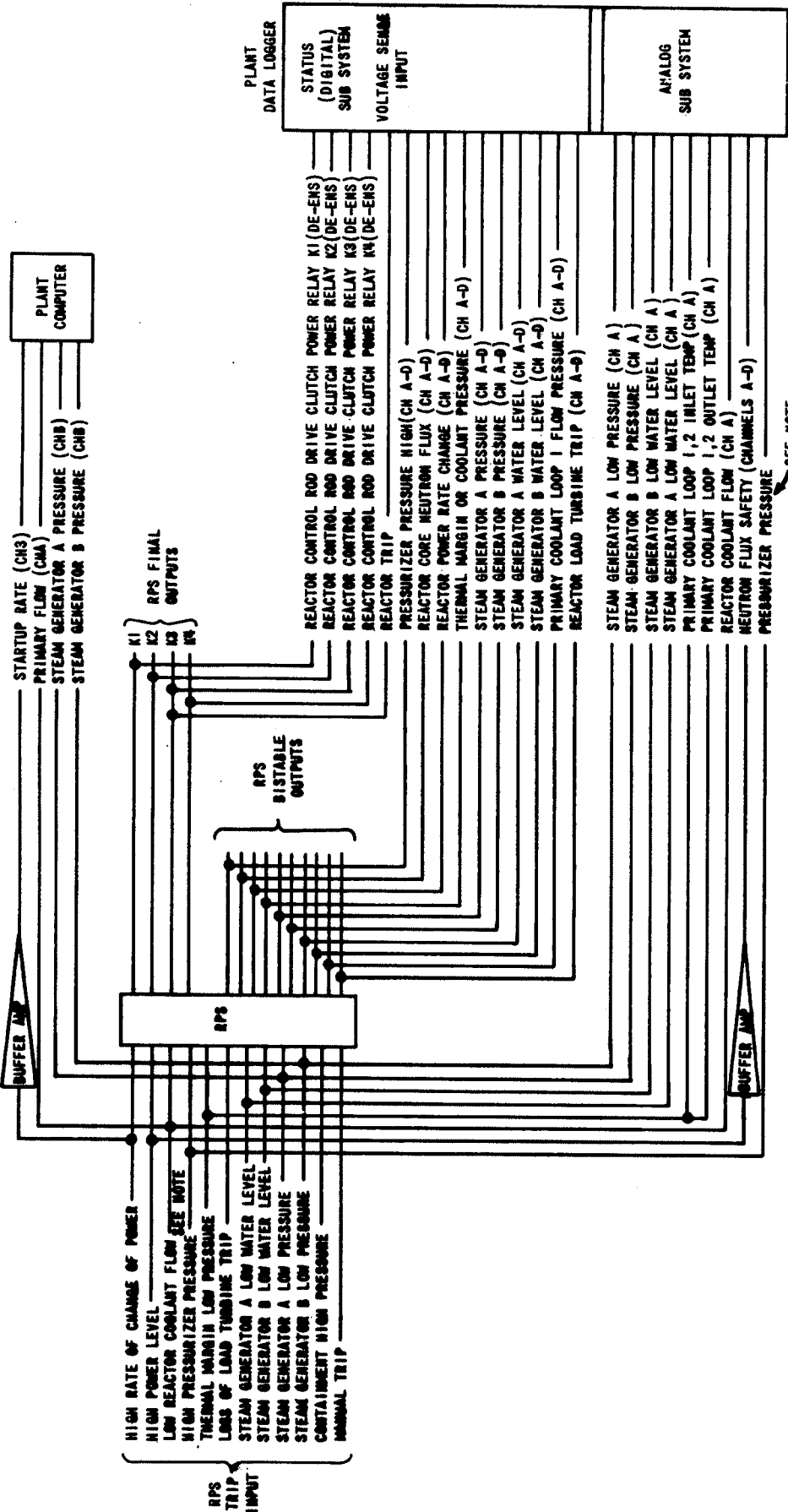
X - Analog Input Signal

With +15V Applied to Bistable Trip Unit: No Trip Regardless To Level of Input Analog Signal

Without +15V Applied to Bistable Trip Unit: Trip According to Level of Input Analog Signal

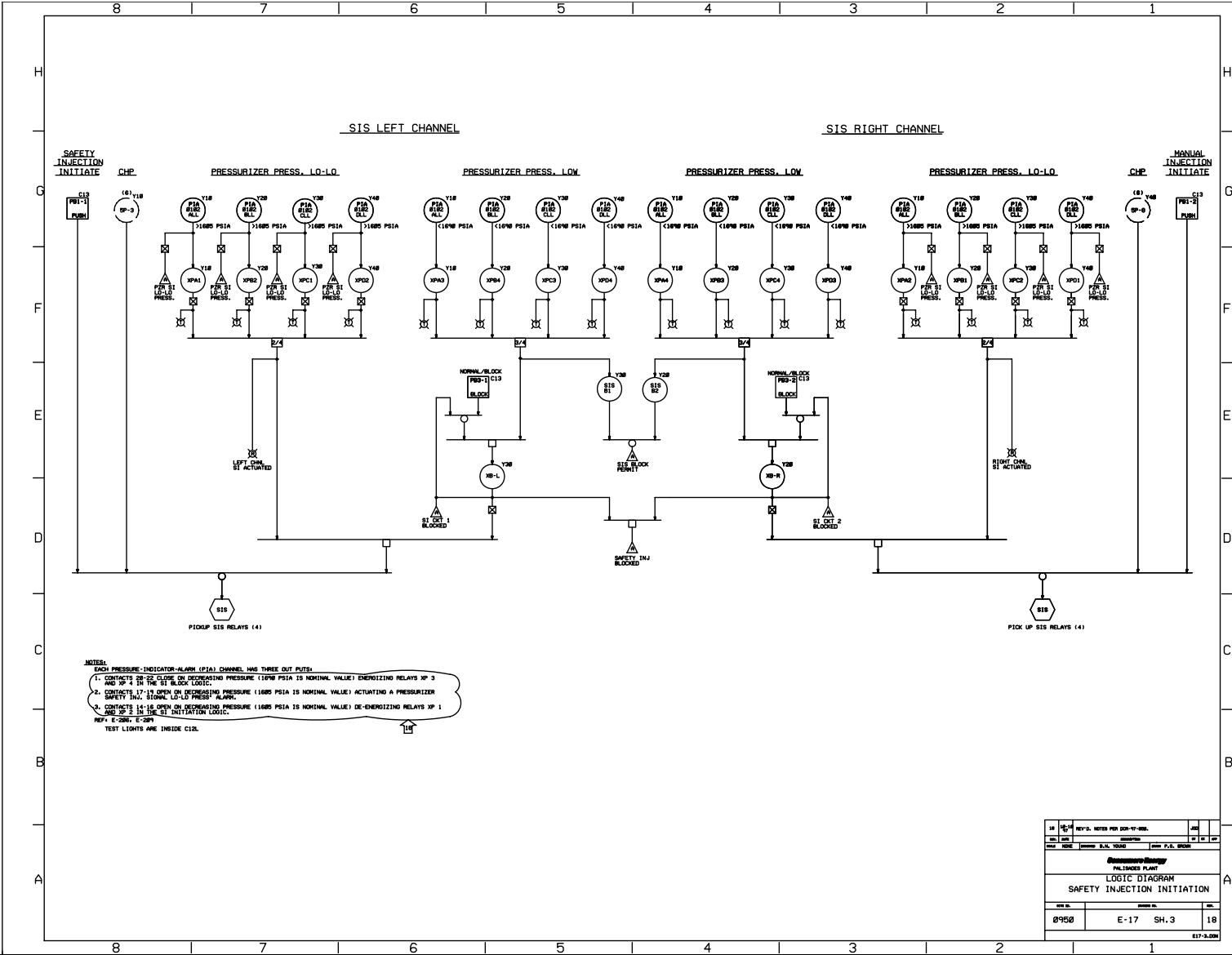
Same Arrangement for Other 3 Channels

REACTOR PROTECTIVE SYSTEM INTERFACES

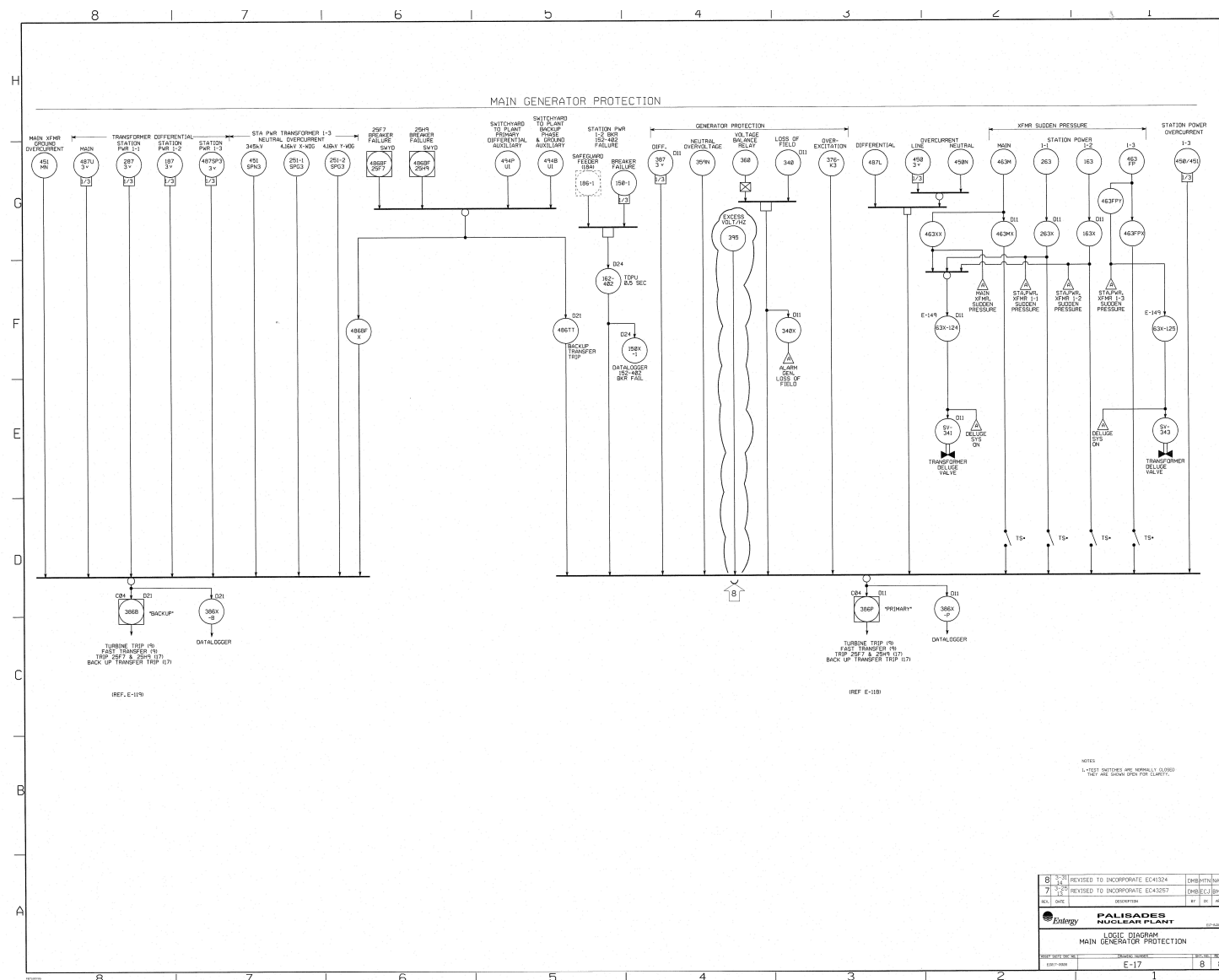


NOTE:
THE SAFETY RELATED CHANNEL OF PRESSURIZER PRESSURE INPUTS TO
RPS. WIDE RANGE PRESSURIZER PRESSURE (NON-SAFETY) INPUTS TO DATA LOGGER.

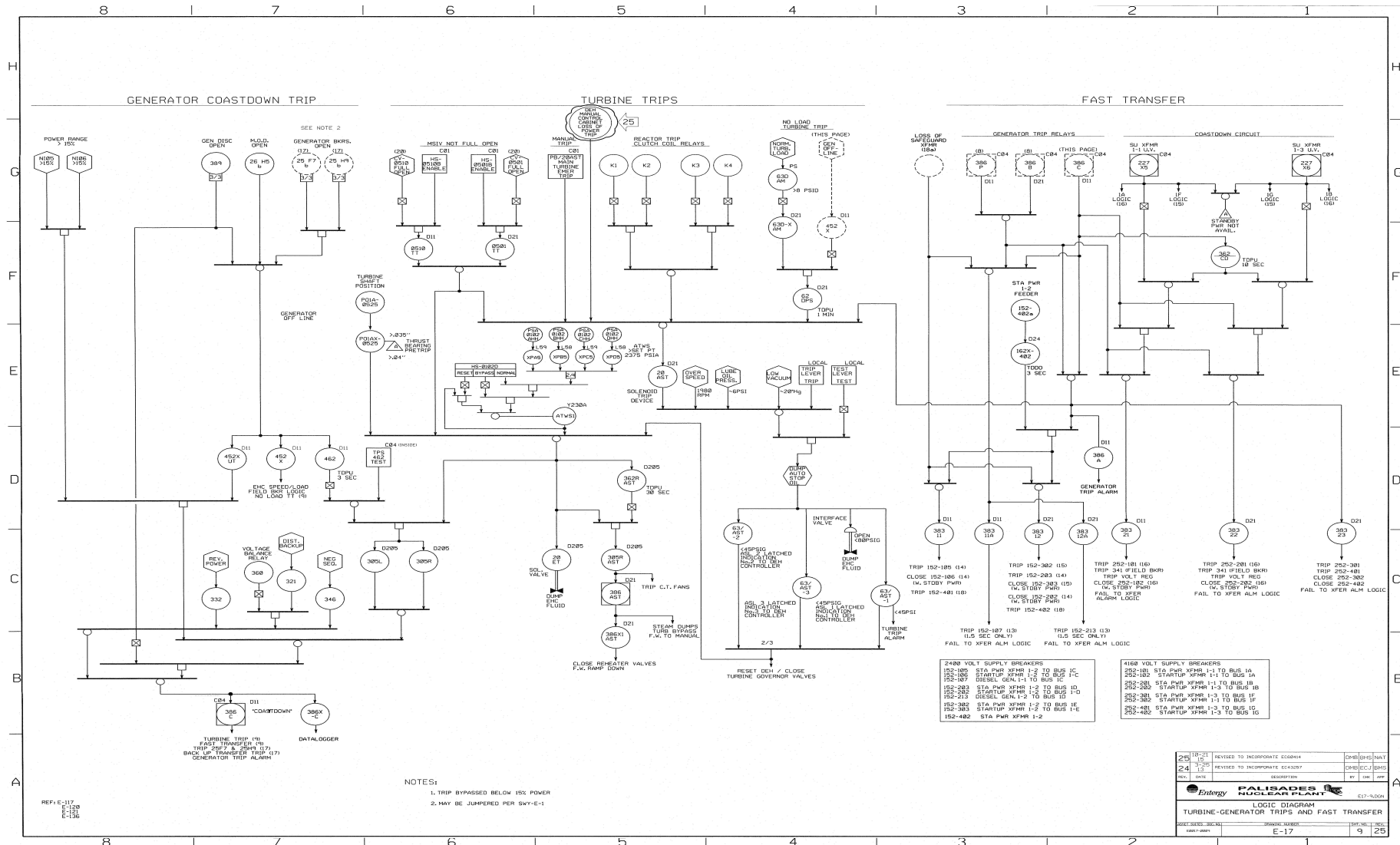
LOGIC DIAGRAM
SAFETY INJECTION INITIATION



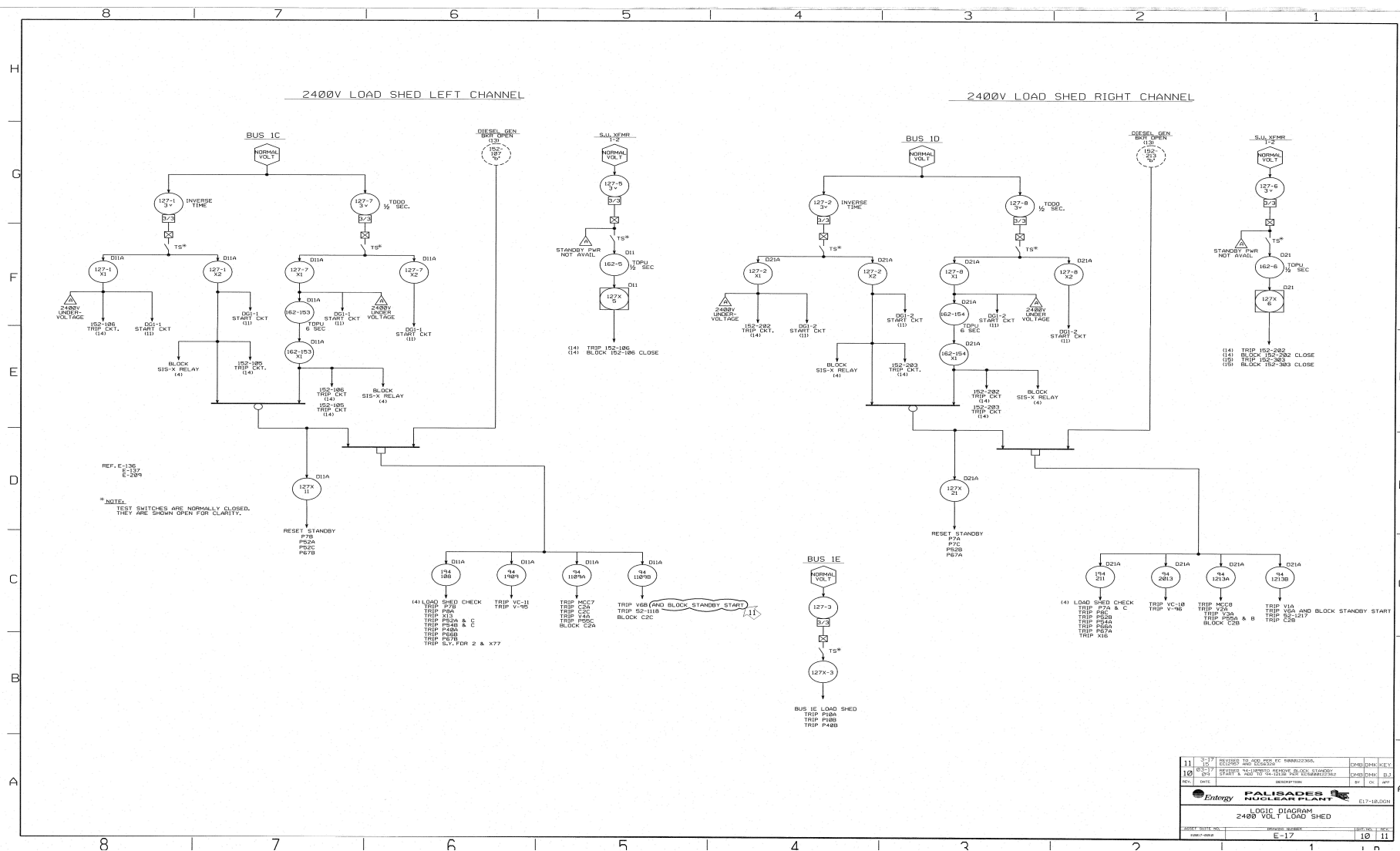
LOGIC DIAGRAM MAIN GENERATOR PROTECTION



LOGIC DIAGRAM TURBINE-GENERATOR TRIPS AND FAST TRANSFER

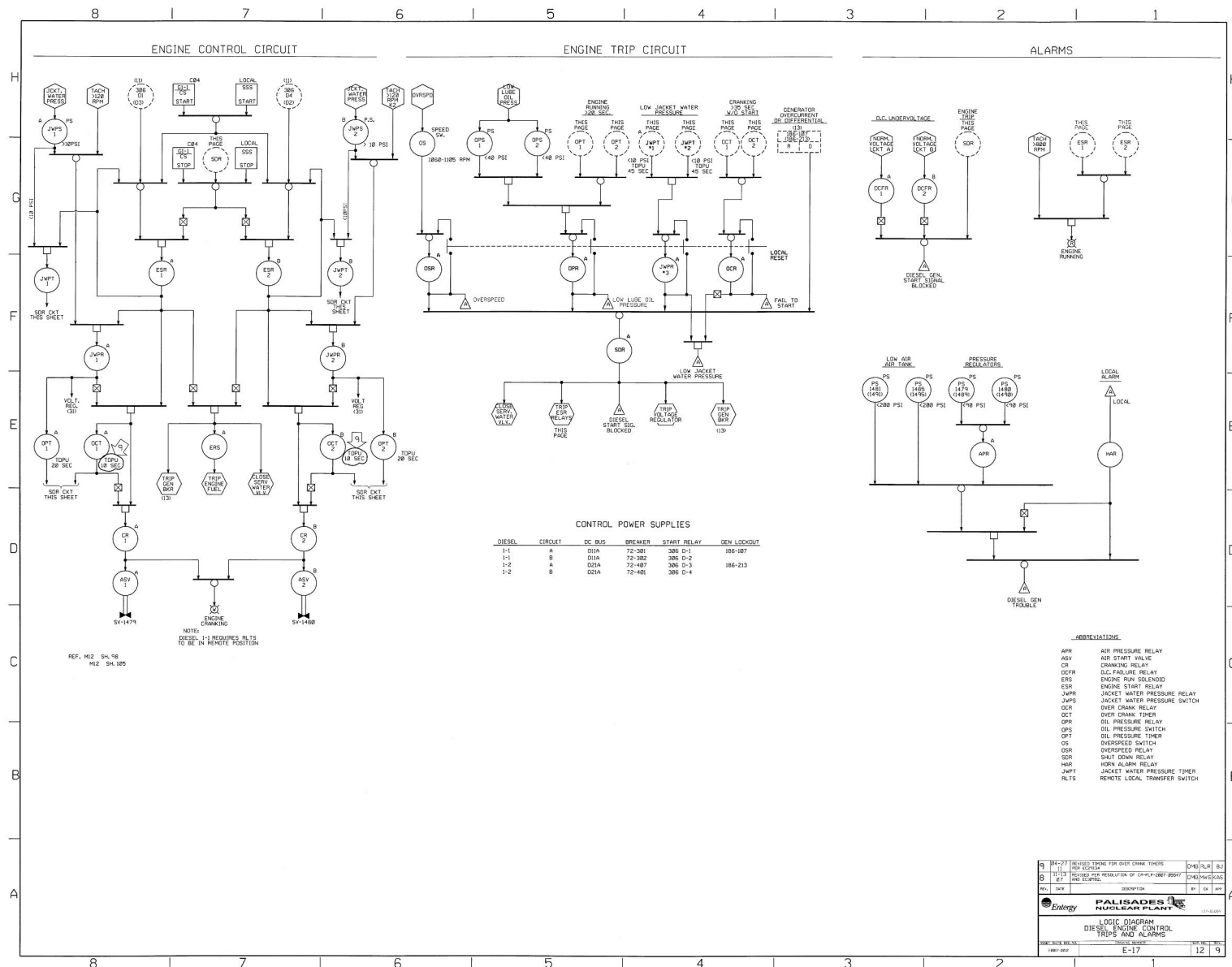


LOGIC DIAGRAM 2400 VOLT LOAD SHED

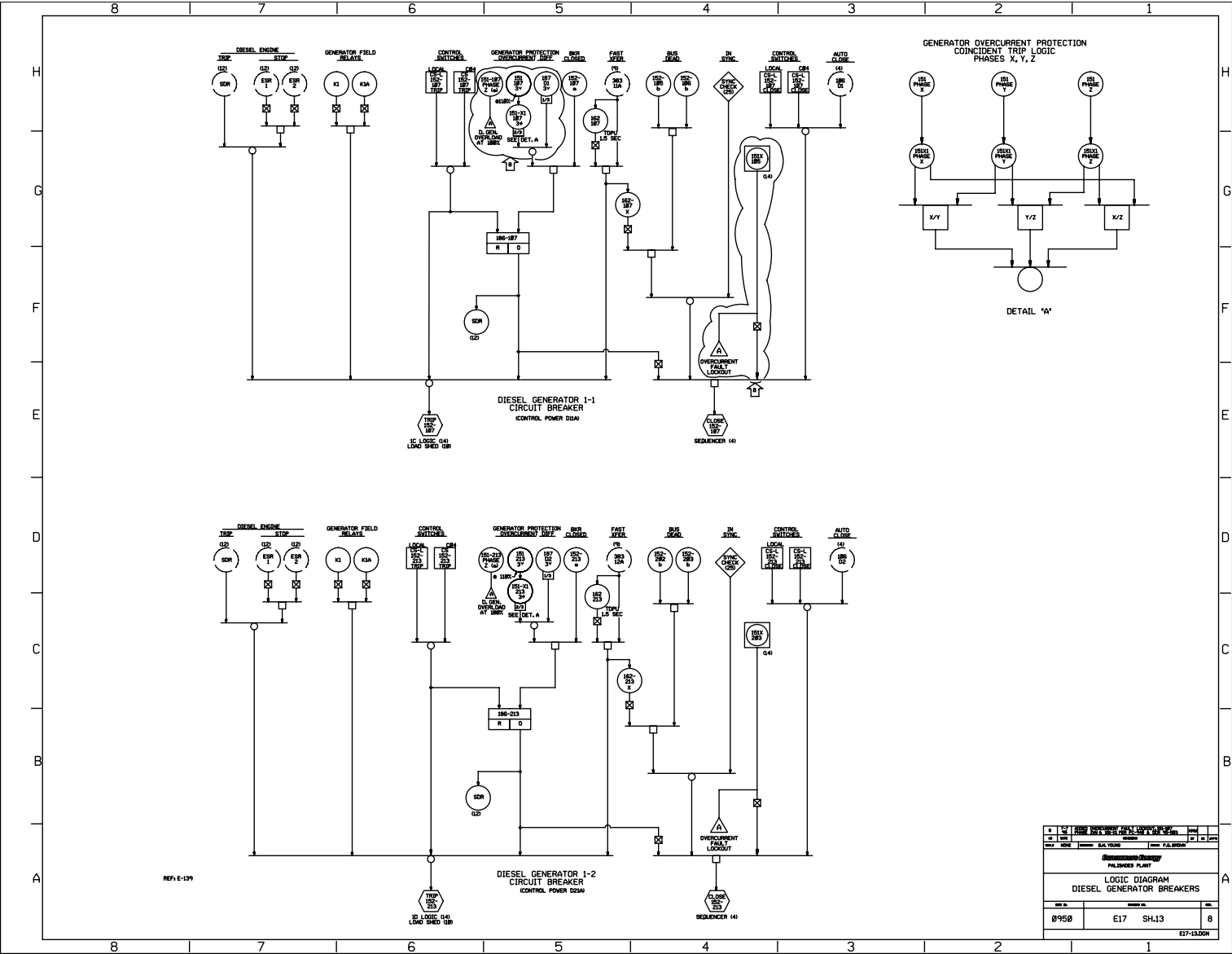


Logic diagram for Diesel Start (CPCD) showing two channels: LEFT CHANNEL and RIGHT CHANNEL. Each channel has an UNDERVOLTAGE BUS TIC (157-1, 157-2) connected to a 300 01 relay, which is connected to a START/STOP/RESET (157-1, 157-2) relay. The diagram is labeled REF E-126 SH.1A.

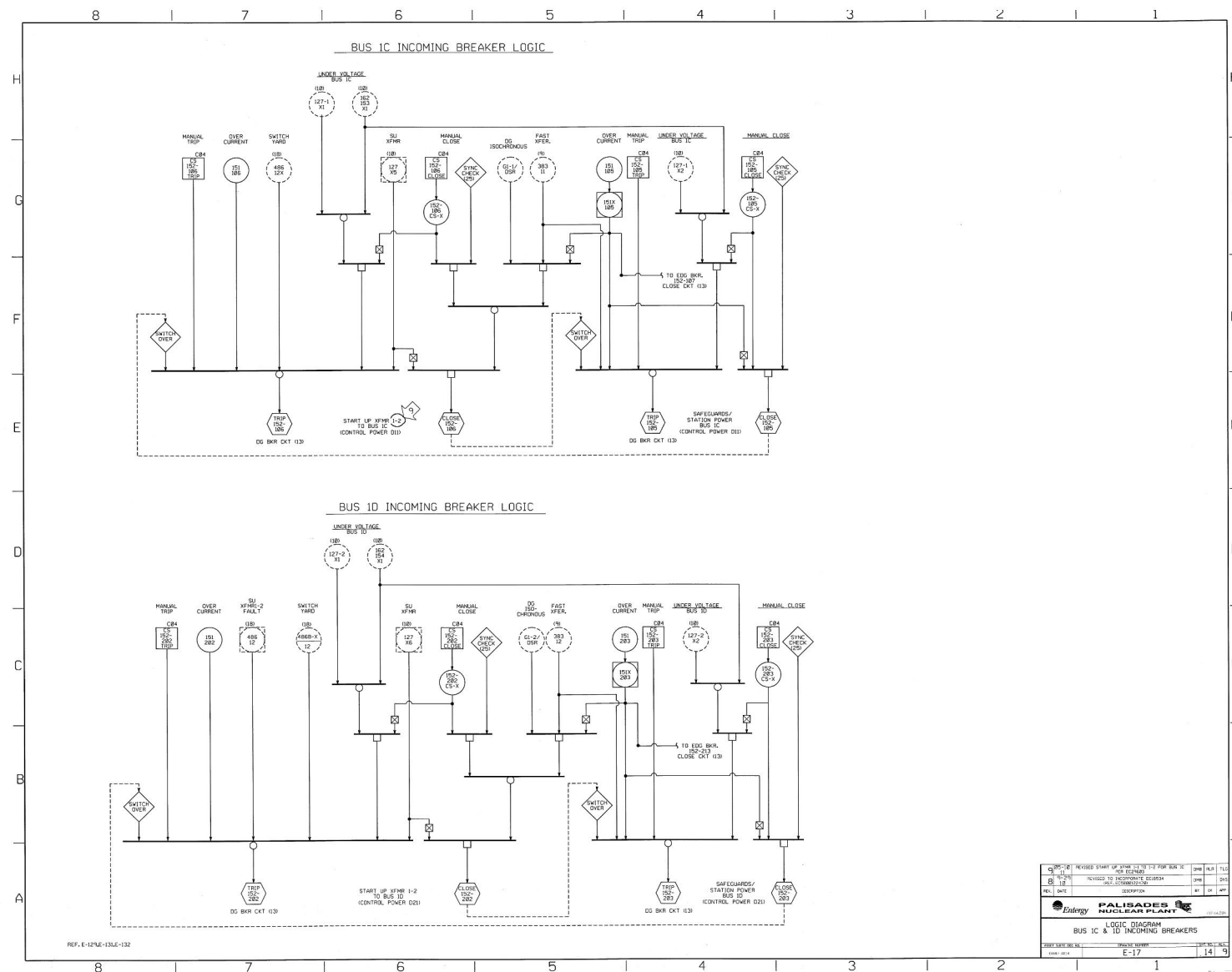
LOGIC DIAGRAM DIESEL ENGINE CONTROL, TRIPS AND ALARMS



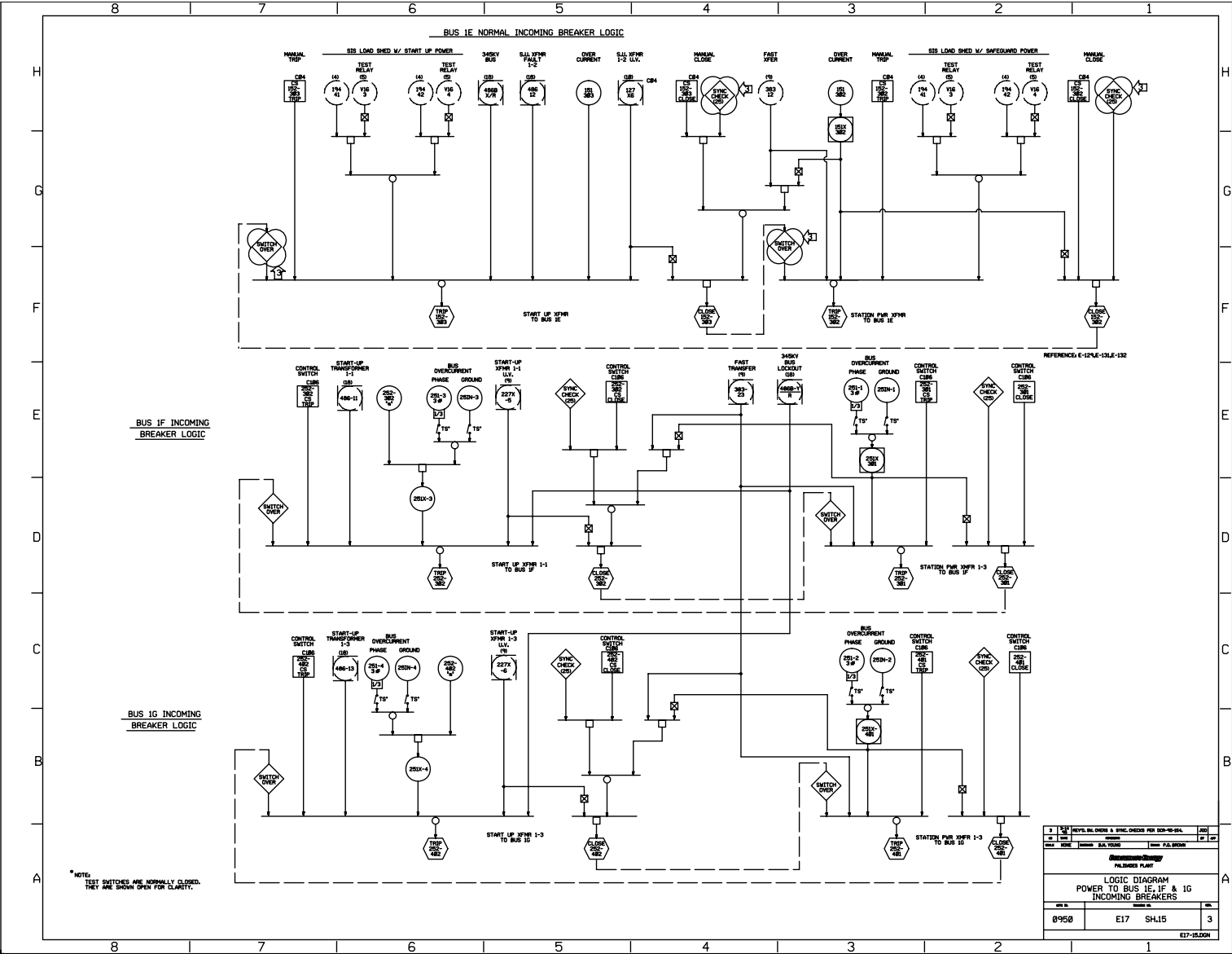
LOGIC DIAGRAM
DIESEL GENERATOR BREAKERS

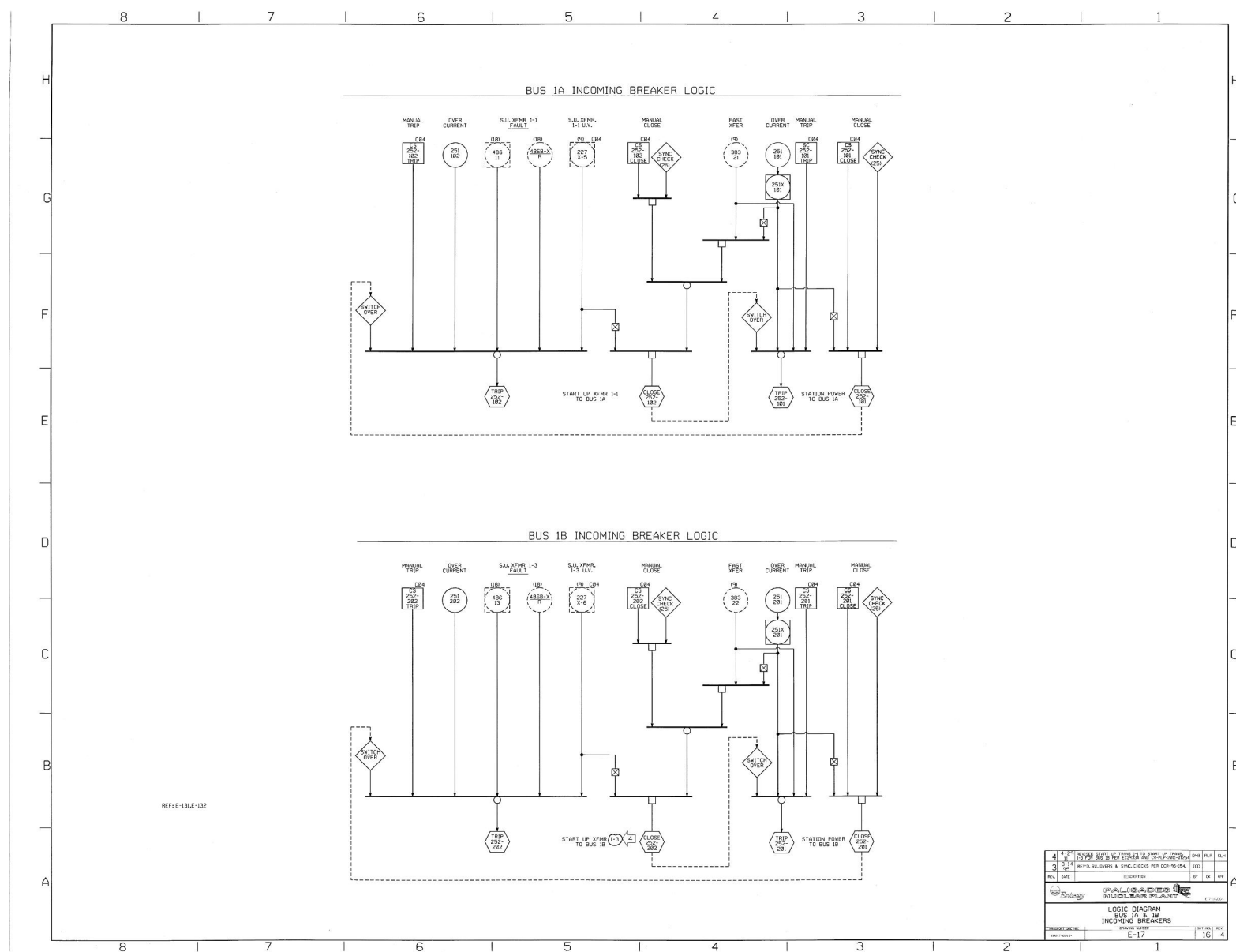


LOGIC DIAGRAM
BUS 1C AND 1D INCOMING BREAKERS

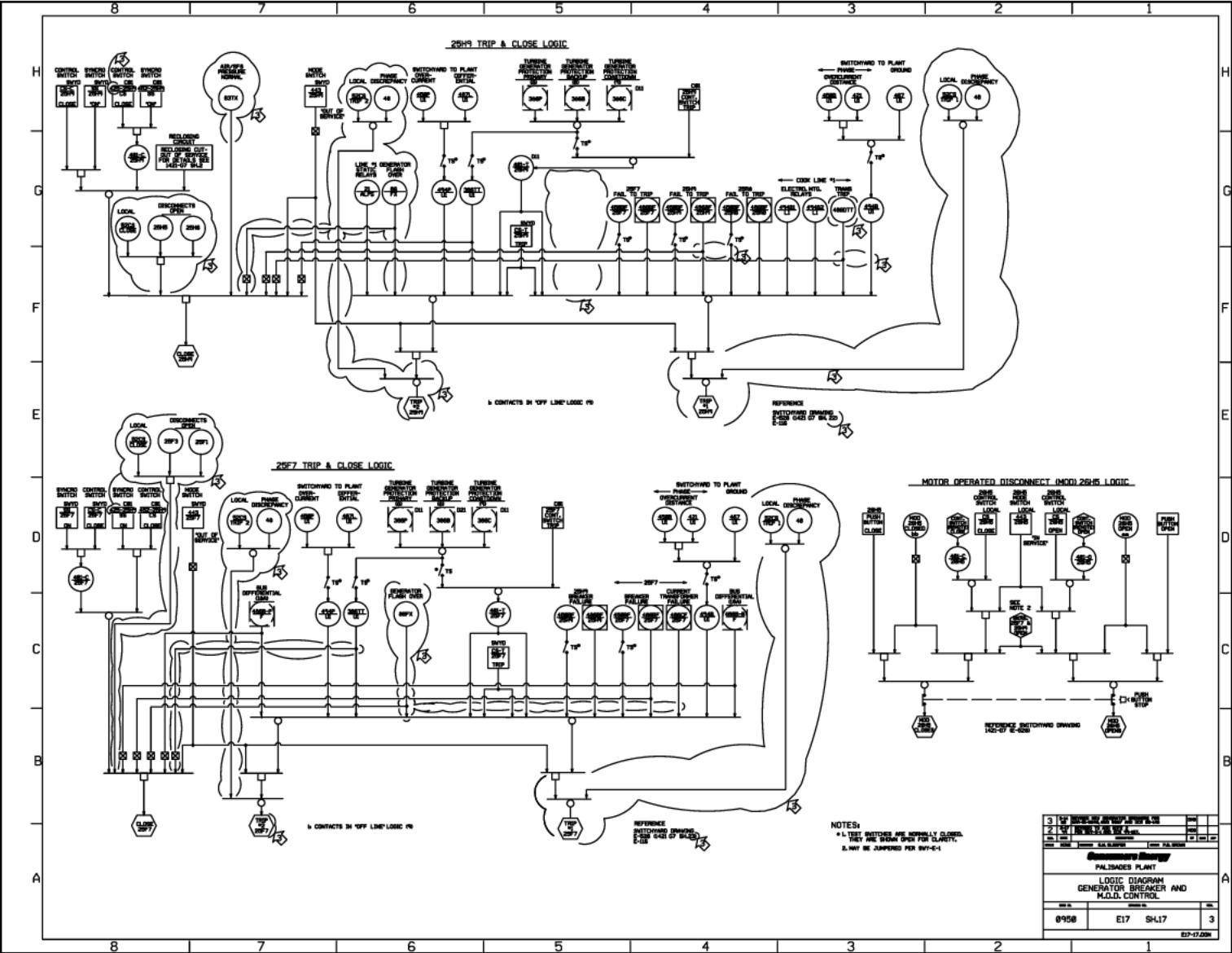


LOGIC DIAGRAM
POWER TO BUS 1E, 1F, AND 1G INCOMING BREAKERS

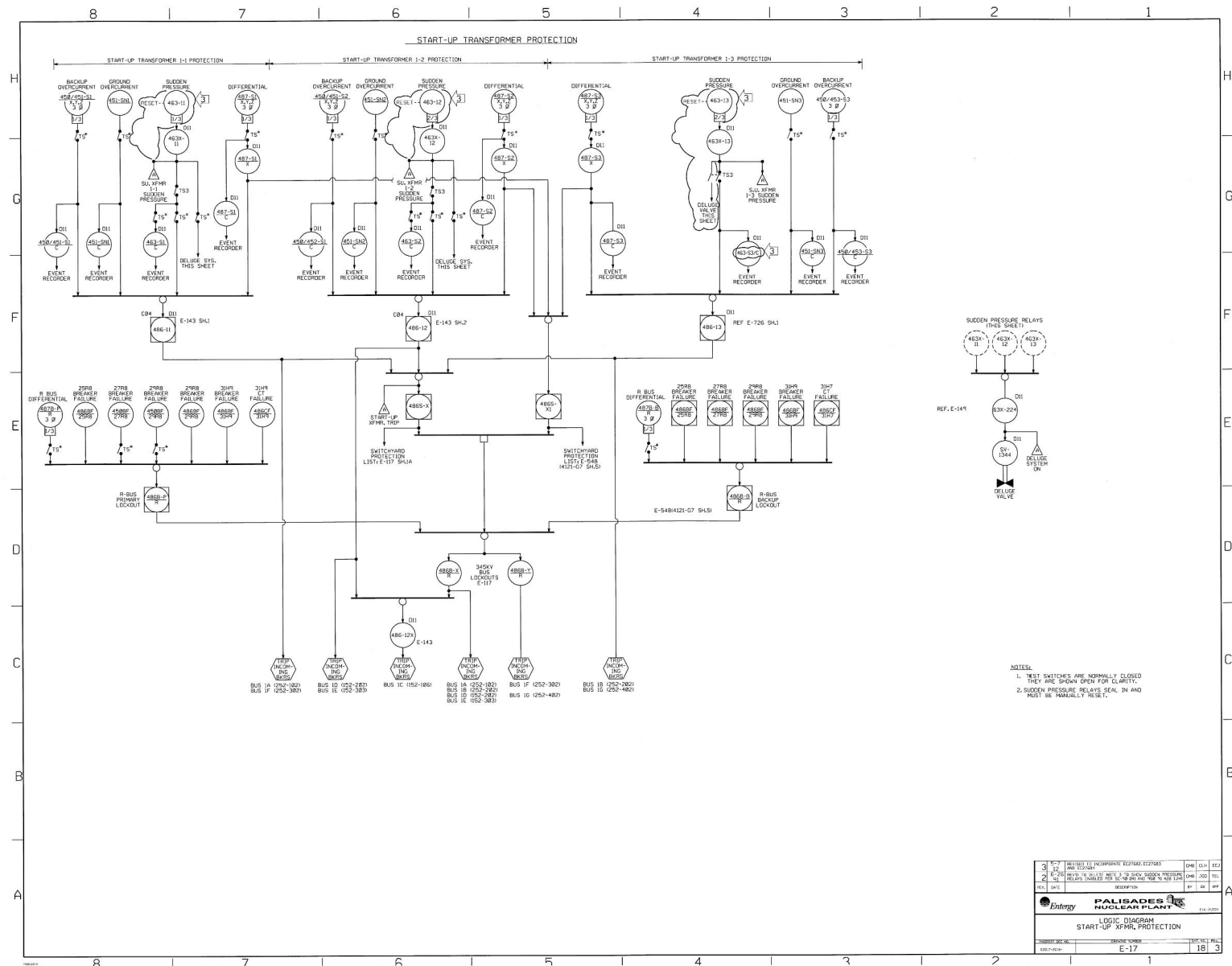




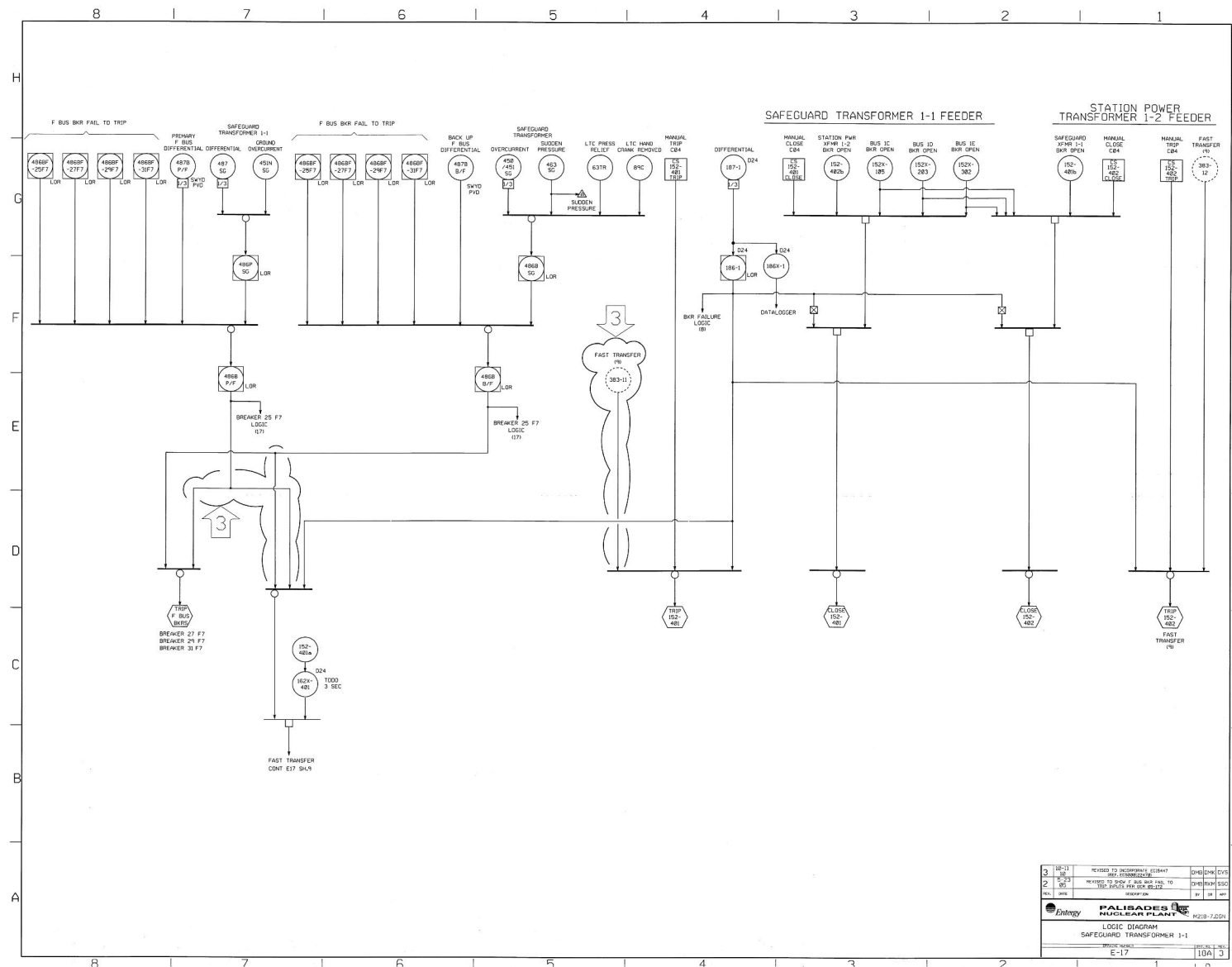
LOGIC DIAGRAM
GENERATOR BREAKER AND M.O.D. CONTROL



LOGIC DIAGRAM
START-UP XFMR PROTECTION



**LOGIC DIAGRAM
SAFEGUARD TRANSFORMER 1-1**



STORED ENERGY BREAKER

SOLENOID OPERATED BREAKER

AIR BLAST BREAKER

LEGEND

LOCAL: LOCAL CONTROL (L.C.)
 REMOTE: REMOTE CONTROL (R.C.)
 INTERLOCK: INTERLOCK (I.L.)
 TRIP: TRIP (T.R.)
 STOP: STOP (S.T.)
 START: START (S.T.)
 STOP/START: STOP/START (S.T./S.T.)
 STOP/START/STOP: STOP/START/STOP (S.T./S.T./S.T.)
 STOP/START/STOP/STOP: STOP/START/STOP/STOP (S.T./S.T./S.T./S.T.)
 STOP/START/STOP/STOP/STOP: STOP/START/STOP/STOP/STOP (S.T./S.T./S.T./S.T./S.T.)

NOTES

- SD-1 AND SD-2 - OPERATED BY A PIN ON THE CLOSING SPRING LINKAGE. WHEN THE SPRING IS CHARGED, SD CLOSING OR SPRING DISCHARGE, SD CLOSING TO START THE MOTOR AND CHARGE SPRING.
- SD-3 - OPERATED BY CAM FOLLOWERS. CONTINUES TO ENERGIZE MOTOR AT REDUCED SPEED AFTER SPRING ARE CHARGED. WHEN OPERATING CAM FOLLOWERS ARE IN POWER POSITION, SD CLOSING COMPLETING THE SVC CIRCUIT.
- REF. E-129
- PCF AND D.L. BREAKERS ALSO HAVE 3 PHASE DIFFERENTIAL 871 RELAY PROTECTION.
- 871 RELAY IS ACTIVATED WHEN BREAKER DOES NOT FULLY CLOSE ON DEMAND.

SIS INITIATION
PRESSURIZER LOW PRESSURE DETECTION
(NOTE 4)

SIS BLOCK

CONTROL CKT.
UNDERVOLT

PPC-SOE NODE
PRESSURIZER LO-LO PRESS.
(E-53 SH. 15)

SAFETY INJECTION DETECTION
CIRCUITS UNDERVOLTAGE
(E-293 SH. 6)

ALARM
SAFETY INJECTION SIGNAL
PRESSURIZER LO-LO PRESSURE
(E-290 SH. 4)

INTERLOCKS
SAFETY INJECTION AND
SEQUENCE LOADING CKTS.
(E-209 SH. 1 & 1A)

S.I. TEST
IND. LIGHTS
(E-206 SH. 2)

SPARES

120V PREFERRED AC PNL Y10
BKR. NO. 1 AT C12L

SAFETY INJECTION DETECTION CIRCUIT NO. 1
SCHEME No. S37

REF. DWGS:
VEN-M201, SH. 52, 53(I) AND 58

NOTES:

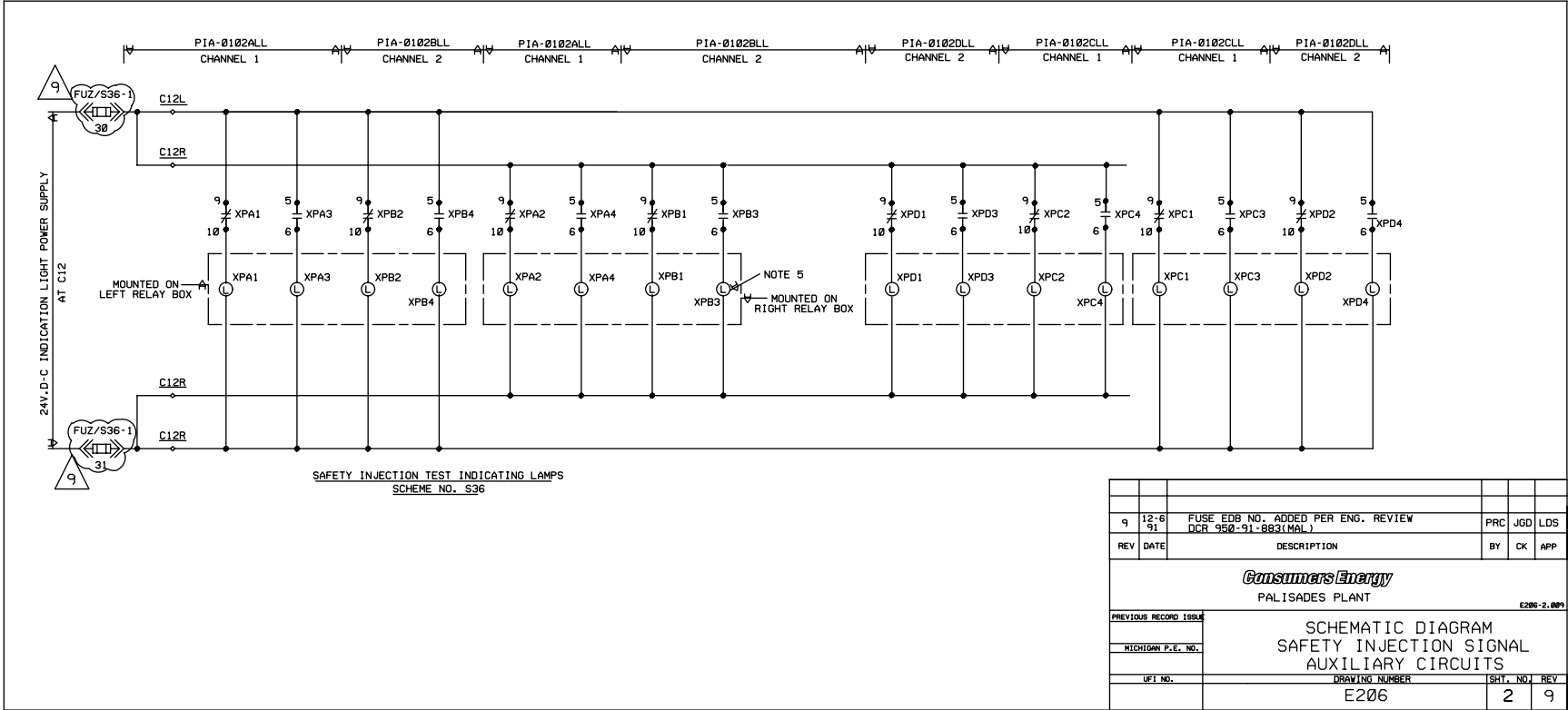
1. SEPARATE RACEWAY SYSTEM
2. BARRIER BETWEEN CHANNELS WITHIN RACEWAY.
3. REF. C E. DWG. 2966-D-3106 (FP5935N5SS-285)
2966-D-3117(FP-5935N5SS-287), HARLO DWG.
E-1266 (FP M201-58)
4. FOR PIA INSTRUMENTATION WIRING, SEE DWG. C 04 SH. 2
CONTACT 14-16 OPENS ON DECREASING PRESSURE.
CONTACT 17-19 OPENS ON DECREASING PRESSURE.
CONTACT 20-22 OPENS ON INCREASING PRESSURE.
5. 4-4 LAMP LIGHT UNITS MOUNTED ON RELAY
CABINETS. LENSE ENGRAVED WITH RELAY NO'S.
6. 4 LAMP MICRO-SWITCH LIGHT UNIT MTD. ON LEFT RELAY BOX.
7. SCHEMES S38, S39 AND S40 REDRAWN TO
E-206, SH. 1A, 1B AND 1C, RESPECTIVELY

Consumers Energy
PALISADES PLANT

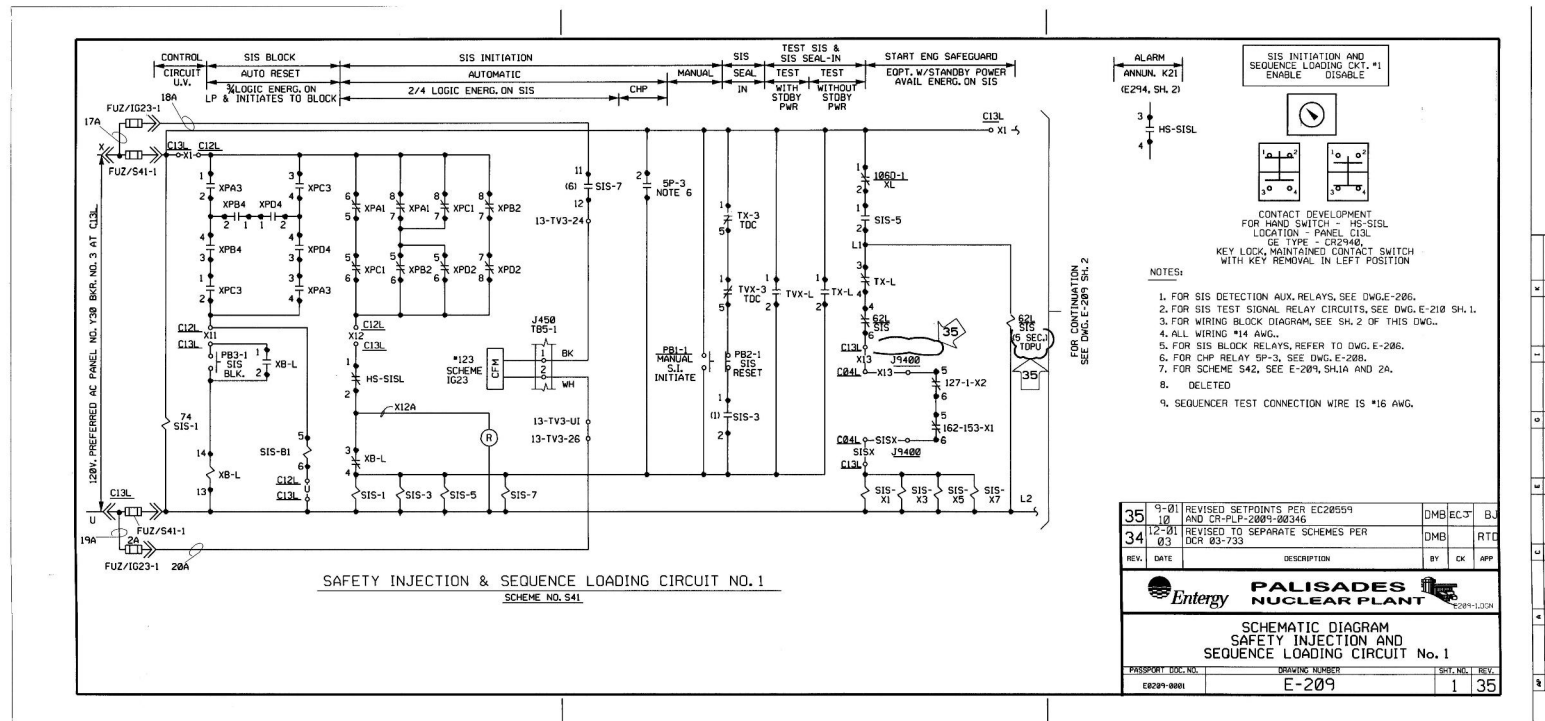
SCHEMATIC DIAGRAM
SAFETY INJECTION DETECTION
CIRCUIT No. 1

DRAWING NUMBER: E-206
SHEET NO.: 1
REV.: 1

SCHEMATIC DIAGRAM
SAFETY INJECTION SIGNAL AUXILIARY CIRCUITS



SCHEMATIC DIAGRAM SAFETY INJECTION AND SEQUENCE LOADING CIRCUITS



[illegible]

SCHEMATIC DIAGRAM
SAFETY INJECTION AND SEQUENCE LOADING CIRCUITS

MC-34L182 (8817-116) SEQUENCER FUNCTIONS-LEFT CHANNEL						MC-34R182 (8817-116) SEQUENCER FUNCTIONS-RIGHT CHANNEL					
INPUT CONTACT NUMBER	INTER INPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD	INPUT CONTACT NUMBER	INTER INPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD
1	10001	INPUT FOR DBA (0001)	E-209 SH2	(0REF)	NA	1	10001	INPUT FOR DBA	E-209 SH2	(0REF)	NA
2	10002	INPUT FOR NSD (0002)	E-209 SH2	NA	(0REF)	2	10002	INPUT FOR NSD	E-209 SH2	NA	(0REF)
3	10003	SPARE				3	10003	SPARE			
4	10004	SPARE				4	10004	SPARE			
5	10005	SPARE				5	10005	SPARE			
6	10006	SPARE				6	10006	SPARE			
7	10007	SPARE				7	10007	SPARE			
8	10008	SPARE				8	10008	SPARE			
9	10009	SPARE				9	10009	SPARE			
10	10010	SPARE				10	10010	SPARE			
11	10011	SPARE				11	10011	SPARE			
12	10012	SPARE				12	10012	SPARE			
13	10013	SPARE				13	10013	SPARE			
14	10014	SPARE				14	10014	SPARE			
15	10015	SPARE				15	10015	SPARE			
16	10016	SPARE				16	10016	SPARE			

MC-34L185 (8836-816) SEQUENCER FUNCTIONS-LEFT CHANNEL						MC-34R185 (8836-816) SEQUENCER FUNCTIONS-RIGHT CHANNEL					
OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD	OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD
1	00017	START SERVICE WATER PUMP P-78	E-154 SH1	18+8.3	18+8.3	1	00017	START SERVICE WATER PUMP P-78	E-154 SH1	18+8.3	18+8.3
2	00018	START CCV PUMP P-52C	E-209	40+8.3	40+8.3	2	00018	START CHARGING PUMP P-52C	E-207 SH1	19+8.3	19+8.3
3	00019	START CHARGING PUMP P-55C	E-207 SH2	2+8.3	2+8.3	3	00019	START CHARGING PUMP P-55A	E-207 SH1	2+8.3	2+8.3
4	00020	START LPSI PUMP P-67B	E-248	13+8.3	NA	4	00020	LPSI PUMP P-67A	E-247	13+8.3	NA
5	00021	SPARE				5	00021	SPARE			
6	00022	SPARE				6	00022	SPARE			
7	00023	SPARE				7	00023	SPARE			
8	00024	SPARE				8	00024	SPARE			
9	00025	SPARE				9	00025	SPARE			
10	00026	SPARE				10	00026	SPARE			
11	00027	SPARE				11	00027	SPARE			
12	00028	SPARE				12	00028	SPARE			
13	00029	SPARE				13	00029	SPARE			
14	00030	SPARE				14	00030	SPARE			
15	00031	SPARE				15	00031	SPARE			
16	00032	SPARE				16	00032	SPARE			

MC-34L188 (8818-800) SEQUENCER FUNCTIONS-LEFT CHANNEL						MC-34R183 (8818-800) SEQUENCER FUNCTIONS-RIGHT CHANNEL					
OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD	OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD
1	00001	OPEN HPSI VOP-3809	E-244 SH1	8+8.3-8	NA	1	00001	OPEN HPSI VOP-3804	E-244 SH1	8+8.3-8	NA
2	00002	OPEN HPSI VOP-3811	E-244 SH4	8+8.3-8	NA	2	00002	OPEN HPSI VOP-3805	E-244 SH4	8+8.3-8	NA
3	00003	OPEN LPSI VOP-3810	E-244 SH1	8+8.3-8	NA	3	00003	OPEN LPSI VOP-3812	E-244 SH1	8+8.3-8	NA
4	00004	CLOSE VLS CONT TIME VOP-3807	E-242 SH1	8+8.3-8	NA	4	00004	START BORE ACB TSD P-3808	E-241	2+8.3-8	NA
5	00005	START BORE ACB PUMP P-580	E-283	2+8.3	NA	5	00005	START BORE ACB PUMP P-58A	E-283	2+8.3	NA
6	00006	SPARE				6	00006	SPARE			
7	00007	SPARE				7	00007	SPARE			
8	00008	SPARE				8	00008	SPARE			

MC-34L184 (8818-800) SEQUENCER FUNCTIONS-LEFT CHANNEL						MC-34R184 (8818-800) SEQUENCER FUNCTIONS-RIGHT CHANNEL					
OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD	OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD
1	00009	OPEN HPSI VOP-3807	E-244 SH1	8+8.3-8	NA	1	00009	OPEN HPSI VOP-3802	E-244 SH1	8+8.3-8	NA
2	00010	OPEN HPSI VOP-3813	E-244 SH4	8+8.3-8	NA	2	00010	OPEN HPSI VOP-3808	E-244 SH4	8+8.3-8	NA
3	00011	OPEN LPSI VOP-3800	E-244 SH1	8+8.3-8	NA	3	00011	OPEN LPSI VOP-3814	E-244 SH1	8+8.3-8	NA
4	00012	OPEN BORE ACB TIME VOP-3801	E-241	8+8.3-8	NA	4	00012	SPARE			
5	00013	OPEN BORE ACB TIME VOP-3808	E-241	8+8.3-8	NA	5	00013	SPARE			
6	00014	SPARE				6	00014	SPARE			
7	00015	SPARE				7	00015	SPARE			
8	00016	SPARE				8	00016	SPARE			

MC-34L186 (8836-816) SEQUENCER FUNCTIONS-LEFT CHANNEL						MC-34R186 (8836-816) SEQUENCER FUNCTIONS-RIGHT CHANNEL					
OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD	OUTPUT CONTACT NUMBER	INTER OUTPUT CONT NO	DESCRIPTION	DRAWING	DBA	TIME NSD
1	00033	START AUX FORTH PUMP P-8A	E-196 SH2	45+8.3	45+8.3	1	00033	START AUX FORTH PUMP P-8C	E-196 SH1	45+8.3	45+8.3
2	00034	START CCV PUMP P-52A	E-209	23+8.3	23+8.3	2	00034	START CC PUMP P-52B	E-209	23+8.3	23+8.3
3	00035	START CHG SPRAY PUMP P-54C	E-251	19+8.3	NA	3	00035	START SERVICE VTR PUMP P-5C	E-154 SH2	26+8.3	26+8.3
4	00036	START CHG SPRAY PUMP P-54B	E-251	2+8.3	NA	4	00036	START CHG SPRAY PUMP P-54A	E-251	2+8.3	NA
5	00037	SPARE				5	00037	SPARE			
6	00038	SPARE				6	00038	SPARE			
7	00039	SPARE				7	00039	SPARE			
8	00040	SPARE				8	00040	SPARE			
9	00041	SPARE				9	00041	SPARE			
10	00042	SPARE				10	00042	SPARE			
11	00043	SPARE				11	00043	SPARE			
12	00044	SPARE				12	00044	SPARE			
13	00045	SPARE				13	00045	SPARE			
14	00046	SPARE				14	00046	SPARE			
15	00047	SPARE				15	00047	SPARE			
16	00048	SPARE				16	00048	SPARE			

NOTES:

1. THE FOLLOWING CONVENTION WAS USED FOR EQUIPMENT NUMBERS.

MC- 3 4 X X X

CHANNEL (LEFT OR RIGHT)

CHARGE #

SLUT 1-

SLUT 2-

SLUT 3-

SLUT 4-

SLUT 5-

SLUT 6-

SLUT 7-

SLUT 8-

SLUT 9-

SLUT 10-

SLUT 11-

SLUT 12-

SLUT 13-

SLUT 14-

SLUT 15-

SLUT 16-

SLUT 17-

SLUT 18-

SLUT 19-

SLUT 20-

SLUT 21-

SLUT 22-

SLUT 23-

SLUT 24-

SLUT 25-

SLUT 26-

SLUT 27-

SLUT 28-

SLUT 29-

SLUT 30-

SLUT 31-

SLUT 32-

SLUT 33-

SLUT 34-

SLUT 35-

SLUT 36-

SLUT 37-

SLUT 38-

SLUT 39-

SLUT 40-

* IF PUMPS P-52A AND P-52B FAIL TO START.

** IF PUMPS P-55A AND P-55C FAIL TO START.

SECTION	DATE	BY	DESCRIPTION	BY	CK	APP
APP. C.J. McDONALD	4/18/83	DR. R.M. SATERRELLI	CK. T.D. VOGT	4/18/83		
APP. P. LOLLICH	4/18/83	Consumers Energy	SAFETY INJECTION & SEQUENCER LOADING CIRCUITS			
APP. D.C. TARSİ	4/18/83	PALISADES PLANT	NO. E-289 SHEET 3			

REV. 25

SIS (SAFETY INJECTION SIGNAL) RELAY TABLE


CONTACTS		SIS-X RELAYS-LEFT (ODD NUMBERS)										SIS-X RELAYS-RIGHT (EVEN NUMBERS)									
		SIS-X1		REC. D-248	SIS-X3	REC. D-244	SIS-X5	REC. D-242	SIS-X7	REC. D-154	SIS-X9	REC. D-240	SIS-X11	REC. D-238	SIS-X13	REC. D-236	SIS-X15	REC. D-234			
1		START LP, INJ, PUMP MOV 3081	E-248	OPEN LP, INJ, LINE LINE OUTLET MOV3081	E-244	CLOSE VALVE CONTROL LINE OUTLET MOV3081	E-242	START SERV. WTR. PUMP P78	E-154	START LP, INJ, PUMP MOV 3082	E-247	OPEN LP, INJ, LINE PUMPED FEED MOV3082	E-244	OPEN BORIC ACID PUMPED FEED MOV3084B	E-241	START SERV. WTR. PUMP P7C	E-151				
2		START LP, INJ, PUMP P55A	E-249	OPEN LP, INJ, LINE P55B	E-244	START BORIC ACID PUMP 3085C	E-283	START COMP. CLG. PUMP 3085C	E-259	START LP, INJ, PUMP MOV 3085A	E-249	OPEN LP, INJ, LINE MOV 3085B	E-244	START BORIC ACID PUMP 3085C	E-280	START COMP. CLG. PUMP P55B	E-251				
3		CONT. SPRAY PUMP P54B ON STAND BY	E-251	CONT. SPRAY PUMP P54B MOV 3083	E-244	OPEN BORIC ACID SK1	E-241	START COMP. CLG. PUMP P52C	E-259	SPARE		OPEN LP, INJ, LINE MOV 3083	E-244	START CHG. PUMP P55B	E-257	SPARE					
4		OPEN LP, INJ, LINE MOV 3087	E-244	TRIP CONT. CLG. UNIT SK1	E-218	OPEN BORIC ACID GRAVITY FEED MOV218	E-241	SPARE		OPEN LP, INJ, LINE MOV 3087	E-249	TRIP CONT. CLG. UNIT SK1	E-218	START CHG. PUMP P55B	E-257	SPARE					
5		OPEN LP, INJ, LINE MOV 3089	E-244	SPARE		START CHG. PUMP MOV 3089	E-257	SPARE		OPEN LP, INJ, LINE MOV 3089	E-249	TRIP CONT. CLG. UNIT SK1	E-218	START SERV. WTR. PUMP P7C	E-154	INITIATE STARTUP POWER MOV 3087	E-240				
6		OPEN LP, INJ, LINE MOV 3089	E-244	SPARE		START CHG. PUMP MOV 3089	E-257	SPARE		OPEN LP, INJ, LINE MOV 3089	E-249	TRIP CONT. CLG. UNIT SK1	E-218	START SERV. WTR. PUMP P7C	E-154	INITIATE STARTUP POWER MOV 3087	E-240				

SIS-X (SAFETY INJECTION SIGNAL AUXILIARY) RELAY TABLE
FUNCTIONS WITH SIS & STANDBY POWER AVAILABLE

GWO 8428
SUBMERGED ELECT. EQUIP. MOD.
NOTES


1. * N.O.CONTACT
2. ** N.C. CONTACT-OPENS ON SIS
3. FOR RELAY CIRCUITS,
SEE E-209, SH. 1
4. SIS-10 & SIS-5 RELAYS
HAVE 12 CONTACTS

31	10-26	REVISED TO INCORPORATE EC19665	RLR	DMK	EC
30	12-02	REVISED PER SC-95-898 AND DCR 98-340	DMB		RT
	03				
REV.	DATE	DESCRIPTION	BY	CK	APP



Entergy

**PALISADES
NUCLEAR PLANT**



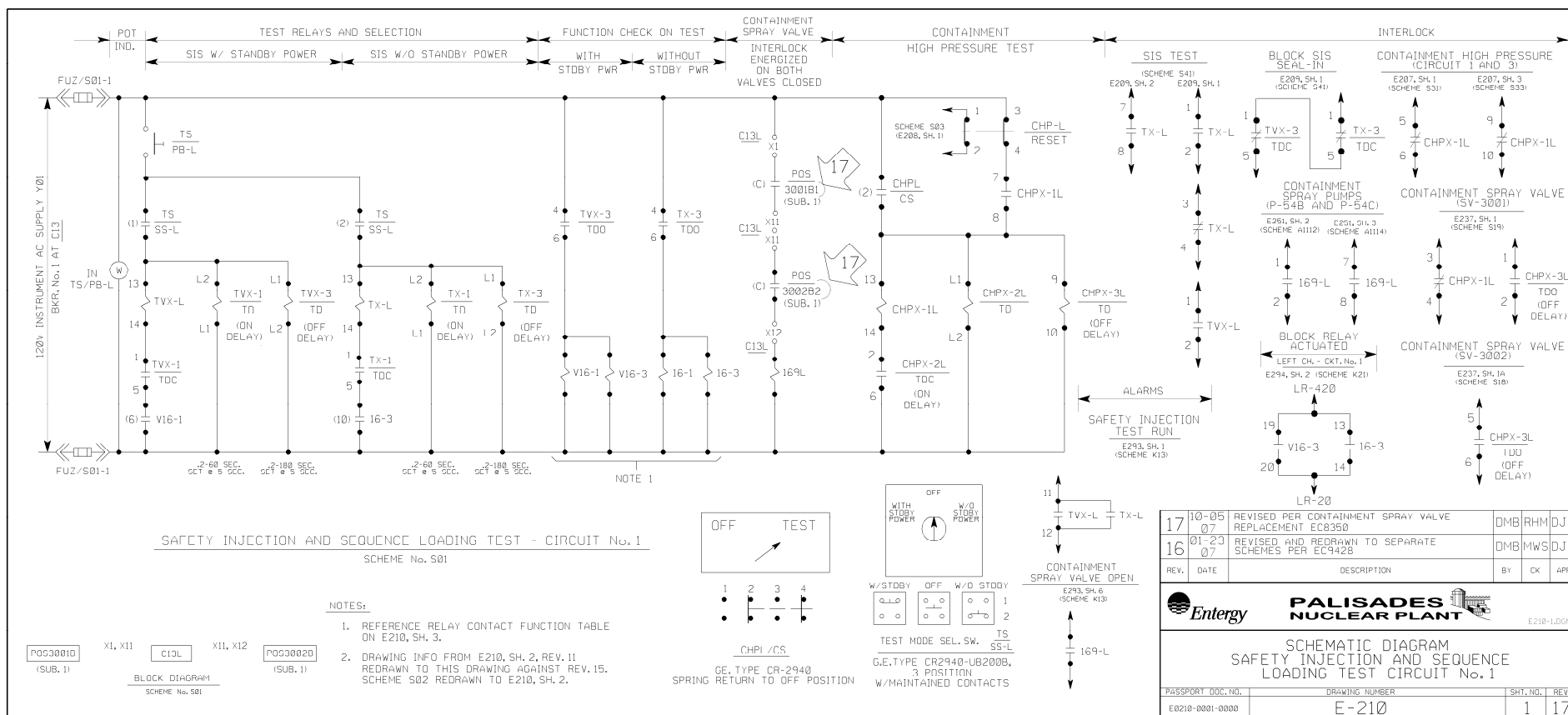
E299-4.00A

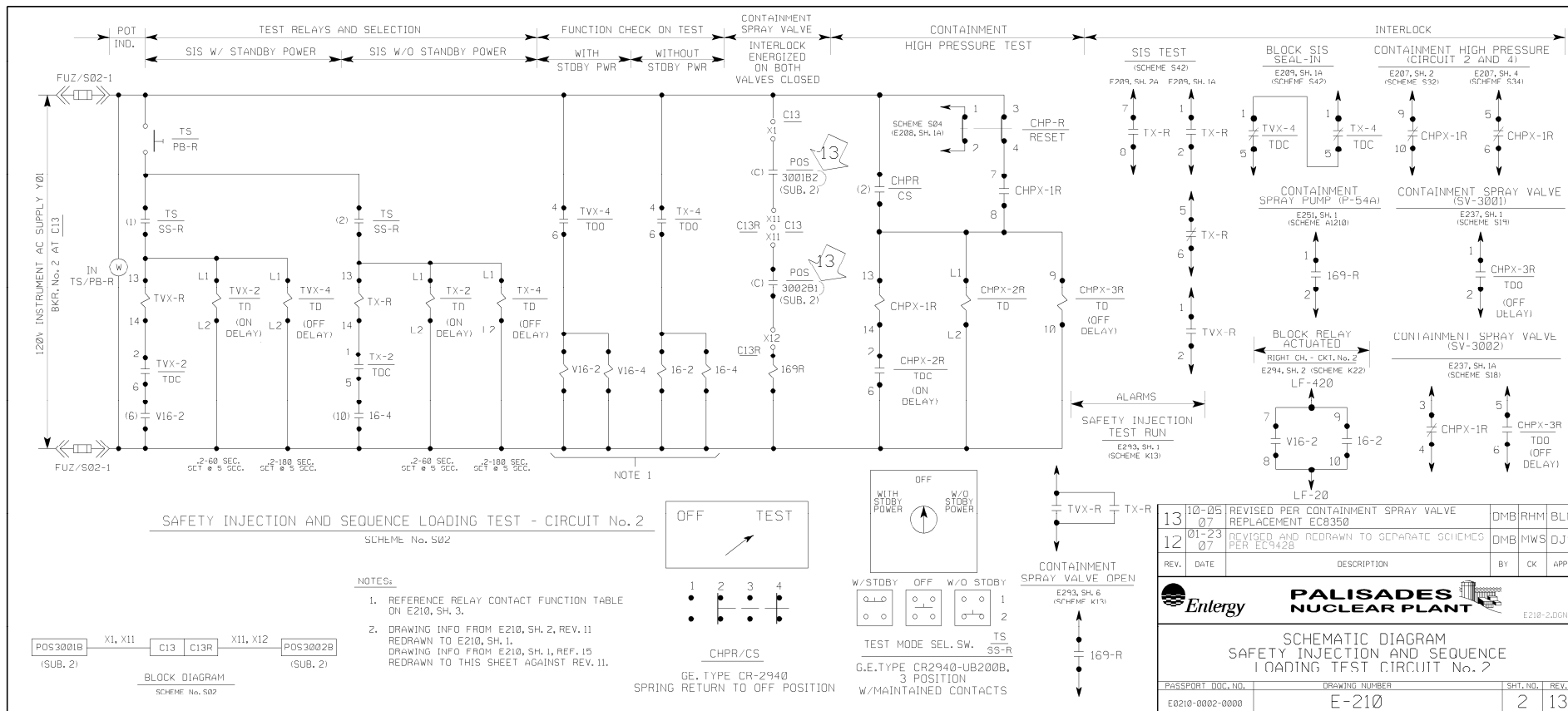
**SCHEMATIC DIAGRAM
SAFETY INJECTION & SEQUENCE
LOADING CIRCUITS**

DRAWING NUMBER	SHT.	NO.	REV.
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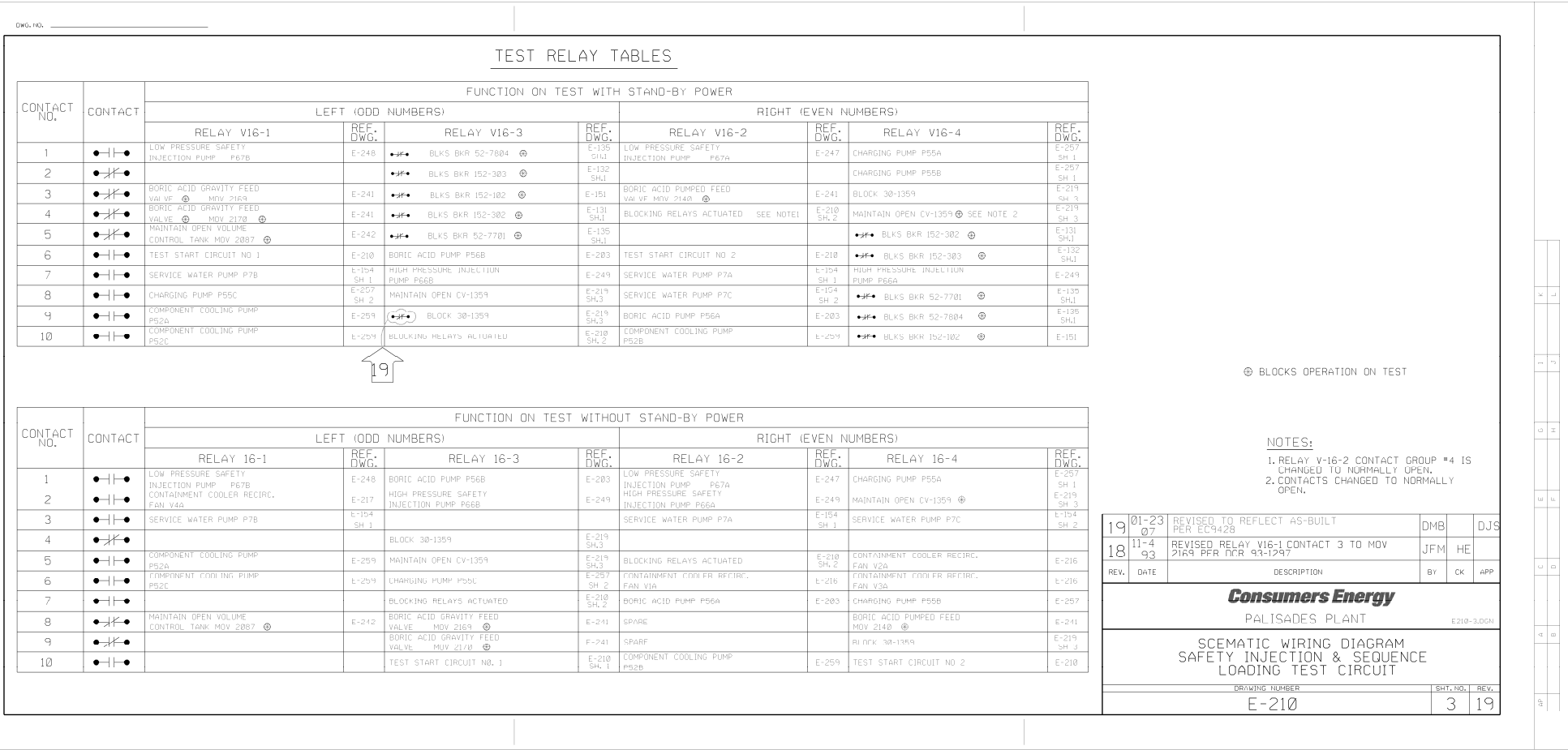
SCHEMATIC DIAGRAM

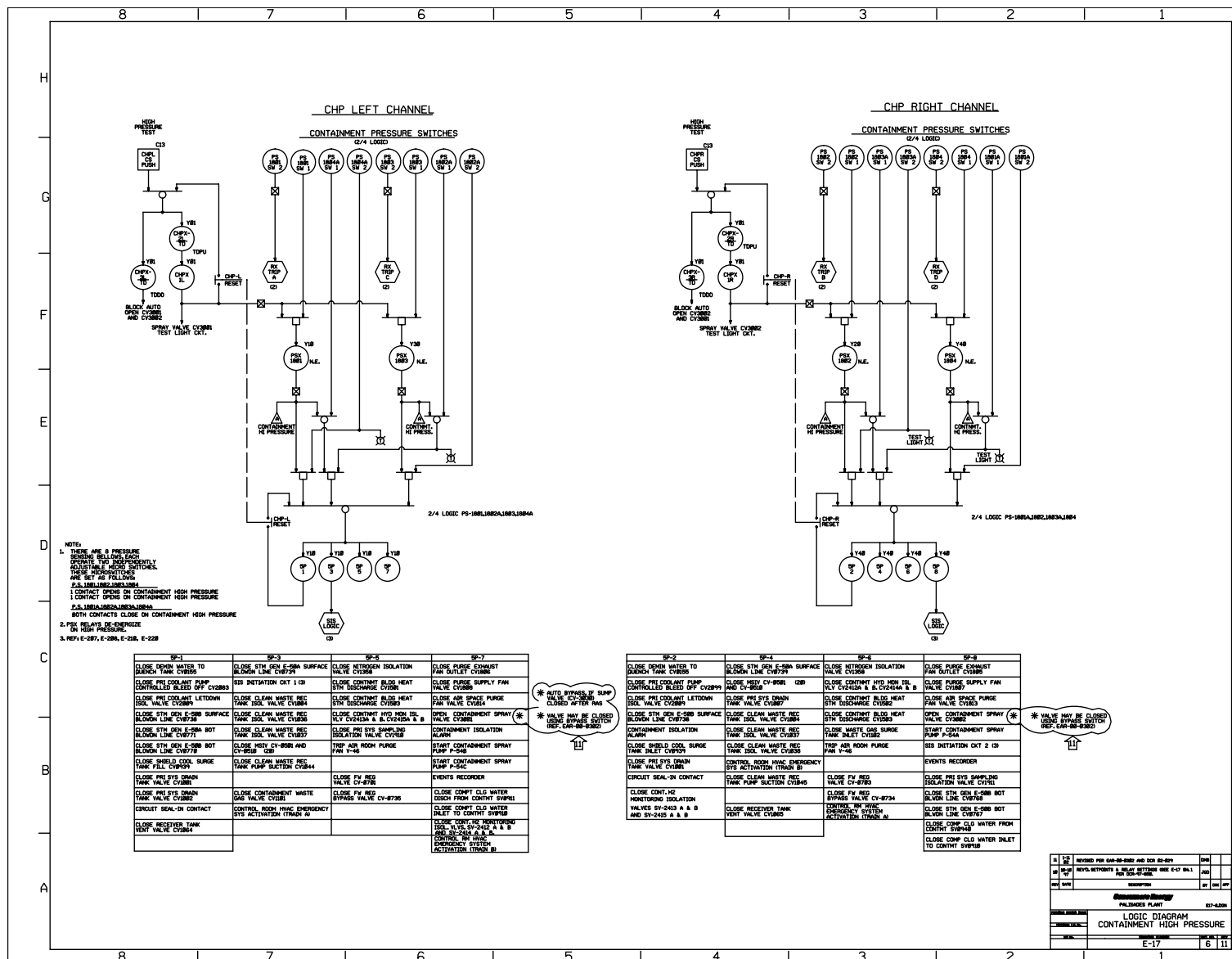
SAFETY INJECTION AND SEQUENCE LOADING TEST CIRCUITS





SCHEMATIC DIAGRAM
SAFETY INJECTION AND SEQUENCE LOADING TEST CIRCUITS





CHR LEFT CHANNEL

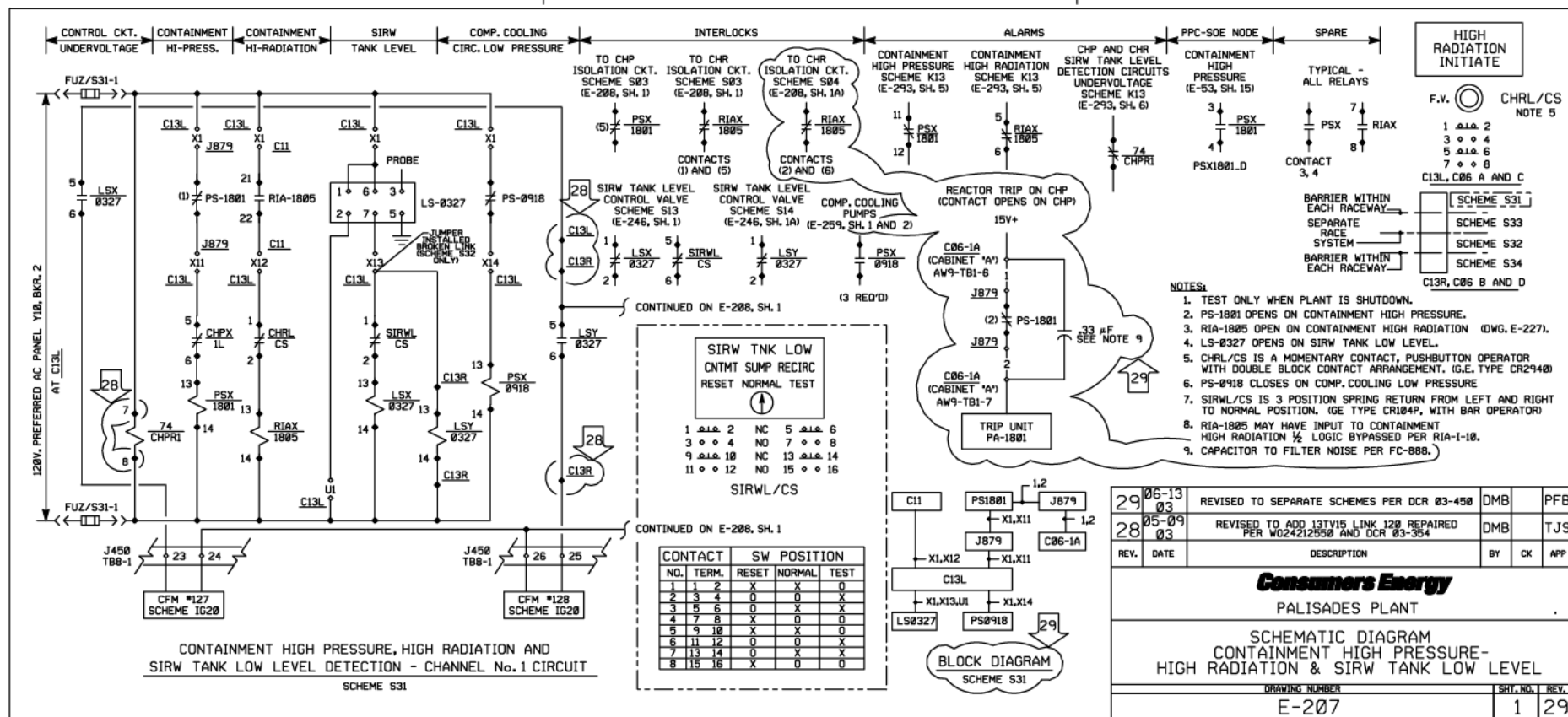
CHR RIGHT CHANNEL

SR-1	SR-3	SR-5	SR-7
CLOSE REHEM WATER TO QUENCH TANK CY850	CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8775	CLOSE NITROGEN ISOLATION VALVE CV1086	CLOSE PURGE EXHAUST FAN OUTLET CV1086
CLOSE PRE COOLANT TANK CONTROLLED BLEED OFF CV1089	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONTAINMENT BLDG HEAT STN DISCHARGE CY1086	CLOSE PURGE SUPPLY FAN VALVE CV1086
CLOSE PRE COOLANT LETDOWN SOLV VALVE CV1089	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONTAINMENT BLDG HEAT STN DISCHARGE CY1086	CLOSE AIR SPACE PURGE FAN VALVE CV1086
CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8758	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONT WTD H2O ISOLV CY1086 & CY1086 & B	CONTAINMENT ISOLATION ALARM
CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8772	CLOSE CLEAN WASTE REC TANK PUMP SUCTION CV1086	CLOSE PRE SYS SAMPLING ISOLATION VALVE CV1086	EVENTS RECORDER
CLOSE 8TH DEN E-SHA BOT BLOWDOWN LINE CV8778	CLOSE CONTAINMENT WASTE GAS VALVE CV1086	TOP AIR ROOM PURGE FAN V-10	CLOSE CONT.H2 MONITORING ISOLATION VALVES
CLOSE SHIELD COOL SURGE TANK FILL CV1089	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN B)
CLOSE PRE SYS DRAIN TANK VALVE CV1086	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)	EVENTS RECORDER
CLOSE PRE SYS DRAIN TANK VALVE CV1086	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)	EVENTS RECORDER
CIRCUIT SEAL-IN CONTACT			
CLOSE RECEIVER TANK VALVE CV1086			

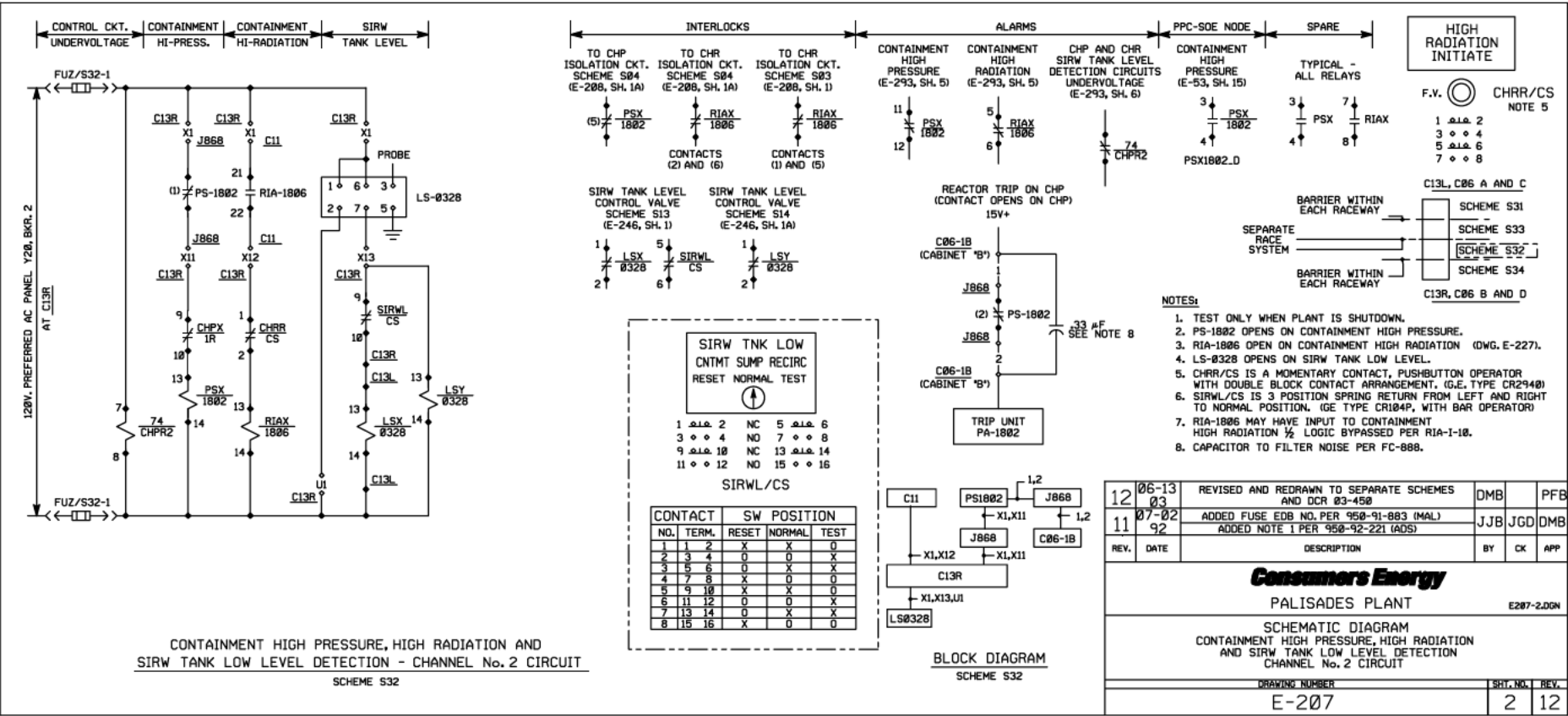
SR-2	SR-4	SR-6	SR-8
CLOSE REHEM WATER TO QUENCH TANK CY-850	CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8775	CLOSE NITROGEN ISOLATION VALVE CV1086	CLOSE PURGE EXHAUST FAN OUTLET CV1086
CLOSE PRE COOLANT TANK CONTROLLED BLEED OFF CV1089	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONT WTD H2O ISOLV CY1086 & CY1086 & B	CLOSE PURGE SUPPLY FAN VALVE CV1086
CLOSE PRE COOLANT LETDOWN SOLV VALVE CV1089	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONT BLDG HEAT STN DISCHARGE CY1086	CLOSE AIR SPACE PURGE FAN VALVE CV1086
CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8758	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONT BLDG HEAT STN DISCHARGE CY1086	CLOSE PRE SYS SAMPLING ISOLATION VALVE CV1086
CLOSE 8TH DEN E-SHA SURFACE BLOWDOWN LINE CV8772	CLOSE CLEAN WASTE REC TANK SOLV VALVE CV1086	CLOSE CONT WASTE GAS SURGE TANK INLET CV1086	CLOSE 8TH DEN E-SHA BOT BLOWDOWN LINE CV8778
CLOSE 8TH DEN E-SHA BOT BLOWDOWN LINE CV8778	CLOSE CONTAINMENT WASTE GAS VALVE CV1086	TOP AIR ROOM PURGE FAN V-10	CLOSE 8TH DEN E-SHA BOT BLOWDOWN LINE CV8778
CLOSE SHIELD COOL SURGE TANK FILL CV1089	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN B)	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)
CLOSE PRE SYS DRAIN TANK VALVE CV1086	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)	EVENTS RECORDER
CLOSE PRE SYS DRAIN TANK VALVE CV1086	PREVENTS OPERATION OF TEST PUMP P-728 WHILE HE IN AUTO E-208	CONTROL ROOM HVAC EMERGENCY SYS ACTIVATION (TRAN A)	EVENTS RECORDER
CIRCUIT SEAL-IN CONTACT			
CLOSE RECEIVER TANK VALVE CV1086			

REF: E-207, E-208

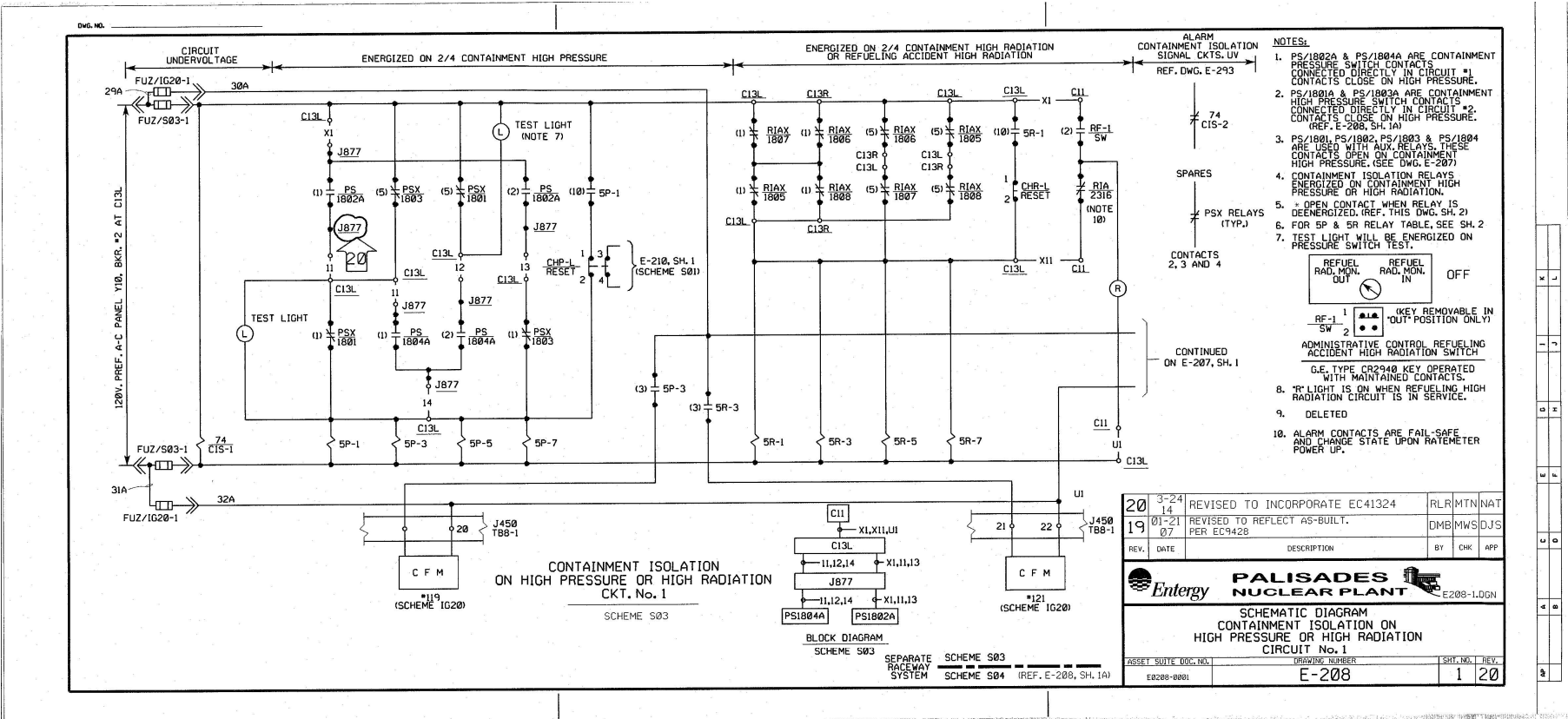
SCHEMATIC DIAGRAM
CONTAINMENT HIGH PRESSURE, HIGH RADIATION AND SIRW TANK LOW LEVEL



SCHEMATIC DIAGRAM
CONTAINMENT HIGH PRESSURE, HIGH RADIATION AND SIRW TANK LOW LEVEL



SCHEMATIC DIAGRAM
CONTAINMENT ISOLATION ON HIGH PRESSURE OR HIGH RADIATION



SCHEMATIC DIAGRAM CONTAINMENT ISOLATION ON HIGH PRESSURE OR HIGH RADIATION

CONTAINMENT ISOLATION RELAY TABLE

CONTACTS	RELAYS 5P-1 & 5R-1	REF. DWG.	RELAYS 5P-3 & 5R-3	REF. DWG.	RELAYS 5P-5 & 5R-5	REF. DWG.	RELAYS 5P-7 & 5R-7	REF. DWG.
1	CLOSE DEMIN. WATER TO DRENCH TANK SV1085	E-235 SH.2	CLOSE STM. GEN. E-508A TOP BLOWN LINE SV10739	E-235 SH.2	DISABLE AUTO START OF ENG SFORDS PUMP P-738 (SR-5 ONLY)	E-285 SH.1	CLOSE PURGE EXHAUST FAN DUTY E1 SV1086	E-221 SH.1
2	CLOSE PRI. COOLANT PUMP CONTROLLED BLEED OFF SV2083	E-235 SH.2	*SIS INITIATION CKT.1 (SP-3 ONLY)	E-285 SH.1	CLOSE NITROGEN ISOLATION VALVE SV1358	E-235 SH.3	CLOSE PURGE SUPPLY FAN VALVE SV1888	E-221 SH.1
3	CLOSE PRI. COOLANT LETDOWN ISOL. VALVE SV2093	E-235 SH.2	*CRITICAL FUNCTION MON. INPUTS *119 (FOR SP-3) *122 (FOR SR-3)	E-285 SH.1	CLOSE CONTAINMENT BLDG. HEAT STM. DISCHARGE SV1502	E-235 SH.3	CLOSE AIR SPACE PURGE FAN VALVE SV1814	E-221 SH.1
4	CLOSE STM. GEN. E-508B TOP BLOWN LINE SV10738	E-235 SH.3	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1084	E-235 SH.3	*CLOSE CV-0701 FW REG VLV (SR-5 ONLY)	E-69 SH.1	OPEN CONTAINMENT SPRAY VALVE SV1800 (SP-7 ONLY)	E-237 SH.1
5	CLOSE STM. GEN. E-508A BOT. BLOWN LINE SV10771	E-235 SH.4	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1036	E-235 SH.1	CLOSE CONTAINMENT BLDG. HEAT STM. INLET SV1503	E-235 SH.1	*CONTAINMENT ISOLATION ALARM KIT #26	E-252 SH.2
6	CLOSE STM. GEN. E-508B BOT. BLOWN LINE SV10770	E-235 SH.4	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1037	E-235 SH.1	CLOSE CONT. HYD. MON. ISOL. VLV SV-2413A & B SV-2415A & B	E-235 SH.1	*START CONTAINMENT SPRAY PUMP P-546 (SP-7 ONLY)	E-251 SH.1
7	CLOSE SHIELD COOL SURGE TANK INLET SV1033	E-235 SH.3	*CLOSE MSIV CV-0501 & CV-0510 (SP-3 ONLY)	E-235 SH.1	CLOSE CONTAINMENT SUMP DR. VALVE SV1083 (RELAYS SR-5 ONLY)	E-235 SH.1	*START CONTAINMENT SPRAY PUMP P-546 (SP-7 ONLY)	E-251 SH.1
8	CLOSE PRI. SYS. DRAIN TANK VALVE SV1001	E-235 SH.3	CLOSE CLEAN WASTE REC. TANK PUMP SUCTION SV1044	E-235 SH.1	*CLOSE CV-738 FW REG BYPASS VLV (SP-5 ONLY)	E-69 SH.1	CLOSE CONT. H. MON. ISOL. VLV SV-2412A & B & SV-2414A & B	E-235 SH.1
9	CLOSE PRI. SYS. DRAIN TANK VALVE SV1002	E-235 SH.3	*SPARE	E-235 SH.1	CLOSE TRI. SYS. SAMPLING ISOLATION VALVE SV1510	E-235 SH.1	SYSTEM ACTIVATION (TRAIN B)	E-271 SH.1
10	*CIRCUIT SEAL-IN CONTACT	E-208 SH.1	CLOSE CONTAINMENT WASTE GAS INLET VALVE SV1081	E-235 SH.1	TRIP AIR ROOM PURGE FAN V-46	E-222 SH.1	CLOSE COMP. CLG. WTR DISCH. FROM CONT. SV1091 (SP-7 ONLY)	E-235 SH.4
11	CLOSE RECEIVER TANK VENT VALVE SV1064	E-235 SH.1	CONTROL ROOM HVAC EMERGENCY SYS. ACTIVATION (TRAIN A)	E-271 SH.1	DISABLE AUTO START OF ENG SFORDS SUMP PUMP P-738 (SR-5 ONLY)	E-285 SH.1	CLOSE COMP. CLG. WTR INLET TO CONT. SV-0910 (SP-7 ONLY)	E-235 SH.4
12	*SPARE	E-235 SH.1	*SPARE	E-235 SH.1	*SPARE	E-285 SH.1	PPC-SOE NODE PT. ID. K59P.5R.D	E-53 SH.8

CONTACTS	RELAYS 5P-2 & 5R-2	REF. DWG.	RELAYS 5P-4 & 5R-4	REF. DWG.	RELAYS 5P-6 & 5R-6	REF. DWG.	RELAYS 5P-8 & 5R-8	REF. DWG.	RELAY 5P-6 (CONT)	REF. DWG.
1	CLOSE DEMIN. WATER TO DRENCH TANK SV1085	E-235 SH.2	CLOSE STM. GEN. E-508A TOP BLOWN LINE SV10739	E-235 SH.2	CLOSE CONTAINMENT SUMP DR. VALVE SV1084 (RELAYS SR-6 ONLY)	E-235 SH.1	CLOSE PURGE EXHAUST FAN DUTY E1 SV1086	E-221 SH.1		
2	CLOSE PRI. COOLANT PUMP CONTROLLED BLEED OFF SV2083	E-235 SH.2	*CLOSE MSIV CV-0501 & CV-0510 (SP-4 ONLY)	E-235 SH.1	CLOSE NITROGEN ISOLATION VALVE SV1358	E-235 SH.3	CLOSE PURGE SUPPLY FAN VALVE SV1888	E-221 SH.1		
3	CLOSE PRI. COOLANT LETDOWN ISOL. VALVE SV2093	E-235 SH.2	CLOSE PRI. SYS. DRAIN TANK VALVE SV1001	E-235 SH.3	CLOSE CONT. HYD. MON. ISOL. VLV SV-2412A & B SV-2414A & B	E-235 SH.1	CLOSE AIR SPACE PURGE FAN VALVE SV1813	E-221 SH.1		
4	CLOSE STM. GEN. E-508B TOP BLOWN LINE SV10738	E-235 SH.3	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1084	E-235 SH.3	CLOSE CONTAINMENT BLDG. HEAT STM. DISCHARGE SV1502	E-235 SH.1	OPEN CONTAINMENT SPRAY VALVE SV1800 (SP-8 ONLY)	E-237 SH.1		
5	*CONTAINMENT ISOLATION ALARM KIT #26	E-252 SH.2	*SPARE	E-235 SH.1	CLOSE CONTAINMENT BLDG. HEAT STM. INLET SV1503	E-235 SH.1	*CLOSE COMP. CLG. WTR DISCH. FROM CONT. SV-0910 (SP-8 ONLY)	E-235 SH.4		
6	CLOSE CONT. H. MON. ISOL. VLV. SV-2413A & B & SV-2415A & B	E-235 SH.1	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1037	E-235 SH.1	CLOSE WASTE GAS SURGE TANK INLET SV1002	E-235 SH.1	*START CONTAINMENT SPRAY PUMP P-546 (SP-8 ONLY)	E-251 SH.1		
7	CLOSE SHIELD COOL SURGE TANK INLET SV1033	E-235 SH.3	CLOSE CLEAN WASTE REC. TANK ISOL. VALVE SV1036	E-235 SH.1	DISABLE AUTO START OF ENG SFORDS SUMP PUMP P-738 (SR-6 ONLY)	E-285 SH.1	*SIS INITIATION CKT. 2 (RELAYS SR-8 ONLY)	E-289 SH.1		
8	CLOSE PRI. SYS. DRAIN TANK VALVE SV1001	E-235 SH.3	CONTROL ROOM HVAC EMERGENCY SYS. ACTIVATION (TRAIN B)	E-271 SH.1	CONTROL ROOM HVAC EMERGENCY SYS. ACTIVATION (TRAIN A)	E-271 SH.1	CLOSE COMP. CLG. WTR INLET TO CONT. SV-0910 (SP-8 ONLY)	E-235 SH.4		
9	*SPARE	E-235 SH.3	CLOSE CLEAN WASTE REC. TANK PUMP SUCTION SV1045	E-235 SH.1	*CRITICAL FUNCTION MON. INPUTS *119 (FOR SP-6) *122 (FOR SR-6)	E-285 SH.1	CLOSE PRI. SYS. SAMPLING ISOLATION VALVE SV1510	E-235 SH.1		
10	*CIRCUIT SEAL-IN CONTACT	E-208 SH.1	*SPARE	E-235 SH.1	TRIP AIR ROOM PURGE FAN V-46	E-222 SH.1	CLOSE STM. GEN. E-508B BOT. BLOWN LINE SV10767	E-235 SH.4		
11	*SPARE	E-235 SH.1	CLOSE RECEIVER TANK VENT VALVE SV1065	E-235 SH.1	*SPARE	E-285 SH.1	CLOSE STM. GEN. E-508A BOT. BLOWN LINE SV10767	E-235 SH.4		
12	*SPARE	E-235 SH.1	*SPARE	E-235 SH.1	DISABLE AUTO START OF ENG SFORDS SUMP PUMP P-738 (SR-6 ONLY)	E-285 SH.1	PPC-SOE NODE PT. ID. K59P.5R.D	E-53 SH.8	*CLOSE FW REG BYPASS VALVE CV-0734	E-69 SH.1

NOTES:

- RELAYS WITH 8 OR LESS NC CONTACTS SHALL UTILIZE COIL TB113-3. RELAYS WITH 9 OR MORE NC CONTACTS SHALL UTILIZE COIL TB113-61.

* - NORMALLY OPEN CONTACT

REFERENCE DWGS:

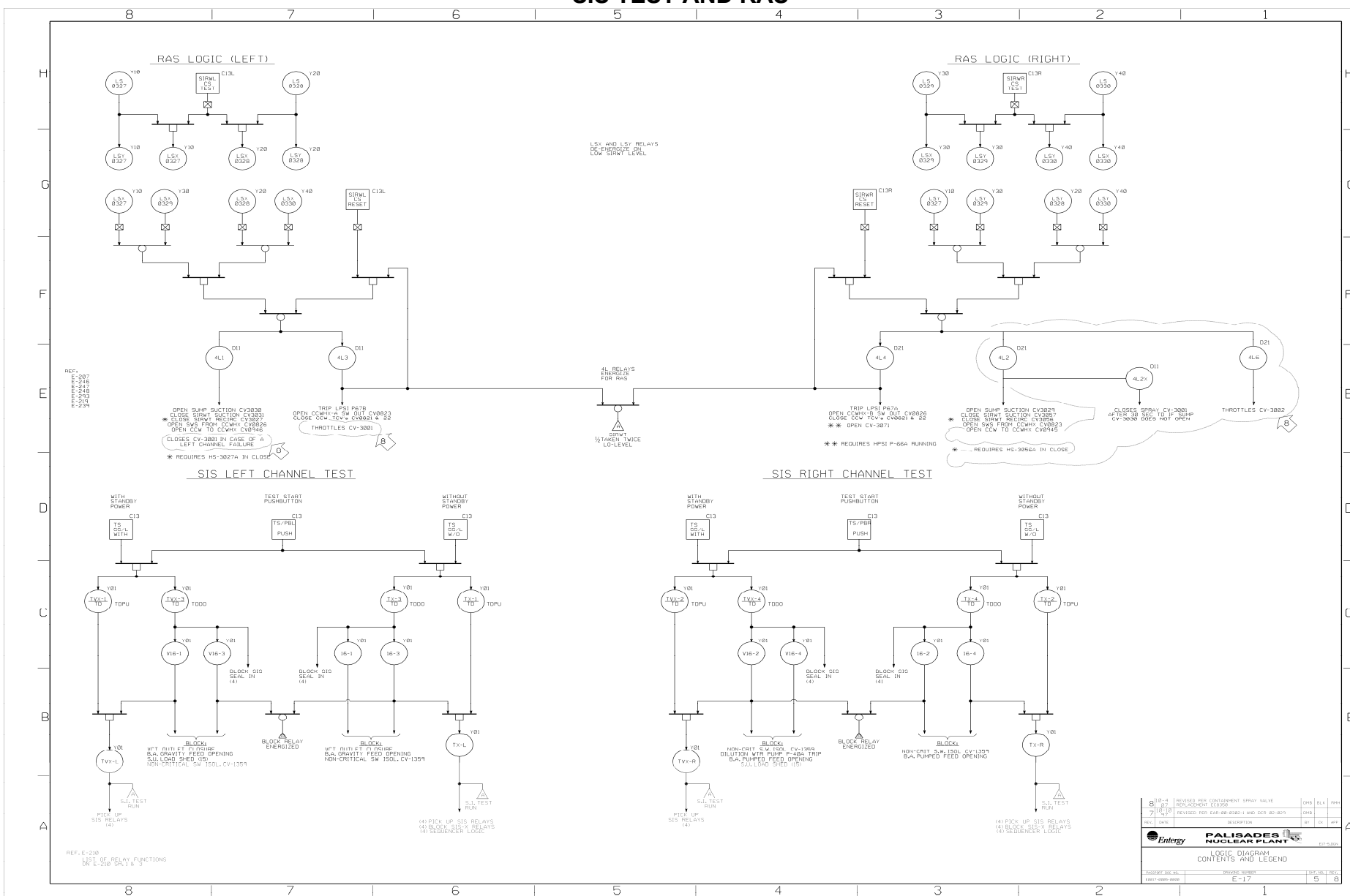
LOGIC DIAGRAM JLC-1210(S) SH. 2
SCHEMATIC DIAGRAMS E-271 SH. 8
E-271 SH. 1
E-223
E-224
E-916
E-69 SH. 1

SPARE CONTACTS

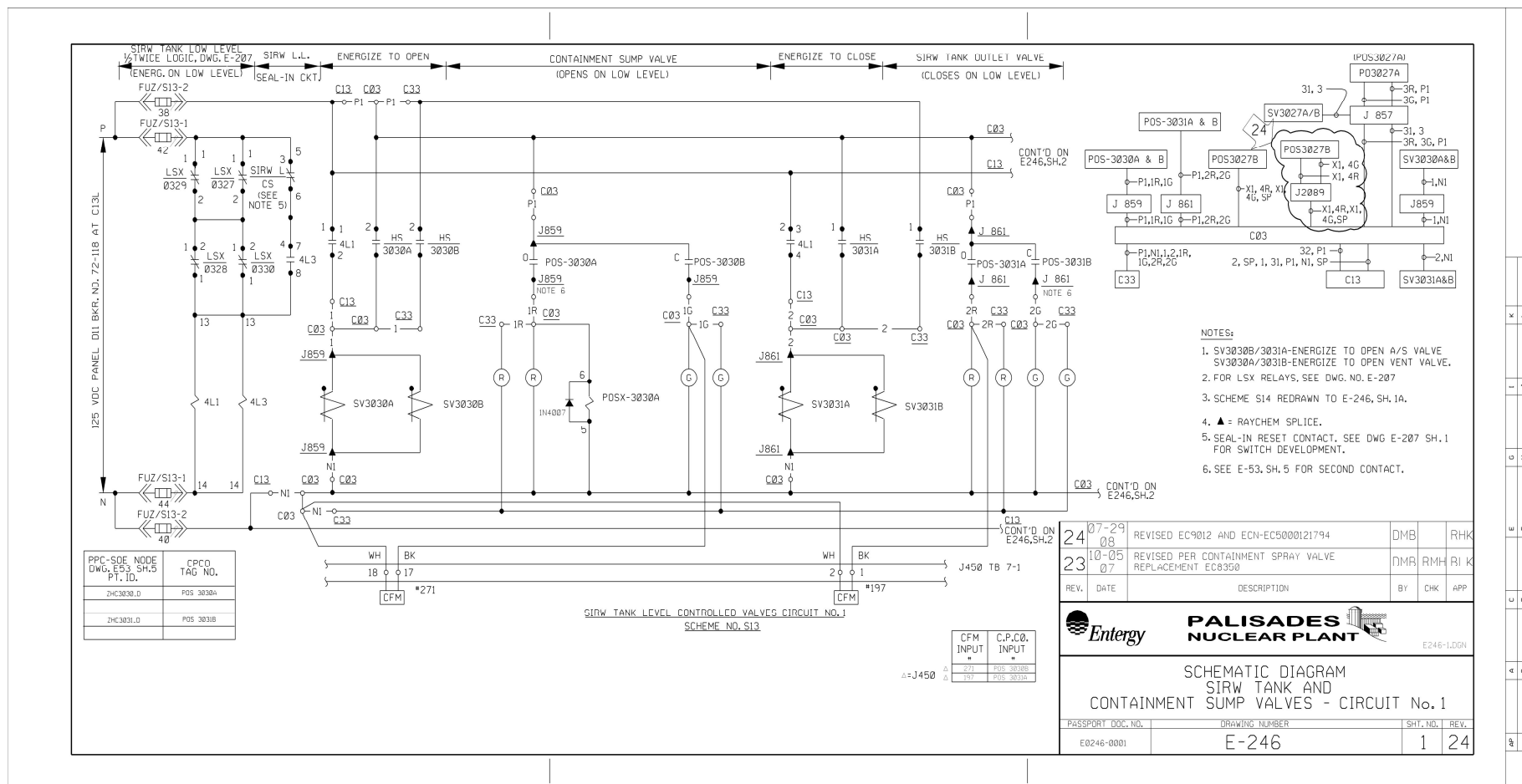
RELAY	NORMALLY OPEN	NORMALLY CLOSED
SR-1	—	* 12
SP-3	* 9, 12	—
SR-3	* 2, 7, 9, 12	—
SP-5	* 1, 7, 11, 12	—
SR-5	* 4, 8, 12	—
SR-7	* 4, 5, 7, 10, 11	—
SP-2	* 3, 11, 12	—
SR-2	* 9, 11, 12	* 12
SP-4	* 5, 10	* 12
SR-4	* 2, 5, 10	* 12
SP-6	* 11	* 1
SR-6	* 11	—
SR-8	* 4, 5, 6, 7, 8	—
SP-1	—	* 12

30	06-13 03	REVISED TO SEPARATE SCHEMES PER DCR 03-450	DMB	PFB
29	07-31 95	SPINDED CONTACT NO.12,RELAYS SP-1,SP-2,SP-3,SP-4 & SP-5 & CONTACT NO.11,RELAYS SP-6 & SR-6 PER FC-045 & DCR 10-000 REMOVED EVENTS RECORDER, ADDED PPC-SOE NODE PER FC-133-06 AND DCR 10-020	DMB	FCM
REV.	DATE	DESCRIPTION	BY	CHK APP
<p align="center">Consumers Energy</p> <p align="center">PALISADES PLANT</p> <p align="right">E200-2.00N</p> <p align="center">SCHEMATIC DIAGRAM CONTAINMENT ISOLATION ON HIGH PRESSURE OR HIGH RADIATION</p>				
DRAWING NUMBER			SHT. NO.	REV.
E-208			2	30

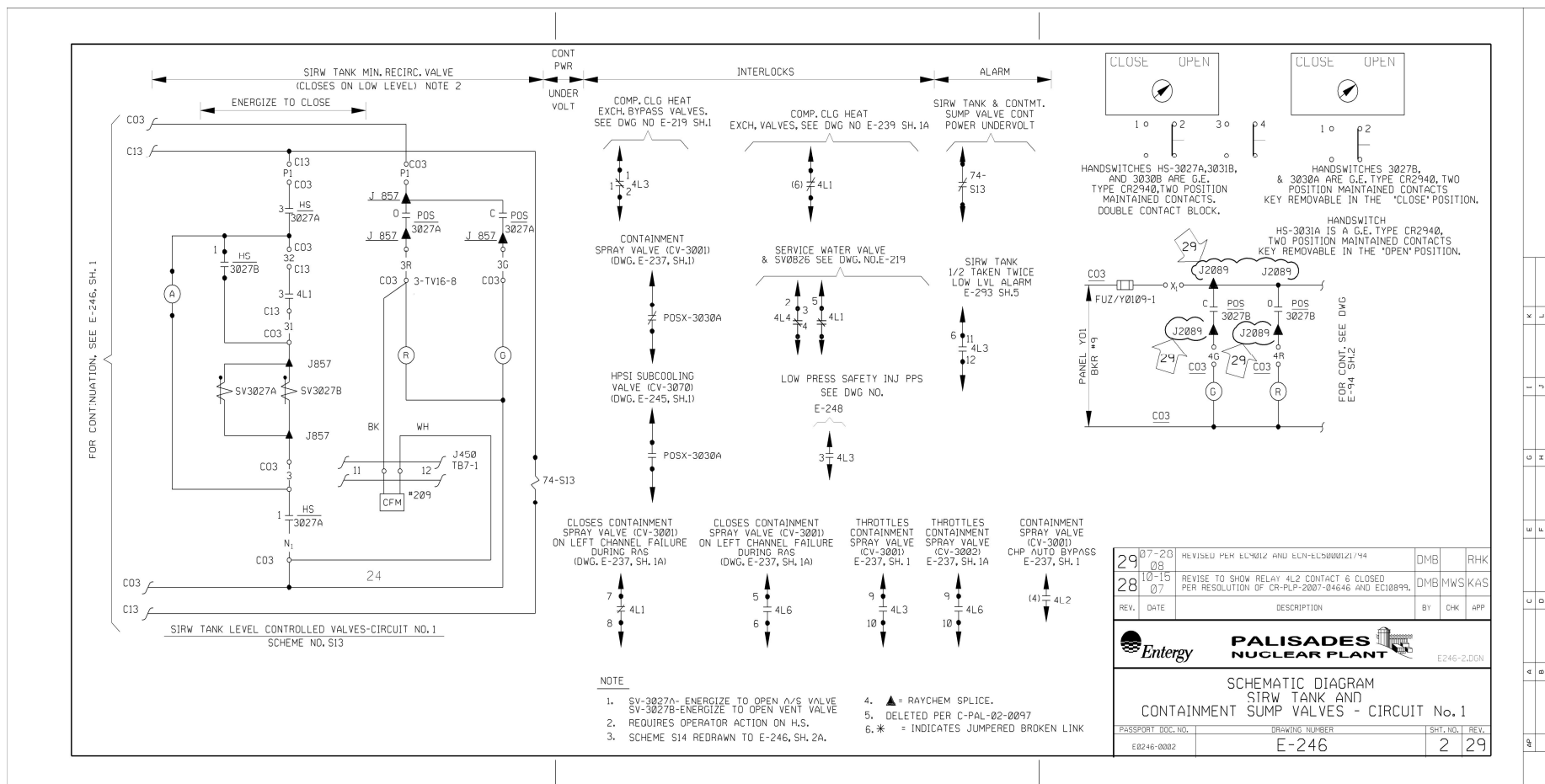
LOGIC DIAGRAM SIS TEST AND RAS



SCHEMATIC DIAGRAM SIRW TANK AND CONTAINMENT SUMP VALVES



SCHEMATIC DIAGRAM SIRW TANK AND CONTAINMENT SUMP VALVES



**LOGIC DIAGRAM
LEGEND AND NOTES**

FUNCTION	SYMBOL INPUT OUTPUT	MEANING
AND		OUTPUT EXISTS WHEN ALL INPUTS EXIST.
OR		OUTPUT EXISTS WHEN ANY INPUT EXISTS.
COINCIDENCE MATRIX		OUTPUT EXISTS WHEN AT LEAST A OUT OF B INPUTS ARE PRESENT.
MEMORY		OUTPUT EXISTS WHEN MEMORY INPUT IS APPLIED AND IS RETAINED UNTIL RESET INPUT IS APPLIED. M AND R DENOTE MEMORY AND RESET RESPECTIVELY.
NOT		OUTPUT EXISTS WHEN INPUT DOES NOT EXIST.
ON TIME DELAY		OUTPUT EXISTS FOLLOWING A TIME DELAY AFTER THE INPUT IS CONTINUOUSLY APPLIED. OUTPUT CEASES WHEN THE INPUT IS NOT PRESENT.
OFF TIME DELAY		OUTPUT EXISTS WHEN THE INPUT IS PRESENT AND CONTINUES TO EXIST FOR A TIME AFTER THE INPUT CEASES.
FUNCTION	SYMBOL INPUT OUTPUT	MEANING
CALIBRATION		CALIBRATING SET POINT INPUT TO PROVIDE A CALIBRATED SIGNAL.
LOW BUSTABLE		DIGITAL OUTPUT EXISTS ONLY WHEN ANALOG INPUT IS LOWER THAN SET POINT.
HIGH BUSTABLE		DIGITAL OUTPUT EXISTS ONLY WHEN ANALOG INPUT IS HIGHER THAN SET POINT.
TEST DEVICE		TEST SIGNAL CAN BE INSERTED AUTOMATICALLY IN PLACE OF NORMAL SIGNAL.
ISOLATION		OUTPUT IS ELECTRICALLY ISO-LATED FROM INPUT.
STATUS ARRAY INDICATING LIGHT		INDICATES EQUIPMENT STATUS

7-90

ANN ARBOR, MICHIGAN

PALISADE PLANT

CONSUMERS POWER COMPANY

LOGIC DIAGRAM

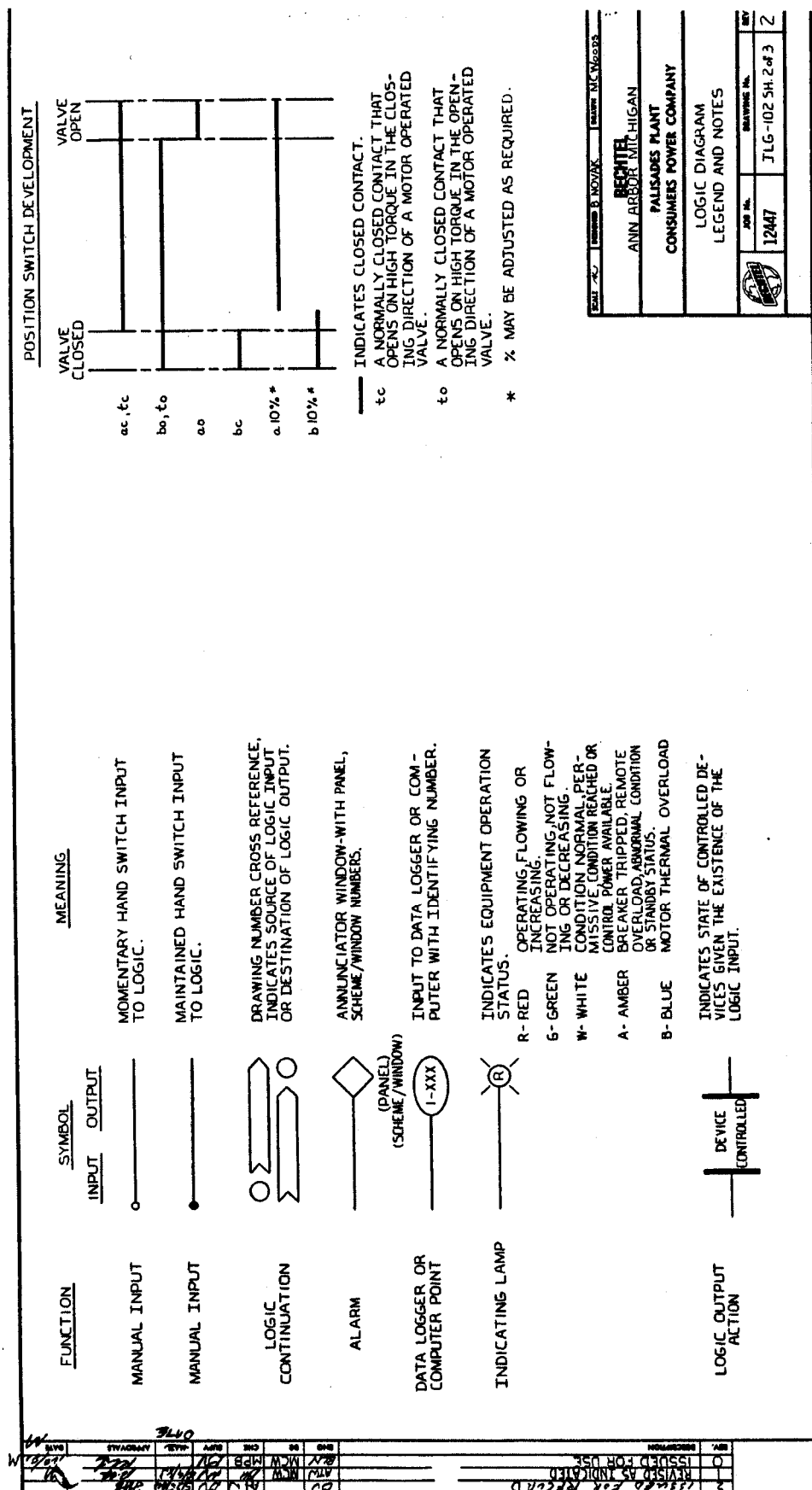
LEGEND AND NOTES

JTG-102 SH 1 of 3

12447

DATE 7/6/80 BY B. MOYER DRAWN J.C. MOYER

**LOGIC DIAGRAM
LEGEND AND NOTES**




LOGIC DIAGRAM LEGEND AND NOTES

NOTES:

1. THESE LOGIC DIAGRAMS DESCRIBE EQUIPMENT/SYSTEM FUNCTIONS AND DO NOT NECESSARILY REFLECT THE ACTUAL HARDWARE IMPLEMENTATION.
2. THE STATE OF EQUIPMENT WILL NOT BE CHANGED BY A TRANSIENT OR LOSS OF POWER UNLESS OTHERWISE NOTED.
3. INHERENT EQUIPMENT INTERLOCKS, SUCH AS CIRCUIT BREAKER TRIP FREE AND REVERSING STARTER CROSS INTERLOCKS ARE NOT SHOWN UNLESS THE INTERLOCKS PERFORM A LOGICAL FUNCTION.
4. ANY SET POINTS SHOWN ON CONTROL LOGIC DIAGRAMS ARE APPROXIMATE. FOR EXACT VALUE REFER TO INSTRUMENT INDEX.
5. VALVE AND DAMPER RED AND GREEN LIGHTS ARE BOTH ON WHEN IN AN INTERMEDIATE POSITION.
6. REFER TO ELECTRICAL SCHEMATICS FOR DETAILS OF ELECTRICAL EQUIPMENT OVERCURRENT, SHORT CIRCUIT, AND DIFFERENTIAL PROTECTION.
7. EQUIPMENT WILL CHANGE STATE WHEN A CHANGE IS INITIATED AND WILL REMAIN IN THAT STATE UNTIL A CHANGE TO ANOTHER STATE IS INITIATED.

ABBREVIATIONS:

CR - CONTROL ROOM
LCP - LOCAL CONTROL PANEL
CS - CONTROL SWITCH
HS - HAND SWITCH
PB - PUSH BUTTON
CHP - CONTAINMENT HIGH PRESSURE
SR TO N - SPRING RETURN TO NORMAL
CHR - CONTAINMENT HIGH RADIATION
AFAS - AUXILIARY FEEDWATER ACTUATION SYSTEM
FOGG A - FEED ONLY GOOD STEAM GENERATOR A
ISOLATE STEAM GENERATOR B
FOGG B - FEED ONLY GOOD STEAM GENERATOR B
ISOLATE STEAM GENERATOR A
SIS - SAFETY INJECTION SIGNAL
HVAC - HEATING, VENTILATION & AIR CONDITIONING
SS - SELECTOR SWITCH
POS - POSITION SWITCH
SV - SOLENOID VALVE
CV - CONTROL VALVE
MO - MOTOR OPERATED
PO - PNEUMATICALLY OPERATED
SP - SET POINT

DATE: 7/1/00	DESIGNED BY: B. MOYER	CHECKED BY: J. MCNEIL
REVISION ANN ARBOR, MICHIGAN PALISADES PLANT CONSUMERS POWER COMPANY		
LOGIC DIAGRAM LEGEND AND NOTES		
	JOB No. 12447	SHEET No. JLG-102 SH.3 of 3
		REV 2

DWG. NO. _____

SCHEMATIC DIAGRAM
STEAM GENERATOR LEVEL INSTRUMENTATION

REFERENCE DRAWINGS:
P & ID M 207 SH.1

STEAM GENERATOR E-50A LOW LEVEL, CIRCUIT NO. 1

ADAPTER TABLE										
DESCRIPTION	CKT. NO.	SCHEME	LEVEL TRANS-MITTER	LEVEL INDICATORS	POWER SUPPLY	PENETRATION CANISTER NO.	LA LOC	AFAS INPUT	JUNCTION BOX #	
										L & LT LOC
STM. GEN. E-50A LO LEVEL	1	IL45	LT-0751A	0751A	C12L	P/S-0751A	Y10	5	2143	C08L
	2	IL46	LT-0751B	0751B	C12R	P/S-0751A	Y10	5	2143	C08R
	3	IL47	LT-0751C	0751C	C12L	P/S-0751A	Y10	5	2143	C08L
	4	IL48	LT-0751D	0751D	C12R	P/S-0751A	Y10	5	2143	C08R

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

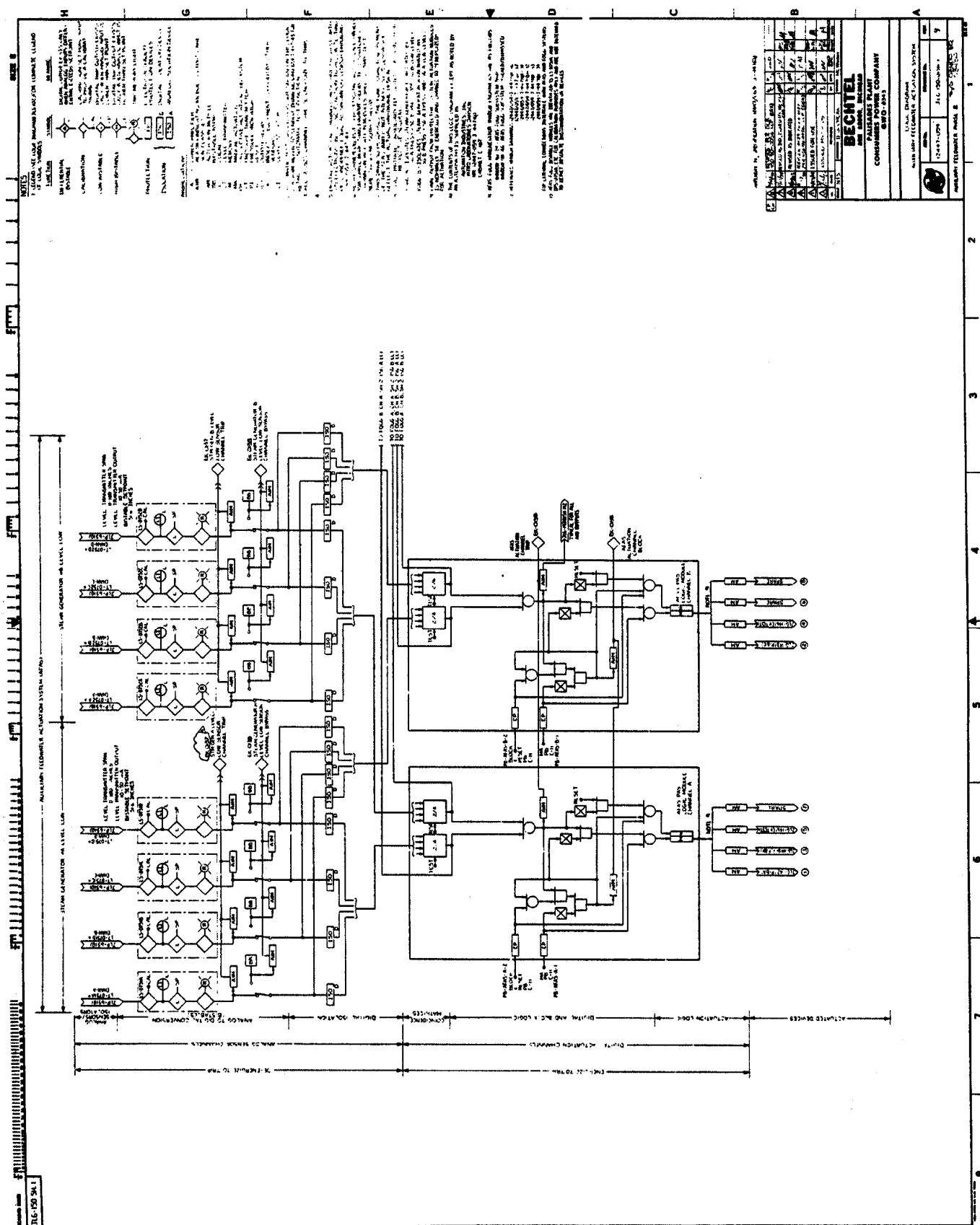
NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

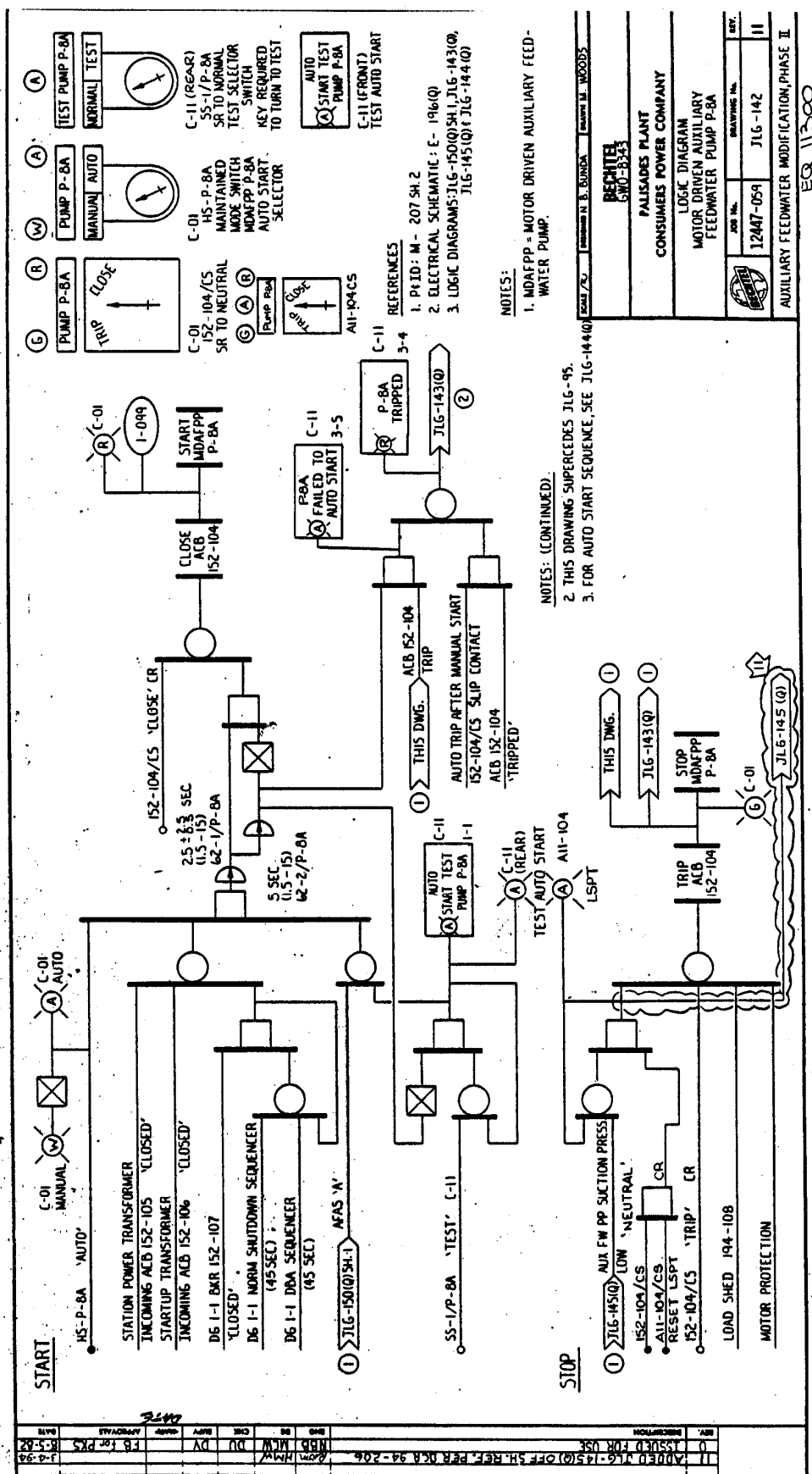
NOTE 1) SCHEMES IL45 & IL49
SCHEMES IL47 & IL51

NOTE 2) SCHEMES IL46 & IL50
SCHEMES IL48 & IL52

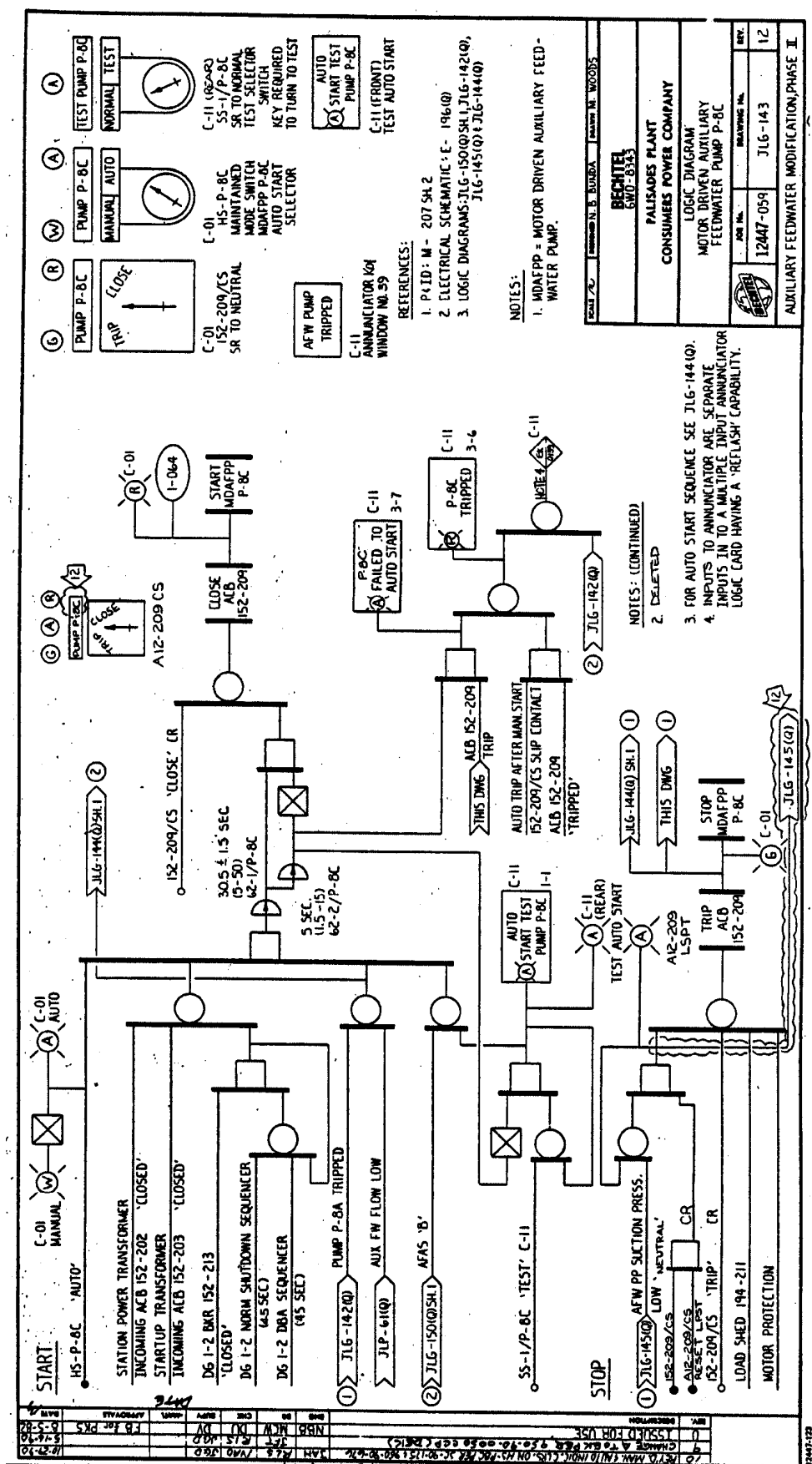
NOTE 1) SCHEMES IL4



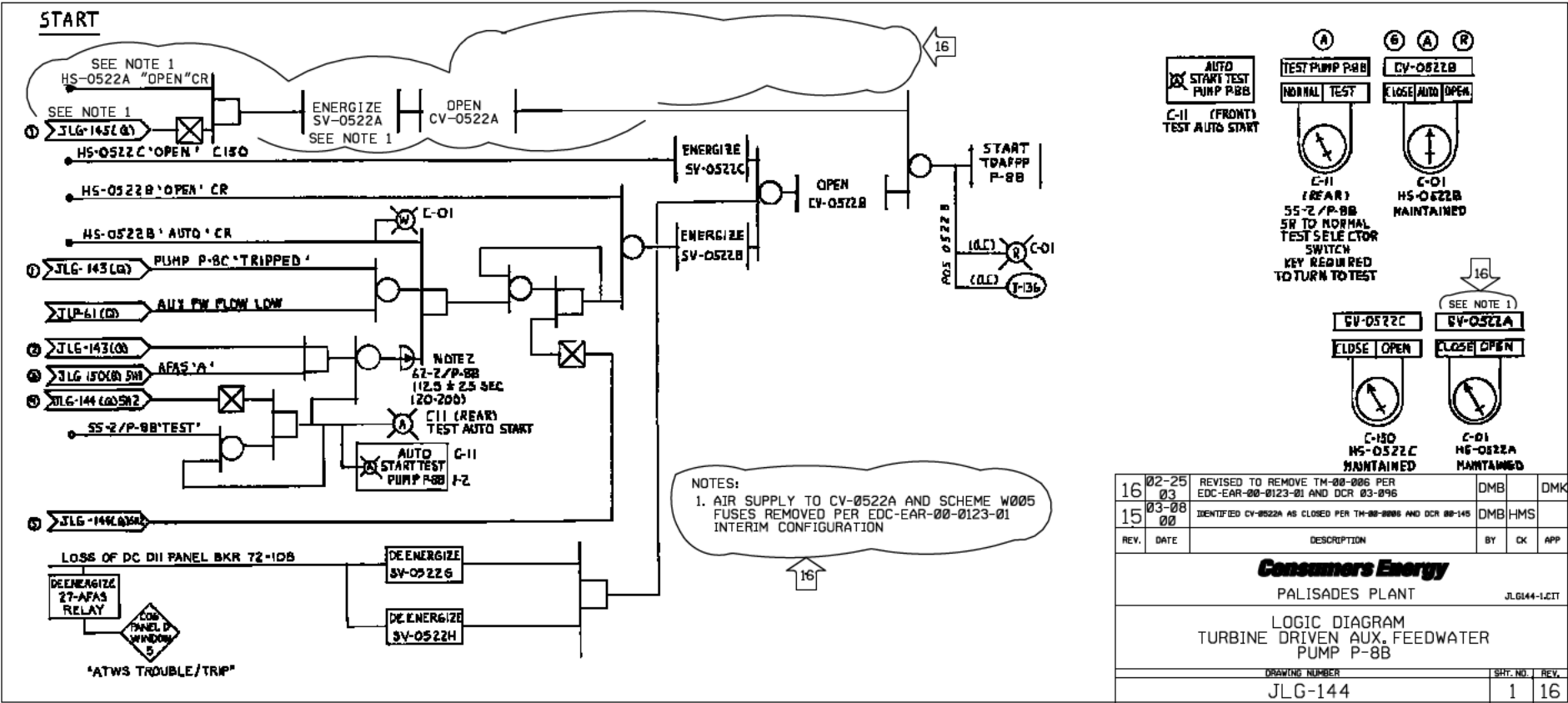
LOGIC DIAGRAM
MOTOR DRIVEN AUXILIARY FEEDWATER PUMP P-8A



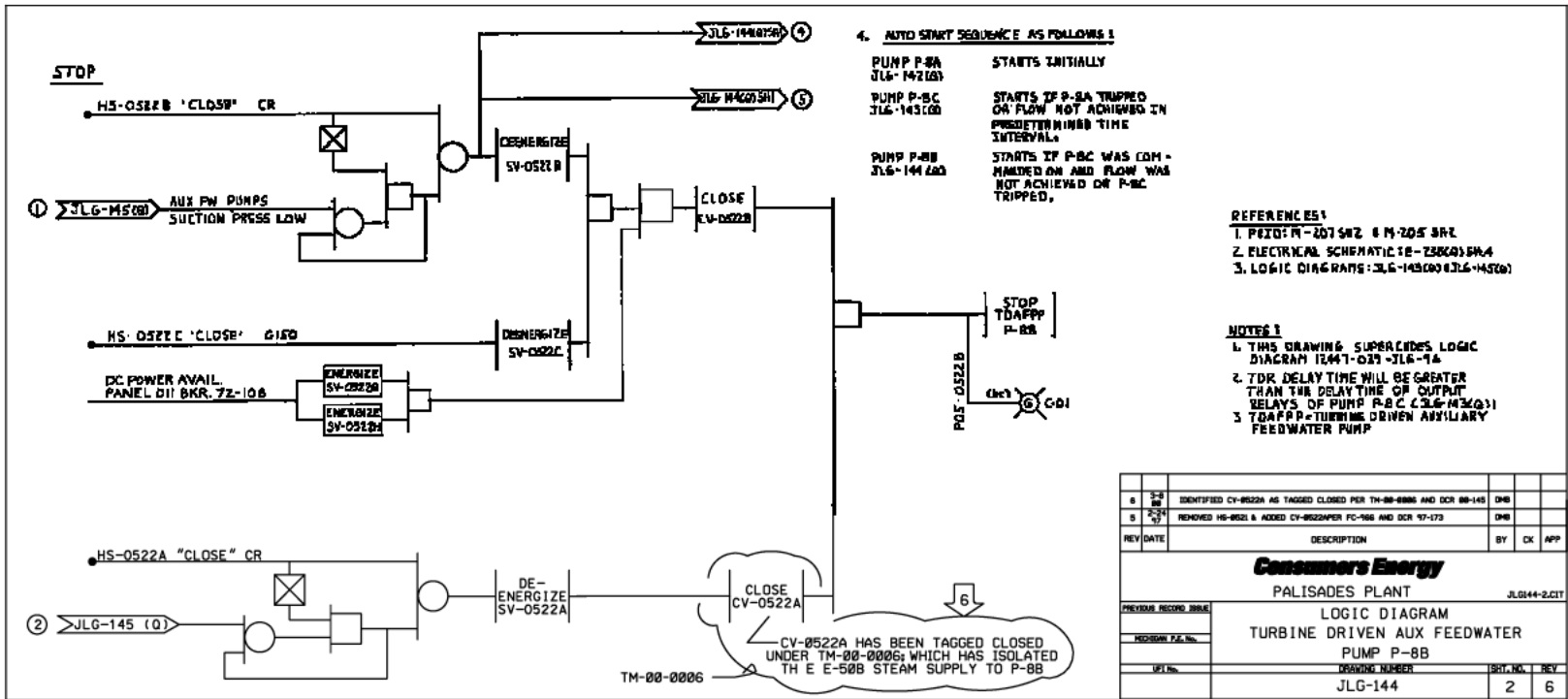
LOGIC DIAGRAM
MOTOR DRIVEN AUXILIARY FEEDWATER PUMP P-8C



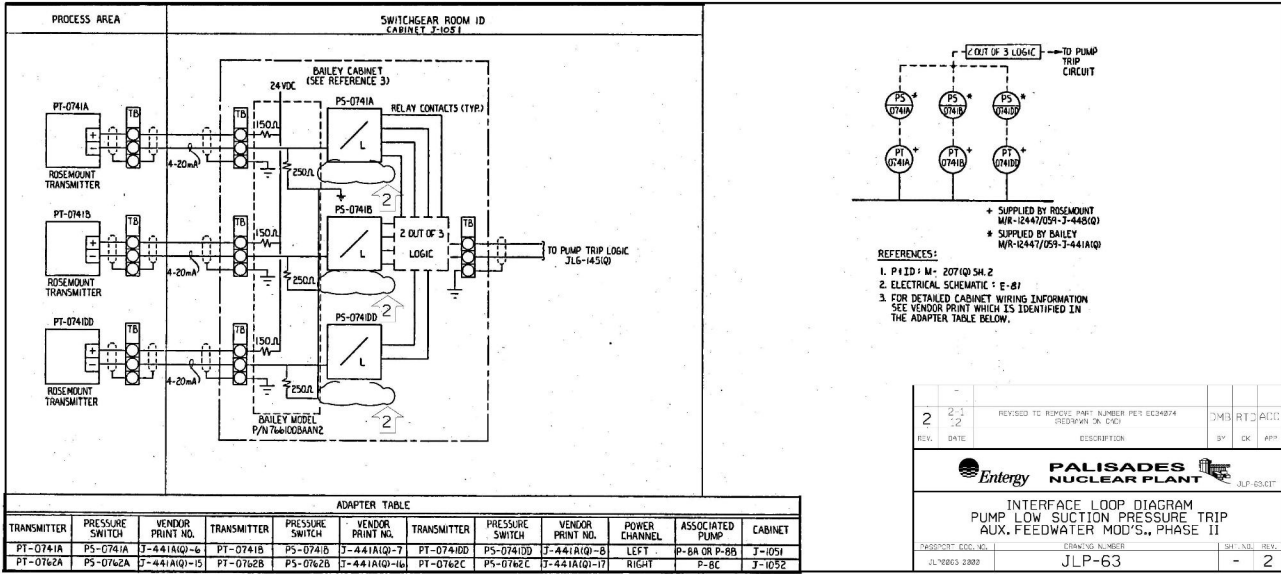
LOGIC DIAGRAM
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP P-8B



LOGIC DIAGRAM
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP P-8B



INTERFACE LOOP DIAGRAM
PUMP LOW SUCTION PRESSURE TRIP



START

TM-00-0006
CV-0522A HAS BEEN TAGGED CLOSED UNDER TM-00-0006 WHICH HAS ISOLATED THE E-50B STEAM SUPPLY TO P-8B

HS-0522A "OPEN" CR
JLG-143 (A) X
HS-0522C "OPEN" C-11
ENERGIZE SV-0522A
OPEN CV-0522A

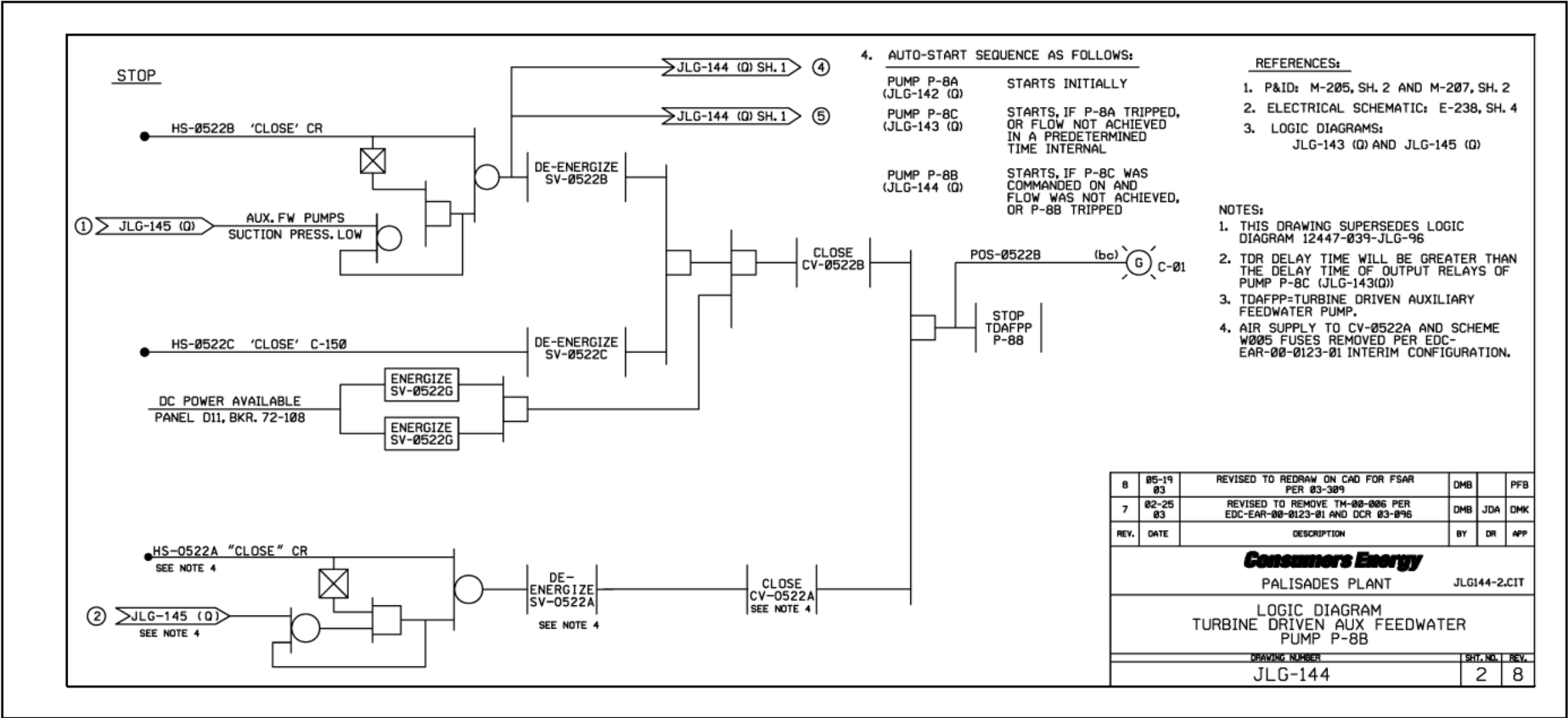
HS-0522B "OPEN" CR
HS-0522B "AUTO" CR
JLG-143 (A) PUMP P-8C "TRIPPED"
JLG-143 (A) AUT FLOW LOW
JLG-143 (A) AFAS "A"
JLG-143 (A) SS-2/P-8B TEST
C-11 (REAR) TEST AUTO START
C-11 (FRONT) TEST AUTO START
JLG-144 (A) LOSS OF DC D11 PANEL BKR 72-108
DEENERGIZE Z7-AFAS RELAY
COP PANEL 2 WINDOW 5
ATWS TROUBLE/TRIP

ENERGIZE SV-0522C
OPEN CV-0522B
START TDAFPP P-8B
POS OPER B
C-01
T-136

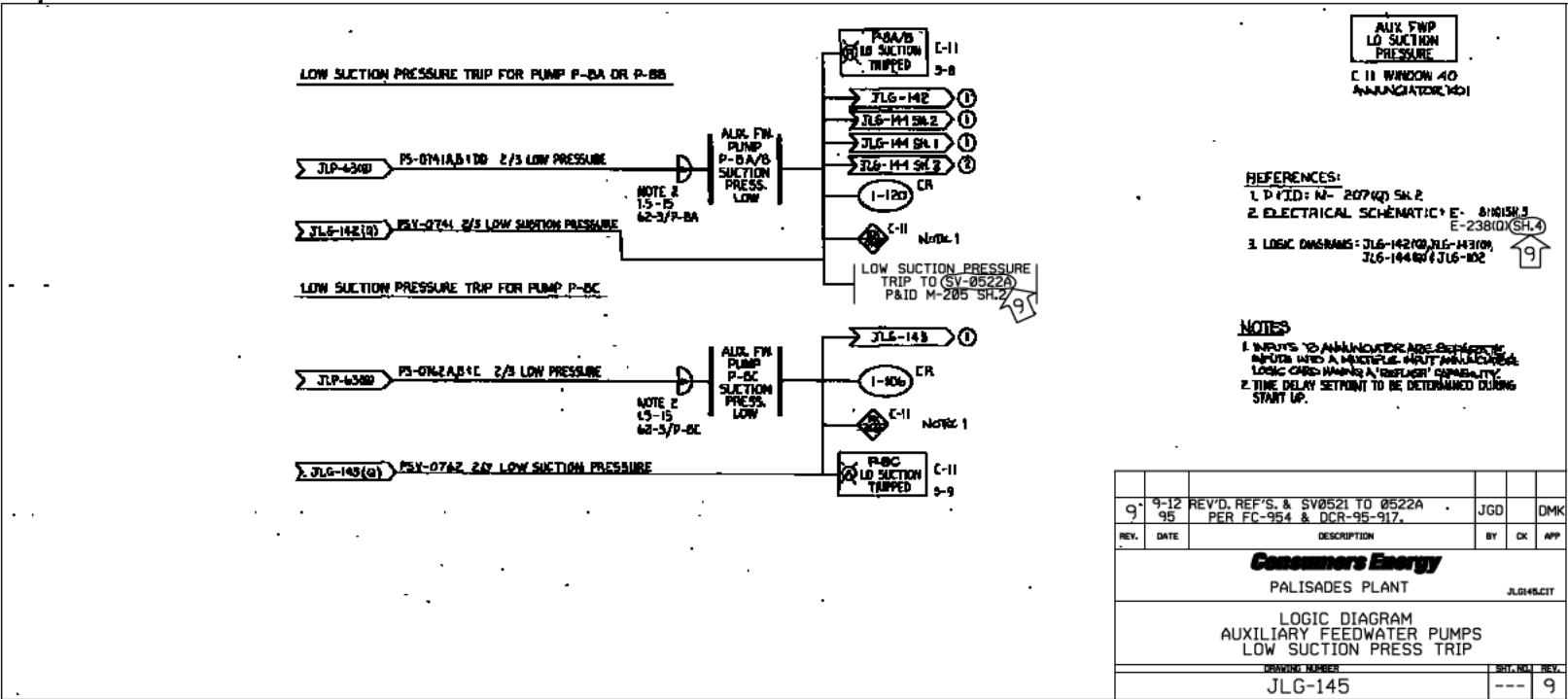
Legend:

- AUTO START TEST PUMP P-8B** (C-11 (FRONT) TEST AUTO START)
- TEST PUMP P-8B** (NORMAL, TEST)
- CV-0522B** (CLOSE, AUTO, OPEN)
- CV-0522C** (CLOSE, OPEN)
- CV-0522A** (CLOSE, OPEN)
- C-11 (REAR) SS-2/P-8B SET TO NORMAL TEST SELECTOR SWITCH KEY REQUIRED TO TURN TO TEST**
- C-11D HS-0522C MAINTAINED**
- C-01 HS-0522A MAINTAINED**

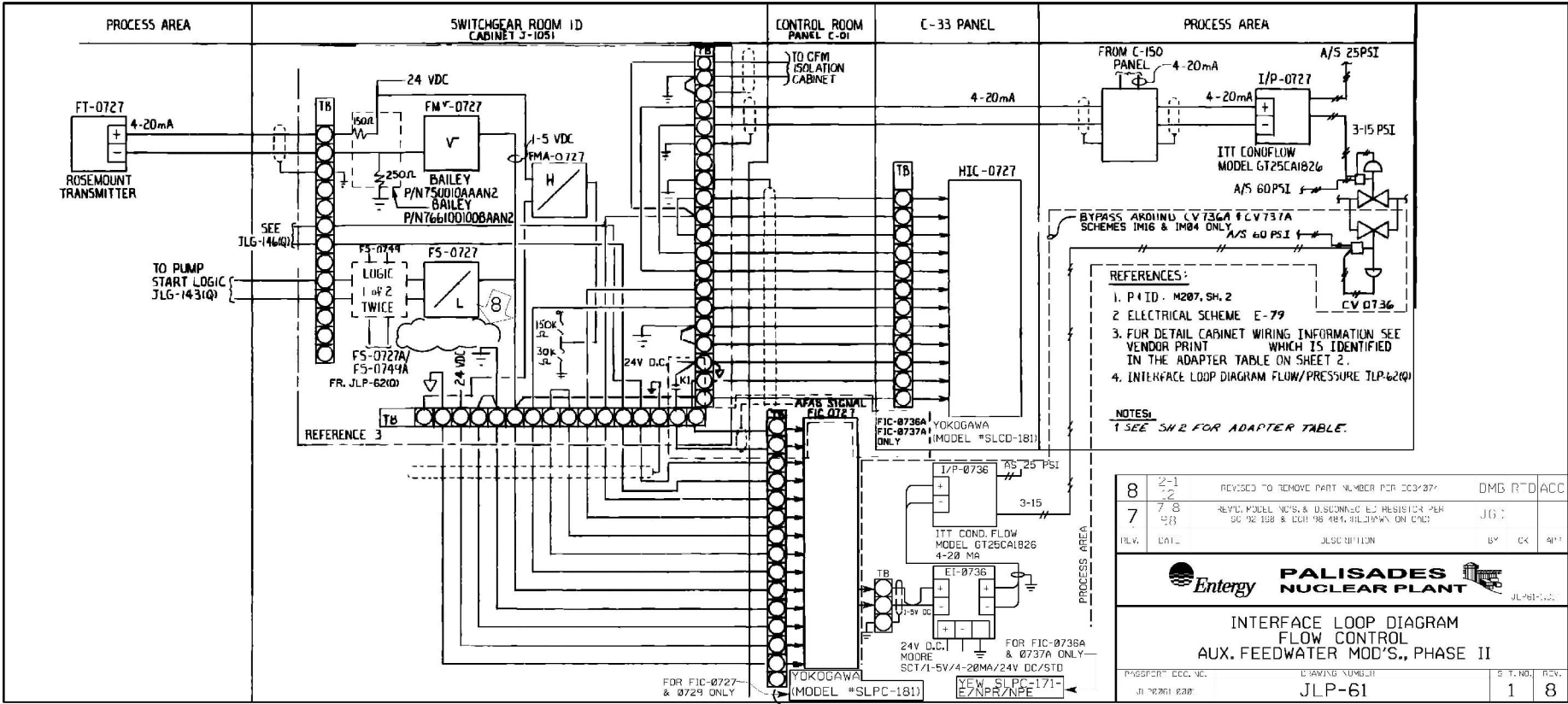
LOGIC DIAGRAM
 TURBINE DRIVEN AUXILIARY FEEDWATER PUMP P-8B



LOGIC DIAGRAM
AUXILIARY FEEDWATER PUMPS LOW SUCTION PRESSURE TRIP

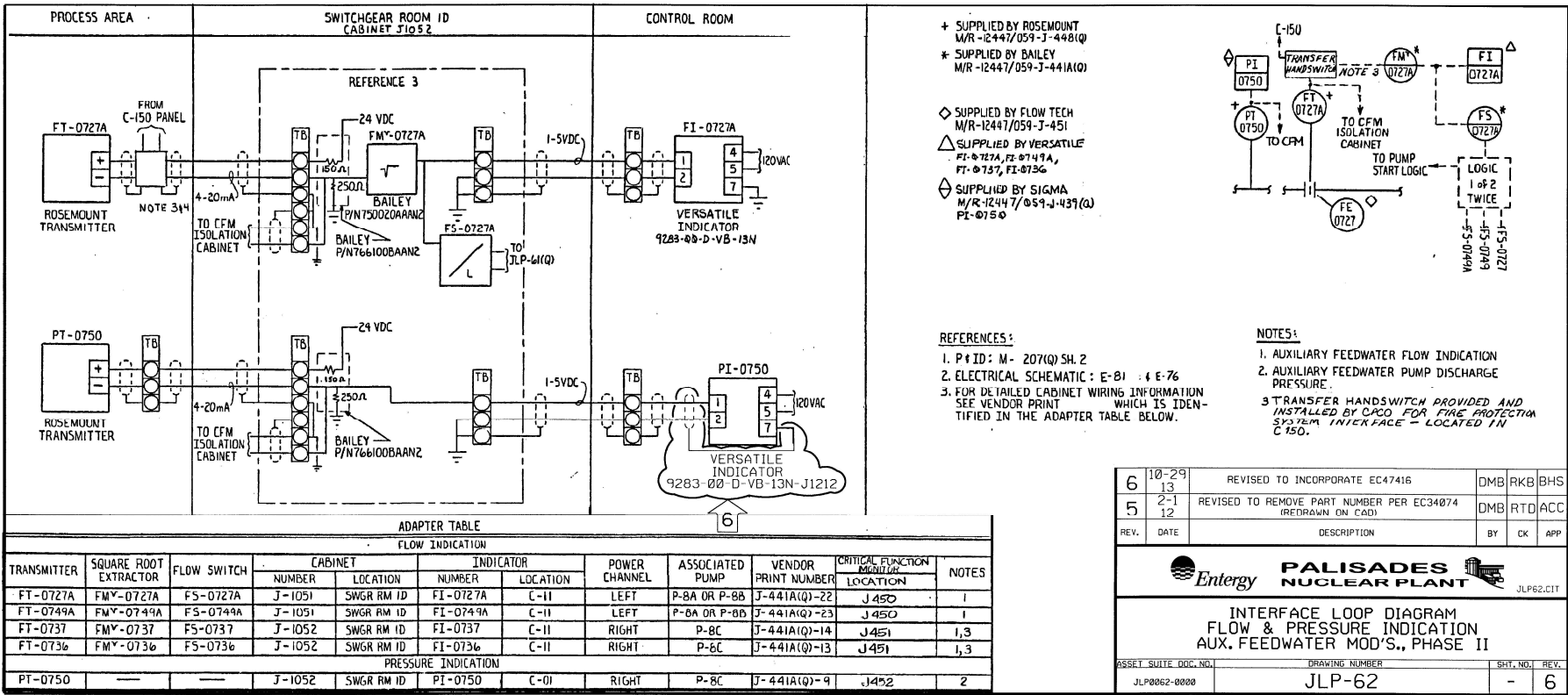


**INTERFACE LOOP DIAGRAM
FLOW CONTROL**

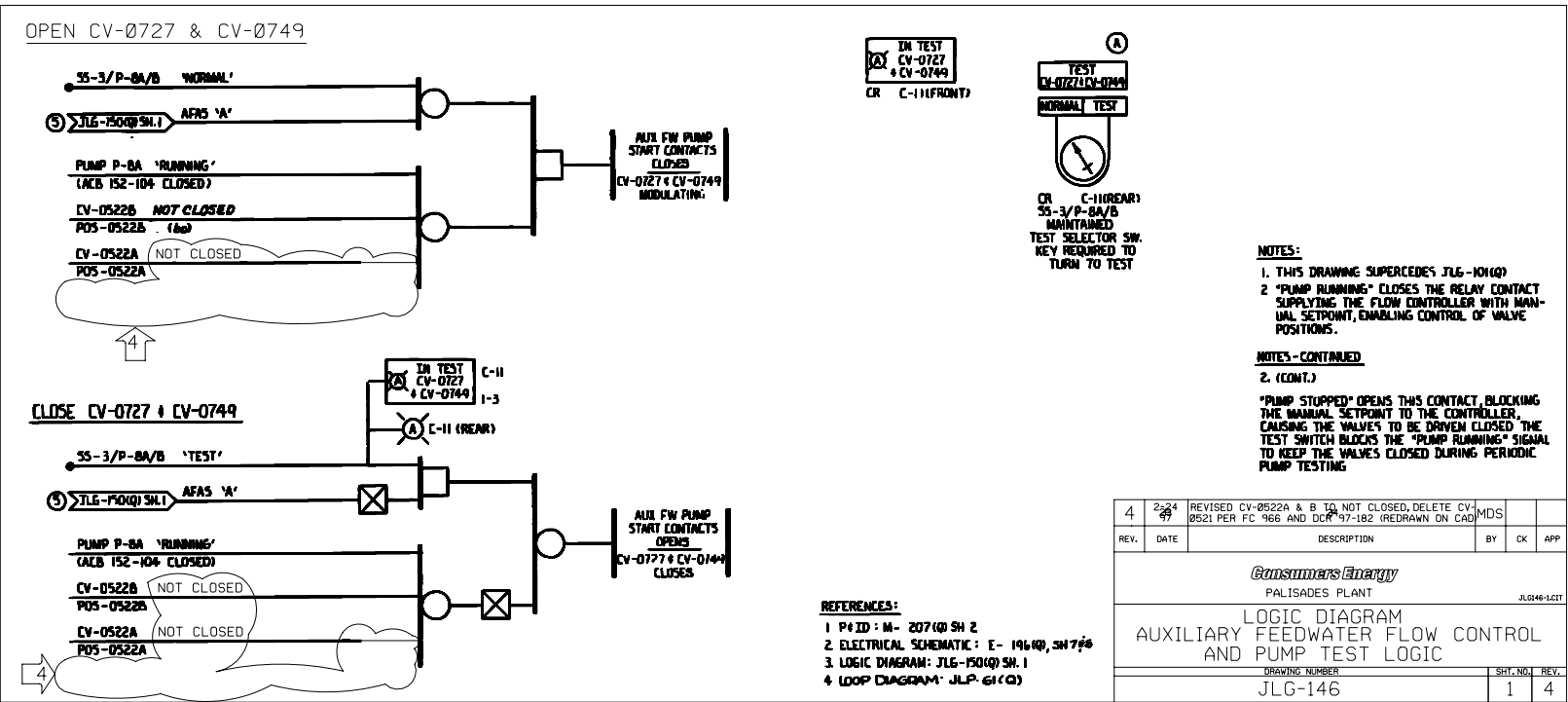


[illegible]

INTERFACE DIAGRAM
FLOW AND PRESSURE INDICATION

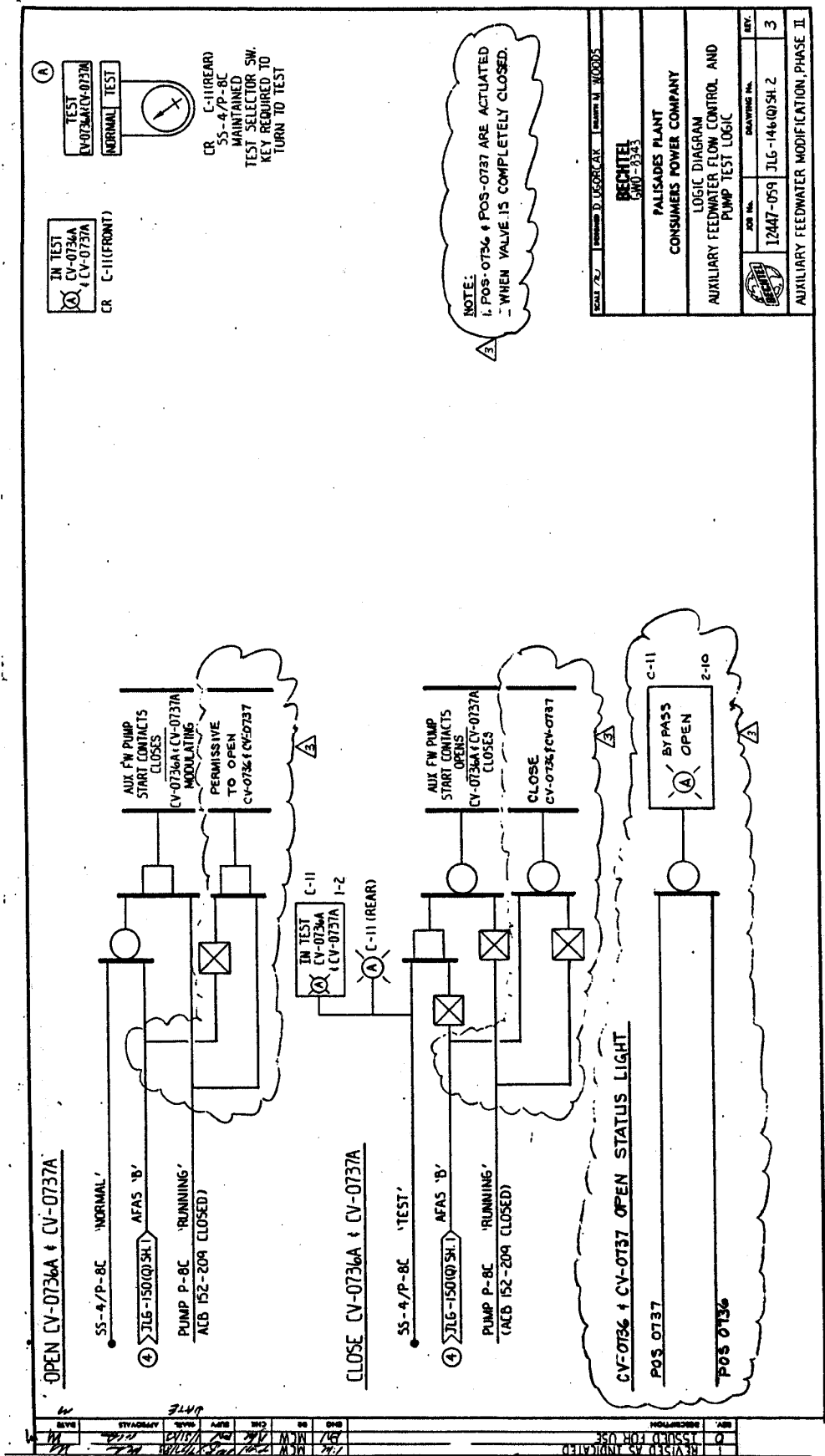


LOGIC DIAGRAM
AUX FEEDWATER FLOW CONTROL AND PUMP TEST LOGIC

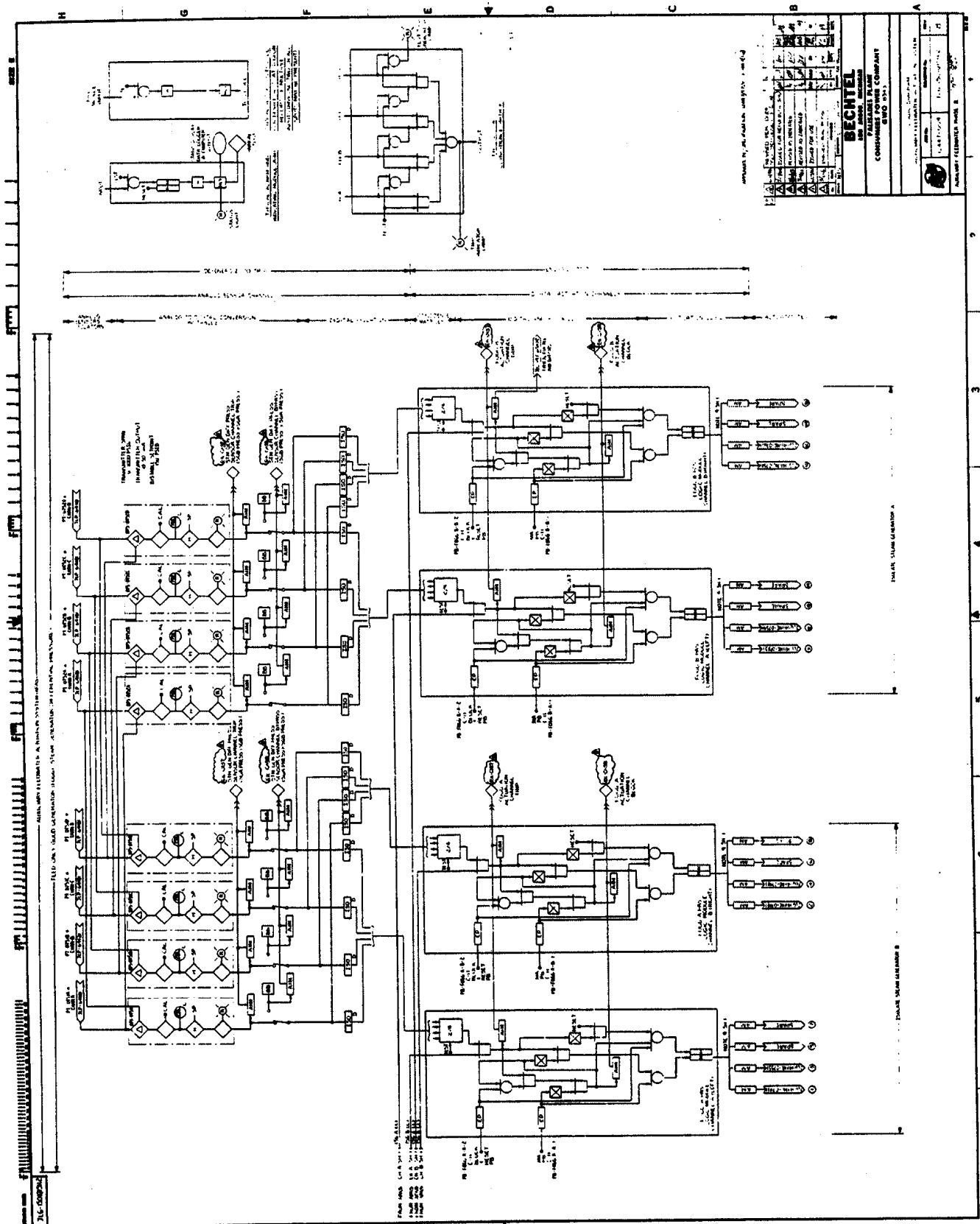


LOGIC DIAGRAM

AUXILIARY FEEDWATER FLOW CONTROL AND PUMP TEST LOGIC

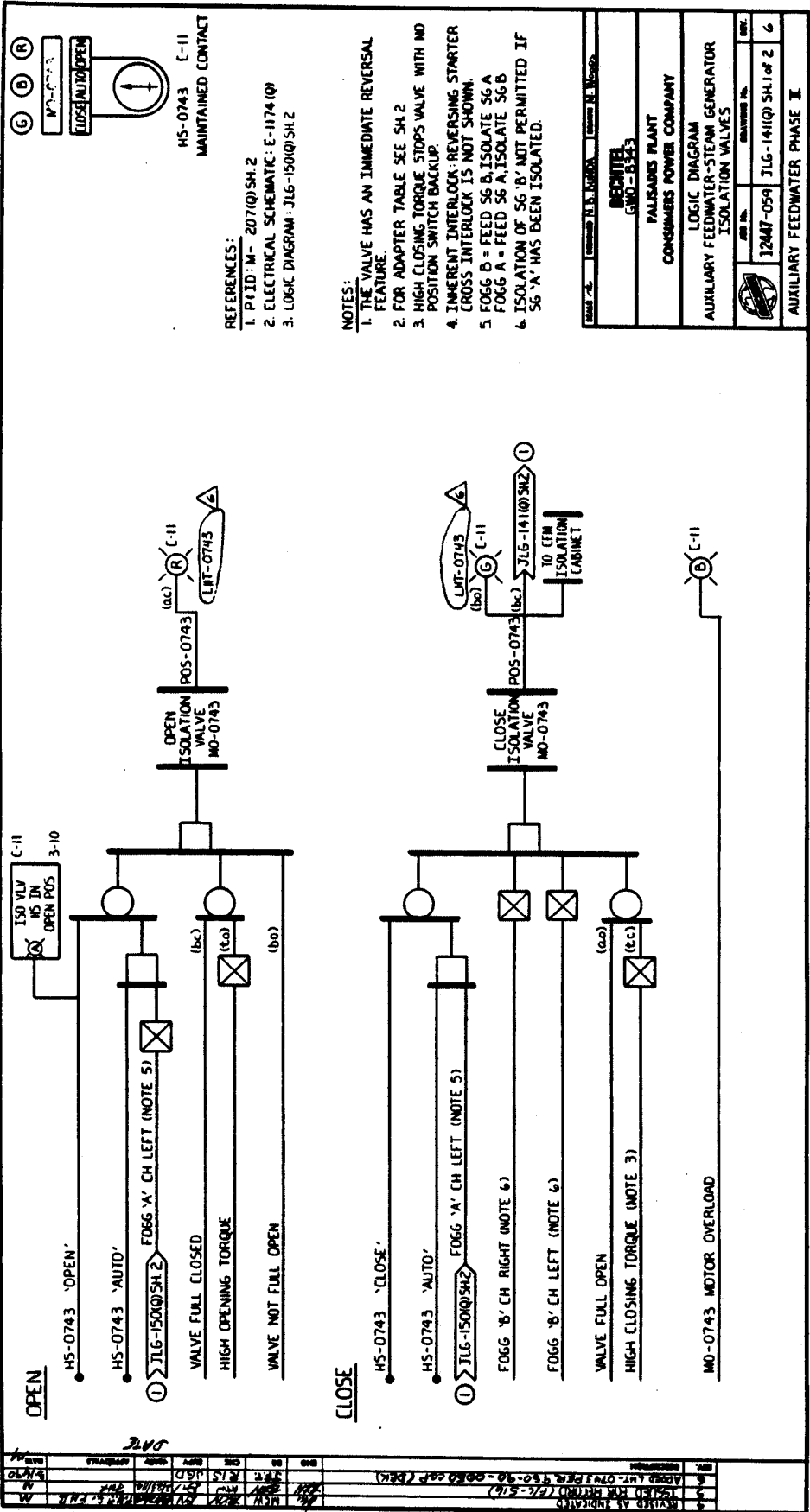


LOGIC DIAGRAM AUXILIARY FEEDWATER ACTUATION SYSTEM

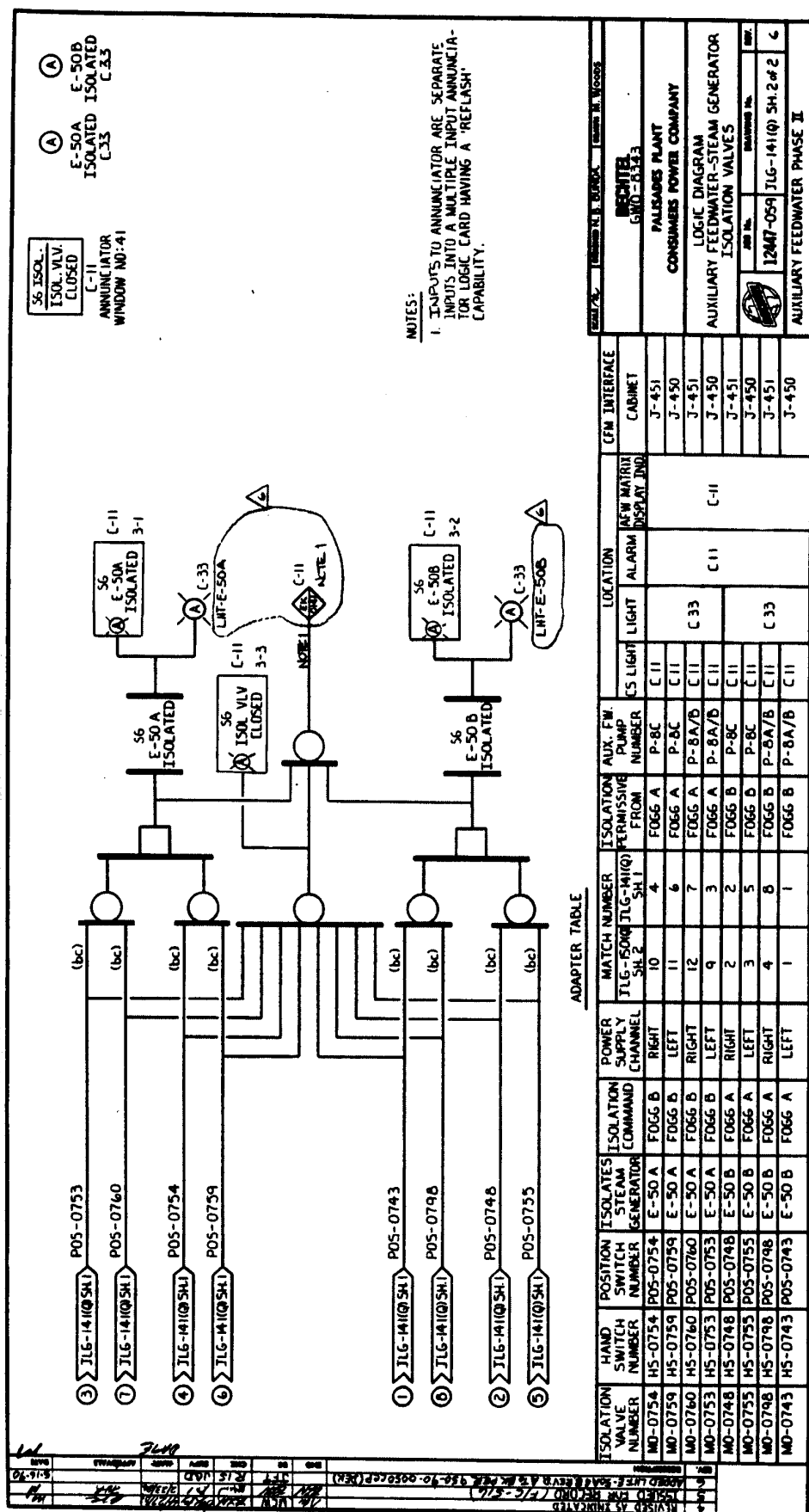


LOGIC DIAGRAM

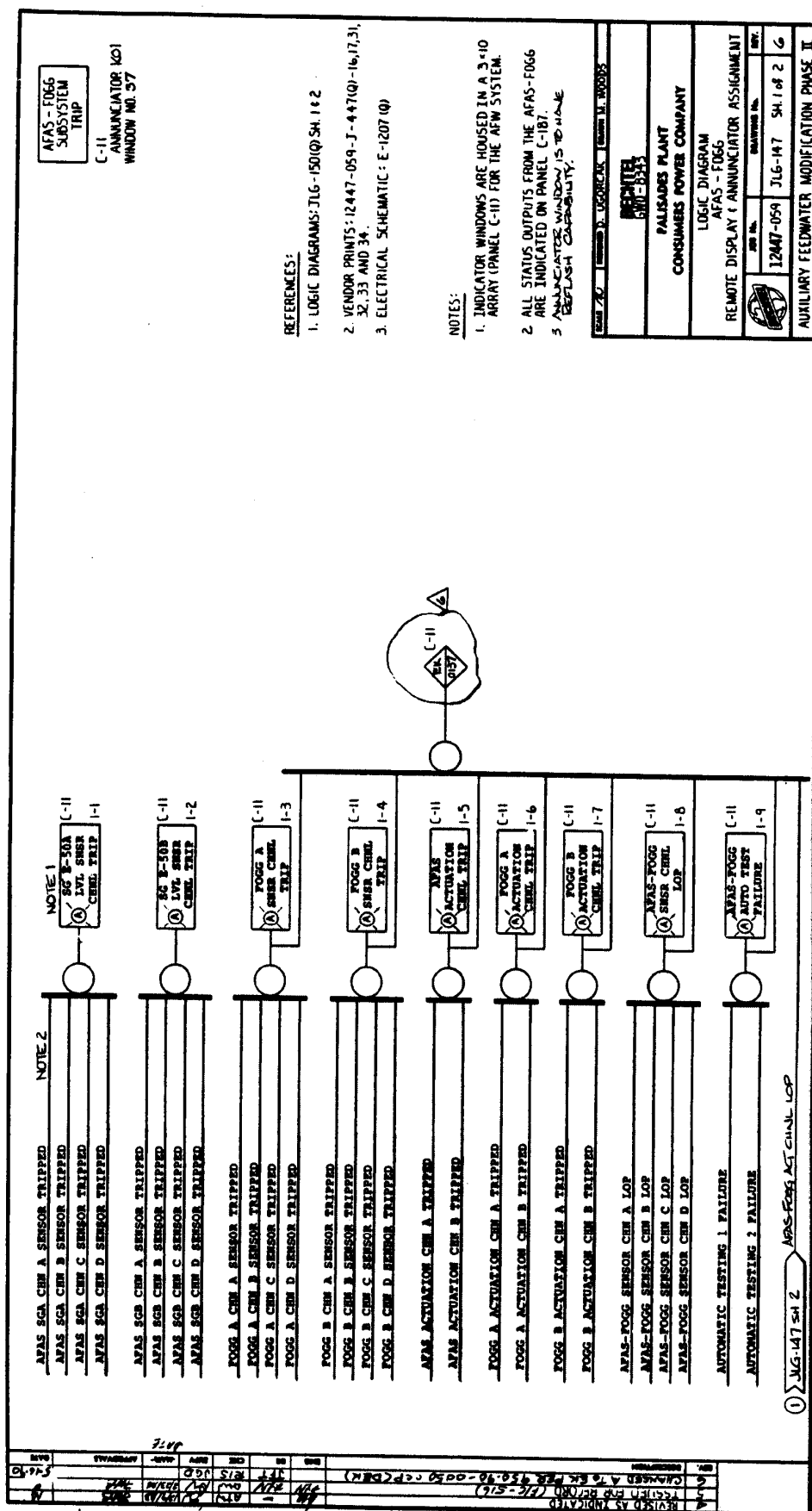
AUXILIARY FEEDWATER – STEAM GENERATOR ISOLATION VALVES



LOGIC DIAGRAM
AUXILIARY FEEDWATER – STEAM GENERATOR ISOLATION VALVES

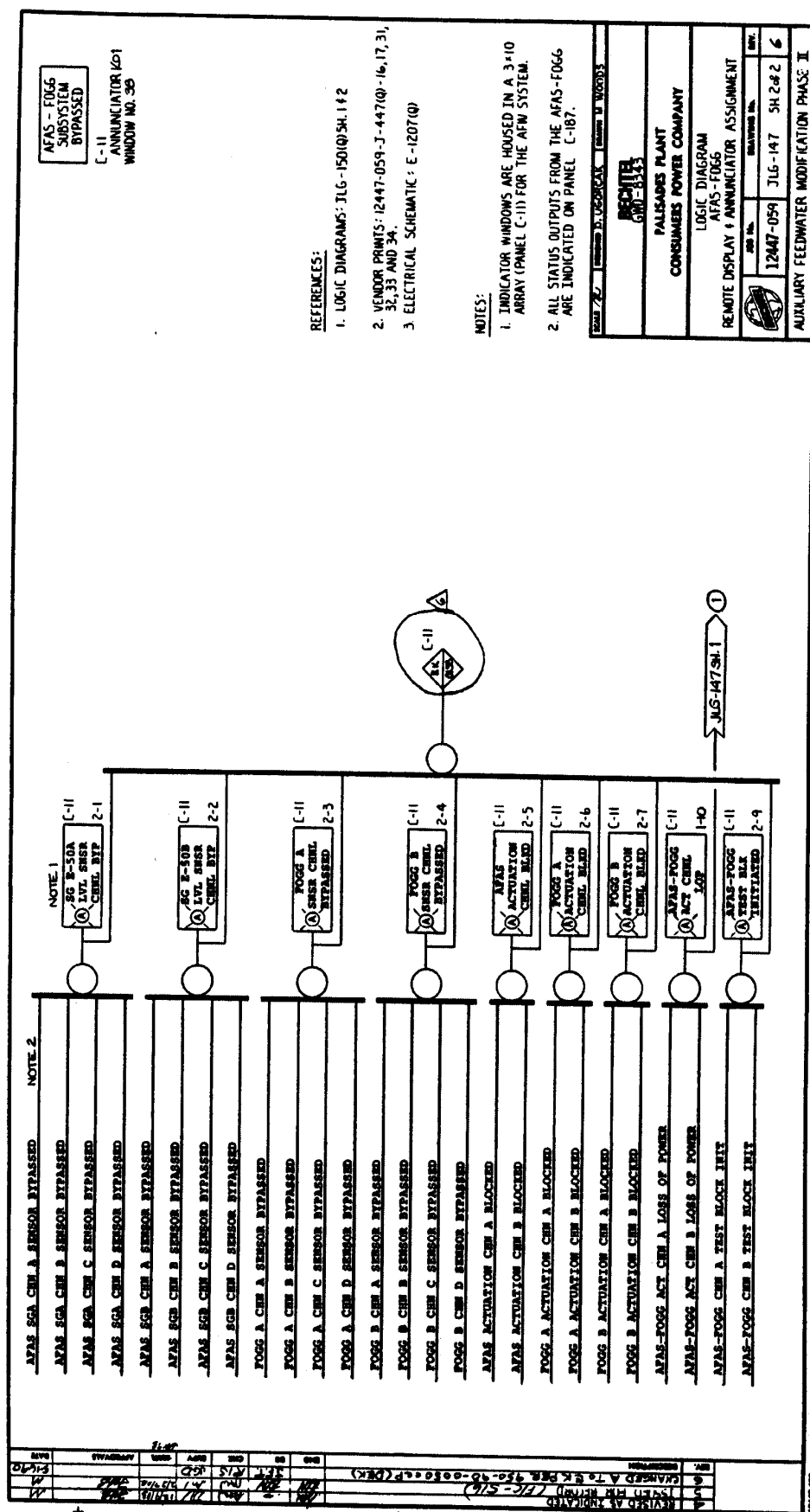


LOGIC DIAGRAM
AFAS-FOGG REMOTE DISPLAY AND ANNUNCIATOR ASSIGNMENT

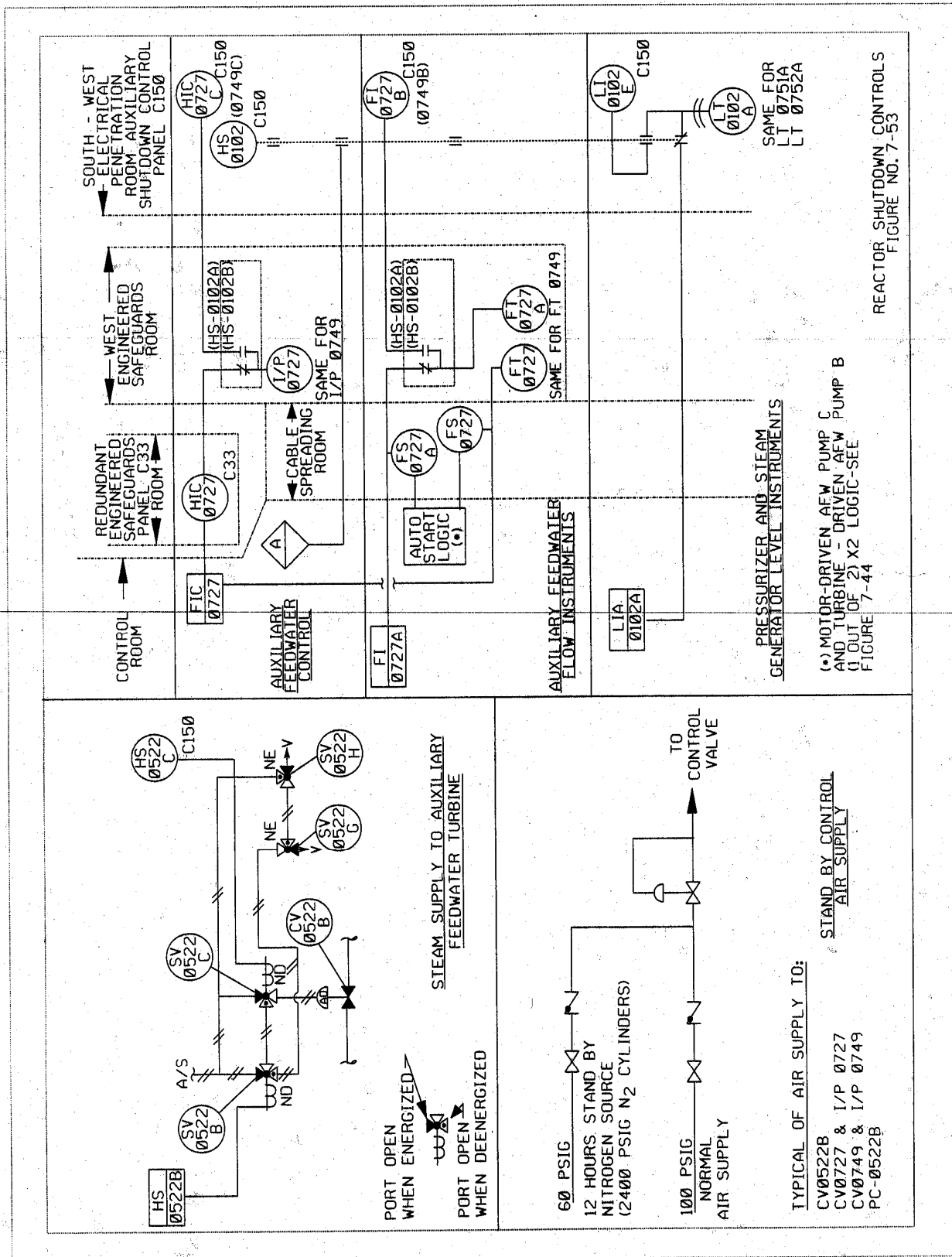


LOGIC DIAGRAM

AFAS-FOGG REMOTE DISPLAY AND ANNUNCIATOR ASSIGNMENT



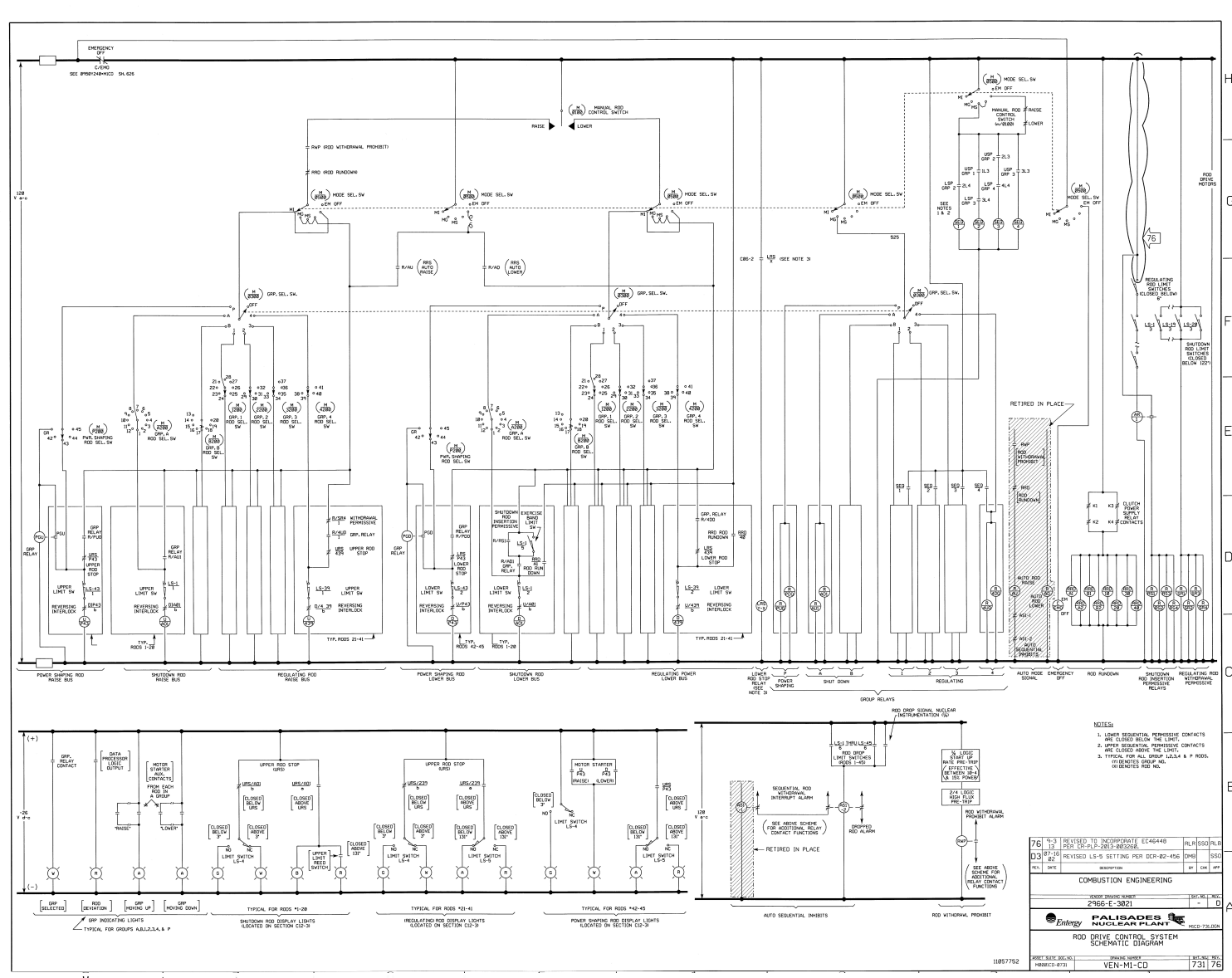
REACTOR SHUTDOWN CONTROLS

REACTOR SHUTDOWN CONTROLS
FIGURE NO. 7-53

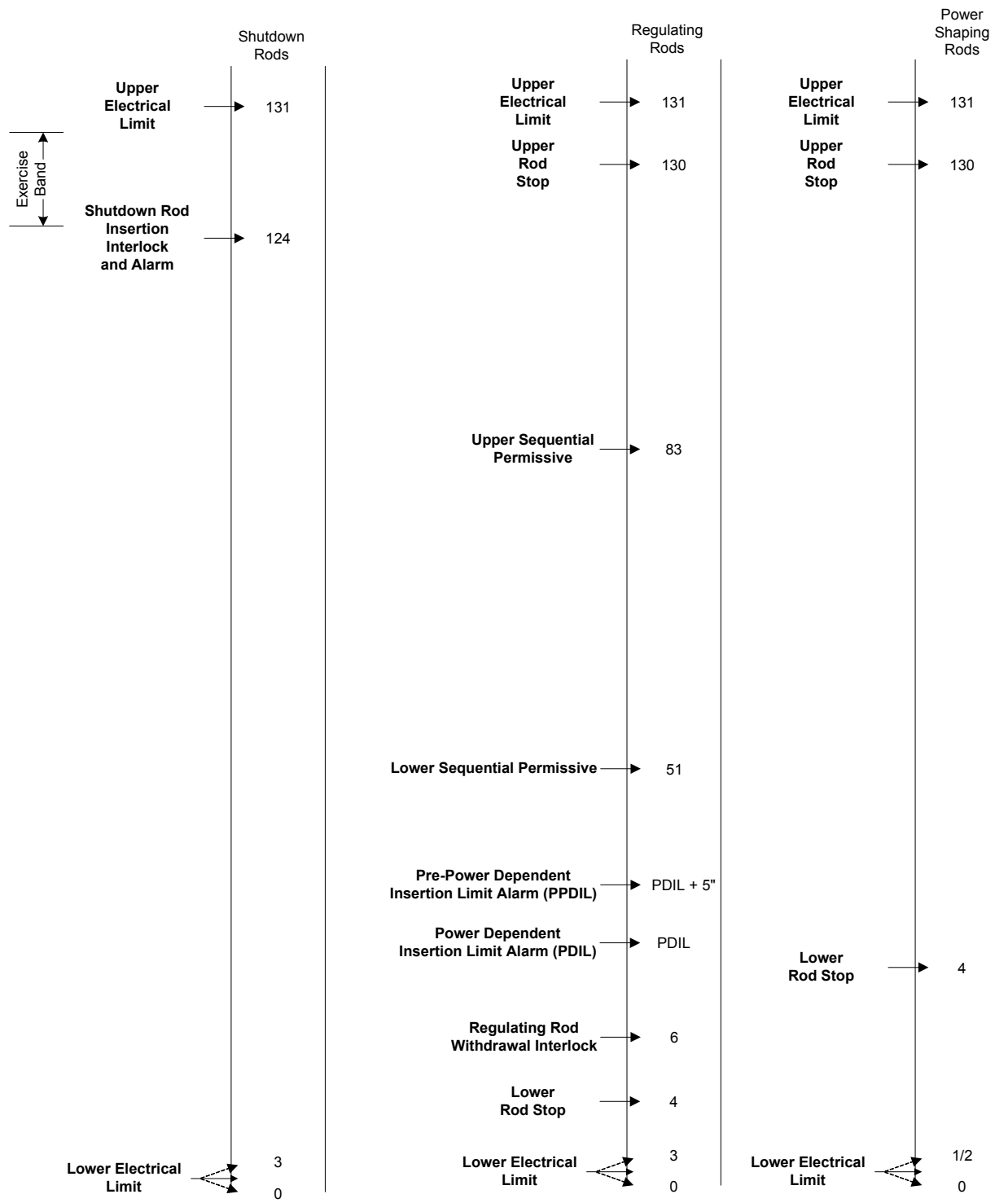
The diagram illustrates the control and safety systems for the C-150 Panel, which is part of a larger process. Key components and connections include:

- Pressure and Temperature Measurements:** PT-0515 (TURB 1st STAGE PRESS), TT-0112 HA, CA, HAA, CAA, HBB, CAB, and PT-0517 (TURB 2nd STAGE PRESS).
- Control Loops:** LOOP #1 (Thot, Tcold) and LOOP #2 (Tcold, Thot) for various process streams.
- Safety and Interlocks:** Safety CH A INPUT, Safety CH B INPUT, and various interlock signals (e.g., I-0112 HA, CA, HAA, CAA, HBB, CAB).
- Control Valves and Pumps:** Various control valves (e.g., V-0112 HA, CA, HAA, CAA, HBB, CAB) and pumps (e.g., P-0112 HA, CA, HAA, CAA, HBB, CAB).
- Process Flow:** The diagram shows the flow of materials through various stages, including the C-150 PANEL and C-150A PANEL.
- Annotations:** The diagram includes several annotations, such as "TURB 1st STAGE PRESS", "TURB 2nd STAGE PRESS", and "C-150 PANEL".

ROD DRIVE CONTROL SYSTEM SCHEMATIC DIAGRAM

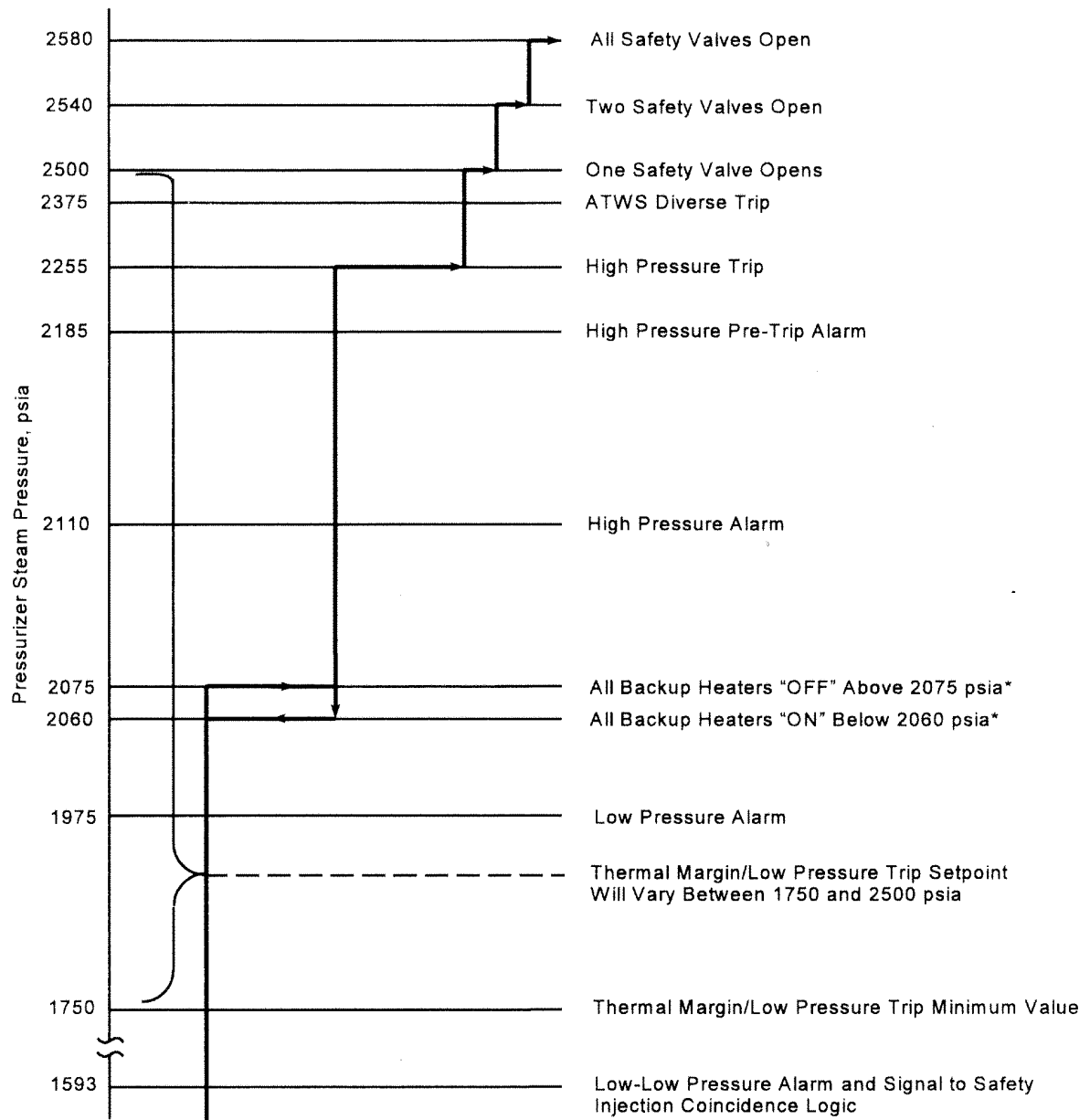


ROD POSITION SETPOINTS



NOTE: All Setpoint are in inches from bottom.

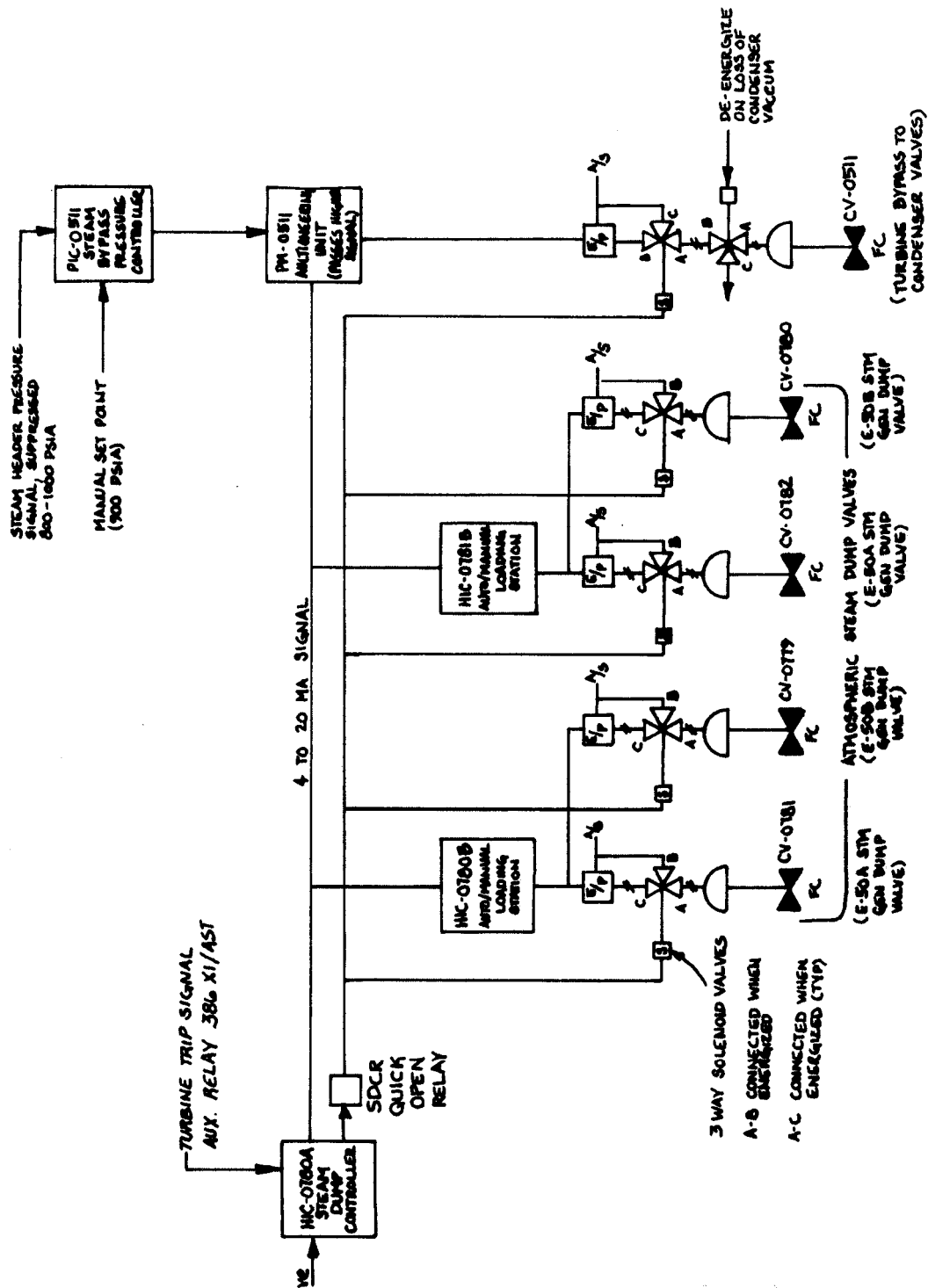
PRESSURE CONTROL PROGRAM



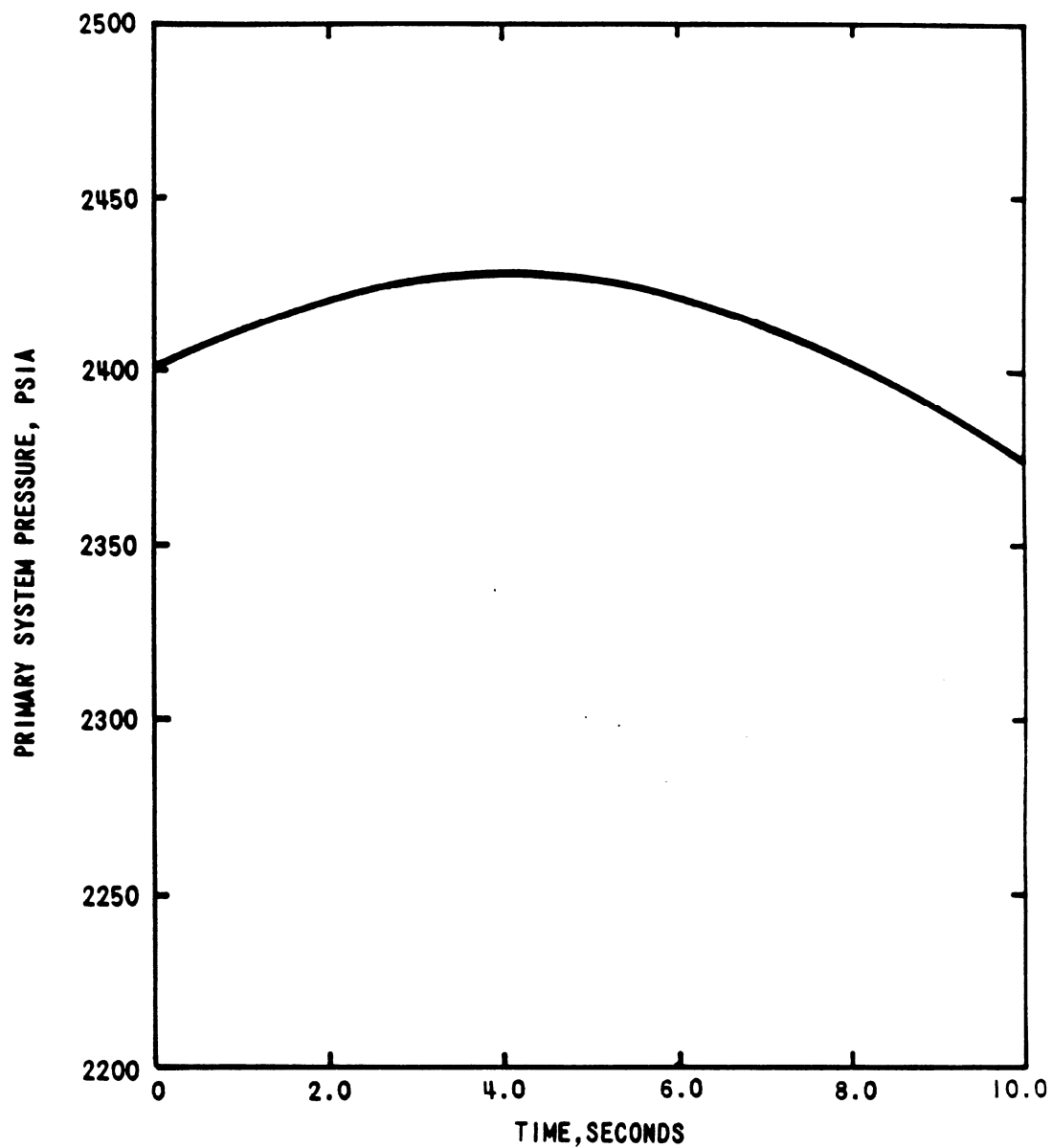
Pressurizer Normal Pressure Control	
Controller Output	Action
100%	Both Spray Valves Open
67%	Both Spray Valves Closed
33%	Proportional Heater "OFF"
0%	Proportional Heater "ON"

* Backup heaters normally operated in manual.

BLOCK DIAGRAM STEAM DUMP AND BYPASS SYSTEM



PRESSURIZER LEVEL CONTROL SYSTEM FAILURES STUDY
MODE "A" FAILURE



(REF P-ICE-900, 10/9/69)

**PIPING DRAWING
NUCLEAR DETECTOR WELLS**

Portions of this page have been
redacted per 10 CFR 2.390(d)(1).

**BLOCK DIAGRAM
CRITICAL FUNCTIONS MONITOR SYSTEM**

