

TABLE I. ANNUNCIATION IN CONTROL ROOM TRIP LOGIC (NOTE 13)

ALARM FUNCTION	DIVISION
1. CRD SCRAM DISCHARGE VOLUME HIGH WATER LEVEL	1, 2, 3 OR 4
2. CRD DISCHARGE VOLUME HIGH WATER LEVEL TRIP BYPASS	1, 2, 3 OR 4
3. MAIN STEAM LINE ISOLATION VALVE (MSIV) CLOSURE TRIP	1, 2, 3 OR 4
4. MSIV CLOSURE TRIP BYPASS	1, 2, 3 OR 4
5. DRYWELL HIGH PRESSURE	1, 2, 3 OR 4
6. DRYWELL HIGH PRESSURE TRIP	1, 2, 3 OR 4
7. REACTOR VESSEL HIGH PRESSURE	1, 2, 3 OR 4
8. REACTOR VESSEL LOW WATER LEVEL (3) TRIP	1, 2, 3 OR 4
9. REACTOR VESSEL HIGH WATER LEVEL (8) TRIP	1, 2, 3 OR 4
10. TURBINE CONTROL VALVE FAST CLOSURE TRIP	1, 2, 3 OR 4
11. TURBINE STOP VALVE CLOSURE TRIP	1, 2, 3 OR 4
12. TURBINE CONTROL VALVE FAST CLOSURE AND STOP VALVE CLOSURE TRIP BYPASS	1, 2, 3 OR 4
13. DRYWELL HIGH OR LOW PRESSURE (APPROACH TO TRIP)	1, 2, 3 OR 4
14. NEUTRON MONITORING SYSTEM TRIP	1, 2, 3 OR 4
15. MANUAL SCRAM TRIP	1, 2, 3 OR 4
16. MANUAL SCRAM SWITCH ARMED	1, 2, 3 OR 4
17. REACTOR MODE SWITCH SHUTDOWN INTERRUPT CLEARED	1, 2, 3 OR 4
18. TRIP ACTUATORS A OR C TRIPPED	1 OR 3
19. TRIP ACTUATORS B OR D TRIPPED	2 OR 4
20.	
21. RECIRC PUMP EOC TRIP SYSTEM A BYPASSED	1
22.	
23. RECIRC PUMP EOC TRIP SYSTEM B BYPASSED	1
24. FULL SCRAM	1, 2, 3 OR 4
25. FULL SCRAM	1, 2, 3 OR 4

* CLOSURE TRIP FOR EITHER OF TWO VALVES WILL ANNUNCIATE
 ** BOTH OF TWO NMS TRIPS ARE REQUIRED FOR ANNUNCIATION

TABLE IA. ANNUNCIATION IN THE CONTROL ROOM - SYSTEM FAILURE OR OUT OF SERVICE

ALARM FUNCTION	DIVISION
1. RPS SYSTEM A/C OUT OF SERVICE	1 OR 3
2. 24 VDC ISOLATOR PWR LOSS OR CARD OUT OF FILE	1
3. 24 VDC ISOLATOR PWR LOSS OR CARD OUT OF FILE	2
4. RPS SYSTEM B/D OUT OF SERVICE	2 OR 4
5. 24 VDC ISOLATOR PWR LOSS OR CARD OUT OF FILE	2
6. 24 VDC ISOLATOR PWR LOSS OR CARD OUT OF FILE	4
7. TRIP UNIT IN CAL. OR GROSS FAILURE (NON SAFETY)	1
8. TRIP UNIT IN CAL. OR GROSS FAILURE (SAFETY)	1
9. TRIP UNIT OUT OF FILE OR POWER FAILURE	1
10. RPS A/C SW IN NUP	1
11. TRIP UNIT IN CALIBRATION OR GROSS FAILURE	2
12. TRIP UNIT OUT OF FILE OR POWER FAILURE	2
13. RPS B/D SW IN NUP	2
14. TRIP UNIT IN CALIBRATION OR GROSS FAILURE	3
15. TRIP UNIT OUT OF FILE OR POWER FAILURE	3
16. TRIP UNIT IN CALIBRATION OR GROSS FAILURE	4
17. TRIP UNIT OUT OF FILE OR POWER FAILURE	4

TABLE II. ALARM INPUTS TO COMPUTER FOR RPS

DESCRIPTION	INPUT NUMBER	CHANNEL (DIVISION)
1. CRD DISCHARGE VOLUME HIGH WATER LEVEL	C11	NC033 NC034 NC035 NC036
2. DRYWELL HIGH PRESSURE	C11	NC001 NC002 NC003 NC004
3. REACTOR VESSEL HIGH PRESSURE	B11	NC001 NC002 NC003 NC004
4. REACTOR VESSEL LOW WATER LEVEL	B11	NC005 NC006 NC007 NC008
5. MAIN STEAM LINE HIGH RADIATION	D11	NC001 NC002 NC003 NC004
6. TURBINE CONTROL VALVE FAST CLOSURE	C11	NC018 NC019 NC020
7. MAIN STEAM ISOLATION VALVES NOT FULLY OPEN	C11	NC047 NC048 NC049 NC050
8. TURBINE STOP VALVE CLOSURE	C11	NC018 NC019 NC020
9. NEUTRON MONITORING SYSTEM	C11	NC005 NC006 NC007 NC008
10. REACTOR MANUAL SCRAM	C11	NC005 NC006 NC007 NC008
11. REACTOR SCRAM CHANNELS A AND C TRIPPED	C11	NC009
12. REACTOR SCRAM CHANNELS B AND D TRIPPED	C11	NC010
13. REACTOR VESSEL HIGH WATER LEVEL	B11	NC051 NC052 NC053 NC054
14. RECIRC. PUMP SYSTEM A TRIPPED	C11	NC055
15. RECIRC. PUMP SYSTEM B TRIPPED	C11	NC056
16. SCRAM DISCHARGE VOLUME VENT VALVE CLOSED, F101	C11	NC057
17. SCRAM DISCHARGE VOLUME VENT VALVE CLOSED, F102	C11	NC058
18. SCRAM DISCHARGE VOLUME DRAIN VALVE CLOSED, F101	C11	NC059
19. SCRAM DISCHARGE VOLUME DRAIN VALVE CLOSED, F102	C11	NC060

3 INDICATION FOR 2 MS LINES REQUIRED PER CHANNEL
 ** CLOSURE OF 2 STOP VALVES REQUIRED PER CHANNEL
 *** EITHER OF TWO NMS TRIPS WILL TRIP CHANNEL

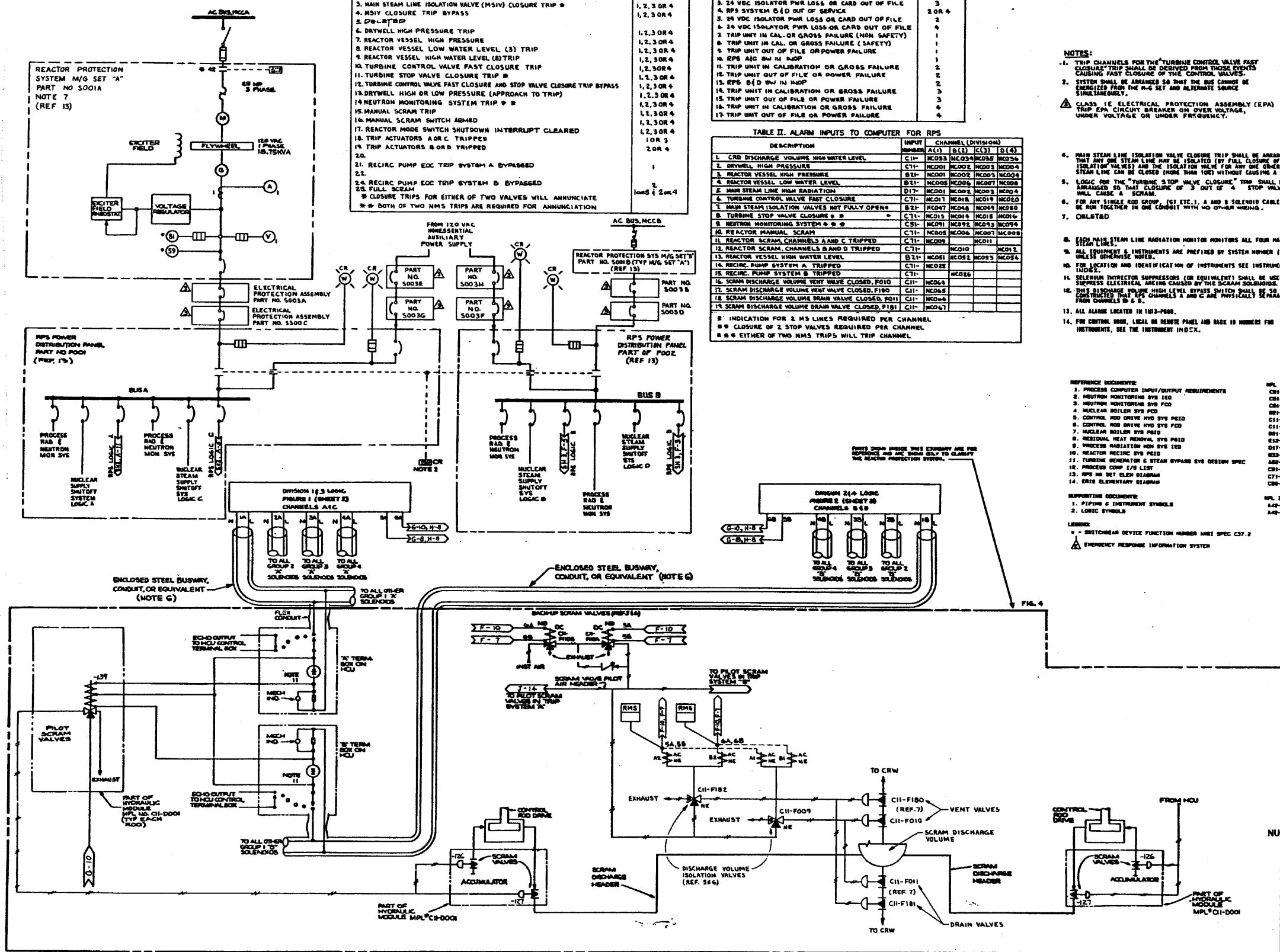
NOTES:
 1. TRIP CHANNELS FOR THE TURBINE CONTROL VALVE FAST CLOSURE TRIP SHALL BE DERIVED FROM THOSE EVENTS CAUSING FAST CLOSURE OF THE CONTROL VALVES.
 2. SYSTEM SHALL BE ARRANGED SO THAT THE BUS CANNOT BE ENERGIZED FROM THE R-E SET AND ALTERNATE SOURCE SIMULTANEOUSLY.
 3. CLASS 1E ELECTRICAL PROTECTION ASSEMBLY (EPA) TRIP EPA CIRCUIT BREAKER ON OVER VOLTAGE, UNDER VOLTAGE OR UNDER FREQUENCY.

4. MAIN STEAM LINE ISOLATION VALVE CLOSURE TRIP SHALL BE ARRANGED SO THAT ONLY ONE STEAM LINE MAY BE ISOLATED (BY FULL CLOSURE OF ITS ISOLATION VALVE) AND THE ISOLATION VALVE FOR ANY ONE OTHER STEAM LINE CAN BE CLOSED (MORE THAN 10S) WITHOUT CAUSING A SCRAM.
 5. LOGIC FOR THE "TURBINE STOP VALVE CLOSURE" TRIP SHALL BE ARRANGED SO THAT CLOSURE OF 3 OUT OF 4 STOP VALVES WILL CAUSE A SCRAM.
 6. FOR ANY SINGLE ROD GROUP (G1 ETC.), A AND B SENSING CABLES MAY BE RUN TOGETHER IN ONE CONDUIT WITH NO OTHER WIRING.
 7. DELETED
 8. EACH MAIN STEAM LINE RADIATION MONITOR MONITORS ALL FOUR MAIN STEAM LINES.
 9. ALL EQUIPMENT & INSTRUMENTS ARE PREFIXED BY SYSTEM NUMBER (C11) UNLESS OTHERWISE NOTED.
 10. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT INDEX.
 11. SELENIUM INJECTOR SUPPRESSORS (OR EQUIVALENT) SHALL BE USED TO SUPPRESS ELECTRICAL INTERFERENCE CAUSED BY THE SCRAM SOLENOIDS.
 12. THIS DISCHARGE VOLUME HIGH LEVEL BYPASS SWITCH SHALL BE SO CONSTRUCTED THAT RPS CHANNELS A AND C ARE PHYSICALLY SEPARATED FROM CHANNELS B & D.
 13. ALL ALARMS LOCATED IN 1003-000.
 14. FOR CONTROL ROOM, LOCAL OR REMOTE PANEL AND BACK IN NUMBER FOR INSTRUMENTS, SEE THE INSTRUMENT INDEX.

REFERENCE DOCUMENTS	NPL ITEM NO.	DRAWING NUMBER
1. PROCESS COMPUTER INPUT/OUTPUT REQUIREMENTS	CS-1010	D-808-300
2. NEUTRON MONITORING SYS IED	CS-1020	D-808-307
3. NEUTRON MONITORING SYS PCD	CS-1030	D-808-307
4. NUCLEAR ROLLER SYS PCD	CS-1040	D-808-307
5. CONTROL ROD DRIVE HYD SYS PCD	CS-1050	D-808-307, 372
6. CONTROL ROD DRIVE HYD SYS PCD	CS-1060	D-808-308
7. NUCLEAR ROLLER SYS PCD	CS-1070	D-808-308, 309, 307
8. NUCLEAR ROLLER SYS PCD	CS-1080	D-808-308, 309, 307
9. REGIONAL HEAT REMOVAL SYS PCD	CS-1090	D-808-308, 309, 307
10. REACTOR RECIRC SYS PCD	CS-1100	D-808-308, 309, 307
11. TURBINE MONITORING & STEAM BYPASS SYS DESIGN SPEC	ASD-1100	D-808-308, 309, 307, 308
12. PROCESS COMP I/O LIST	CS-1000	D-808-301, 302
13. RPS IN SET ELEM DIAGRAM	C11-1000	D-808-301
14. ELEM ELEMENTARY DIAGRAM	CS-1000	D-808-301

REPORTING DOCUMENTS:
 1. PIPING & INSTRUMENT SYMBOLS A-2-1010
 2. LOGIC SYMBOLS A-2-1030

LEGEND:
 * - SWITCHGEAR DEVICE FUNCTION NUMBER ANSI SPEC C37.2
 Δ - EMERGENCY RESPONSE INFORMATION SYSTEM



PROPERTY OF PERRY NUCLEAR POWER PLANT
 AMPLIFIED, 10/77
 DRAWING UNDER DESIGN
 CONFIGURATION MANAGEMENT
 AS OF REV. C

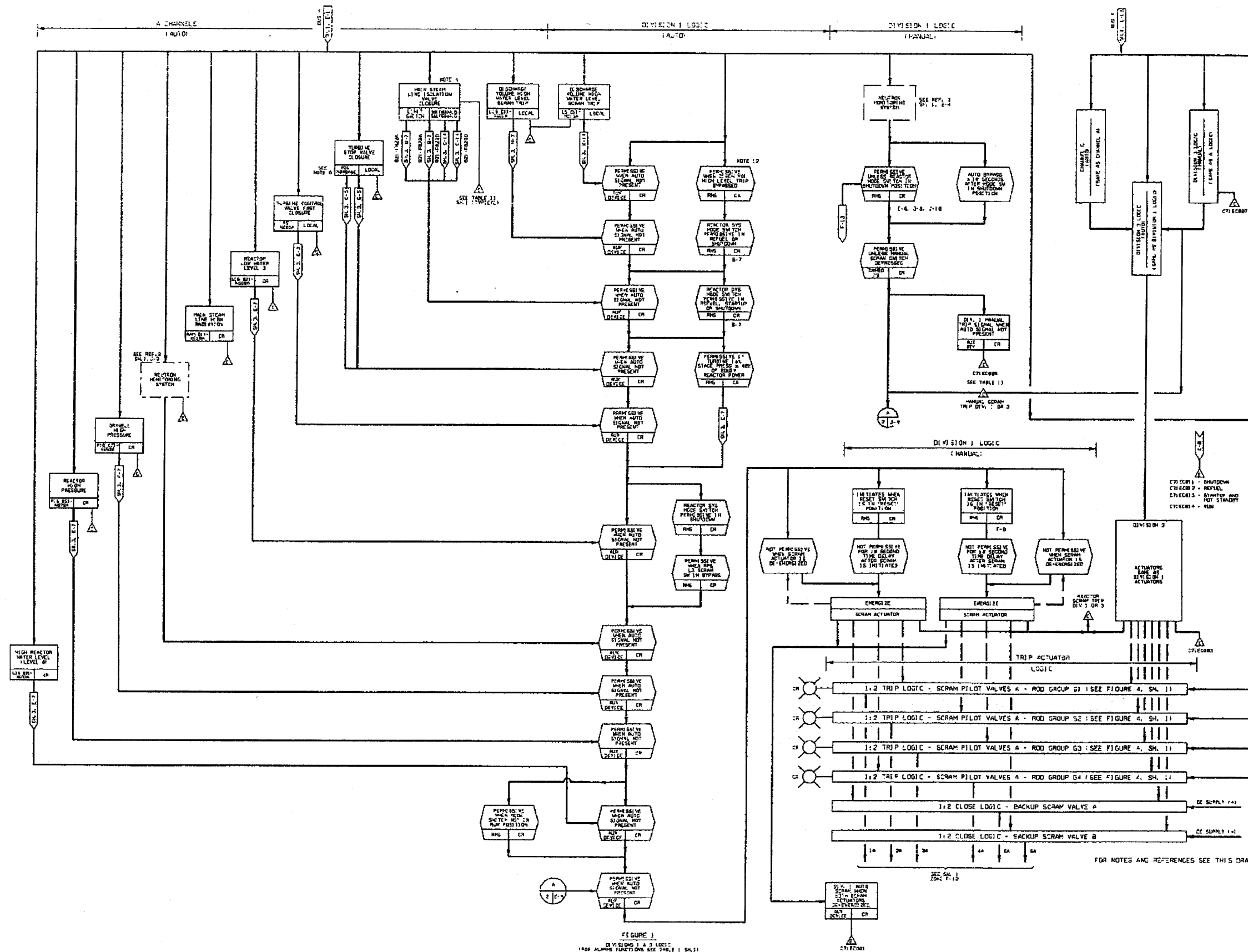
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

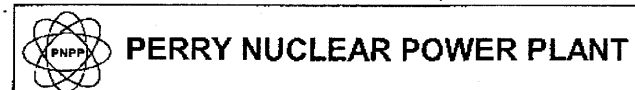
PERRY NUCLEAR POWER PLANT

Reactor Protection System
 Figure 7.2-1 (Sheet 1 of 4)

[Dwg. D-808-302(1)]

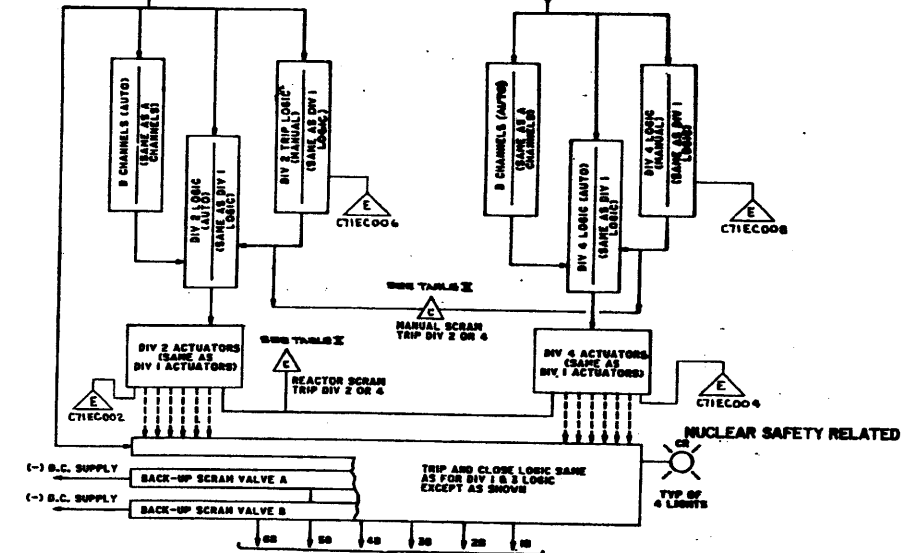
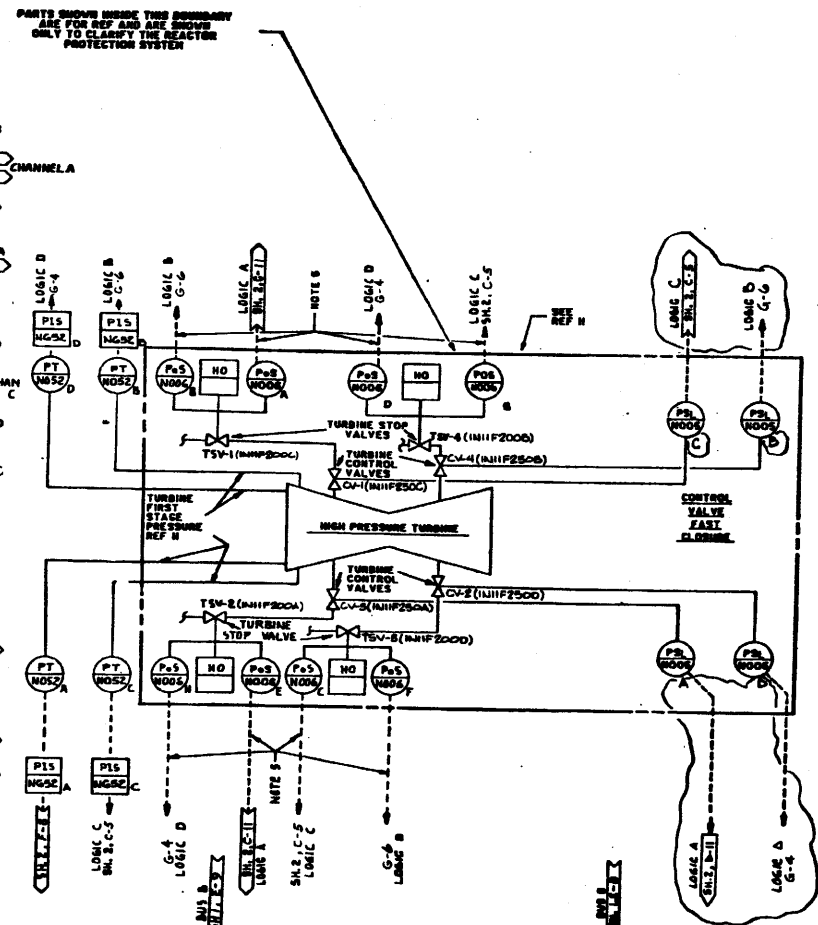
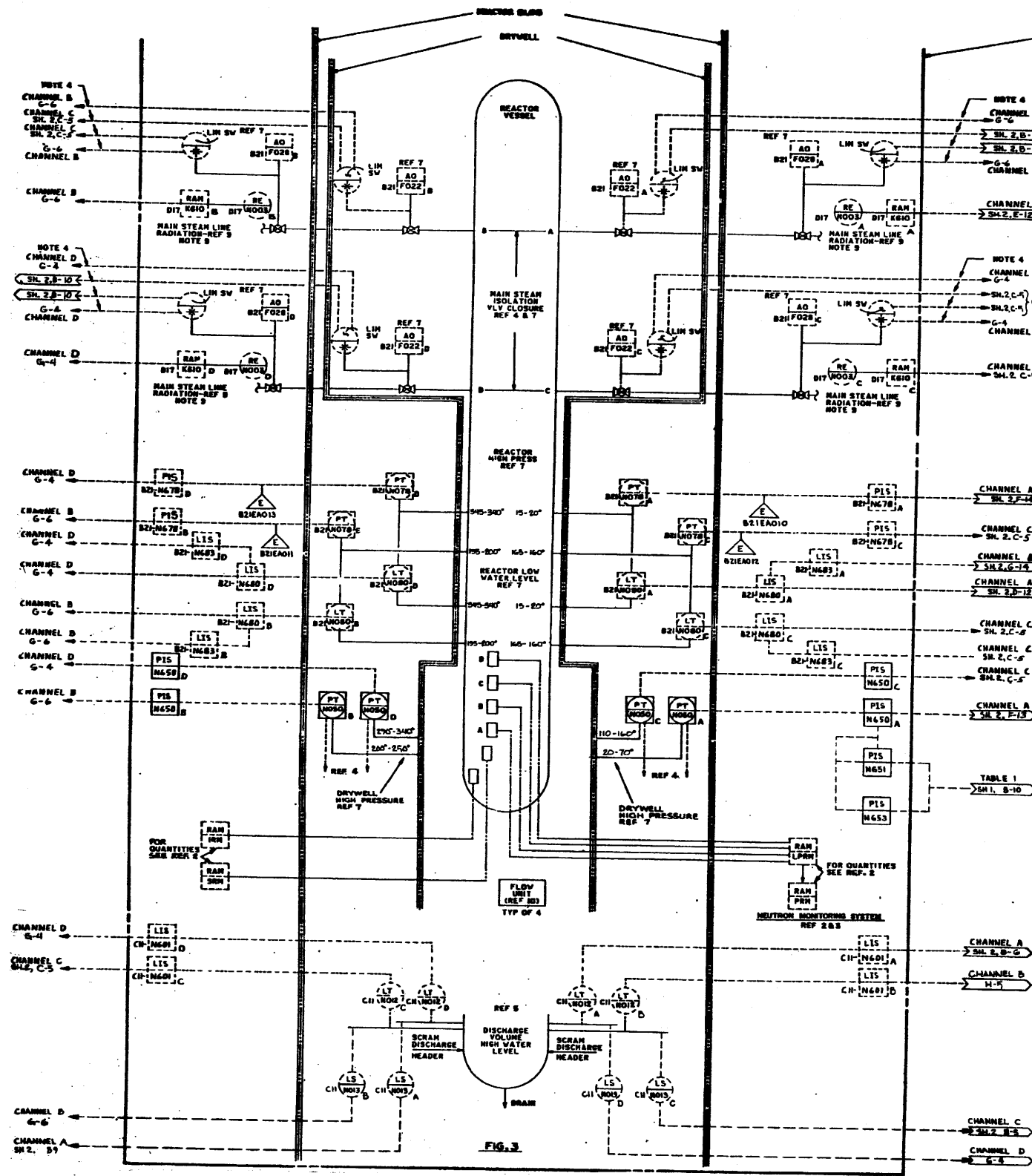


(Rev. 14 10/05)



Reactor Protection System
Figure 7.2-1 (Sheet 2 of 4)

[Dwg. D-908-302(2)]

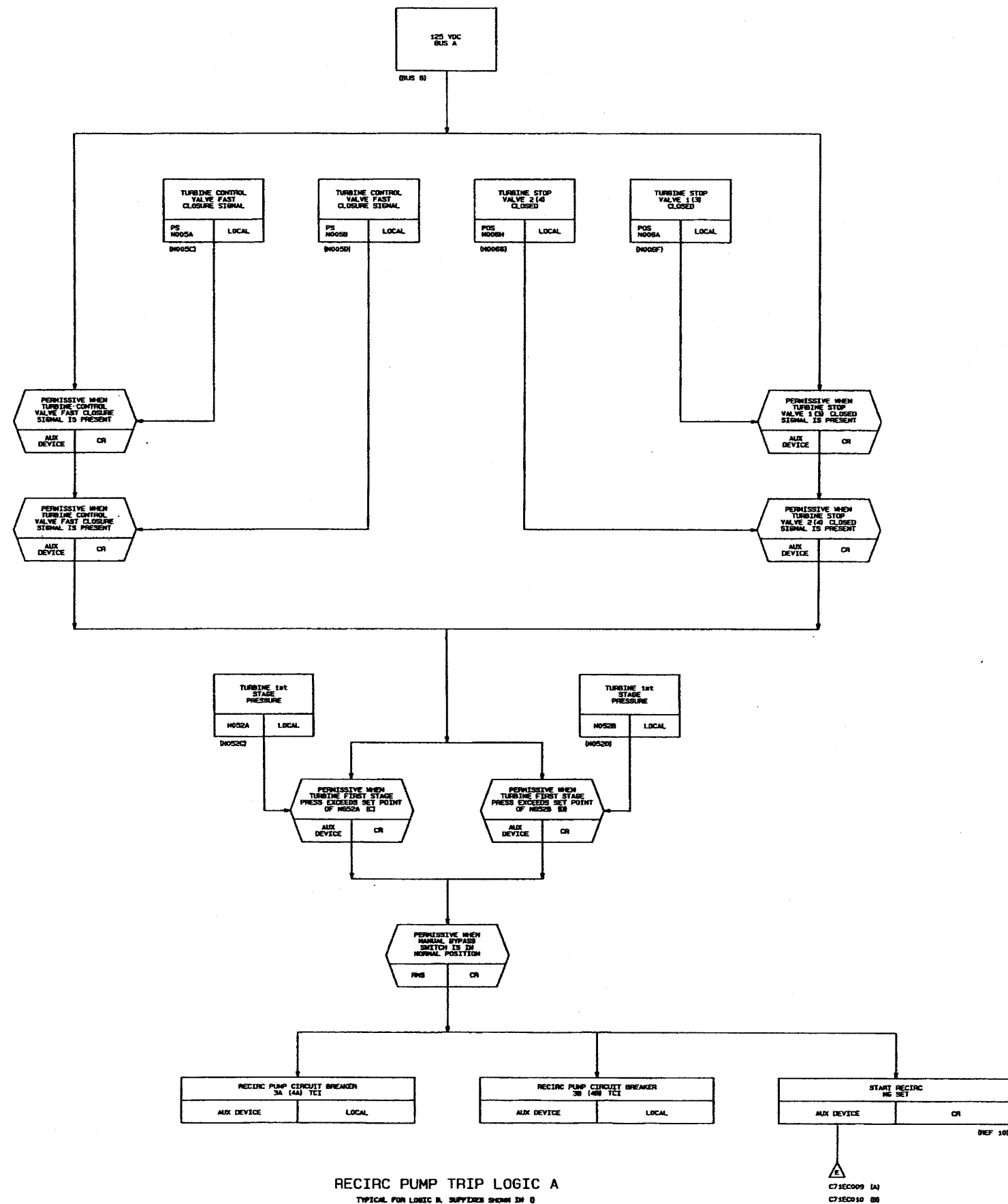


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FOR NOTES & REFERENCES
SEE THIS DWG. SH. 1

PERRY NUCLEAR POWER PLANT

Reactor Protection System
Figure 7.2-1 (Sheet 3 of 4)
[Dwg. D-808-302(3)]

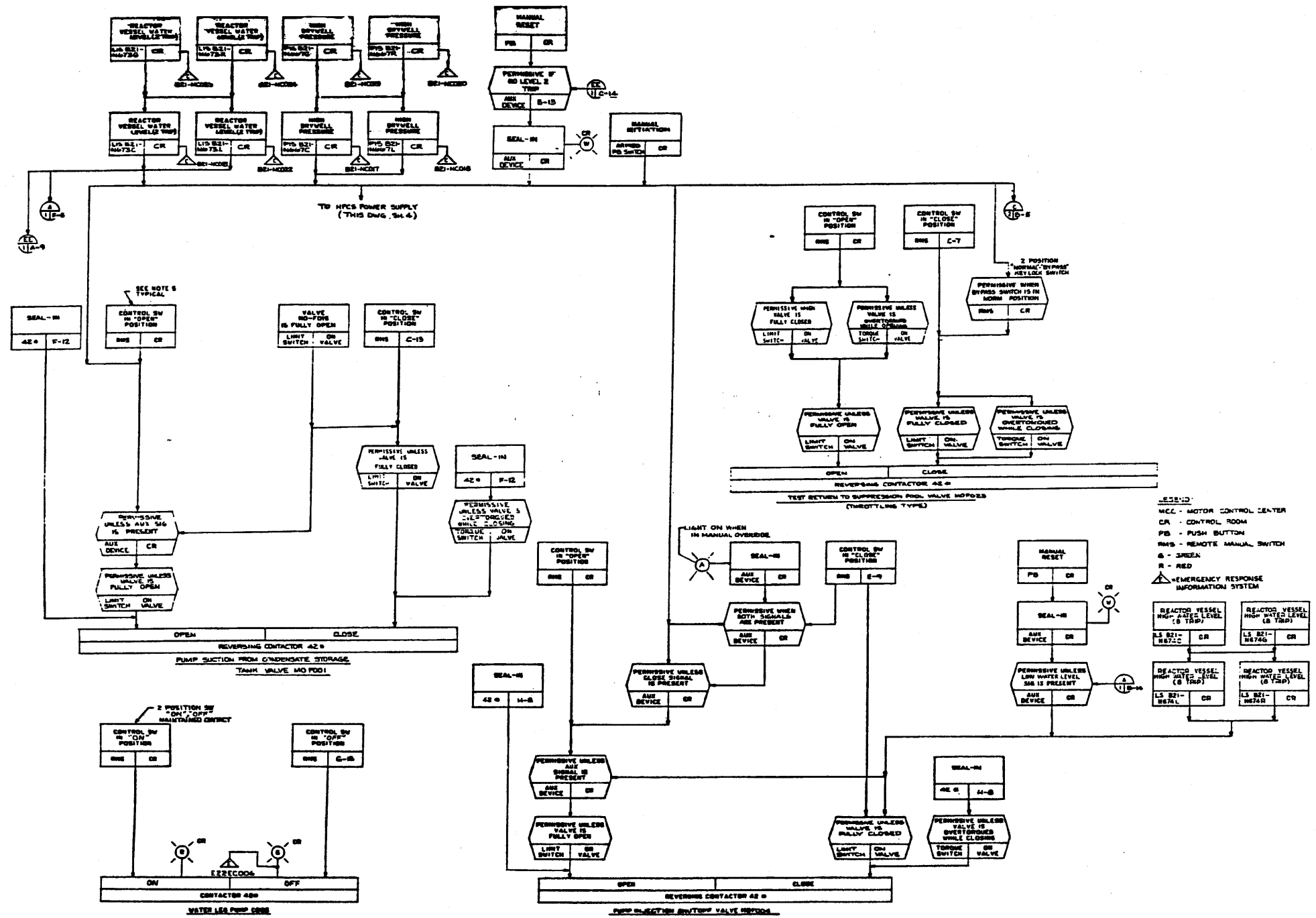


(Rev. 12 1/03)



Reactor Protection System
Instrumentation and Electrical
Diagram

Figure 7.2-1 (Sheet 4 of 4)
[Dwg. D-808-302(4)]



- NOTES:**
1. All pump-motor combination starters shall be provided with thermal overload which trip on overload. Breakers shall provide short circuit protection. Tripping of either type of device is annunciated via an alarm relay.
 2. All valve motors are to be provided with loss of power annunciation. In addition valve motor circuits are to be provided with "SHORT CIRCUIT CURRENT PROTECTIVE TRIP".
 3. All equipment and instruments are prefixed by system number E22 unless otherwise noted.
 4. For additional alarm & process instrumentation not shown see Ref. 1.
 5. For switchgear device function numbers see Reference 5.
 6. Unless otherwise noted all relays shall be 3 position switches: "CLOSE" - "OPEN" - "TRIP" (RETURN TO "TRIP" FROM "CLOSE" - "TRIP").
 7. The inter-locks shall be designed in accordance with IEEE 388.1011 & IEEE 388.1012.
 8. Lamp "L" is part of light and located below regular HPCS annunciation legend as shown.

- REFERENCE DOCUMENTS:**
- | | |
|--|-------------------|
| 1. HIGH PRESSURE CORE SPRAY P&ID | E22-1000 |
| 2. NUCLEAR BOILER SYSTEM P&ID | E22-1000 |
| 3. DELETED | DELETED |
| 4. LEAK DETECTION SYSTEM P&ID | E22-1000 |
| 5. ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS | NA |
| 6. LOGIC SYMBOLS | AAI-1230/AAZ-1230 |
| 7. REDUNDANT REACTIVITY CONTROL SYS | E22-1210 |
| 8. EMS ELEMENTARY DIAGRAM | E22-800 |

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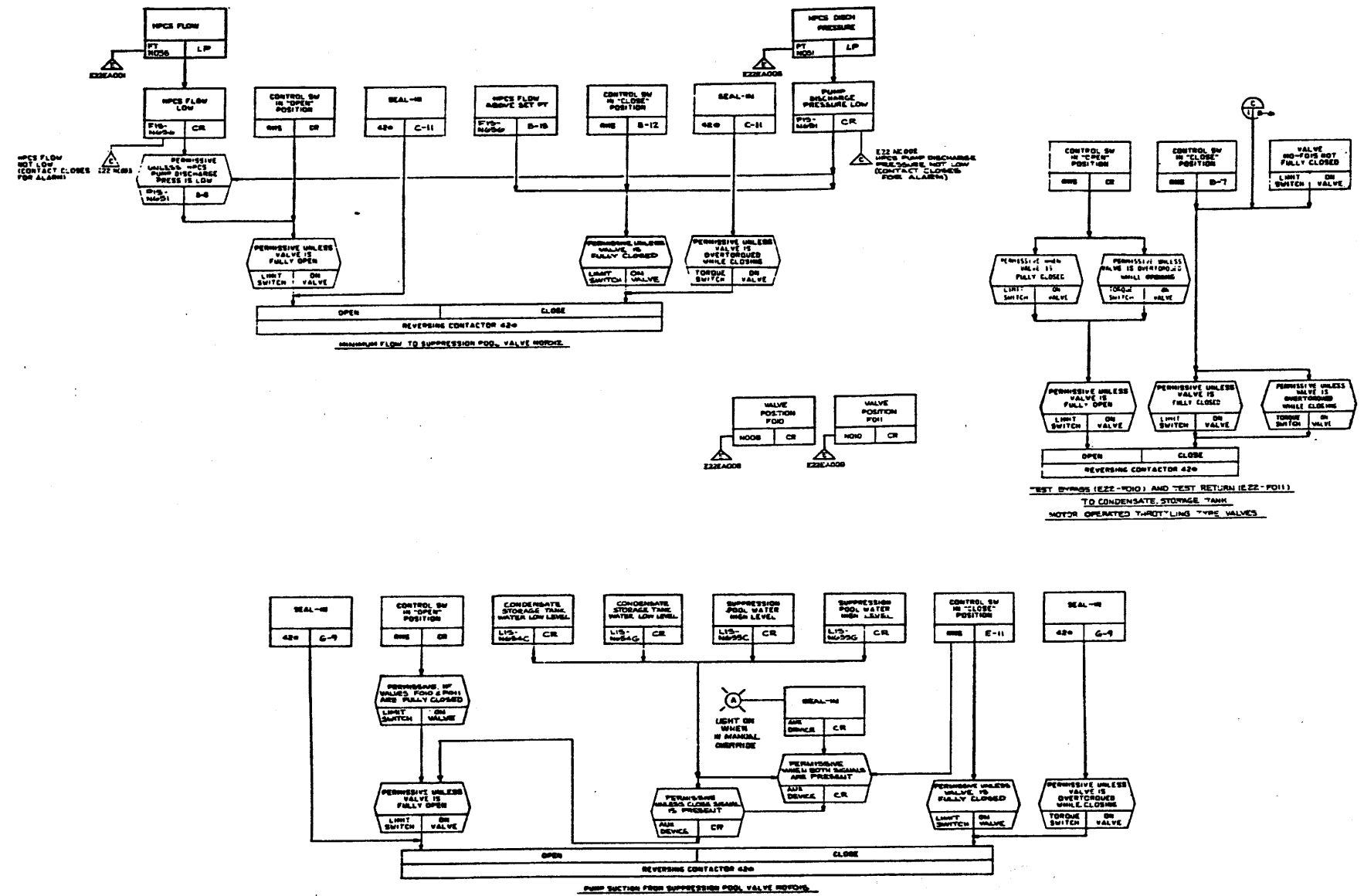
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PERRY NUCLEAR POWER PLANT

High Pressure Core Spray System


Figure 7.3-1 (Sheet 1 of 3)

(Dwg. D-808-311)



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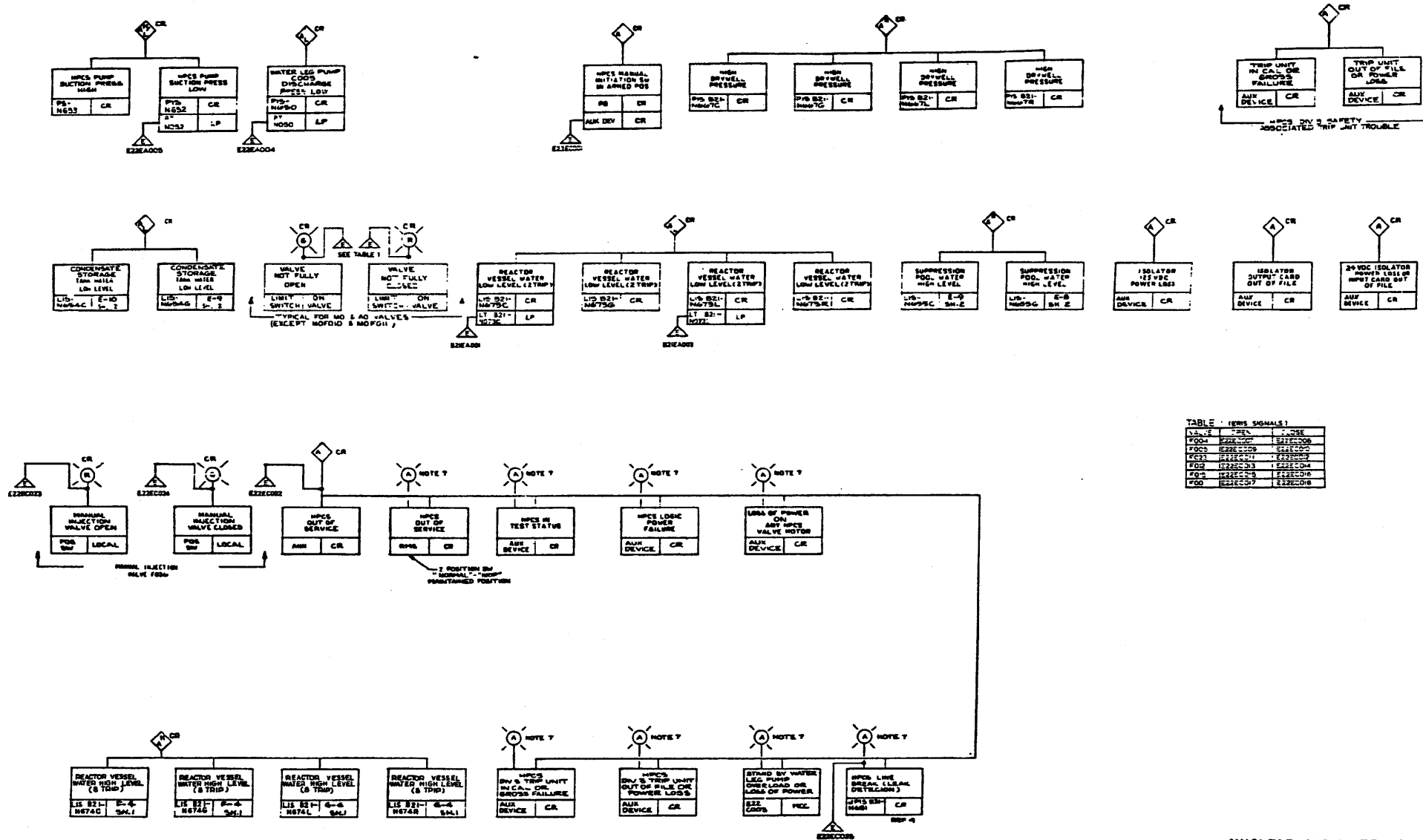


PERRY NUCLEAR POWER PLANT

High Pressure Core Spray System


Figure 7.3-1 (Sheet 2 of 3)

(Dwg. D-808-311)



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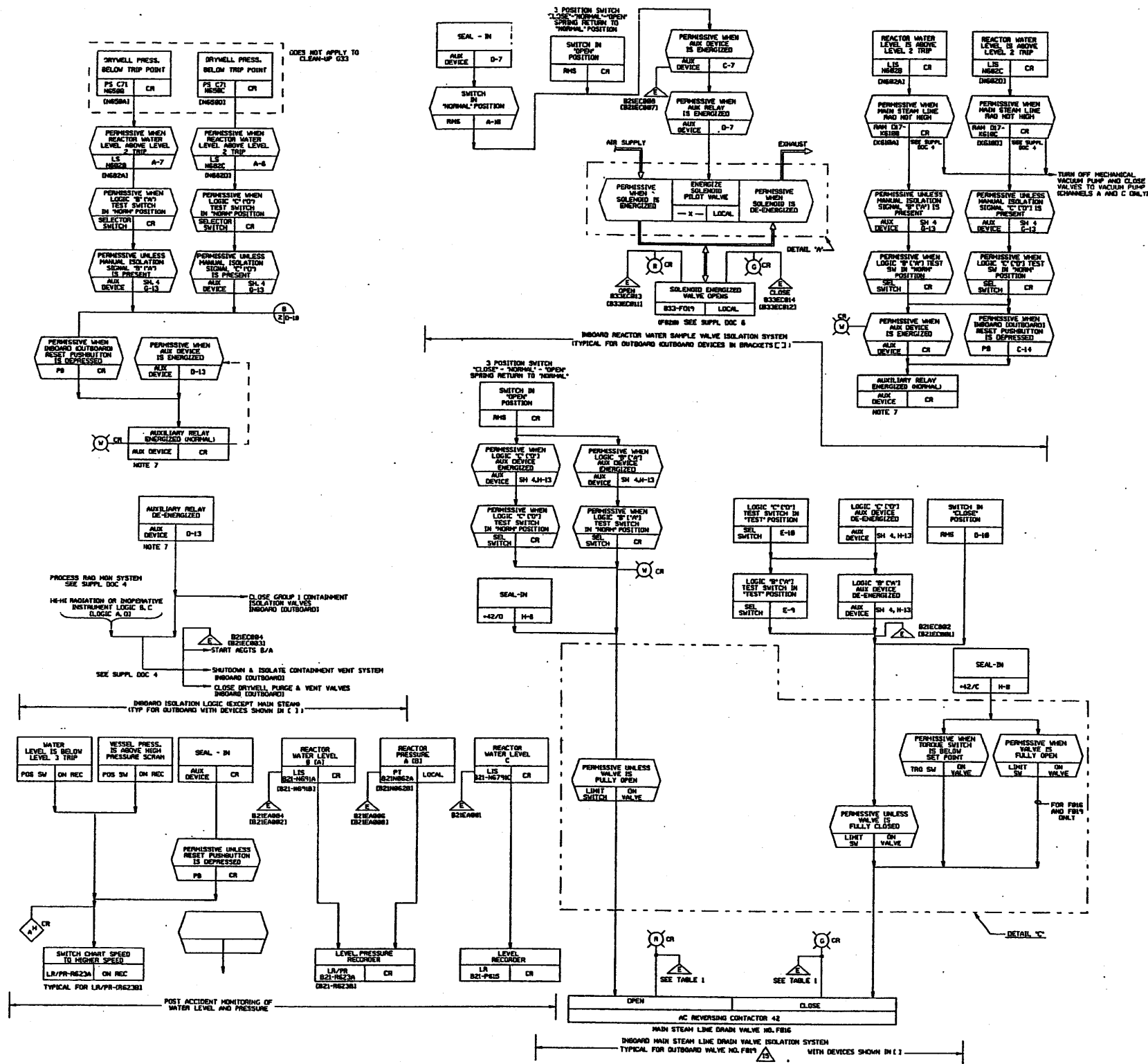


PERRY NUCLEAR POWER PLANT

High Pressure Core Spray System

Figure 7.3-1 (Sheet 3 of 3)

(Dwg. D-808-311)



- NOTES:
1. WHEN TEST SOLENOID PILOT IS ENERGIZED THE MAIN STEAM ISOLATION VALVE OPERATION IS SLOWLY EXHAUSTED (60 SEC. CLOSURE TIME) WHILE VALVE IS CLOSED BY ACTION OF THE AIR SUPPLY. THE VALVE IS OPENING WITHIN 100 SEC. OF AIR PRESSURE.
 2. THE ALARMS AND VALVE INDICATING LIGHTS SHOWN ON THE PCD ARE SYSTEM REQUIREMENTS IN ADDITION TO THOSE SHOWN ON THE SYSTEM PAID. ADDITIONAL INFORMATION ON ALARMS AND INDICATORS FROM SUPPL. DOC. 10, 11 AND 12. INFORMATION NOT SHOWN ON THIS PCD MAY BE OBTAINED FROM SUPPL. DOC. AUXILIARY RELAYS & DEVICES ARE NOT SHOWN ON PCD EXCEPT WHERE NECESSARY TO CLARIFY FUNCTION.
 3. ALL EQUIPMENT AND INSTRUMENTS ARE PREFEED BY SYSTEM NO. 821 UNLESS OTHERWISE NOTED.
 4. LPCS (SEE SUPPL. DOC. 10) PUMP RUNNING PERMISSIVE IS USED IN ACS LOGIC A & E ONLY.
 5. EACH SAFETY/RELIEF VALVE & AUTO DEPRESSURIZATION CONTROL LOGIC CIRCUIT SHALL AUTO DEPRESSURIZATION SUPPLIES SO THAT A SINGLE FAILURE WILL NOT DISABLE THE AUTO DEPRESSURIZATION FUNCTION.
 6. THE NUCLEAR BOILER SYS SHALL BE DESIGNED IN ACCORDANCE WITH PROPOSED CRITERIA FOR NUCLEAR POWER PLANT PROTECTION SYSTEM IEEE 279 AS APPLICABLE TO THE CONTROL CIRCUITRY.
 7. ISOLATION LOGIC SHALL BE "FAILSAFE" LOGIC SHALL BE DESIGNED TO INITIATE ISOLATION FUNCTIONS WHEN DE-ENERGIIZED.
 8. DELETED
 9. THE DEVICES IN THIS AREA, AS WELL AS OTHER DEVICES IN THIS LOGIC ARE ESSENTIAL AND MUST MEET THE REQUIREMENTS OF IEEE 279.
 10. DELETED
 11. ALARM FROM ROTARY CONTACT.
 12. DELETED
 13. THE SVS RECEIVE UNDERPRESSURE TRIPS FROM VARIOUS TRIP UNITS FOR THE TRIP UNIT ASSIGNMENT FOR EACH SVS SEE TABLE 3 OF SUPPLEMENTAL DOCUMENT 1.
 14. SVS MONITOR SHALL CAUSE ANNUNCIATION IF ANY SVS LINE DISCHARGE PRESSURE EXCEEDS SETPOINT.
 15. SEE REF. 11 FOR REMOTE SHUTDOWN REQUIREMENTS.
 16. SEL SWITCH IS 2 POSITION "NORM"-TEST, MAINTAINED CONTACTS KEY REMOVABLE IN "NORM" POSITION.
 17. TYPICALLY DIVISION 1 ISOLATION LOGIC CONTROLS THE INBOARD VALVES AND DIVISION 2 ISOLATION LOGIC CONTROLS THE INBOARD VALVES UNLESS THE OPPOSITE IS FURNISHED PROVIDED THE CONDITIONS OF DIVISIONAL SEPARATION ARE NOT VIOLATED.

SUPPORTING DOCUMENTS

SUPPORTING DOCUMENTS	REFERENCE DESIGNATOR
1. LOGIC SYMBOLS	A62-1638
2. ELEC. EQUIP. SEPARATION FOR PROTECTION SYS	A62-1638
3. DELETED	

SUPPLEMENTAL DOCUMENTS

SUPPLEMENTAL DOCUMENTS	REFERENCE DESIGNATOR
1. NUCLEAR BOILER PAID	B21-1818
2. DELETED	
3. REACTOR PROTECTION SYS PAID	C71-1818
4. PROCESS RADIATION SYS PAID	
5. DELETED	
6. REACTOR RECIRC SYS PAID	B33-1818
7. RWS SYS PAID	E22-1818
8. LEAK DETECTION SYS PAID	E31-1838
9. ISOLATION VALVES PURCH. PART PAID	E22-1818
10. LOW PRESSURE CONC. SPRAY PAID	B21-F822-F028
11. DELETED	
12. REMOTE SHUTDOWN SYS PAID	C41-1838
13. STANDBY LIQUID CONTROL SYS PAID	C41-1838
14. REACTOR WATER CLEANUP SYS PAID	G33-1828
15. PWR SYS PAID	G12-1828
16. DELETED	
17. EHS ELEMENTARY DIAGRAM	C16-1858

LEGEND:

IEEE INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS
 APS AUTO DEPRESSURIZATION SYSTEM
 RPS REACTOR PROTECTION SYSTEM
 # APPLIES IF IN GE SCOPE OF SUPPLY
 * SWITCHGEAR DEVICE FUNCTION NO'S ASA SPEC C17.2
 RHM RADIATION MONITOR
 ERS EMERGENCY RESPONSE INFORMATION SYSTEM

TABLE I ERS SIGNALS

MAIN STEAM LINE DRAIN ISLV VALVE

VALVE	OPEN	CLOSE
B21-F816	B21EC183	B21EC184
B21-F817	B21EC183	B21EC184

TABLE V ERS SIGNALS

HEAD VENT - MAIN STEAM LINE DRAIN VALVES

VALVE	OPEN	CLOSE
B21-F808	B21EC115	B21EC116
B21-F802	B21EC117	B21EC118
B21-F809	B21EC115	B21EC116
B21-F821	B21EC117	B21EC118

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PERRY NUCLEAR POWER PLANT

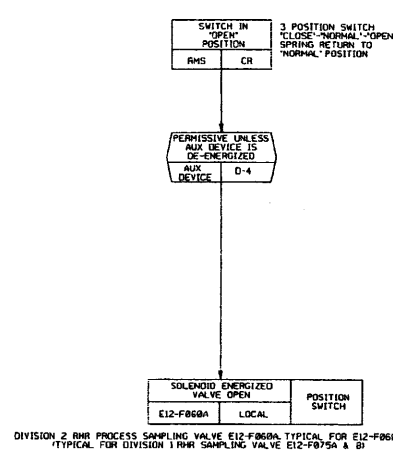
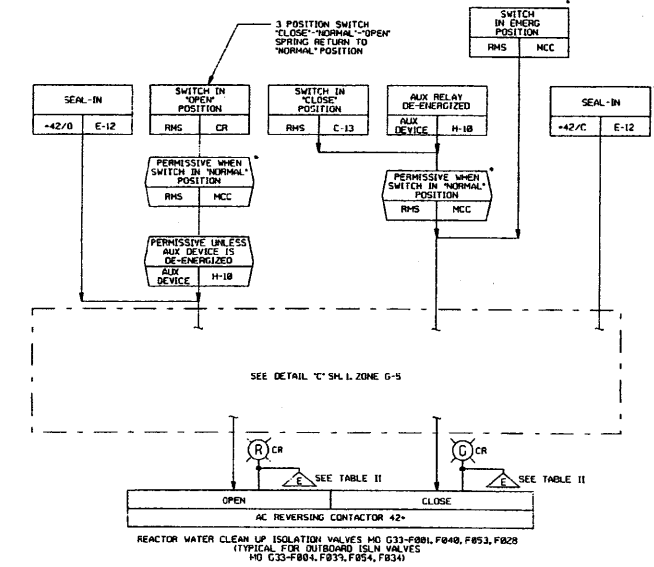
Nuclear Boiler System

Figure 7.3-3 (Sheet 1 of 7)

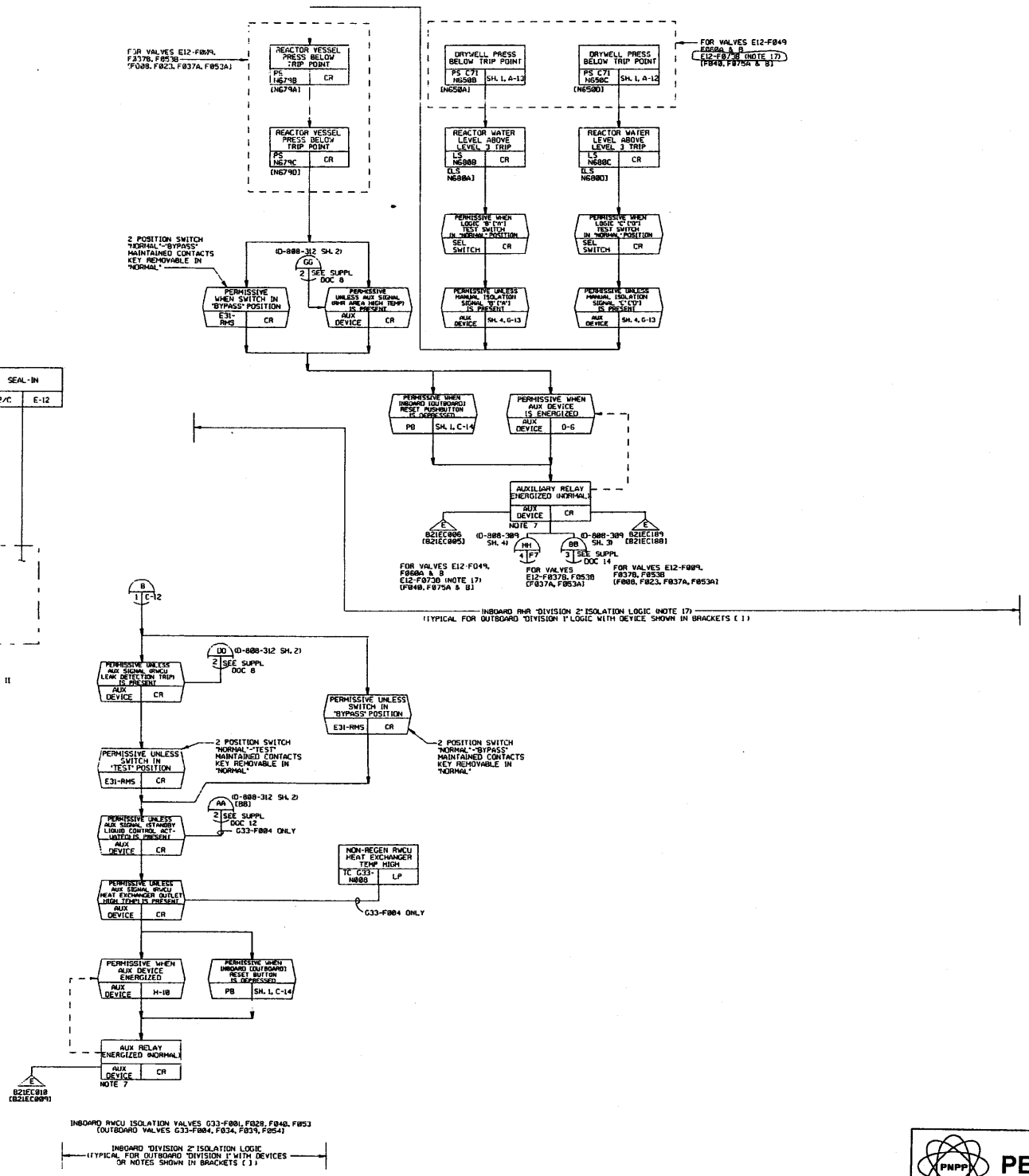
[Dwg. D-808-303(1)]

TABLE II - ERIS SIGNALS
 REACTOR WATER CLEANUP ISLN VALVES

VALVE	OPEN	CLOSE
G33F001	G33EC012	G33EC013
G33F040	G33EC018	G33EC019
G33F053	G33EC008	G33EC009
G33F028	G33EC004	G33EC005
G33F004	G33EC014	G33EC015
G33F039	G33EC016	G33EC017
G33F054	G33EC010	G33EC011
G33F034	G33EC006	G33EC007



DIVISION 2 RWR PROCESS SAMPLING VALVE E12-F001 TYPICAL FOR E12-F000
 TYPICAL FOR DIVISION 1 RWR SAMPLING VALVE E12-F05A & B



INBOARD RWR DIVISION 2 ISOLATION LOGIC
 TYPICAL FOR OUTBOARD DIVISION 1 LOGIC WITH DEVICES
 OR NOTES SHOWN IN BRACKETS ()

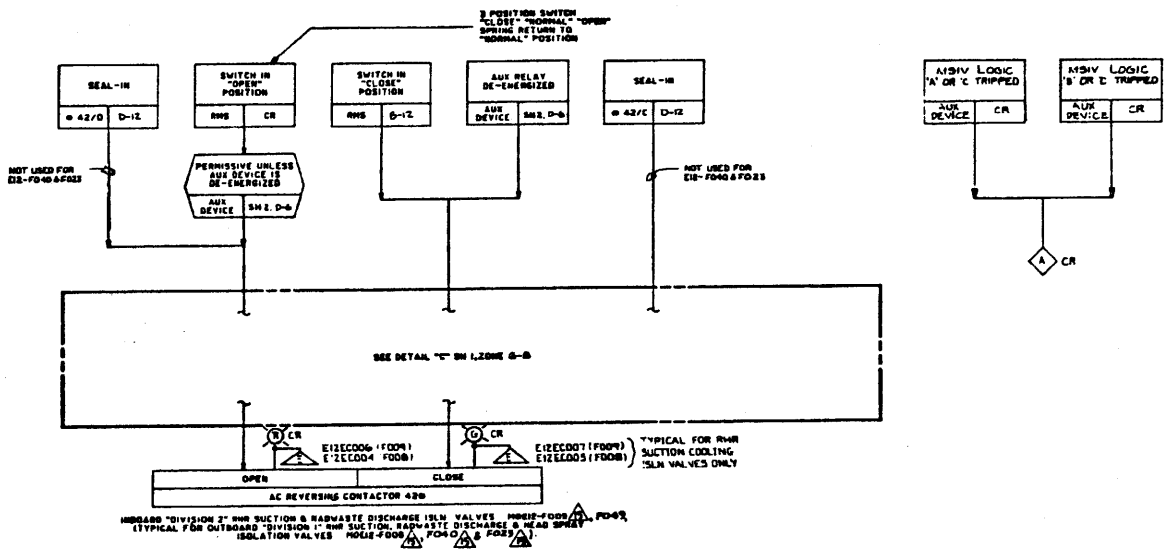
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PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 2 of 7)

[Dwg. D-808-303(2)]



NUCLEAR SAFETY RELATED

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PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 3 of 7)

[Dwg. D-808-303(3)]

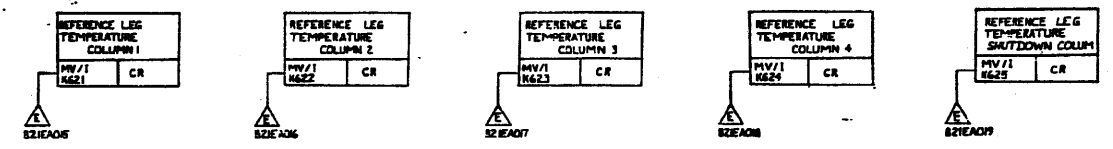
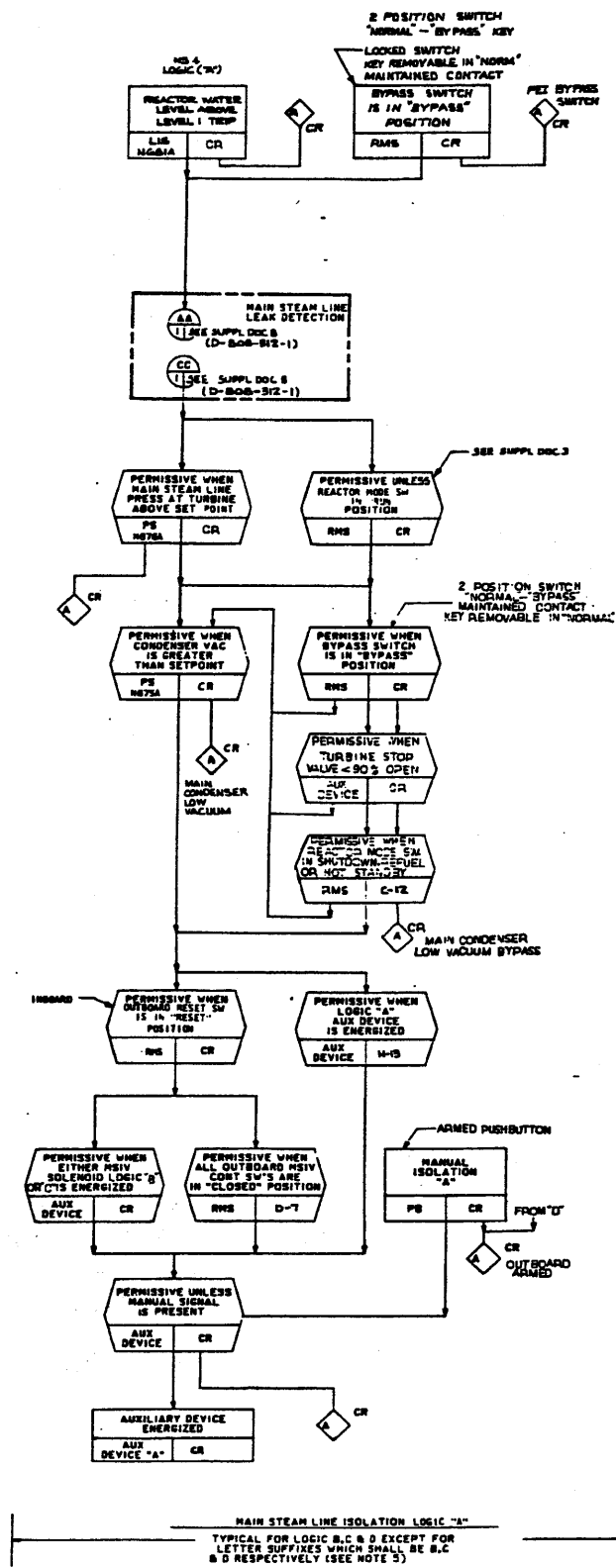
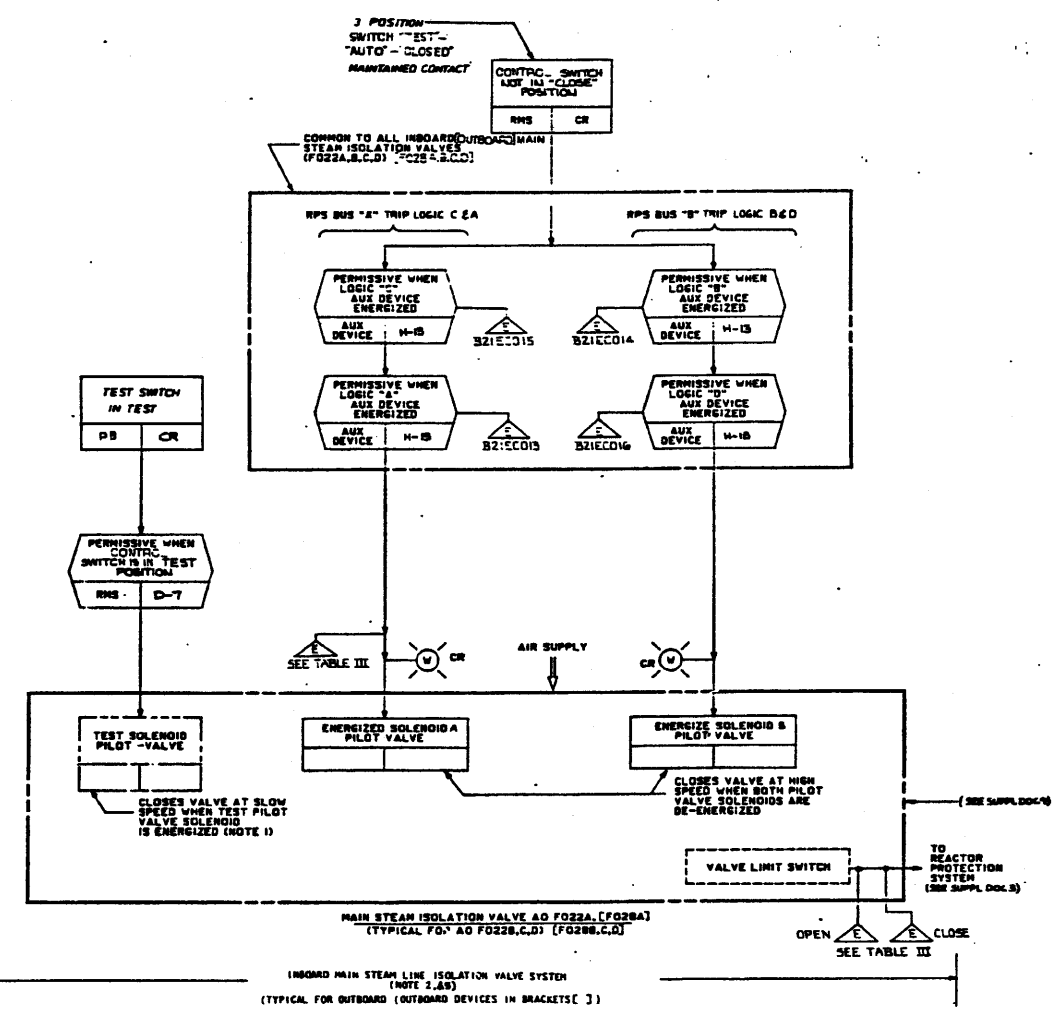


TABLE III - ERIS SIGNALS - MSIV

ALVE	PILOT SOLENOID	VALVE > 90% OPEN	VALVE < 90% OPEN
INBOARD	B21-F022A	B21E026	B21E027
	B21-F022B	B21E027	B21E028
	B21-F022C	B21E028	B21E029
OUTBOARD	B21-F028A	B21E081	B21E082
	B21-F028B	B21E082	B21E083
	B21-F028C	B21E083	B21E084
	B21-F028D	B21E084	B21E085



NUCLEAR SAFETY RELATED

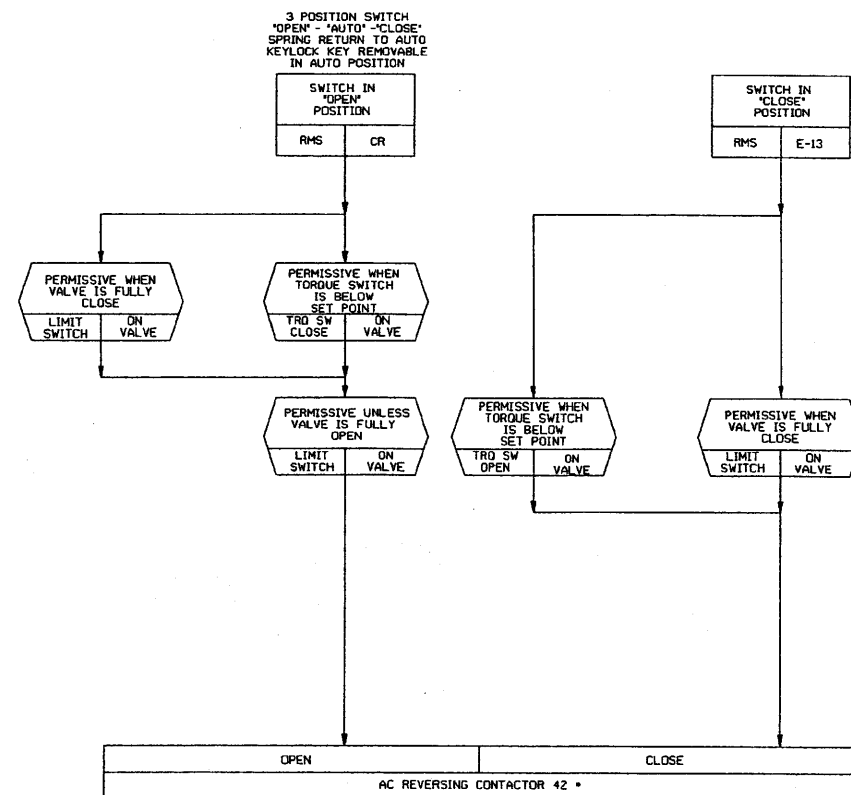
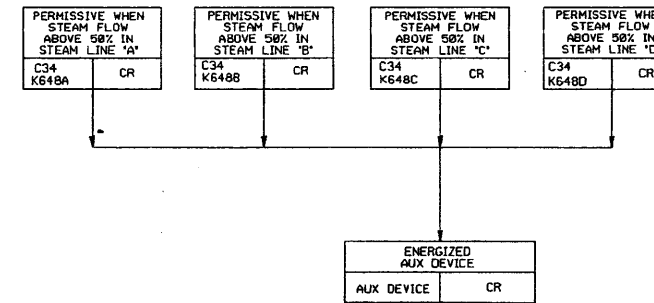
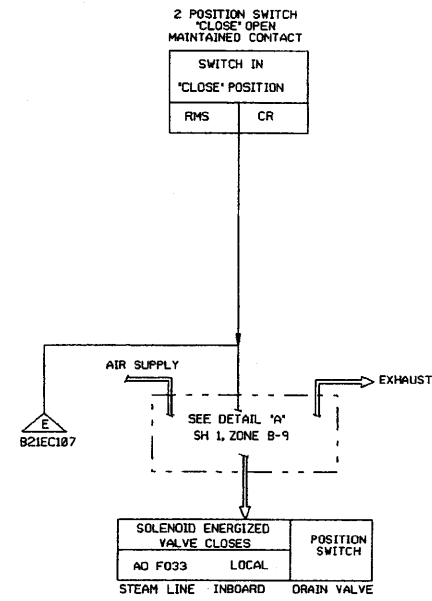
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PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

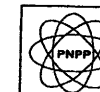
Figure 7.3-3 (Sheet 4 of 7)

[Dwg. D-808-303(4)]



3-d MAIN STEAM LINE SHUTOFF VALVE MD IN11-F020A
STEAM LINE "A" (TYP FOR STEAM LINE B, C & D EXCEPT SUFFIX A WILL
BE SUFFIX B, C & D RESPECTIVELY)

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 5 of 7)

[Dwg. D-808-303(5)]

DIVISION 1 POWER LOGIC A & E
 DIVISION 2 POWER LOGIC B & F
 SEE REF 15

ALL LOGIC (THIS SHEET) SHALL BE ENERGIZED TO ACTUATE

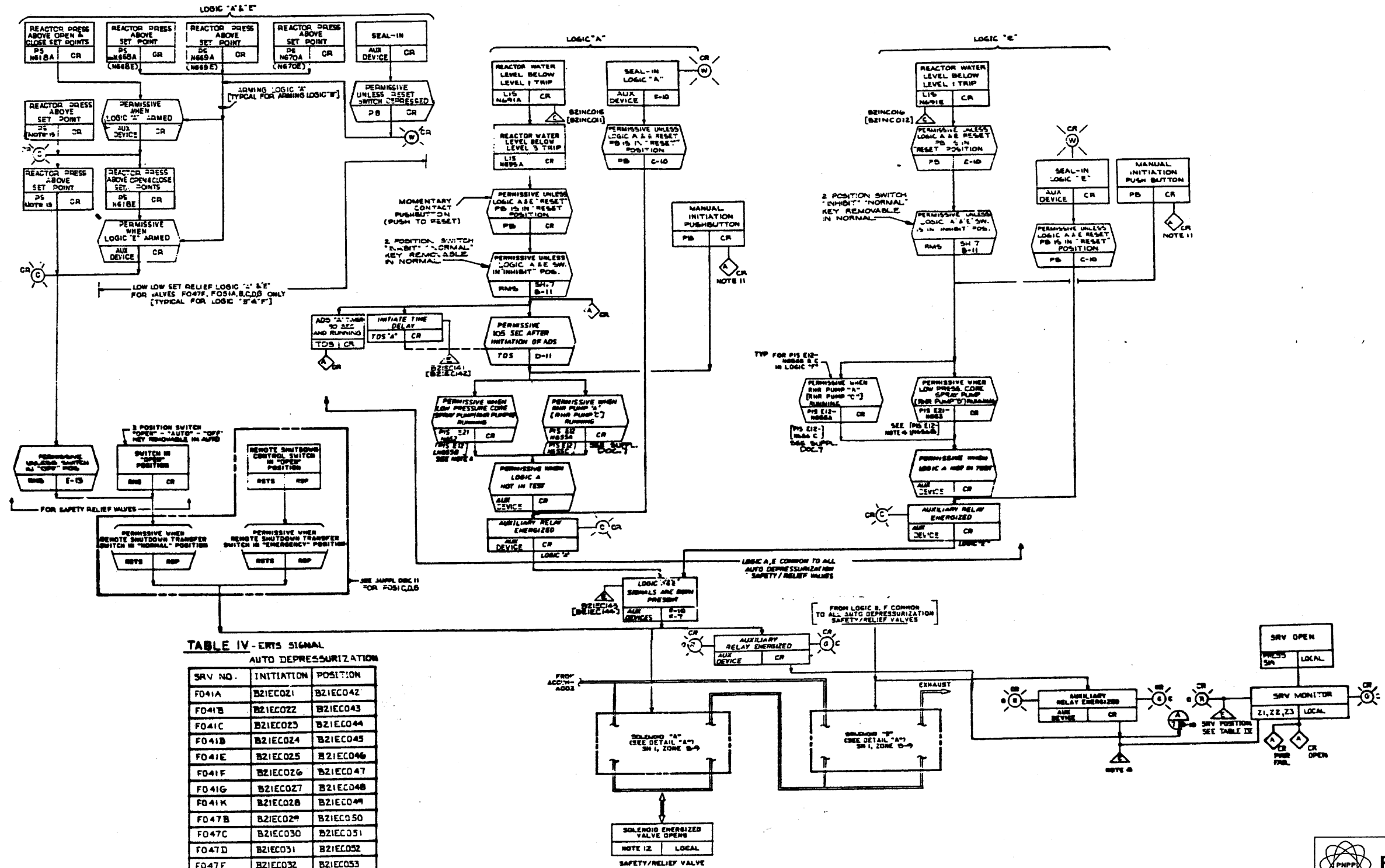


TABLE IV - ERTS SIGNAL AUTO DEPRESSURIZATION

SRV NO.	INITIATION	POSITION
FO41A	B21EC021	B21EC042
FO41B	B21EC022	B21EC043
FO41C	B21EC023	B21EC044
FO41D	B21EC024	B21EC045
FO41E	B21EC025	B21EC046
FO41F	B21EC026	B21EC047
FO41G	B21EC027	B21EC048
FO41K	B21EC028	B21EC049
FO47B	B21EC029	B21EC050
FO47C	B21EC030	B21EC051
FO47D	B21EC031	B21EC052
FO47F	B21EC032	B21EC053
FO47G	B21EC033	B21EC054
FO47H	B21EC034	B21EC055
FO51A	B21EC035	B21EC056
FO51B	B21EC036	B21EC057
FO51C	B21EC037	B21EC058
FO51D	B21EC038	B21EC059
FO51G	B21EC039	B21EC060

AUTO DEPRESSURIZATION SEE SUPPL. DOC. 1, TABLE 3 FOR ADS VALVES ASSIGNMENT LOGIC B & F SAME AS LOGIC A & E RESPECTIVELY EXCEPT FOR LETTER SUFFIXES OR AS NOTED.

NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

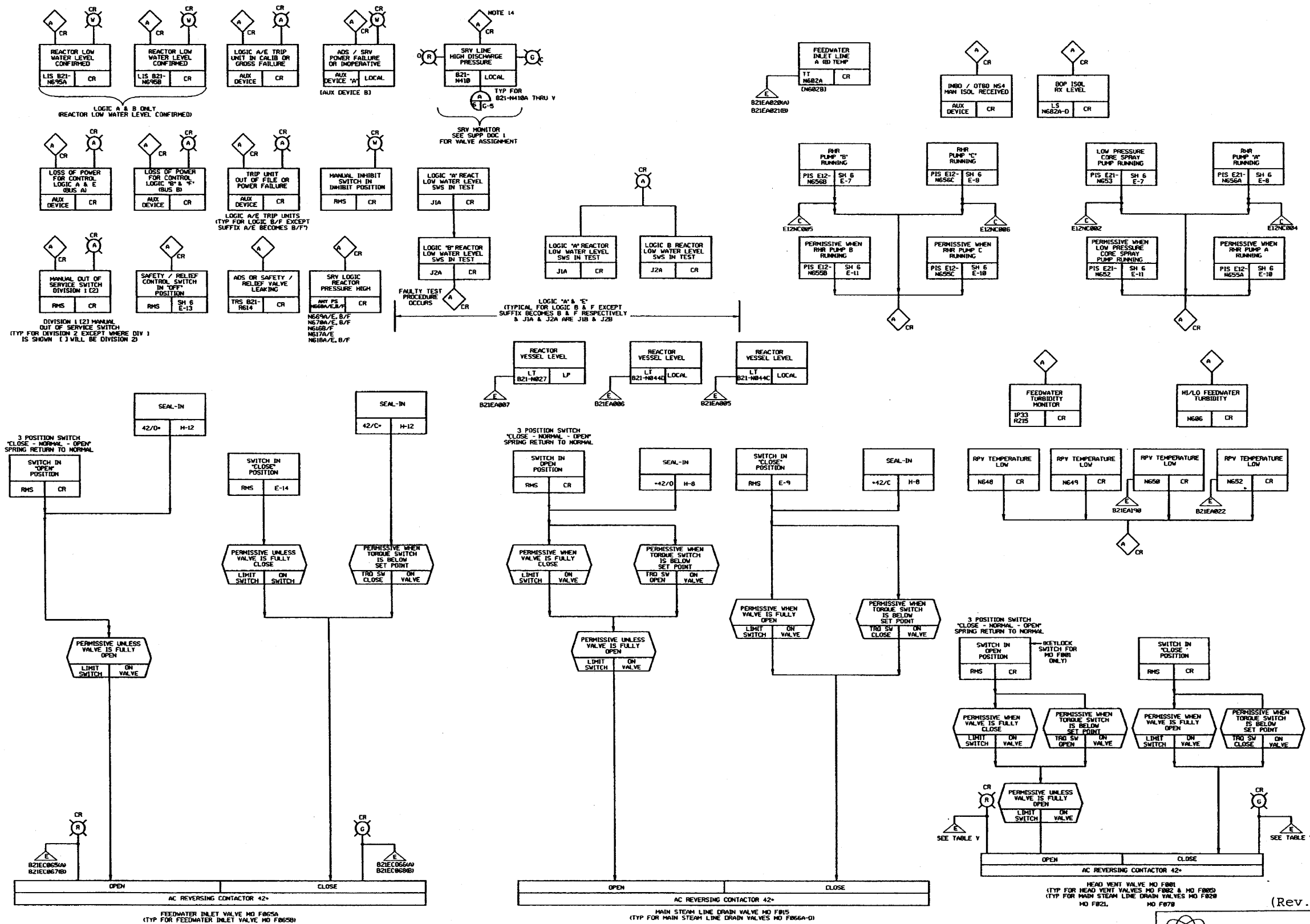


PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 6 of 7)

[Dwg. D-808-303(6)]



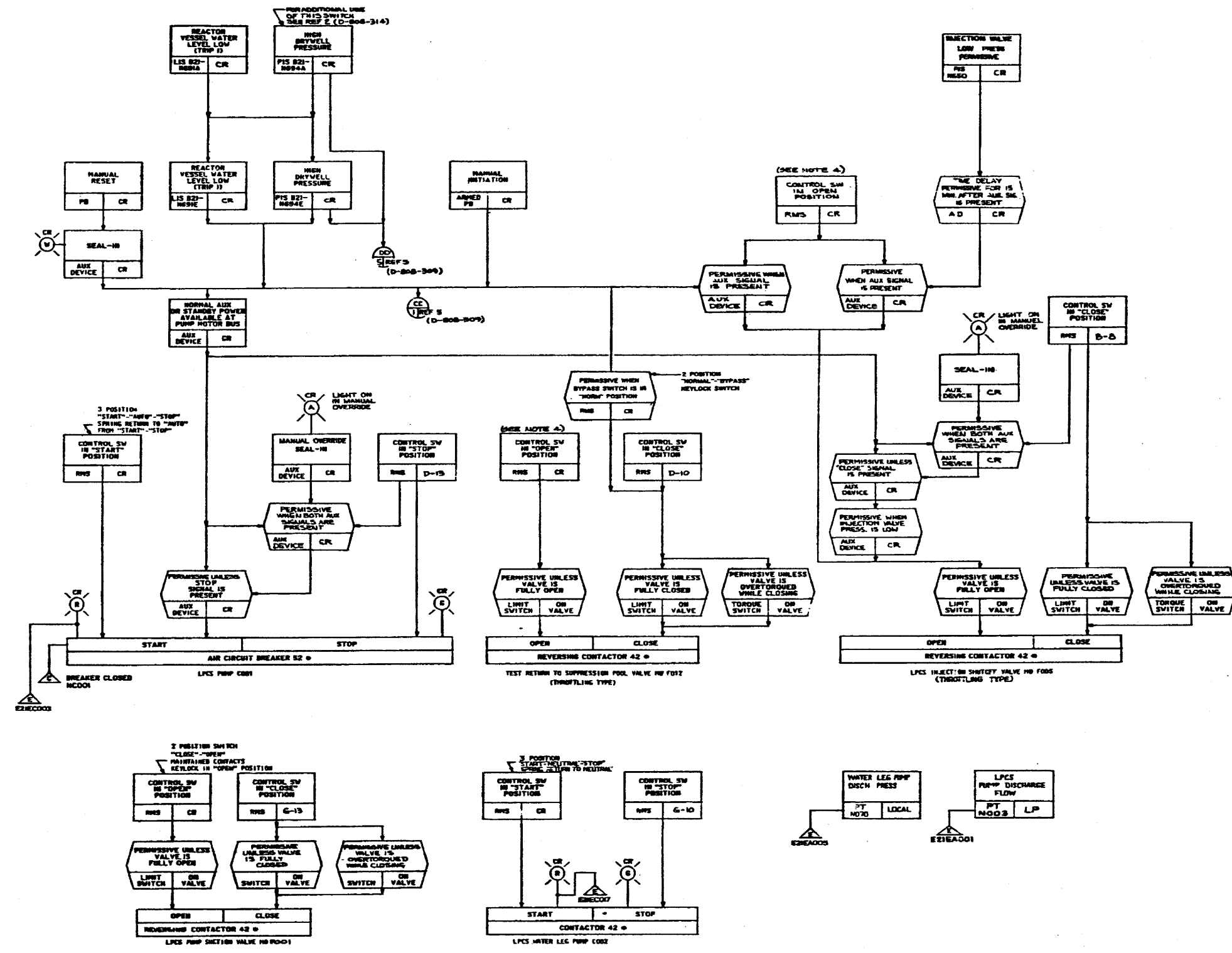
(Rev. 12 1/03)

PNPP PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 7 of 7)

[Dwg. D-808-303 (7)]



- NOTES:**
1. PUMP MOTOR SHALL BE PROTECTED WITH OVERLOAD PROTECTION. PROTECTION DELAYS ARE TO BE APPLIED SO AS TO MAINTAIN POWER ON THE MOTOR AS LONG AS POSSIBLE WITHOUT IMMEDIATE DAMAGE TO EMERGENCY SYSTEM.
 2. VALVE MOTORS ARE TO BE PROVIDED WITH SAFETY CIRCUIT CURRENT PROTECTIVE TRIPS.
 3. FOR ADDITIONAL PROCESS INSTRUMENTATION NOT SHOWN, SEE REF. 1.
 4. UNLESS OTHERWISE NOTED, ALL RNS SHALL BE 3 POSITION SWITCHES. "CLOSE" AND "OPEN" SPRINGS RETURN TO "AUTO" FROM "CLOSE" OR "OPEN".
 5. CONTROL AND MOTIVE POWER FOR LPCS SHALL BE FROM SAME SOURCE AS THE RWB LOOP "AP EQUIPMENT" (REF. 5).
 6. THE LPCS SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH IEEE 275-1971 AND REF. 7.

REFERENCE DOCUMENTS

REF. LIST NO.	REF. LIST NO.
1. LOW PRESSURE CORE SPRAY SYSTEM PCB	E71-1010
2. REAC. CORE HEAT EXCH. SYSTEM PCB	E70-1070
3. NUCLEAR ROILER SYSTEM PCB	E21-1010
4. RESIDUAL HEAT REMOVAL SYSTEM PCB	E12-1010
5. RESIDUAL HEAT REMOVAL SYSTEM PCB	E12-1020
6. NUCLEAR ROILER SYS PCB	E21-1020
7. ELECTRICAL EQUIPMENT SEPARATION FOR SAFEGRAM SYSTEM	AE2-4000
8. LEAK DETECTION SYS (NEEP)	E70-1040
9. ERIS ELEMENTARY DIAGRAM	C30-1000

LEGEND:
 Ⓢ - SWITCHOVER DEVICE FUNCTION NO. AND SPEC. CST. 2
 IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEER
 ⚡ - EMERGENCY RESPONSE INFORMATION SYSTEM

NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Low Pressure Core
Spray System

Figure 7.3-4 (Sheet 1 of 2)
[Dwg. D-808-310(1)]

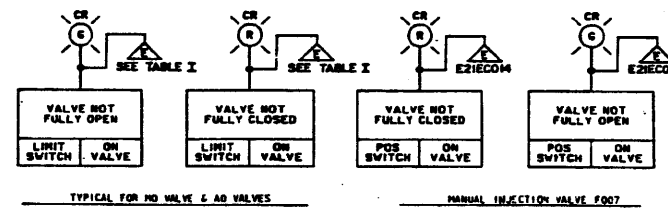
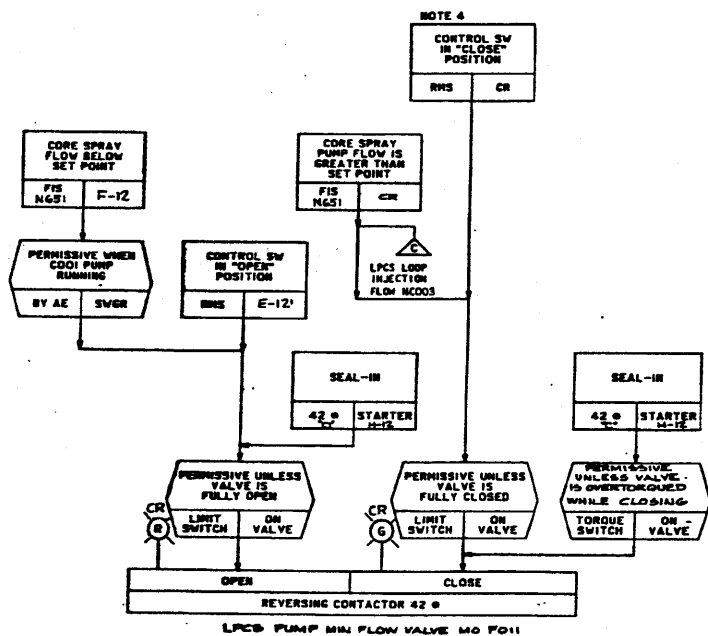
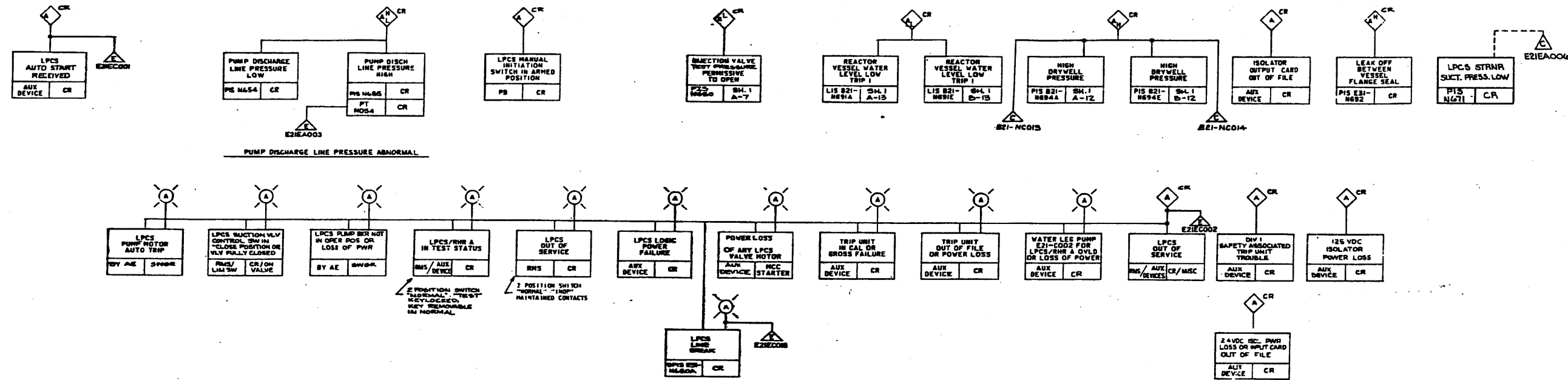


TABLE I
ERIS SIGNALS

VALVE	OPEN	CLOSE
FO05	E21EC004	E21EC005
FO06	E21EC006	E21EC007
FO01	E21EC008	E21EC009
FO11	E21EC010	E21EC011
FO12	E21EC012	E21EC013

NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Low Pressure Core Spray System

Figure 7.3-4 (Sheet 2 of 2)
[Dwg. D-808-310(2)]

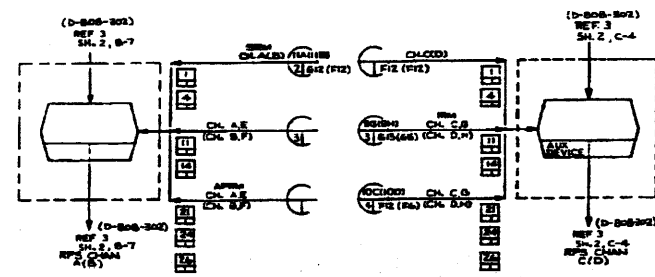
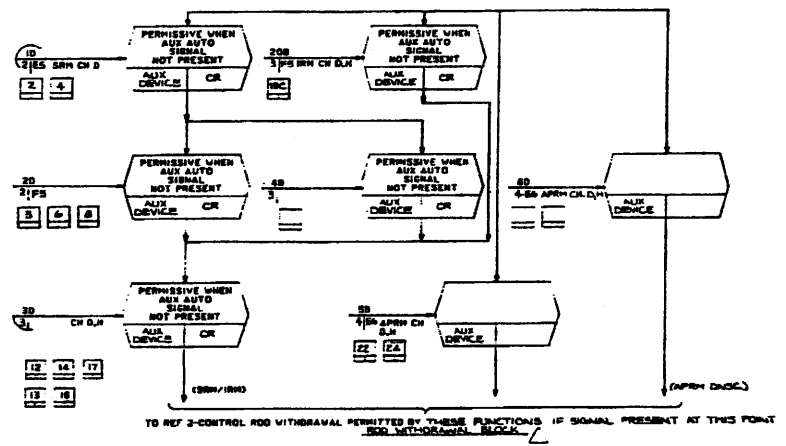
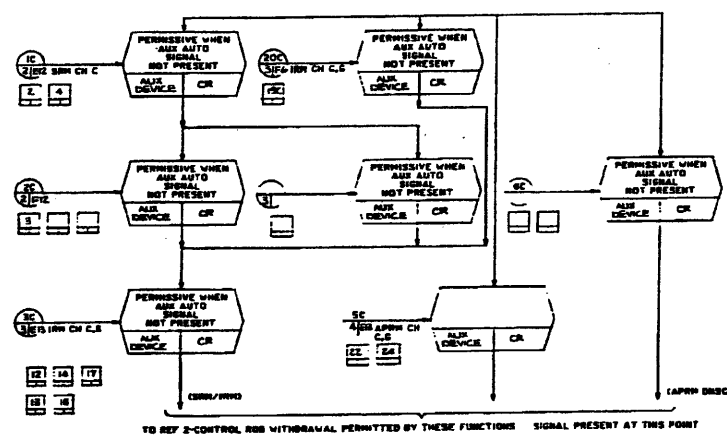
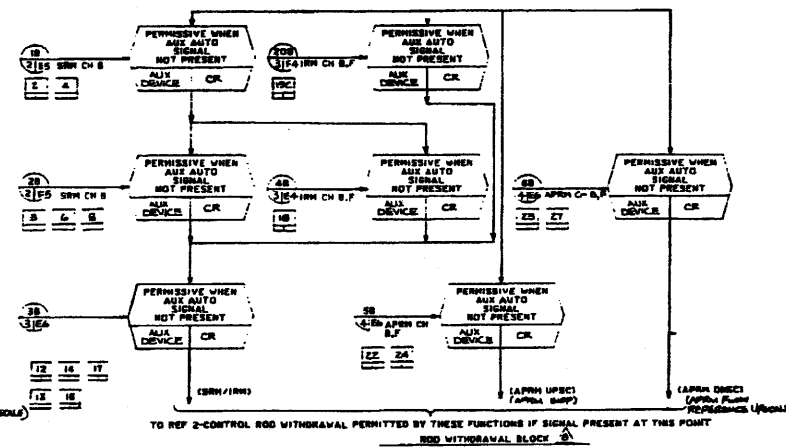
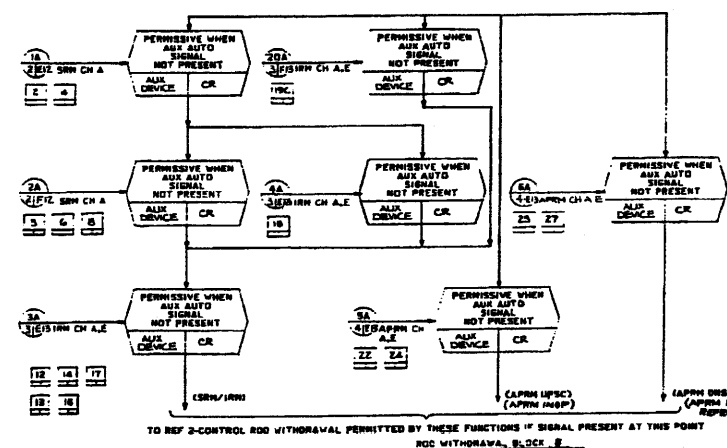


FIGURE 3

1. THE EVENT THAT POWER IS LOST. FOLLOWING ACTIONS WILL BE INITIATED AFTER POWER IS RESTORED:
 - A. IN AUTOMATIC MODE, DETECTOR RETURNS TO "000" VIA AUTOMATIC WIDE PATH. DETECTOR MUST THEN BE RETURNED TO STORAGE POSITION TO
 - B. IN MANUAL MODE, MUST REPEAT MANUAL SWITCH IN REVERSE AND RETURN TO STORAGE POSITION TO REPROGRAM DETECTOR.
2. THE DURATION OF THE INTERFACE SHALL BE COMPATIBLE WITH ASSOCIATED COMPUTER SYSTEM EXCEPT FOR MANUAL
3. EQUIPMENT & INSTRUMENTS BY
4. CHANNELS A, C, E & G
5. CHANNELS B, D, F & H

△ ROD WITHDRAWAL BLOCKS SUBJECT TO BYF-66-146 AT SUBSYSTEM LEVEL - SEE SHEETS

- LEGEND
- WITHIN BLOCK (SEE DETAILS WITH NUMBERS)
 - INTERMEDIATE RANGE
 - AVERAGE POWER
 - SOURCE RANGE
 - LOCAL POWER RANGE
 - THRESHOLD IN-CORE
 - MOC --- MULTIPLE OUTPUT

- REFERENCE DOCUMENTS
- | | |
|-----------------------------------|-------------------------|
| 1. PERFORMANCE SYSTEM DESIGN SPEC | HPL ITEM No. / DWG. No. |
| 2. CONTROL ROD HYD SYS | CH-100 / D-808-302 |
| 3. REACTOR PROTE SYS | C22-1030 / D-808-350 |
| 4. RESIDUAL REACTIVITY | |
| 5. DIS ELEMENT DIAGRAM | |
| 6. PERFORMANCE MONITORING SYS | |

LEGEND (CONT.)

- DCU ---
- △ ---

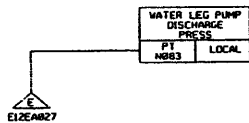
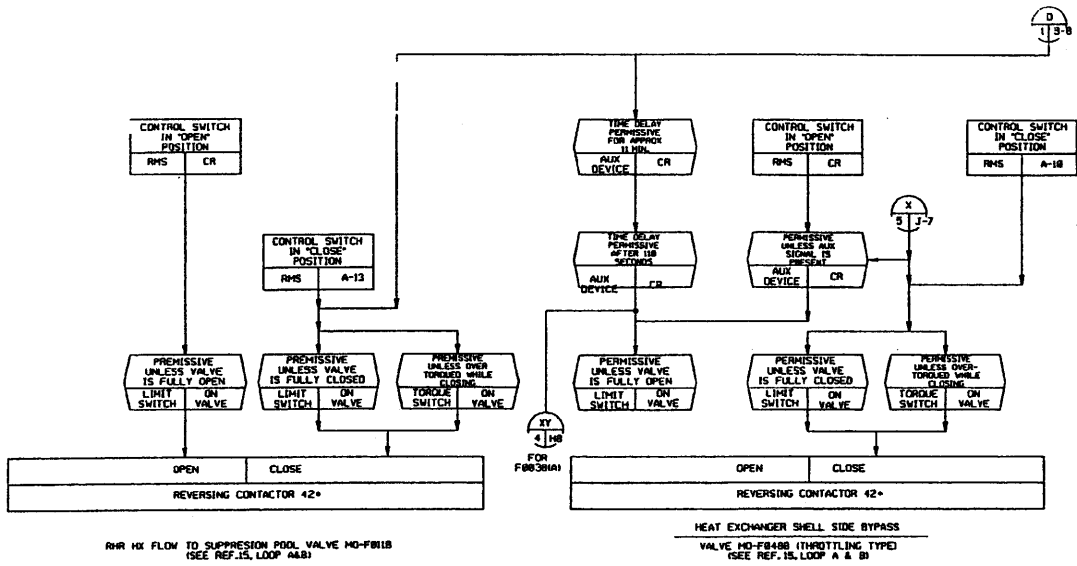
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System

Figure 7.3-5 (Sheet 1 of 5)

[Dwg. D-808-309(1)]



FOR NOTES AND LEGEND, SEE THIS DWG., SHT. 1

(Rev. 12 1/03)

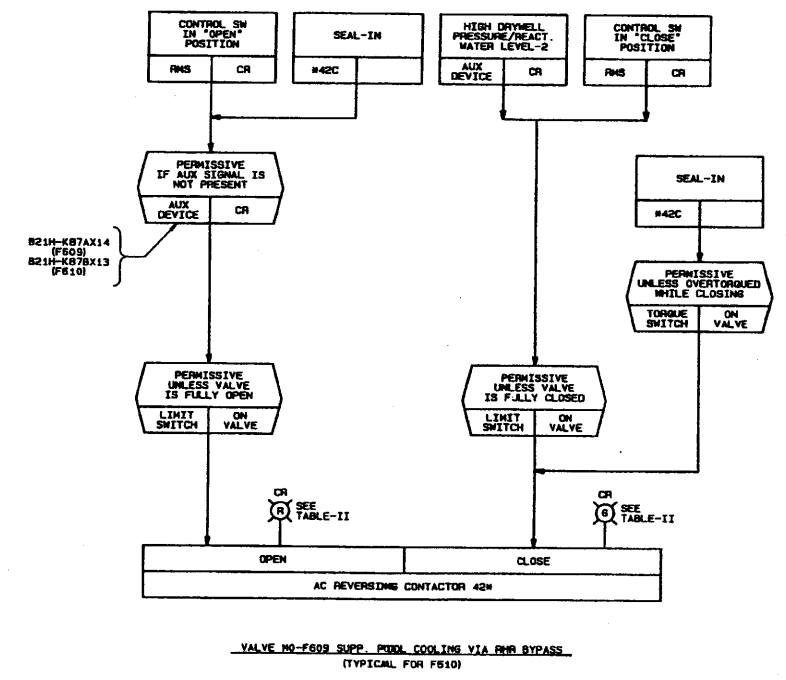
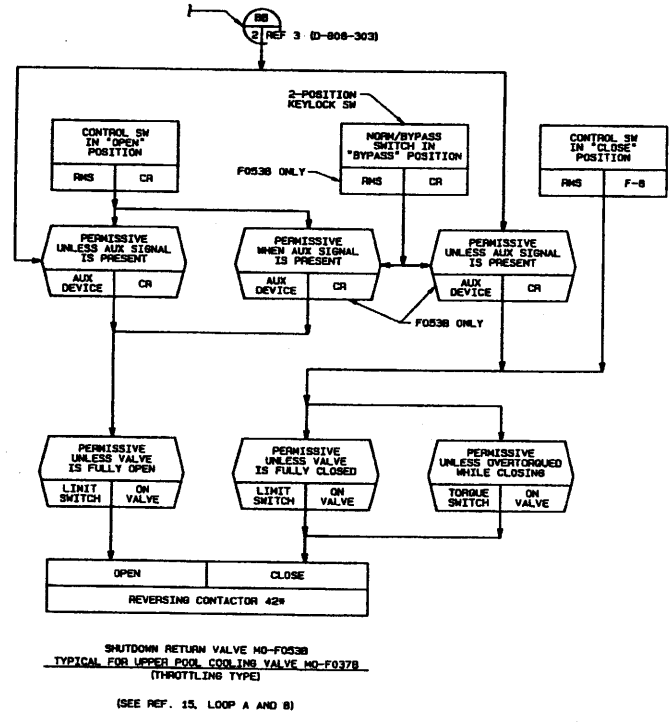
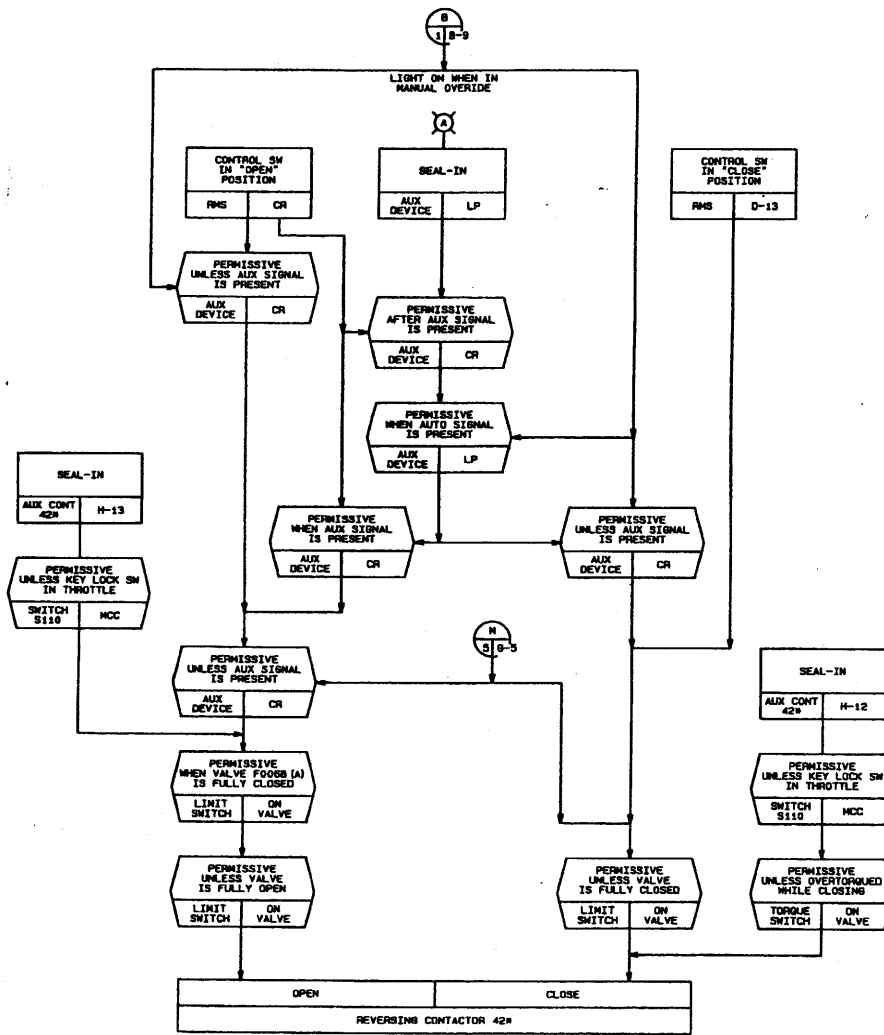
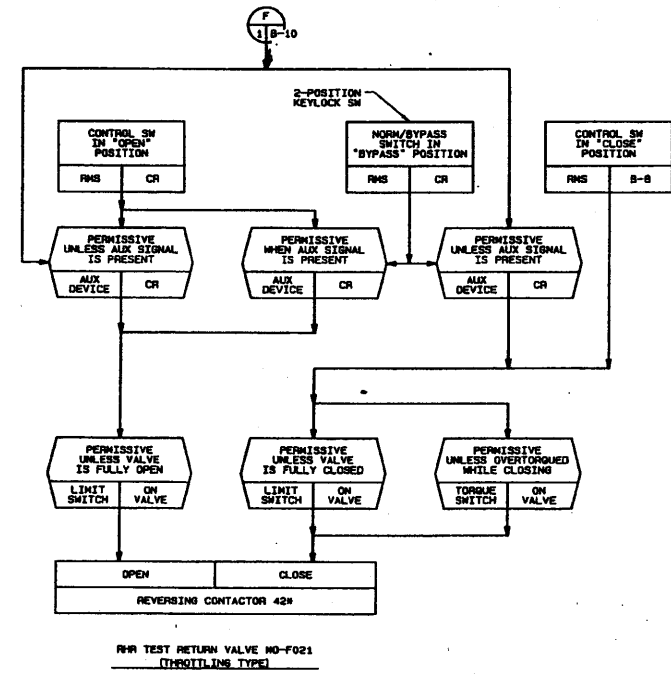
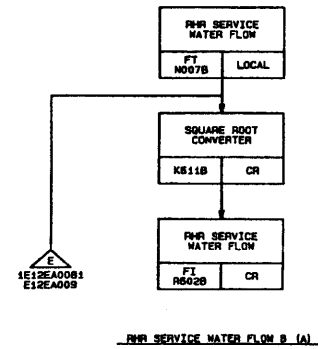


PERRY NUCLEAR POWER PLANT

Residual Heat Removal System

Figure 7.3-5 (Sheet 2 of 5)

[Dwg. D-808-309(2)]



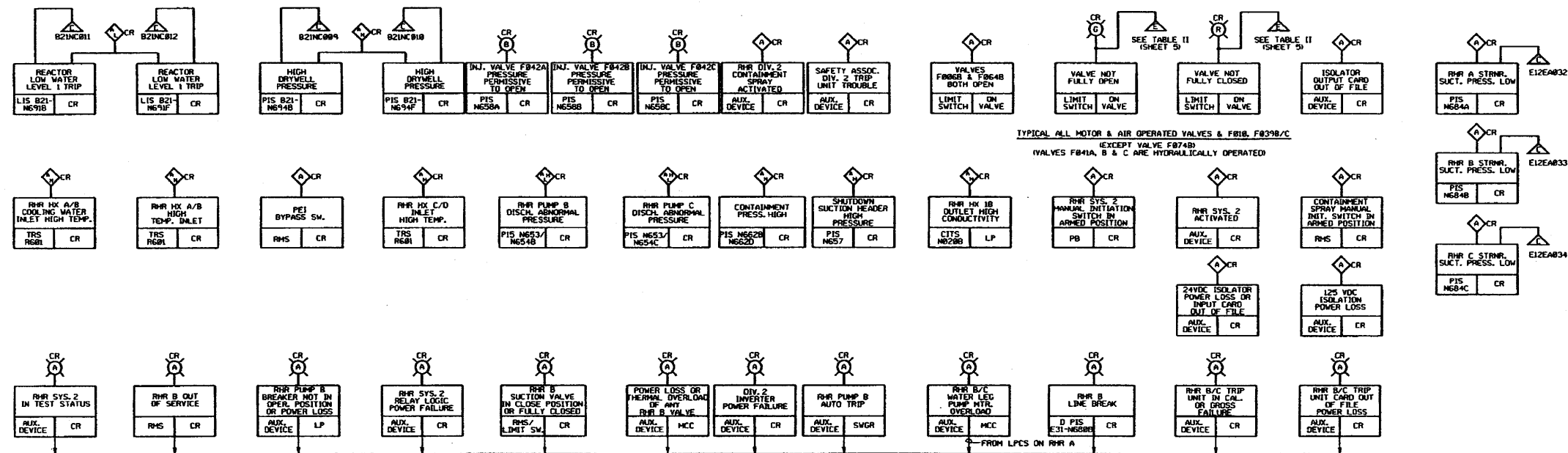
FOR NOTES AND LEGEND SEE THIS DWG. SHEET 1
THIS DRAWING AS-BUILT. REDRAWN AND CONVERTED TO CADD REV. A

NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System
Figure 7.3-5 (Sheet 3 of 5)
[Dwg. D-808-309(3)]



TYPICAL ALL MOTOR & AIR OPERATED VALVES & FB18, FB398/C
(EXCEPT VALVE FB74B)
VALVES FB41A, B & C ARE HYDRAULICALLY OPERATED

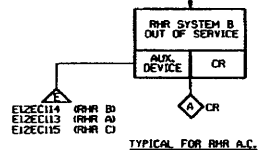


TABLE I

VALVE DESCRIPTION	VALVE NUMBER	SWITCH DESCRIPTION	NOTE
HX VENT VALVES	FB74B	3 POS. SW "OPEN" - "NORMAL" - "CLOSE" SPRING RETURN TO "NORMAL"	
SHUTDOWN COOLING SUCTION VALVE	FB66B	2 POSITION SW "CLOSE" - "CLOSE" MAINTAINED CONTACTS	(SEE REF. 15, LOOP A & B)
RHR PUMP SUCTION VALVES HX INLT. VALVE	FB43 & FB15 FB47B	2 POSITION SW "CLOSE" - "OPEN" MAINTAINED CONTACTS KEYLOCK IN "OPEN" POSITION (NO KEYLOCK ON FB47B)	(SEE REF. 15, LOOP A & B)
HX OUTLET VALVE	FB93B	3 POS. SW "CLOSE" - "AUTO" - "OPEN" SPRING RETURN TO "NORMAL"	
HX VENT VALVE	FB73B	3 POS. SW "OPEN" - "AUTO" - "CLOSE" SPRING RETURN TO "AUTO"	

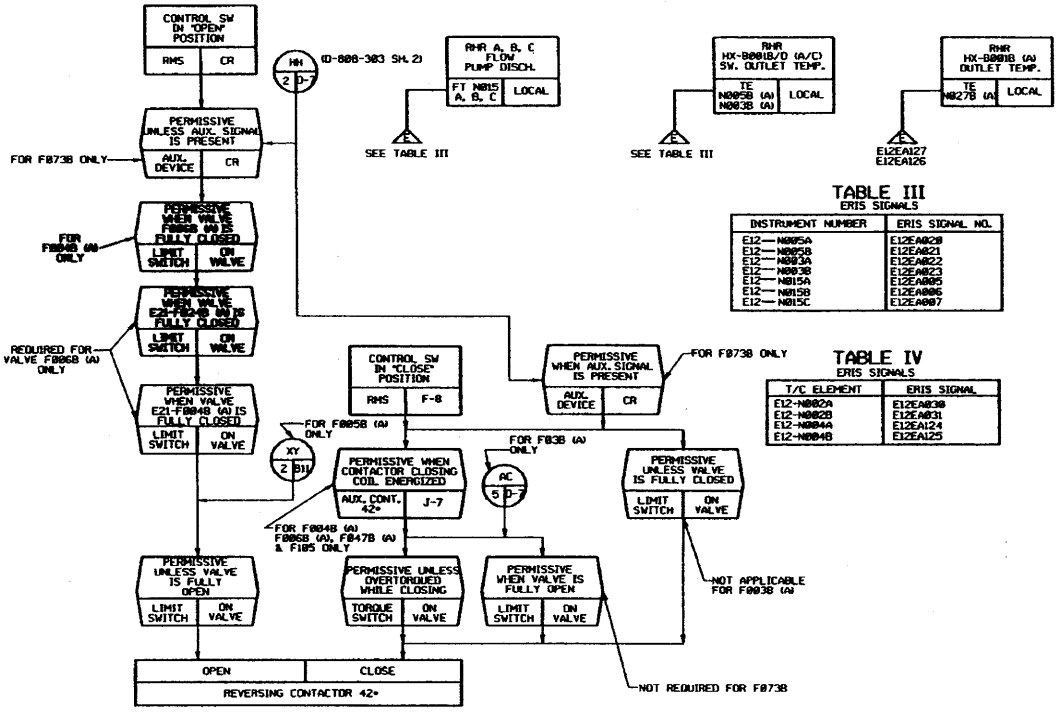
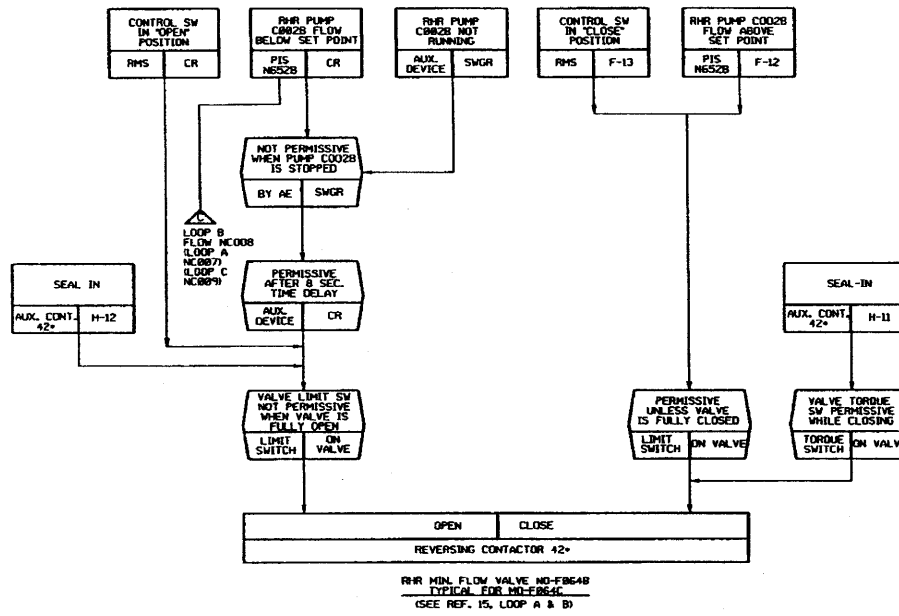


TABLE III
ERIS SIGNALS

INSTRUMENT NUMBER	ERIS SIGNAL NO.
E12-NB05A	E12EA829
E12-NB05B	E12EA821
E12-NB05C	E12EA822
E12-NB05D	E12EA823
E12-NB05E	E12EA824
E12-NB05F	E12EA825
E12-NB05G	E12EA826
E12-NB05H	E12EA827

TABLE IV
ERIS SIGNALS

T/C ELEMENT	ERIS SIGNAL
E12-NB02A	E12EA830
E12-NB02B	E12EA831
E12-NB04A	E12EA832
E12-NB04B	E12EA833

FOR NOTES AND LEGENDS SEE THIS DRAWING SHEET 1.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System

Figure 7.3-5 (Sheet 4 of 5)

[Dwg. D-808-309(4)]

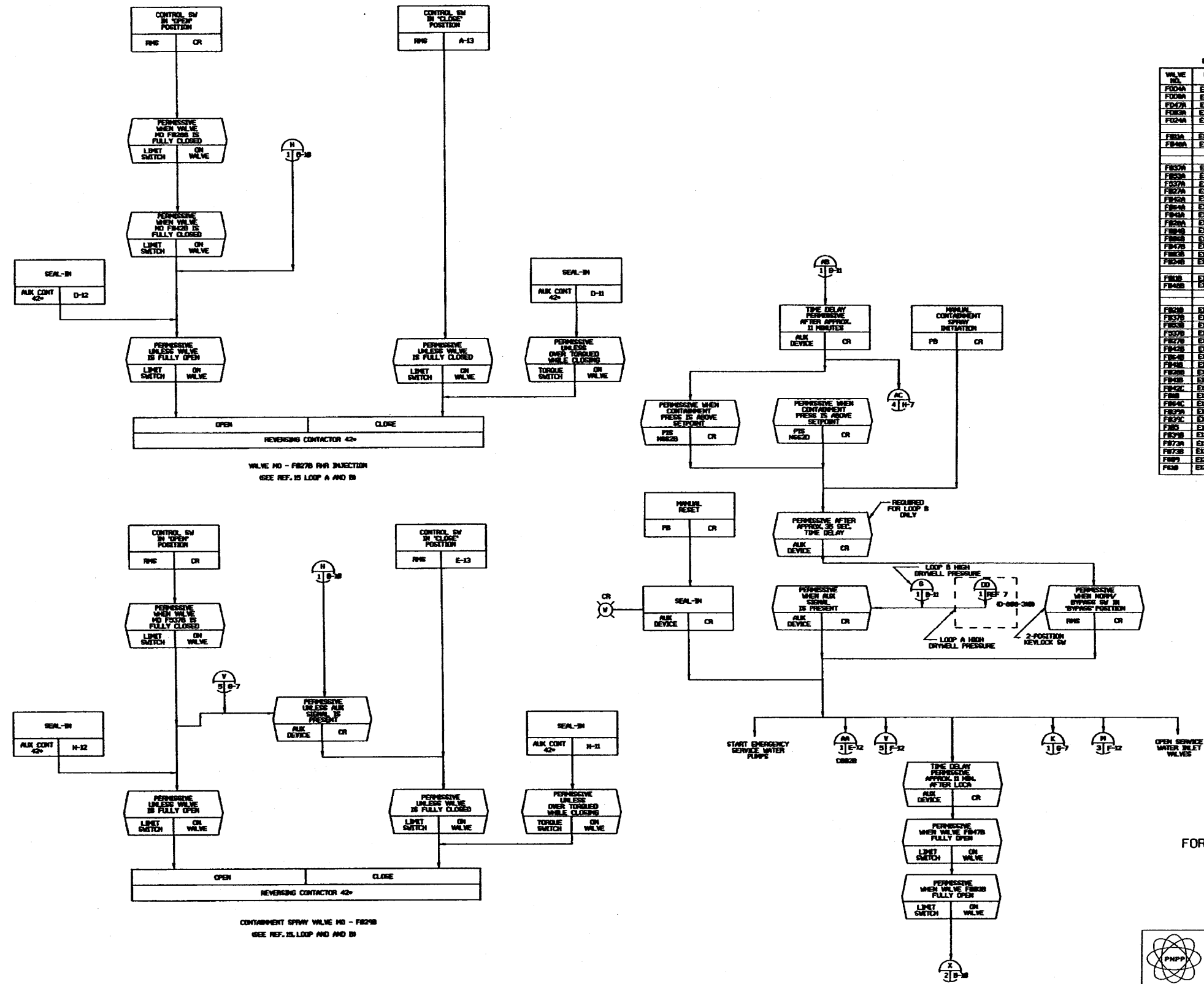


TABLE II
ENS SIGNALS

VALVE NO.	ENS NO. OPEN	ENS NO. CLOSE
FD04A	E220212	E220213
FD04B	E220214	E220215
FD04C	E220216	E220217
FD04D	E220218	E220219
FD04E	E220220	E220221
FD04F	E220222	E220223
FD04G	E220224	E220225
FD04H	E220226	E220227
FD04I	E220228	E220229
FD04J	E220230	E220231
FD04K	E220232	E220233
FD04L	E220234	E220235
FD04M	E220236	E220237
FD04N	E220238	E220239
FD04O	E220240	E220241
FD04P	E220242	E220243
FD04Q	E220244	E220245
FD04R	E220246	E220247
FD04S	E220248	E220249
FD04T	E220250	E220251
FD04U	E220252	E220253
FD04V	E220254	E220255
FD04W	E220256	E220257
FD04X	E220258	E220259
FD04Y	E220260	E220261
FD04Z	E220262	E220263
FD05A	E220264	E220265
FD05B	E220266	E220267
FD05C	E220268	E220269
FD05D	E220270	E220271
FD05E	E220272	E220273
FD05F	E220274	E220275
FD05G	E220276	E220277
FD05H	E220278	E220279
FD05I	E220280	E220281
FD05J	E220282	E220283
FD05K	E220284	E220285
FD05L	E220286	E220287
FD05M	E220288	E220289
FD05N	E220290	E220291
FD05O	E220292	E220293
FD05P	E220294	E220295
FD05Q	E220296	E220297
FD05R	E220298	E220299
FD05S	E220300	E220301
FD05T	E220302	E220303
FD05U	E220304	E220305
FD05V	E220306	E220307
FD05W	E220308	E220309
FD05X	E220310	E220311
FD05Y	E220312	E220313
FD05Z	E220314	E220315
FD06A	E220316	E220317
FD06B	E220318	E220319
FD06C	E220320	E220321
FD06D	E220322	E220323
FD06E	E220324	E220325
FD06F	E220326	E220327
FD06G	E220328	E220329
FD06H	E220330	E220331
FD06I	E220332	E220333
FD06J	E220334	E220335
FD06K	E220336	E220337
FD06L	E220338	E220339
FD06M	E220340	E220341
FD06N	E220342	E220343
FD06O	E220344	E220345
FD06P	E220346	E220347
FD06Q	E220348	E220349
FD06R	E220350	E220351
FD06S	E220352	E220353
FD06T	E220354	E220355
FD06U	E220356	E220357
FD06V	E220358	E220359
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FD06X	E220362	E220363
FD06Y	E220364	E220365
FD06Z	E220366	E220367

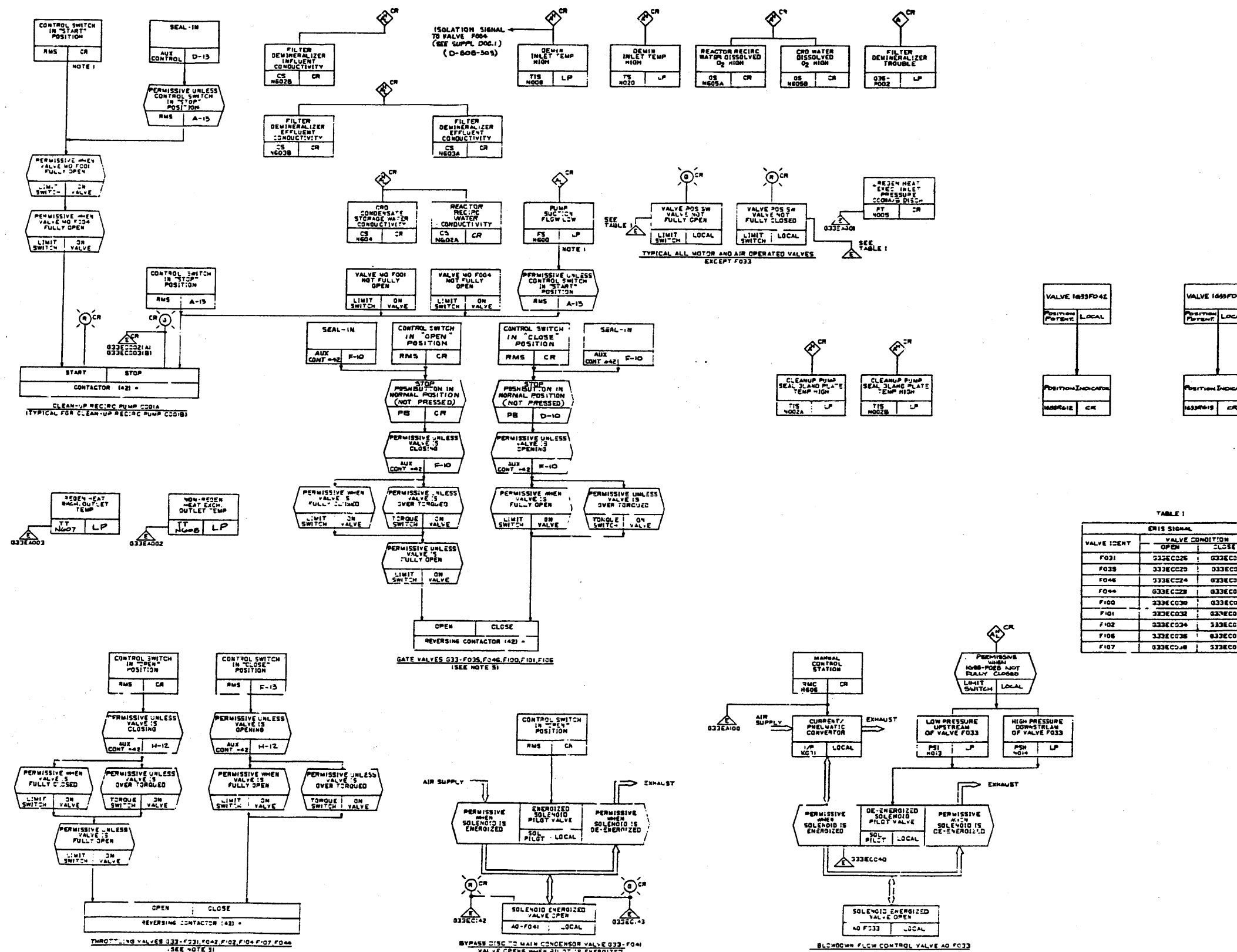
FOR NOTES AND LEGEND SEE THIS DWG. SHEET 1

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System
Figure 7.3-5 (Sheet 5 of 5)

[Dwg. D-808-309(5)]



- NOTES:**
1. INTERLOCK PUMP START-UP CIRCUIT WITH PUMP SUCTION LOW FLOW SWITCH TO PERMIT PUMP TO BE STARTED. PUMP IS TO TRIP OFF AFTER START IF FLOW IS NOT ESTABLISHED AFTER A TIME DELAY.
 2. EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY SYSTEM NO. 033 UNLESS NOTED.
 3. ALL PUMP MOTORS SHALL HAVE THERMAL OVERLOAD TRIP.
 4. FOR REACTOR WATER CLEAN-UP ISOLATION VALVES AND CONTROL LOGIC SEE SUPPL. DOC.
 5. ALL MOTOR OPERATED GATE VALVES REQUIRE SEAL-IN. MOTOR OPERATED GLOBE TYPE VALVES DO NOT REQUIRE SEAL-IN.
 6. DELETE

- SUPPLEMENTAL DOCUMENTS:**
 UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.
- MPL ITEM NO.**
1. 82-1030 NUCLEAR BOILER SYSTEM FCD
 2. CSB-1080 ERS ELEM DIAG (CS94)
 3. DELETE

- LEGEND:**
- • SWITCH/GEAR DEVICE FUNCTION NUMBERS ANSI SPEC. 37.2
 - △ ERS COMPUTER INPUT

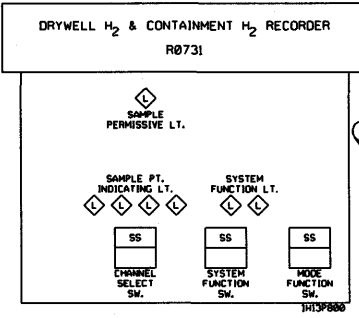
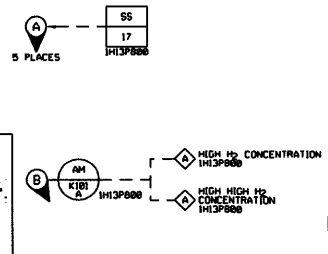
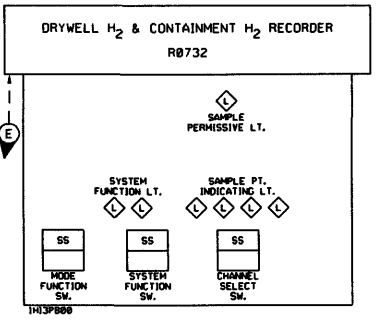
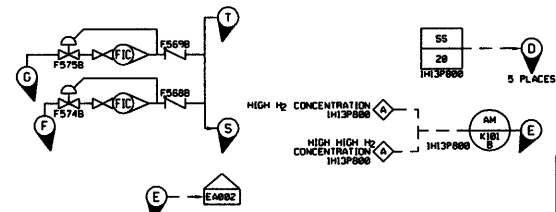
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Water Cleanup System

Figure 7.3-6

(Dwg. D-808-315)



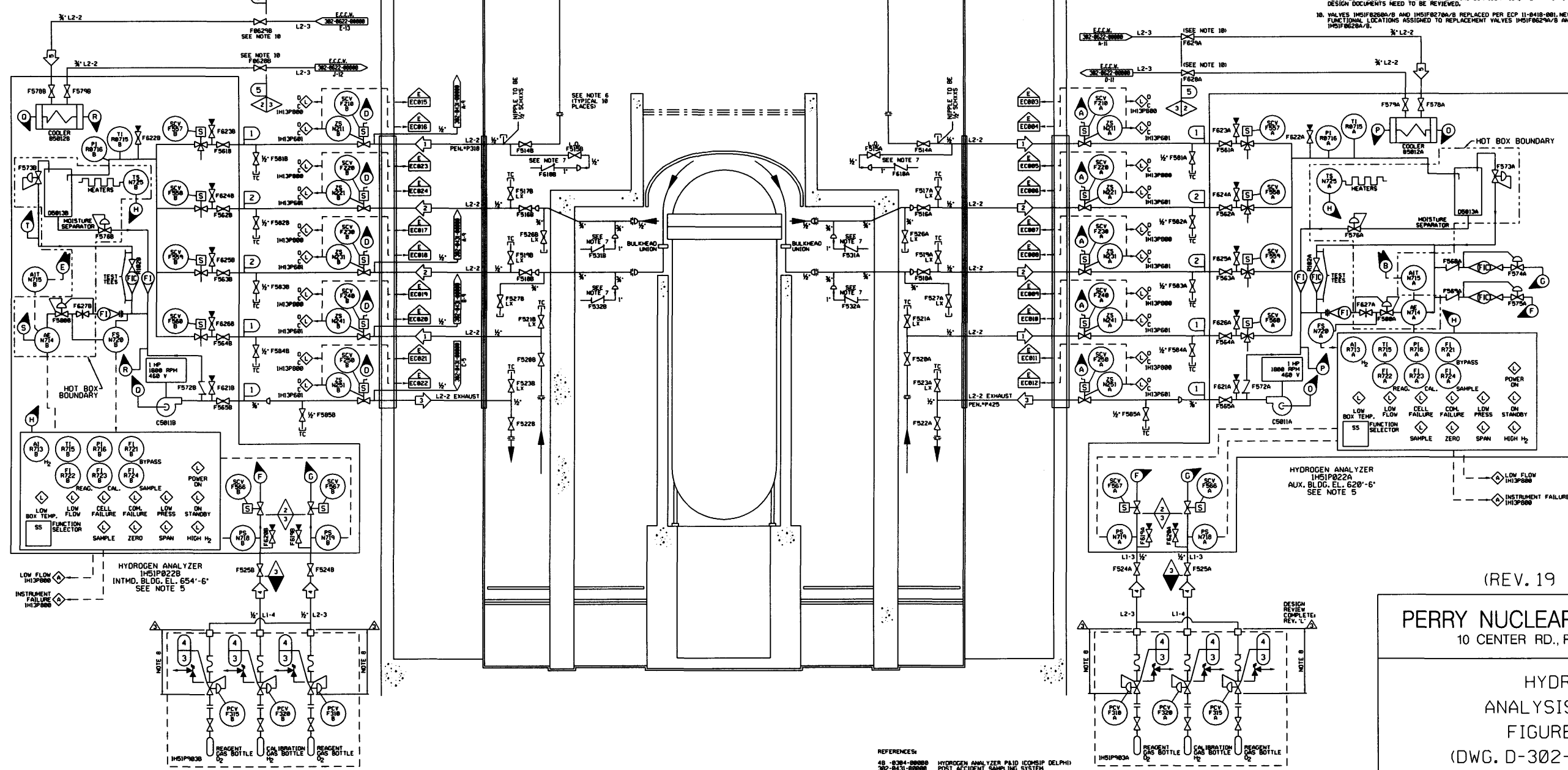
OPERATING DATA (POST LOCA)
SEE NOTE 9

#	PSIG	SCFM	F	BY	REMARKS	REV
1	12	1	185	ETO		
2	22.1	1	330	ETO		
3	22.1	1	130	ETO		
4	32	8	133	ETO		
5						

DESIGN DATA

ID	NORMAL	UPSET	BY	CHKD	REMARKS	REV
1	0	90	15.0	185	ETO MCL	
2	0	135	30.0	330	ETO MCL	
3	2600	90	2600	90	JET KSE	
4	32	90	50	90	JET KSE	
5	91	95	150	150	JET KSE	

- NOTES:
- ALL CONTROL SWITCHES, STATUS LIGHTS AND RECORDERS ARE LOCATED ON PANEL IHI3P888, UNLESS OTHERWISE NOTED.
 - RECORDER AND SWITCH STATION LOCATED ON PANEL IHI3P888 HAS THE FOLLOWING CONTROL SWITCHES:
MODE FUNCTION SWITCH: LOCAL/SAMPLE/ZERO/SPAN
SYSTEM FUNCTION SWITCH: OFF/STANDBY/ANALYZE
CHANNEL SELECT SWITCH
 - EACH SAMPLE LOCATION IS SELECTED MANUALLY BY OPERATOR. THE SAMPLE PERMISSIVE LIGHT INDICATES WHEN A REPRESENTATIVE SAMPLE IS BEING ANALYZED.
 - LOCAL CONTROL CHASSES ON IHI3P822A/B HAVE FUNCTION SELECTOR SWITCH.
 - FOR FURTHER DETAILS OF ANALYZER INTERVALS, SEE COMSIP-DELPHI DWG. 48-8304-00000.
 - 1/4" RESTRICTING ORIFICE (TYPICAL 18 PLACES).
 - VALVE SPRINGS REMOVED FROM DRESSER CHECK VALVES IHSIF531A/B, IHSIF532A/B, AND IHSIF534A/B PER DCP 86-8299.
 - THE BOTTLE RACKS AND PIPING FROM THE BOTTLE SIDE OF THE REGULATOR TO THE BULKHEAD FITTINGS ARE SUPPLIED SAFETY RELATED AND SEISMICALLY QUALIFIED BUT NON-SAFETY CODE. REAGENT GAS BOTTLES AND SHUT OFF VALVES ARE NON-SAFETY RELATED.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - VALVES IHSIF5258A/B AND IHSIF5278A/B REPLACED PER ECP II-8418-881 NEW FUNCTIONAL LOCATIONS ASSIGNED TO REPLACEMENT VALVES IHSIF5258A/B AND IHSIF5278A/B.

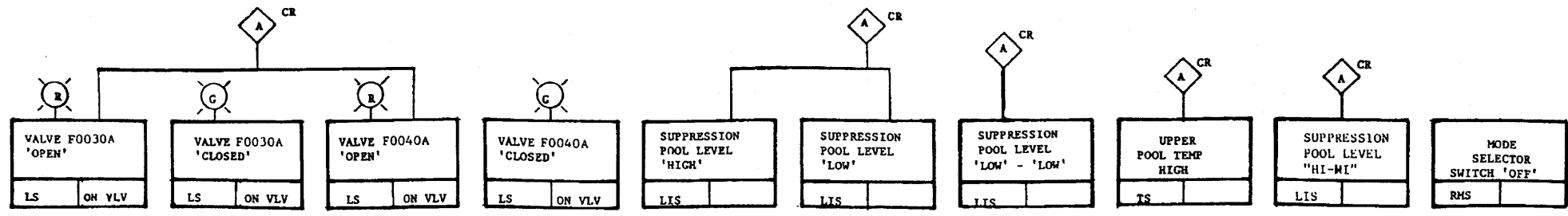


REFERENCES:
 48-8304-00000 HYDROGEN ANALYZER PAID (COMSIP DELPHI)
 382-8431-00000 POST ACCIDENT SAMPLING SYSTEM
 382-8622-00000 EMERGENCY CLOSED COLLING SYSTEM P42
 382-8831-00000 COMBUSTIBLE GAS CONTROL SYSTEM H51

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
 10 CENTER RD., PERRY, OHIO 44081

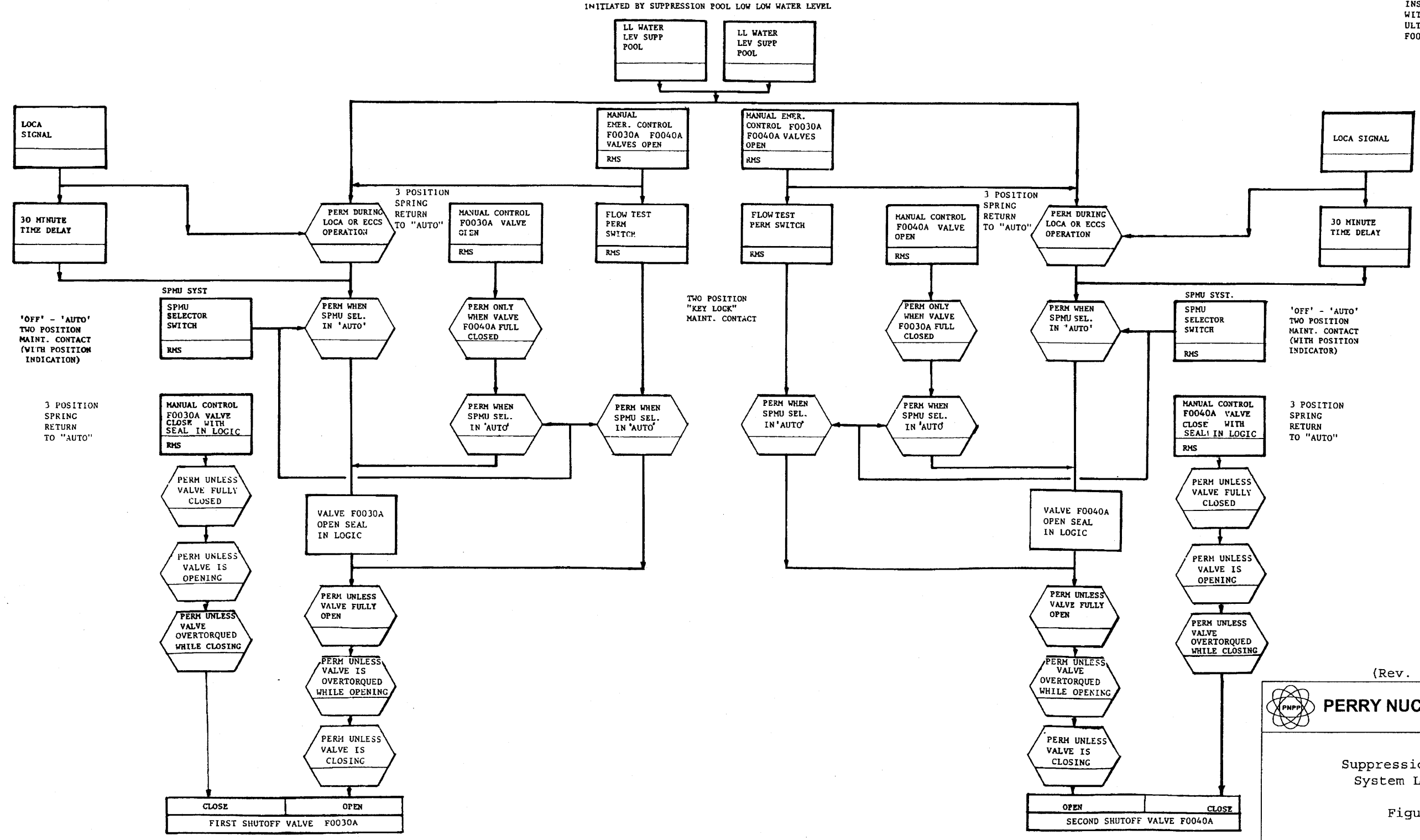
HYDROGEN ANALYSIS SYSTEM
 FIGURE 7.3-8
 (DWG. D-302-0832-00000)




ALARMS AND INDICATORS FOR DIVISION 1 (DIVISION 2 SIMILAR)

ALARMS AND INDICATORS COMMON FOR DIVISION 1 AND FOR DIVISION 2

NOTES:
 1. IN ADDITION TO REQUIREMENTS FOR SEPARATION AND INDEPENDENCE BETWEEN DIVISION 1 AND DIVISION 2, SEPARATION REQUIREMENTS APPLY BETWEEN SUBSYSTEMS ASSOCIATED WITH VALVE F0030 AND F0040 IN EACH DIVISION. THIS SEPARATION IS TO INSURE THAT NO SINGLE FAULT WITHIN A DIVISION WILL SIMULTANEOUSLY OPEN VALVES F0030 AND F0040.



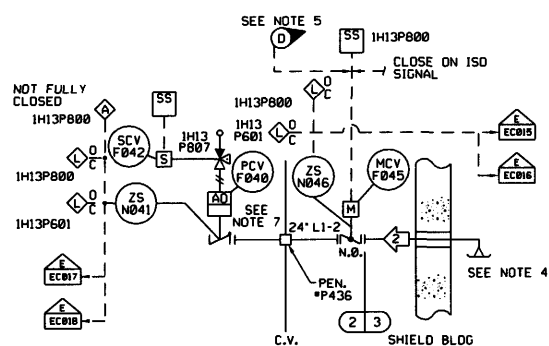
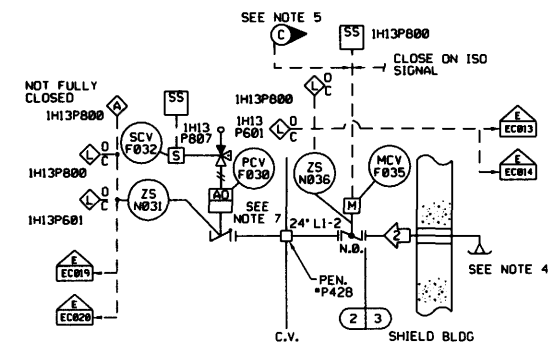
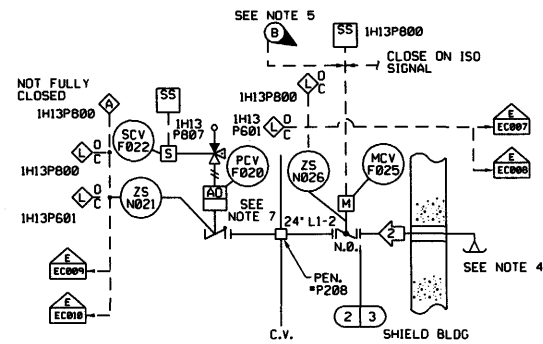
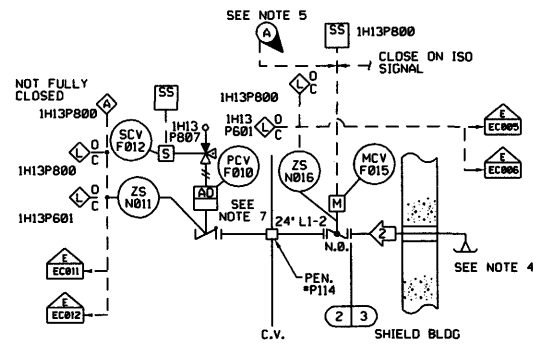
(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

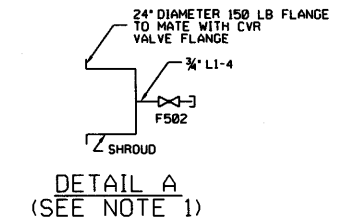
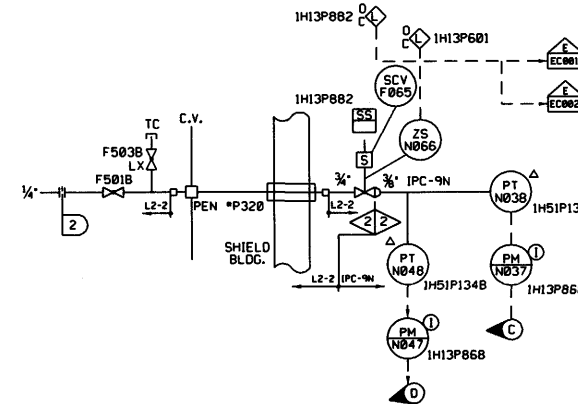
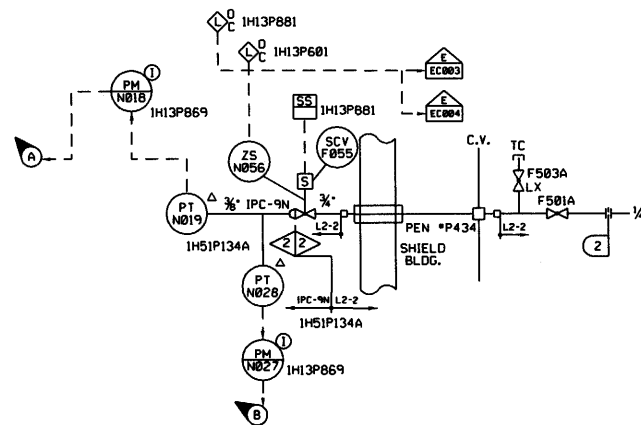
 Suppression Pool Makeup System Logic Diagram

 Figure 7.3-9

OPERATING DATA						
ID	PSIG	QPM	F	BY	REMARKS	REV
1	0	NA	104			
2			95			

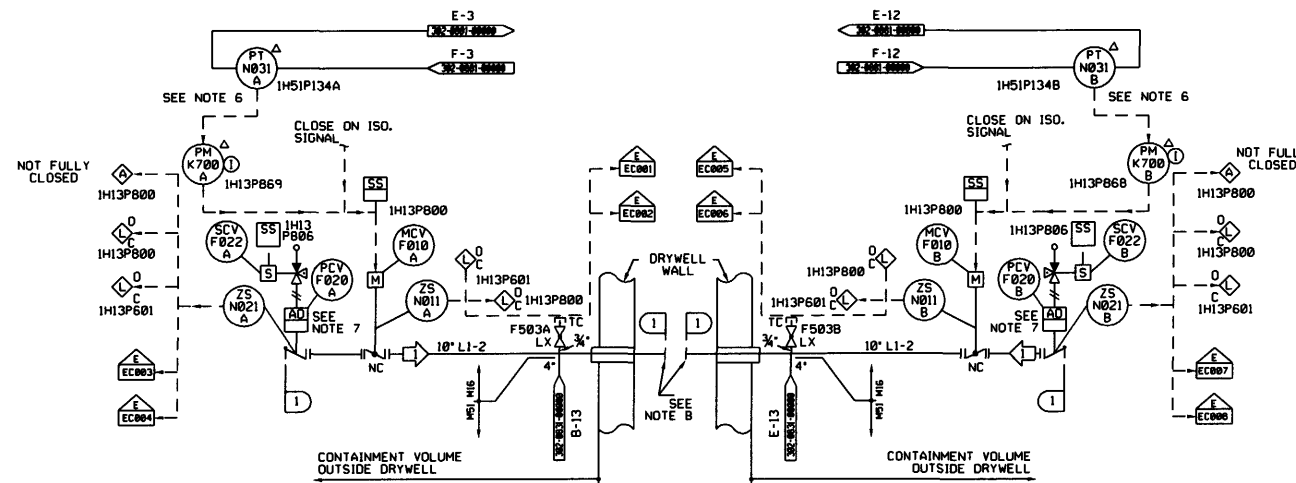


CONTAINMENT VACUUM RELIEF SYSTEM
M17



DESIGN DATA						
ID	NORMAL PSIG	UPSET PSIG	F TIME	BY	CHKD	REMARKS
1	15	105	30	NA		
2	0	95	15	105	NA	

*DURING LOCA PORTIONS OF THE SYSTEM WILL BE SUBJECT TO THESE UPSET CONDITIONS



DRYWELL VACUUM RELIEF SYSTEM
M16

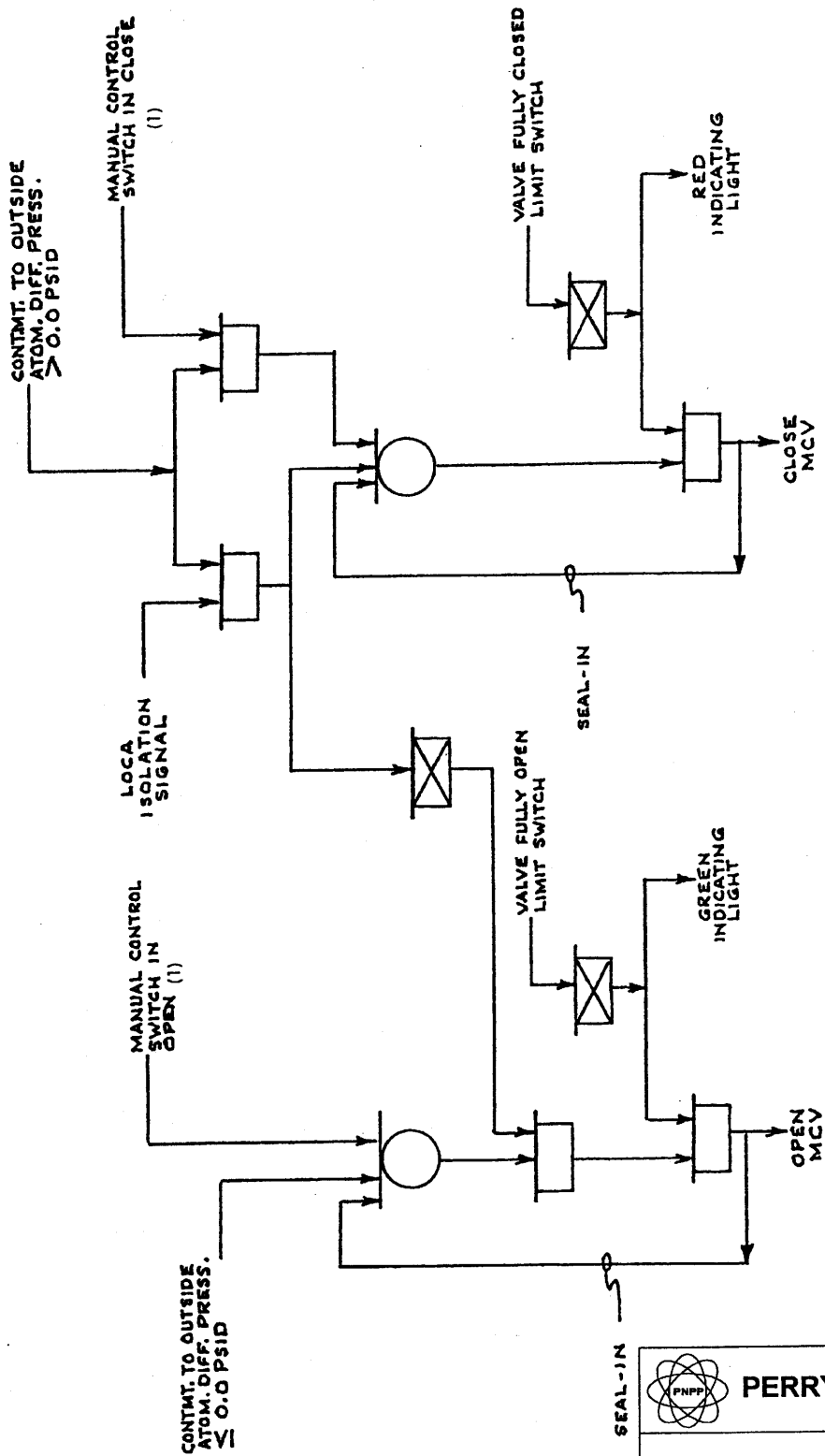
- NOTES:
- ONE REMOVABLE LEAK TEST SHROUD SHALL BE PROVIDED BY THE C.V.R. VALVE VENDOR FOR LEAK TESTING ALL C.V.R. VALVES FOR UNITS 1 AND 2. SHROUD SHALL HAVE 3/4" MIT TYP FOR CONNECTING TO 3/4" TEST LINE AND ROOT VALVE (TEST LINE AND ROOT VALVE BY OWNER). SHROUD TEST LINES AND ROOT VALVE ARE NON-SAFETY RELATED.
 - THE RM SIGNAL IS FROM THE CONTROL ROOM.
 - SYSTEM M16 AND M17 ARE SAFETY CLASS 2.
 - ENTRANCE SHALL BE A WELL-ROUNDED BELLMOUTH.
 - OPEN SIGNAL ON LOW CONTAINMENT PRESSURE.
 - OPEN SIGNAL ON LOW DRYWELL/CONTAINMENT DIFFERENTIAL PRESSURE.
 - AIR OPERATORS ON VACUUM RELIEF VALVES ARE NON-SAFETY RELATED ITEMS USED ONLY FOR TESTING OPERABILITY OF VALVES.
 - PROVIDED BLIND FLANGE FOR LEAK TEST.

REFERENCES:
302-001-00000 CONTAINMENT ATMOSPHERIC MONITORING SYSTEM D-23
302-001-00000 COMBUSTIBLE GAS CONTROL SYSTEM-M1

(REV. 19 10/2015)


PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

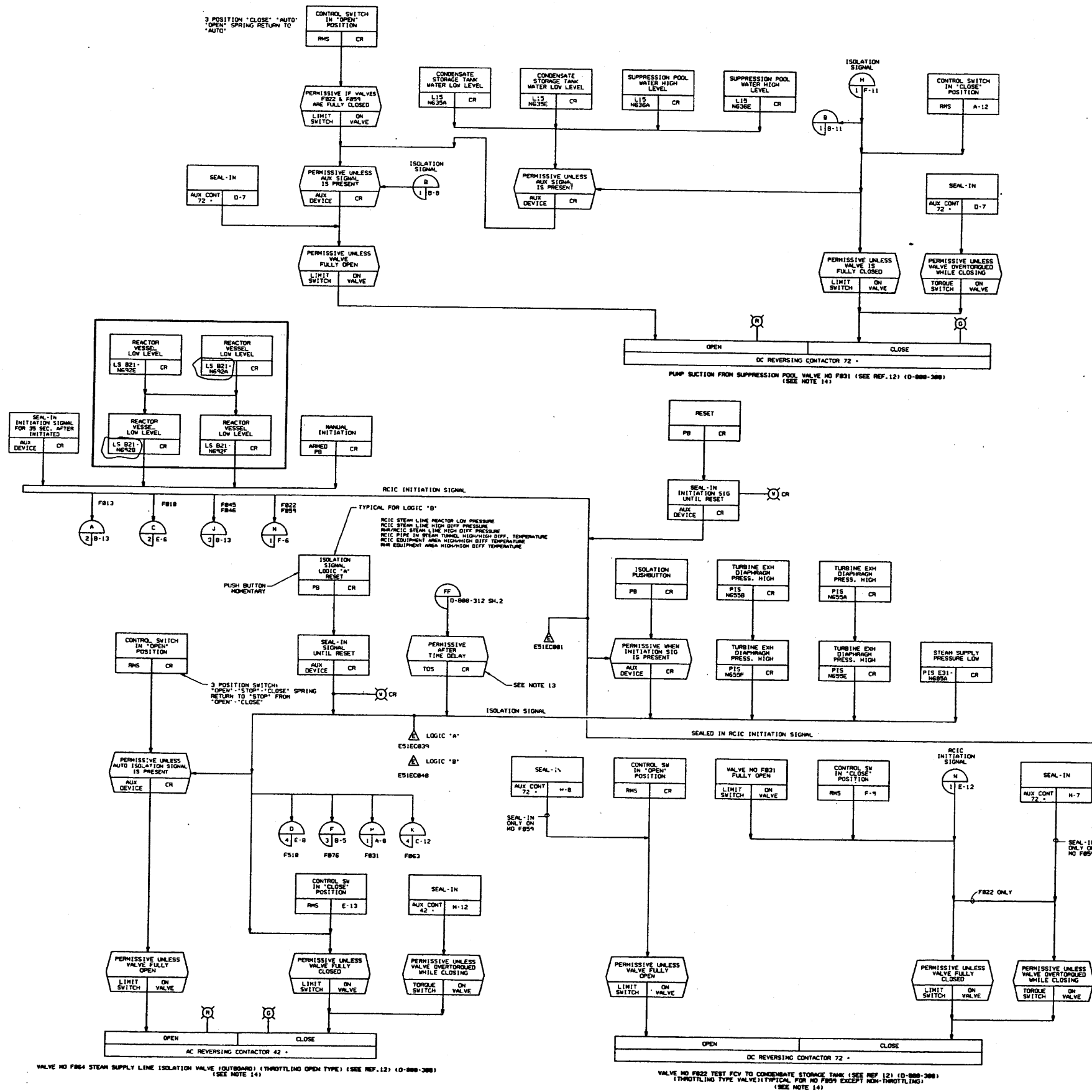
DRYWELL AND CONTAINMENT
VACUUM RELIEF SYSTEM
FIGURE 7.3-10
(DWG. D-912-0606-00000)



NOTE:
 (1) MANUAL CONTROL SWITCHES ARE SPRING RETURN TO NEUTRAL OR CENTER POSITION.

(Rev. 12 1/03)

	PERRY NUCLEAR POWER PLANT
Containment Vacuum Relief System Control Logic	
Figure 7.3-11	



- NOTES:
1. THE RCIC SYS IS ARRANGED FOR TEST OF PUMP AT FULL FLOW & ALL VALVES FOR OPEN & CLOSE CAPABILITY AT ANY TIME EXCEPT WHEN INITIATION SIGNAL OR AUTO ISOLATION SIGNAL IS ACTIVATED. IN EVENT THE INITIATION SIGNAL OCCURS WHILE TEST IS UNDERWAY, THE SYSTEM AUTOMATICALLY RETURNS TO STARTUP MODE.
 2. ALL POWER FOR OPERATION OF D.C. VALVE MOTORS SHALL ORIGINATE FROM A PLANT D.C. BUS. POWER FOR A.C. OPERATED VALVES AND FILL LINE PUMP SHALL ORIGINATE FROM A STANDBY A.C. BUS.
 3. ALL EQUIPMENT & INSTRUMENT PREFIXED BY SYS NO. (ES1) UNLESS OTHERWISE NOTED.
 4. ISOLATION SIGNAL SWITCHES SHALL BE OF THE TYPE THAT CLOSE CONTACTS FOR THE SPECIFIED ISOLATION EVENT. WHERE AUXILIARY RELAYS ARE USED IN THE ISOLATION CHANNELS THEY SHALL BE POWERED FROM STATION SWITCHES. (REF. 9)
 5. AUXILIARY RELAYS & DEVICES NOT SHOWN ON FUNCTIONAL CONTROL DIAGRAMS EXCEPT WHERE REQUIRED TO CLARIFY FUNCTION.
 6. FURNISHED WITH TURBINE.
 7. THE RCIC SYS SHALL BE DESIGNED IN ACCORDANCE WITH REF. 9.
 8. RCIC PUMP MOTOR COMBINATION STARTERS SHALL BE PROVIDED WITH THERMAL OVERLOADS WHICH TRIP ON OVERLOAD. BREAKERS SHALL PROVIDE SHORT CIRCUIT PROTECTION. TRIPPING OF EITHER TYPE OF DEVICE IS ANNUNCIATED VIA AN ALARM RELAY.
 9. THE RCIC SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH CRITERIA FOR PROTECTION SYSTEMS FOR NUCLEAR POWER GENERATING STATIONS (IEEE-2791).
 10. LIGHTS TO BE PART OF LIGHT BOX LOCATED BELOW REGULAR RCIC ANNUNCIATION SYSTEMS FOR NUCLEAR POWER GENERATING STATIONS (IEEE-2791).
 11. AC MOTOR OPERATED VALVES SHALL BE OPERATED FROM MOTOR CONTROL CENTERS HAVING GROUNDED CONTROL POWER TRANSFORMERS.
 12. VALVE MOTORS ARE TO BE PROVIDED WITH LOSS OF POWER ANNUNCIATOR VALVE MOTOR CIRCUITS ARE TO BE PROVIDED WITH SHORT CIRCUIT PROTECTIVE TRIPS.
 13. TIME DELAY FOR RCIC STEAM LINE DIFF PRESSURE FOR AMBIENT AND DIFF. TEMPERATURES.
 14. THE REMOTE SHUTDOWN SYSTEM PROVIDES CAPABILITY FOR DIRECT REMOTE MANUAL CONTROL OF THIS COMPONENT. (REF. 16)
 15. THIS SYSTEM DIAGRAM IS A PHOTOGRAPHIC REPRODUCTION OF G.E. DWG. 444E452. SPECIFIC REVISION IS SHOWN BENEATH TITLE BLOCK.

REFERENCE DOCUMENTS:

REF. NO.	DOC. NO.	DWG. NO.
1. NUCLEAR BOILER SYSTEM P&ID	B21-10110	D-382-605
2. NUCLEAR BOILER SYSTEM FCD	B21-10230	D-889-383
3. RHR SYSTEM FCD	E12-10300	D-889-384
4. LEAK DETECTION SYSTEM IED	E31-10110	D-889-311
5. NPCC SYSTEM FCD	E22-10300	D-889-312
6. LEAK DETECTION SYSTEM FCD	E31-10300	D-889-311
7. LEAK DETECTION SYSTEM DESIGN SPEC	E31-48110	D-889-312
8. LOW PRESSURE CORE SPRAY SYSTEM FCD	E21-10300	D-889-300
9. ELECTRICAL EQUIP. SEPARATION FOR PROTECTION SYSTEMS	M62-40950	D-889-300
10. TURBINE CONTROL SYS & ELECTRIC WIRING	WPP-3622-18-1, 3622-20-4, 3622-24-2	D-889-300
11. LOGIC SYMBOLS	A42-10300	D-889-300
12. REMOTE SHUTDOWN SYSTEM FCD	C61-10300	D-889-300
13. NRV & RCC STANDARDS	A42-10300	D-889-300
14. REDUNDANT REACTIVITY CONT SYS FCD	C22-10300	D-889-300
15. ERIS ELEMENTARY DIAGRAM	CMS-10050	D-889-300
16. REMOTE SHUTDOWN SYS IED	C61-10110	D-889-300

LEGEND:
 * - SWITCHGEAR DEVICE FUNCTION NUMBERS ANSI SPEC C37.2
 ▲ - EMERGENCY RESPONSE INFORMATION SYSTEM

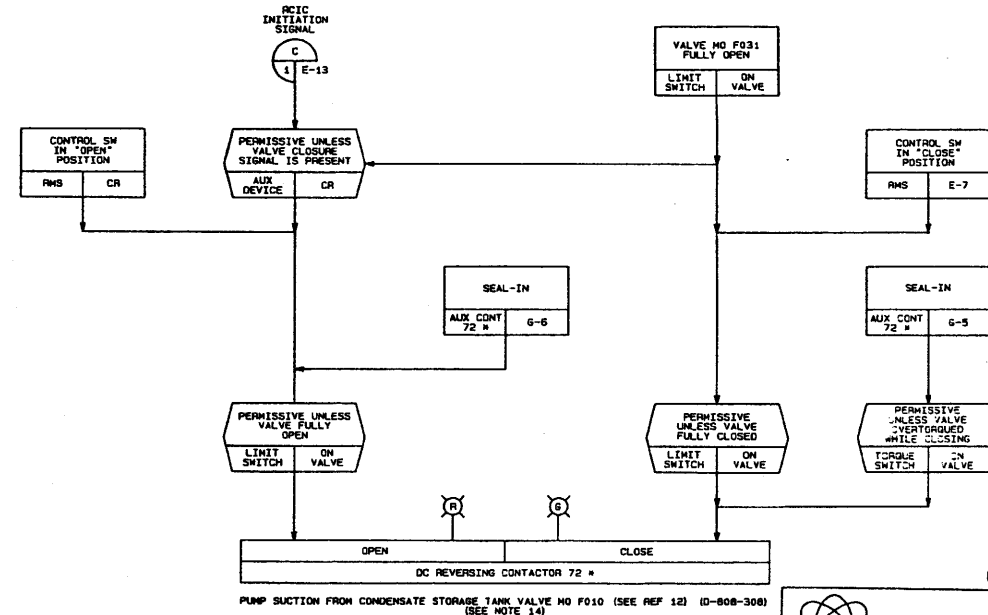
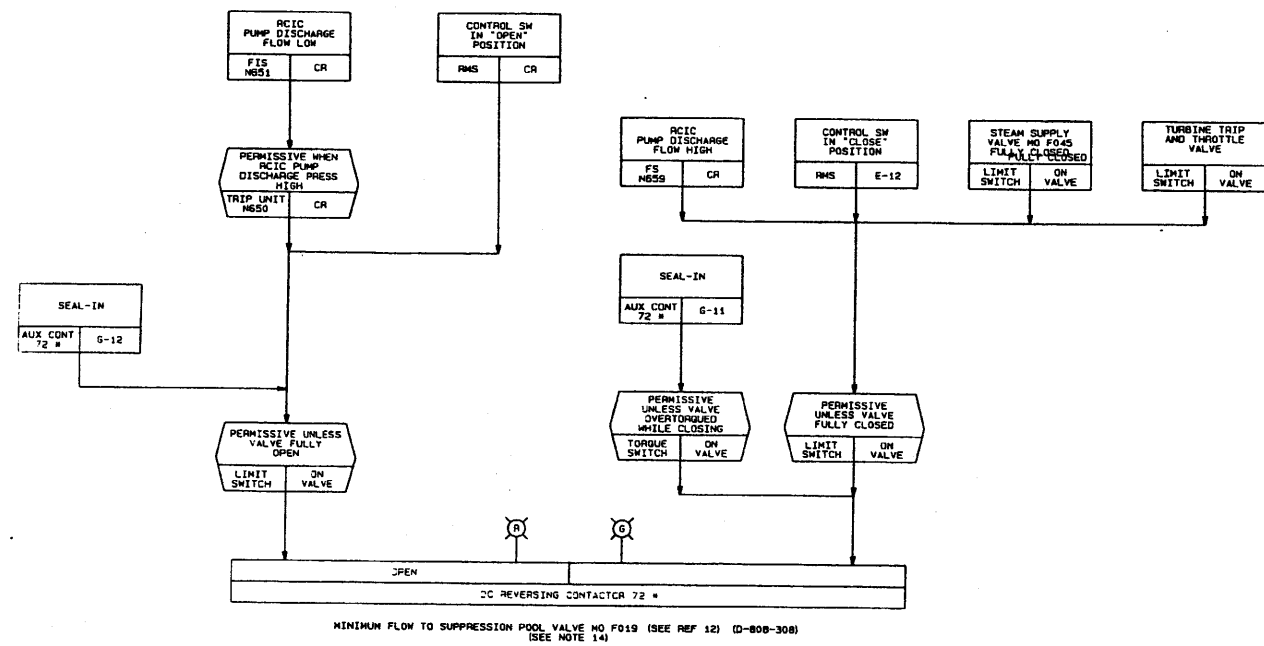
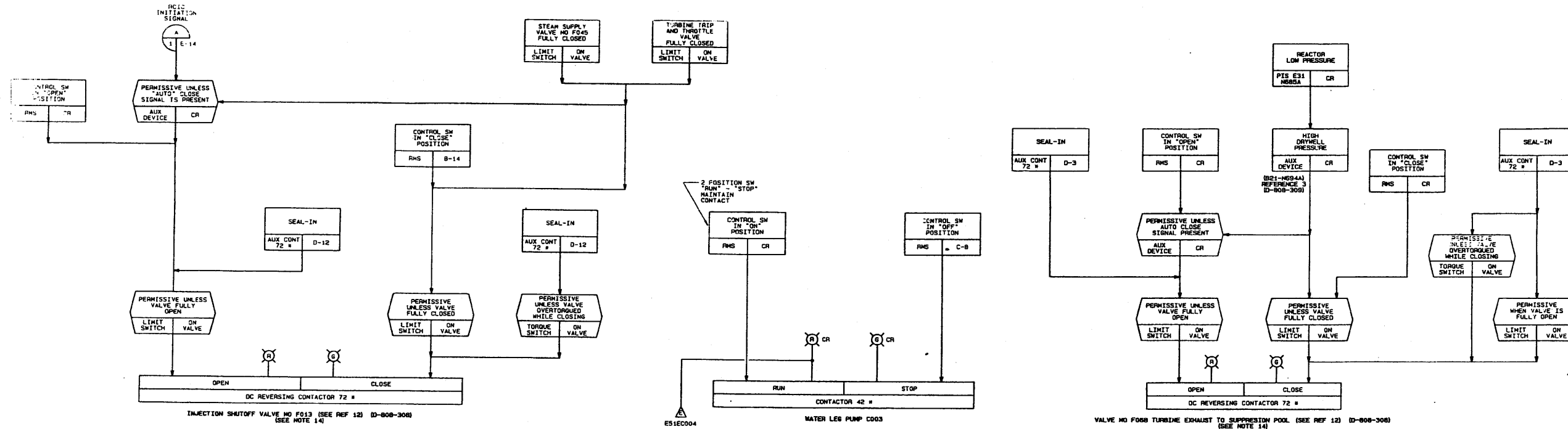
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling System

Figure 7.4-1 (Sheet 1 of 5)
 [Dwg. D-808-314(1)]



NUCLEAR SAFETY RELATED

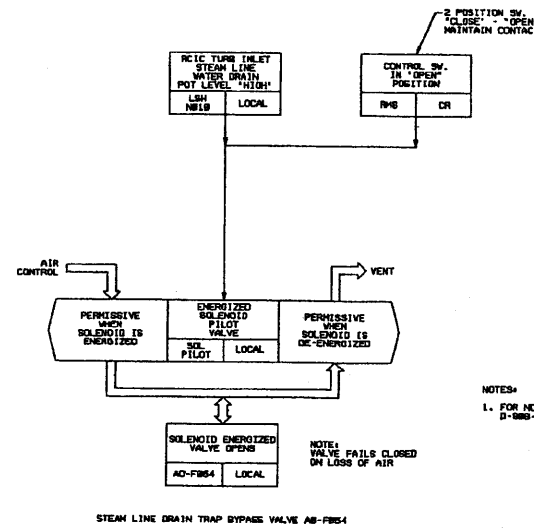
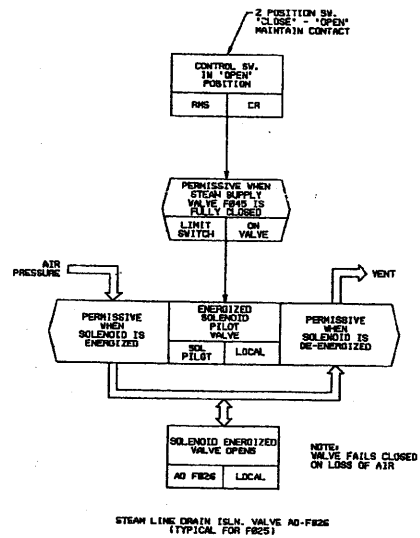
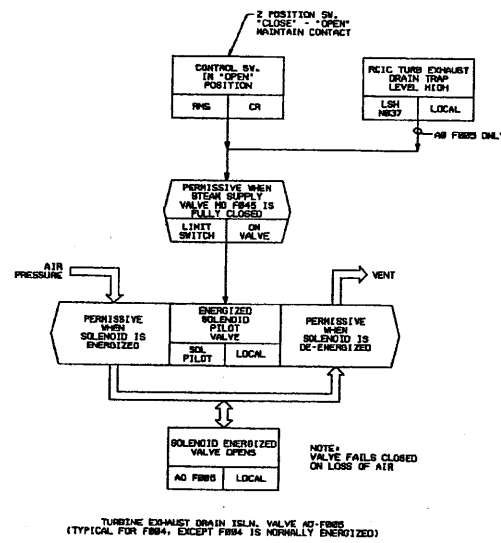
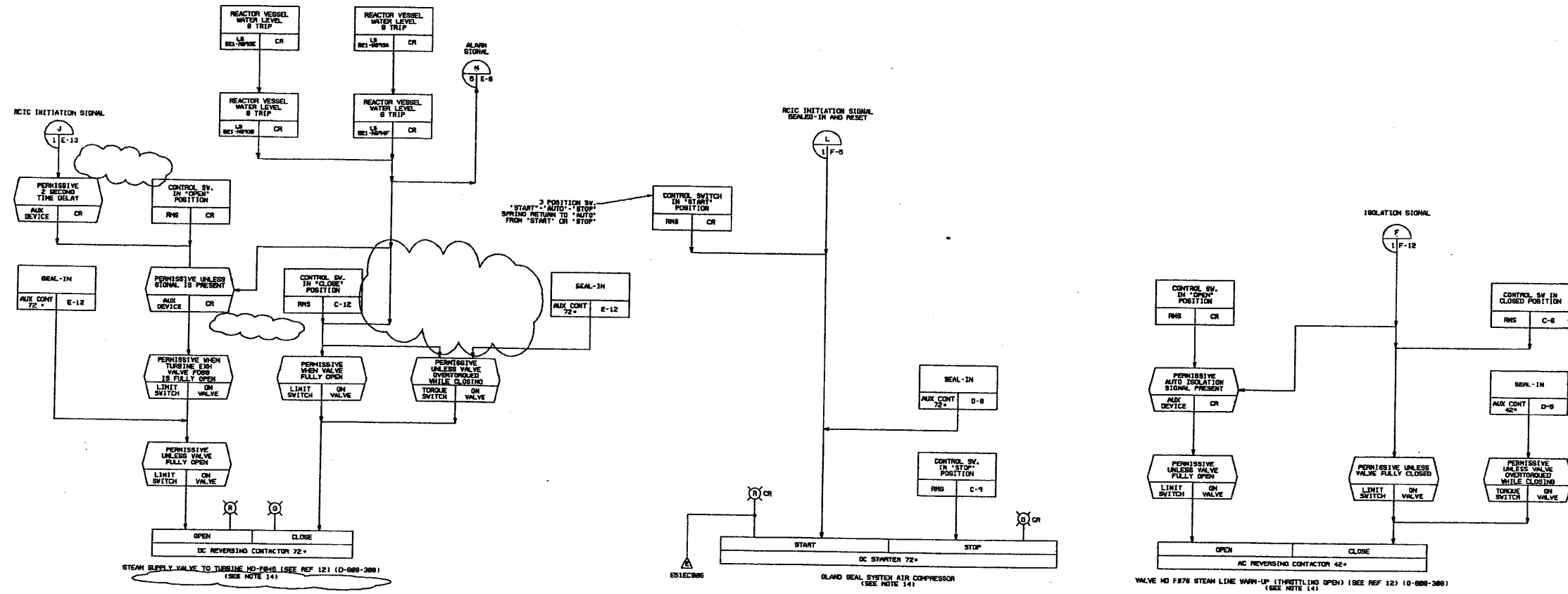
(Rev. 12 1/03)

PNPP PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling System


Figure 7.4-1 (Sheet 2 of 5)
[Dwg. D-808-314 (2)]

NOTES:
1. FOR NOTES, LEGEND AND REFERENCE DOCUMENTS SEE DRAWING D-808-314 (2).



NOTES:
1. FOR NOTES, LEGEND AND REFERENCE DOCUMENTS SEE DRAWING D-808-314 SH.1.

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Reactor Core Isolation
Cooling System

Figure 7.4-1 (Sheet 3 of 5)
[Dwg. D-808-314(3)]

NOTES:
1. FOR NOTES, LEGEND AND REFERENCE DOCUMENTS SEE DRAWING D-808-314 SH. 1.

NUCLEAR SAFETY RELATED

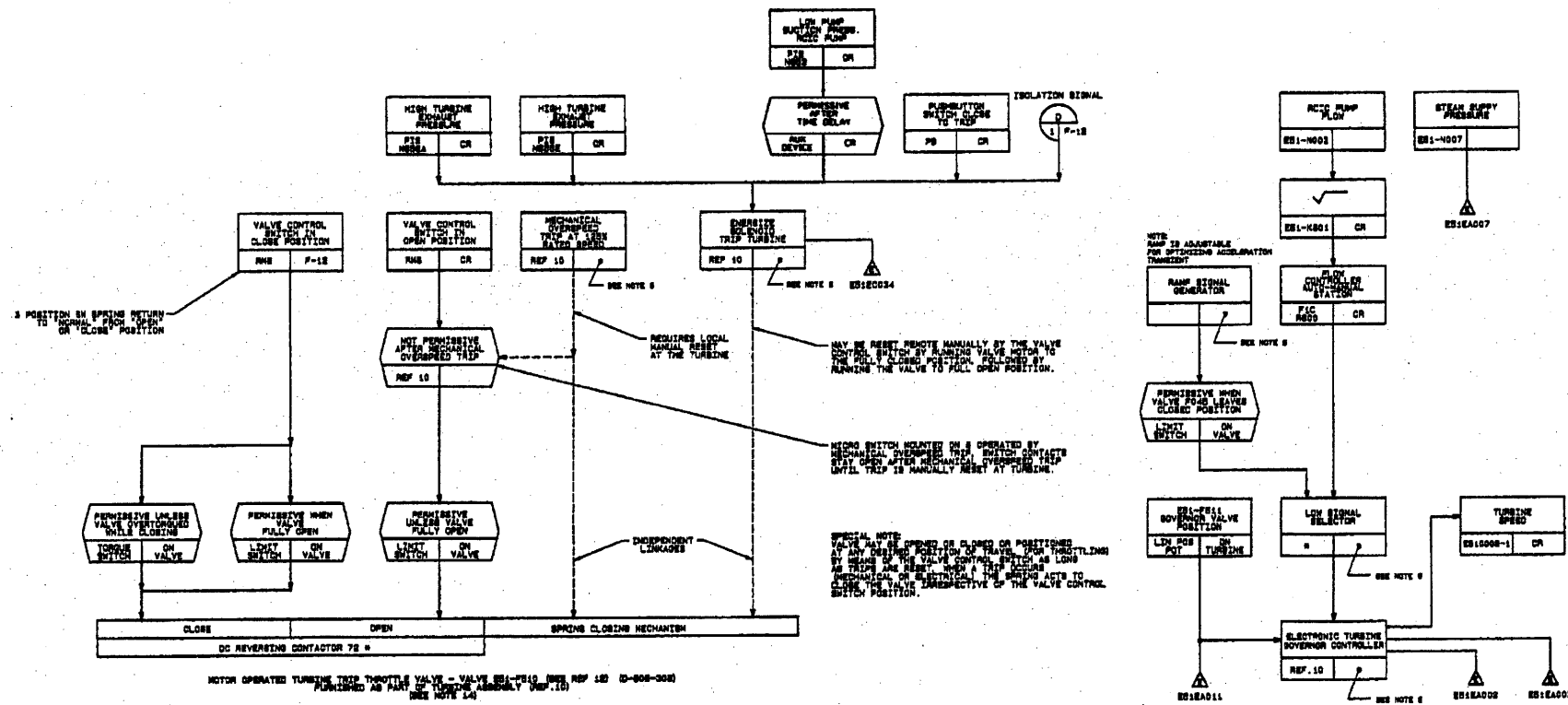
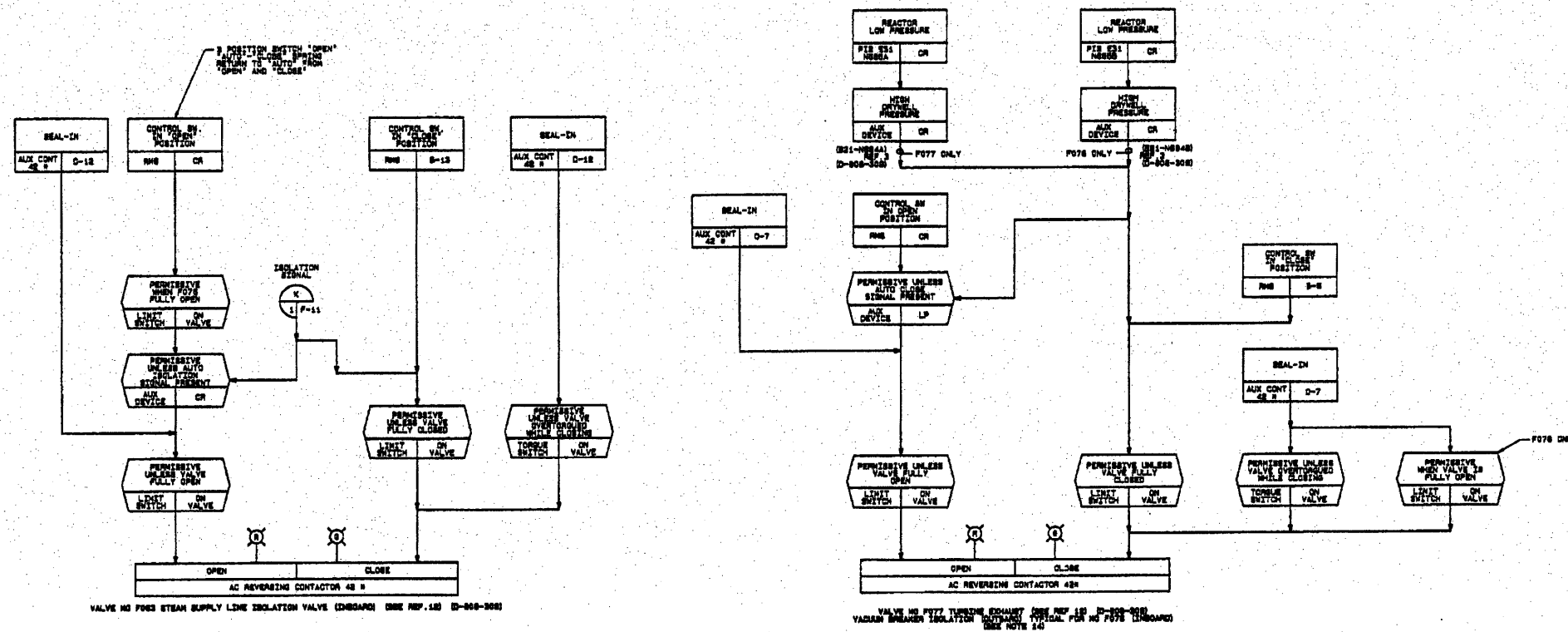


TABLE III - ERIS SIGNALS

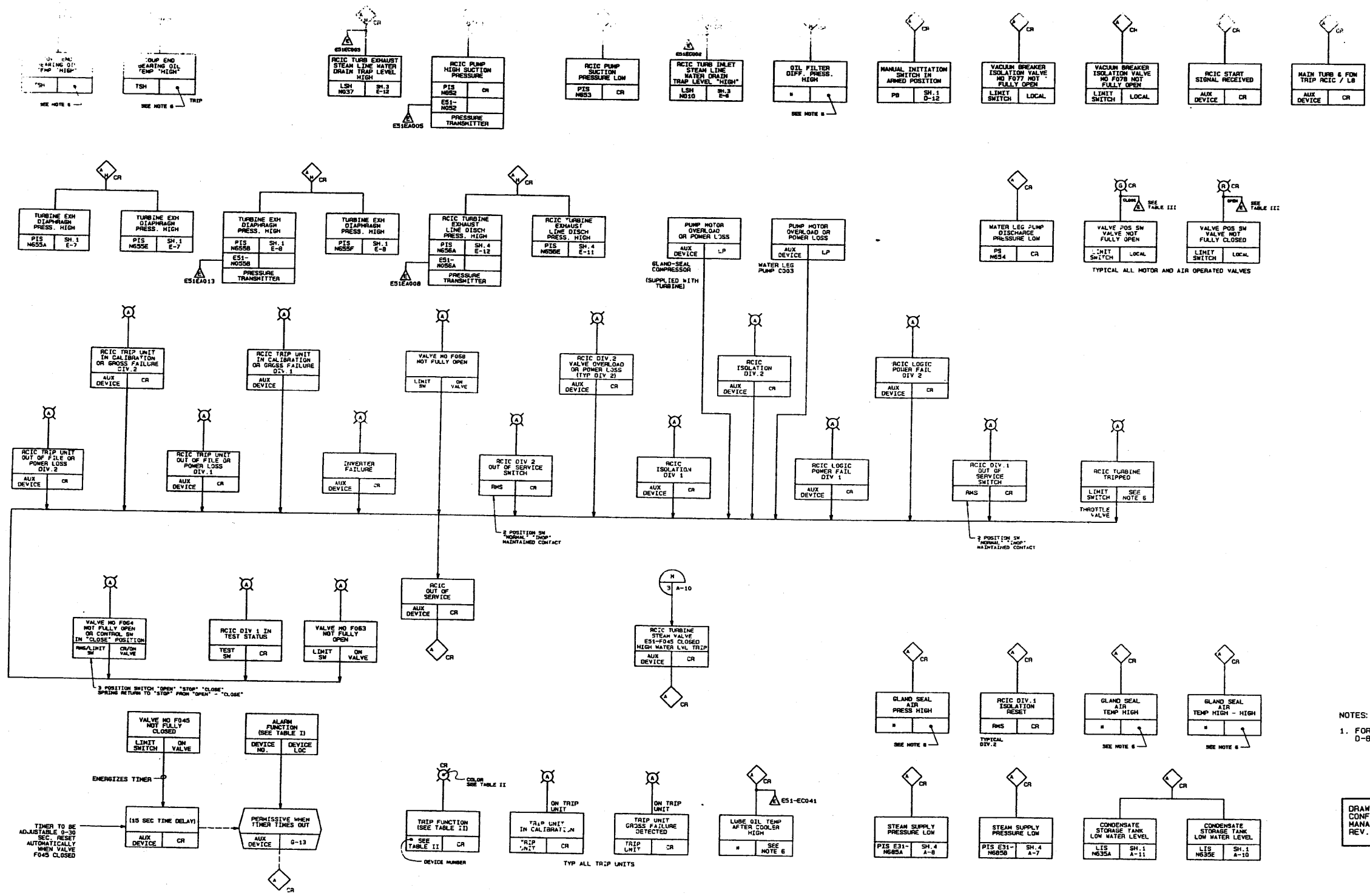
VALVE NO.	OPEN	CLOSE
ES1-P083	ES1EC034	ES1EC035
ES1-P078	ES1EC036	ES1EC037
ES1-P084	ES1EC038	ES1EC037
ES1-P017	ES1EC039	ES1EC038
ES1-P079	ES1EC038	ES1EC039
ES1-P088	ES1EC010	ES1EC011
ES1-P010	ES1EC012	ES1EC013
VALVE OPERATOR		
ES1-P010	ES1EC014	ES1EC015
ES1-P088	ES1EC016	ES1EC017
ES1-P000	ES1EC018	ES1EC019
ES1-P084	ES1EC025	ES1EC024
ES1-P088	ES1EC020	ES1EC021
ES1-P004	ES1EC022	ES1EC023
ES1-P013	ES1EC042	ES1EC043
ES1-P081	ES1EC044	ES1EC045
ES1-P010	ES1EC046	ES1EC047
ES1-P088	ES1EC048	ES1EC049
ES1-P018	ES1EC090	ES1EC091
ES1-P082	ES1EC092	ES1EC093
ES1-P088	ES1EC094	ES1EC095

(Rev. 16 10/09)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation
 Cooling System

Figure 7.4-1 (Sheet 4 of 5)
 [Dwg. D-808-314(4)]



NOTES:
 1. FOR NOTES, LEGEND AND REFERENCE DOCUMENTS SEE DRAWING D-808-314 SH.1.

DRAWING UNDER DESIGN
 CONFIGURATION MANAGEMENT AS OF REV. _____

DRAWING UNDER CE/VE DRAWING
 RECONCILIATION PER ERM NO. AMP-0017 AS OF REV. _____

NUCLEAR SAFETY RELATED

TABLE I

ALARM FUNCTION	INITIATING DEVICE NO.	DEVICE LOCATION	TYPE OF ALARM
TURBINE BRG OIL PRESSURE LOW	PS #	SEE NOTE 6	LOW
GLAND SEAL SYSTEM STEAM SEAL AIR PRESSURE LOW	SH #	SEE NOTE 6	LOW
CONDENSATE STORAGE TANK LOW WATER LEVEL	LIS N635A	CR	LOW

TABLE II

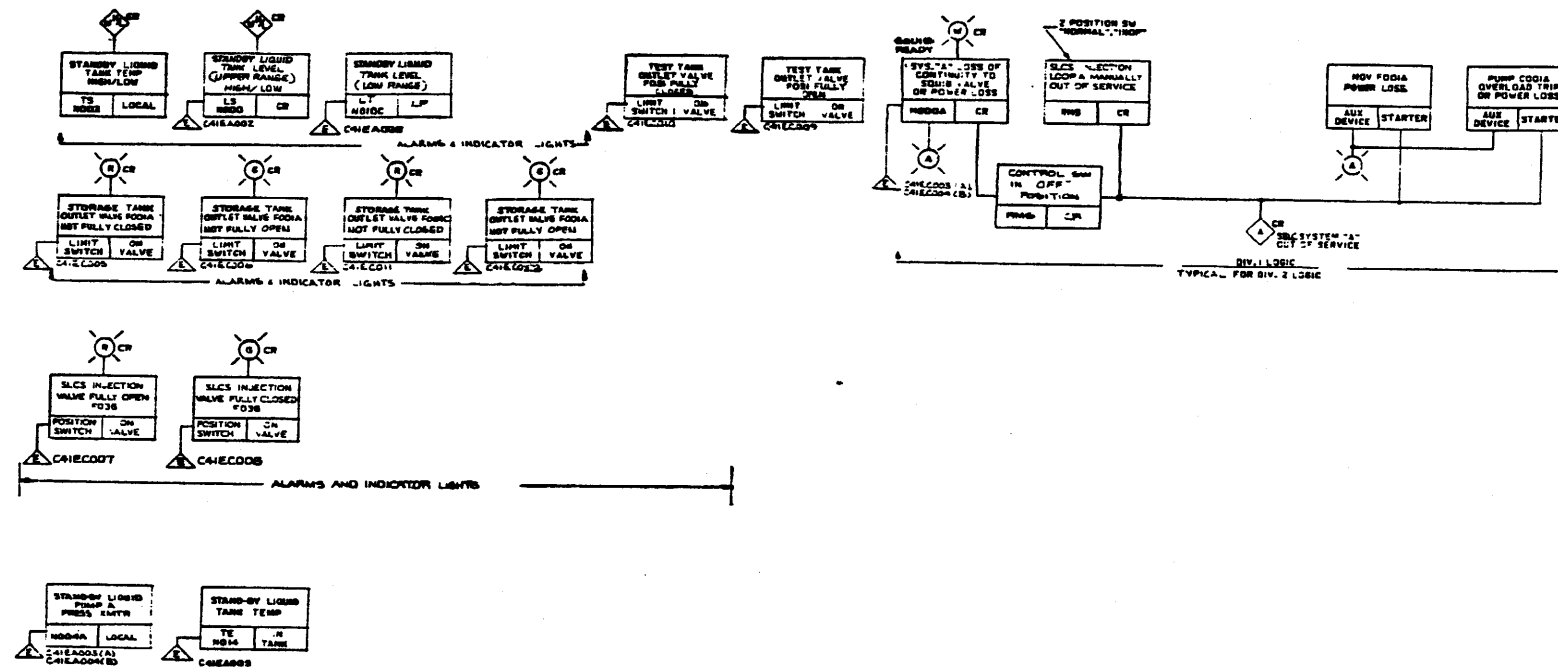
ACTUATING DEVICE	TRIP FUNCTION	COLOR
REF 10	TRIP THROTTLE VALVE OPEN	RED
	TRIP THROTTLE VALVE CLOSED	GREEN
	GOVERNOR VALVE OPEN	RED
	GOVERNOR VALVE CLOSED	GREEN

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling System

Figure 7.4-1 (Sheet 5 of 5)
 [Dwg. D-808-314(5)]



- NOTES
1. EACH SYSTEM CONTROL SWITCH IS KEYLOCKED IN OFF POSITION.
 2. CONTINUITY MONITOR SHALL BE CURRENT LIMITED AND WIRED TO PREVENT ACCIDENTAL FIRING OF EXPLOSIVE VALVES.
 3. HAZARDOUS RELAYS AND DEVICES NOT SHOWN.
 4. STORAGE TANK OUTLET VALVES (FOVA) ARE INTERLOCKED WITH THE TEST TANK LEVEL (LH) (LH) TO PREVENT INJECTION OF CONTROL SYSTEM WATER INTO THE REACTOR. BALANCE OF THE SYSTEM IS TESTED USING THE SYSTEM CONTROL SWITCH TO INJECT TEST TANK WATER INTO THE REACTOR.
 5. SYSTEM ELECTRICAL POWER SHALL BE POWERED FROM DIV. 1 AND 2 BUSES WITH PUMP CALIBRATION AND ANALYSIS SYSTEMS ON A DIFFERENT BUS FROM PUMP CALIBRATION AND ANALYSIS SYSTEMS.
 6. WIRING AND OPERATIONAL LOGIC ARE NOT FUNCTIONAL. REVISIONS AND MODIFICATIONS TO LOGIC ARE TO BE MADE IN CONFORMANCE WITH THE DESIGN.
 7. TEST TANK OUTLET VALVE SHALL HAVE TWO IDENTICAL LIMIT SWITCH CONFIGURATIONS. A & B TO REPRESENT DIV. 1 & DIV. 2 LOGICS.

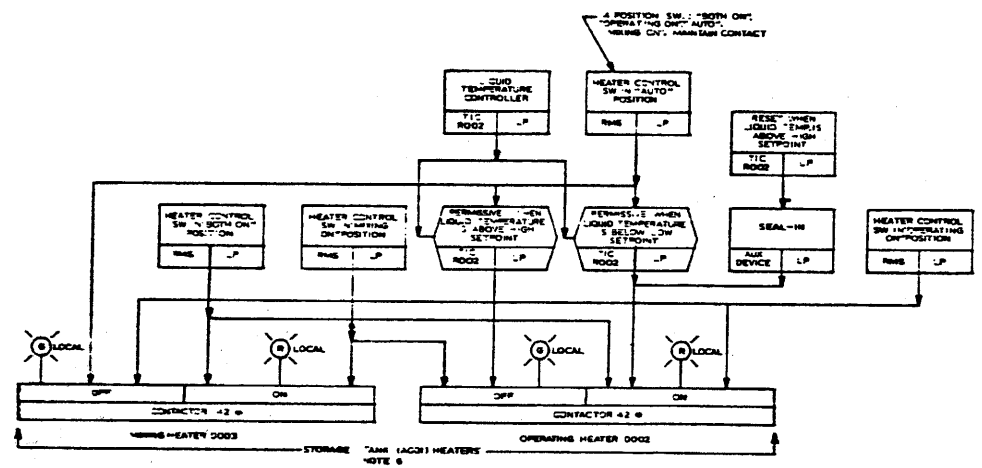
LEGEND

○ SWITCHING DEVICE FUNCTION NUMBER (MS) SPEC. C. 2. C.

△ EMERGENCY RESPONSE INFORMATION SYS.

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTIFIERS ARE TO BE USED IN CONNECTION WITH THIS DRAWING:

1. AKE-1050	LEGEND SYMBOLS
2. BSI-1050	NUCLEAR SYMBOLS
3. CEE-1050	NUCLEAR SYMBOLS
4. CYS-1050	NUCLEAR SYMBOLS



NUCLEAR SAFETY RELATED

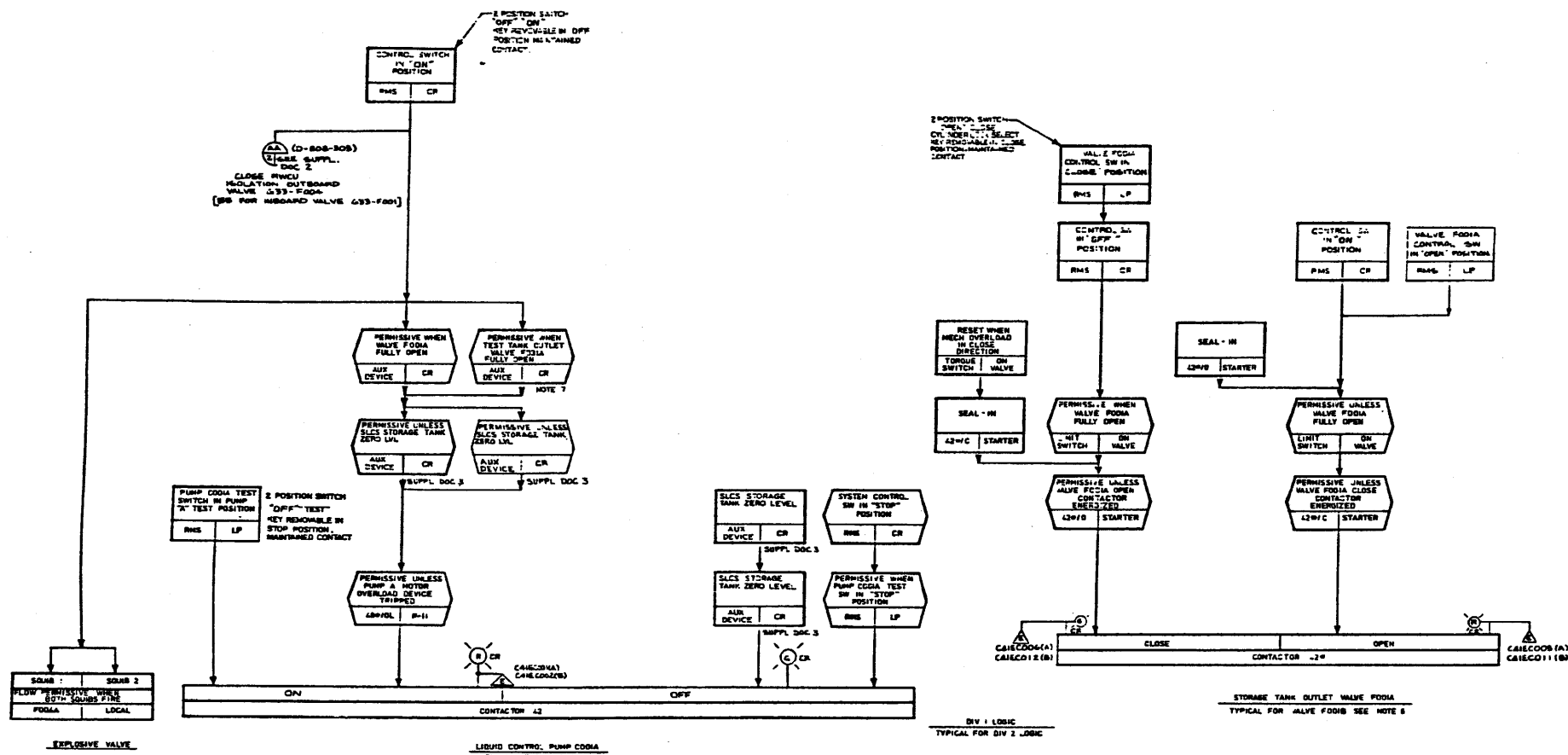
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Standby Liquid Control System


Figure 7.4-2 (Sheet 1 of 2)

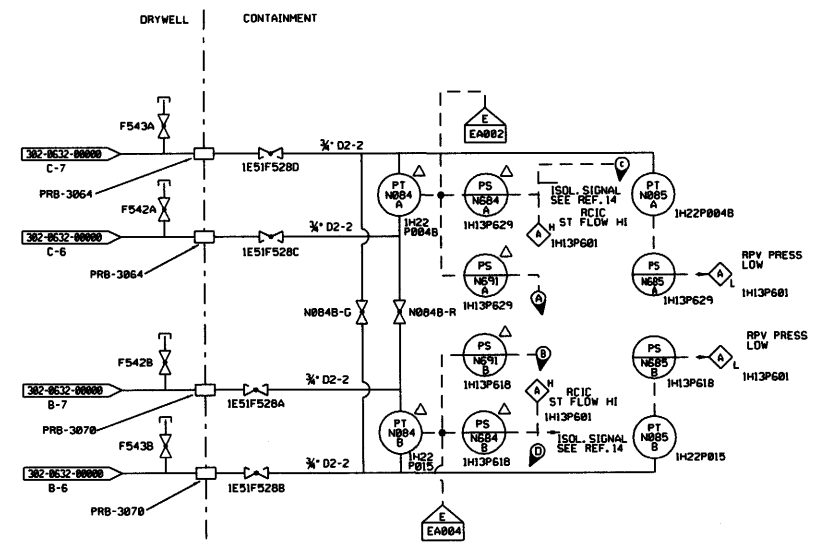
[Dwg. D-808-306(1)]



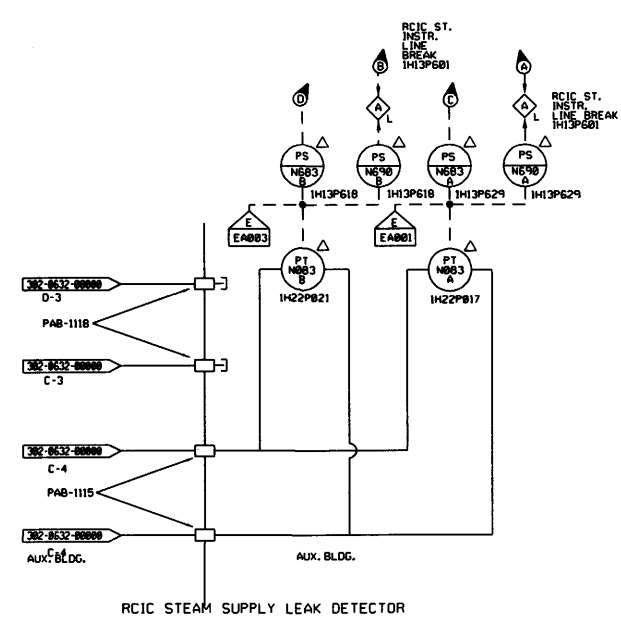
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

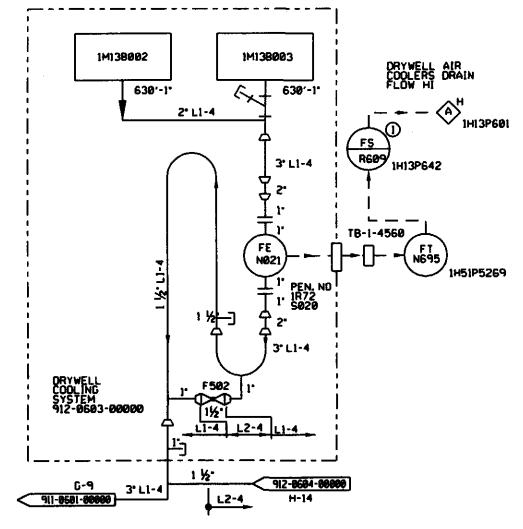
	PERRY NUCLEAR POWER PLANT
	Standby Liquid Control System Figure 7.4-2 (Sheet 2 of 2) (Dwg. D-808-306)



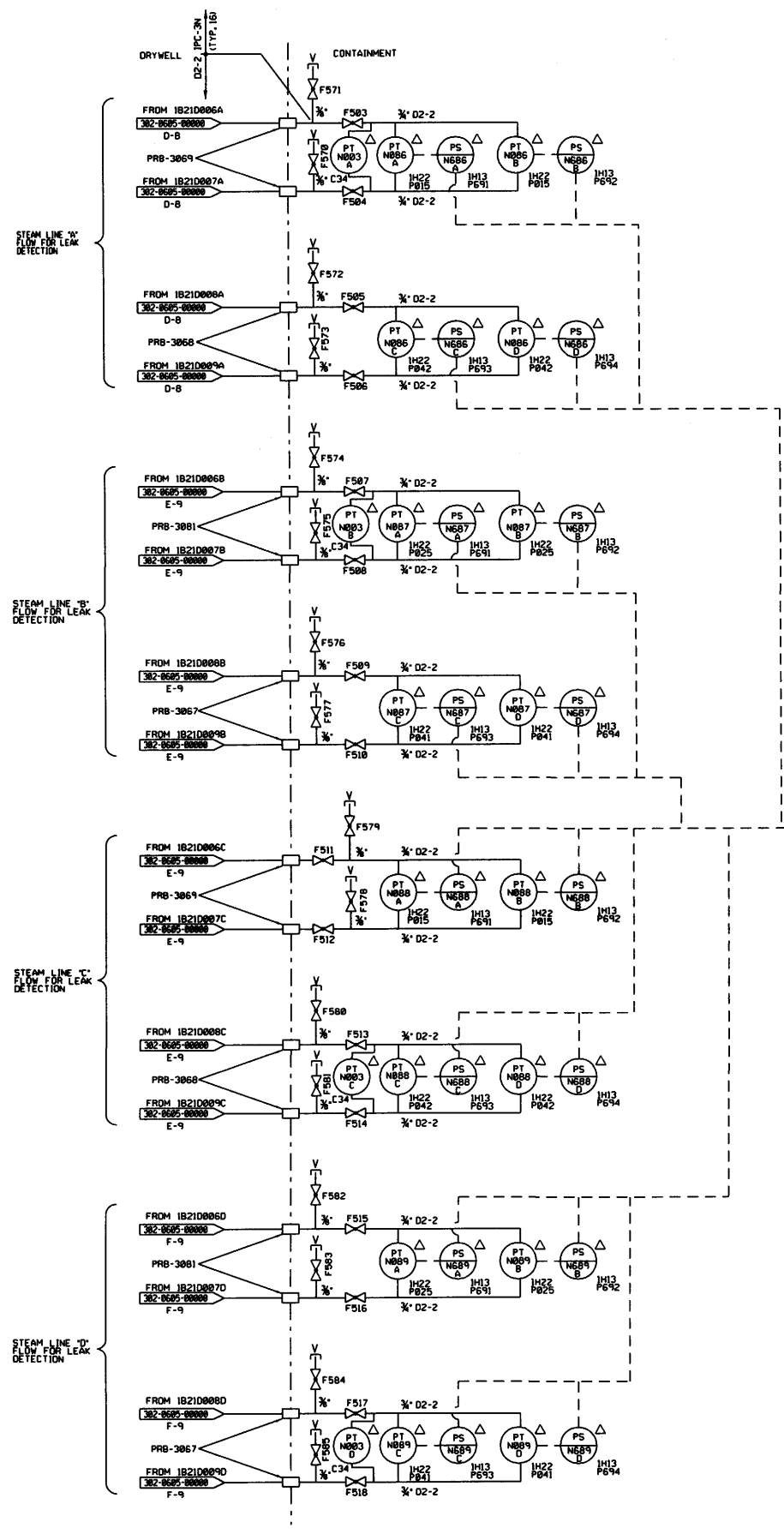
RCIC STEAM SUPPLY FLOW LEAK DETECTOR



RCIC STEAM SUPPLY LEAK DETECTOR



DRYWELL AIR COOLER LEAK DETECTOR (NON-SAFETY RELATED) SEISMIC CATEGORY 1



- NOTES:
1. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY SYSTEM NO. IE31, UNLESS OTHERWISE SPECIFIED.
 2. DUAL THERMOCOUPLE TE1 IS FOR ISOLATION SIGNAL, TE2 IS FOR INDICATORS.
 3. TYPICAL OF 4, ONE IN EACH MAIN STEAM LINE GUARD PIPE AREA, TE PLACED AT OPEN END OF GUARD PIPE TO DETECT LEAKAGE IN GUARD PIPE AREA.
 4. INSTRUMENT LINE VALVING MUST COMPLY WITH INSTRUMENT PIPING SPECIFICATION A62-4878.
 5. ANY DIVISIONAL AREA HIGH TEMPERATURE WILL ALARM A SINGLE ANNUNCIATOR WINDOW LOCATED ON PANEL IH13P681 AS 'MSL ISOLATION LOGIC 'X' TURBINE AREA HIGH TEMPERATURE'.
 6. A. CLOSE MAIN STEAM LINE ISOLATION VALVE. B. CLOSE MAIN STEAM LINE DRAIN VALVE.
 7. ALL INSTRUMENT PIPING IS SAFETY CLASS 2, EXCEPT AS NOTED.
 8. FOUR TEMPERATURE ELEMENTS ARE EQUALLY SPACED IN THE VERTICAL DIRECTION OF THE DRYWELL.
 9. PRESSURE INTEGRITY CLASSIFICATION OF LEAK-OFF LINE SHOULD CORRESPOND TO THE CLASSIFICATION OF THE LEAK-OFF VALVES AND COMPLY WITH SUPPLEMENTARY DOCUMENT A62-4838.
 10. BYPASS TIMER IS PROVIDED TO OVERRIDE THE ISOLATION SIGNAL DURING THE REACTOR WATER CLEANUP SYSTEM SURGES.
 11. ONE 'XS' IS USED TO MEASURE SUMP FILLUP TIME AND SECOND 'XS' IS MONITORING SUMP PUMPOUT TIME.
 12. TE2 SPARE FOR N0XXB

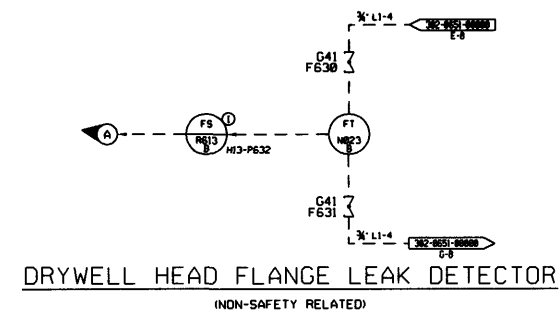
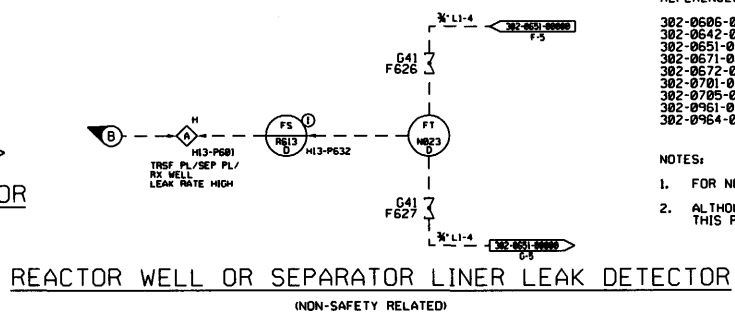
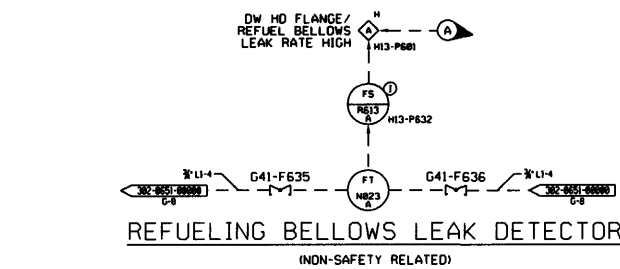
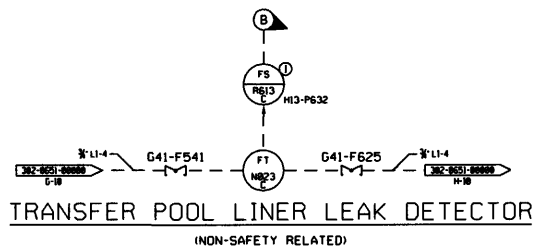
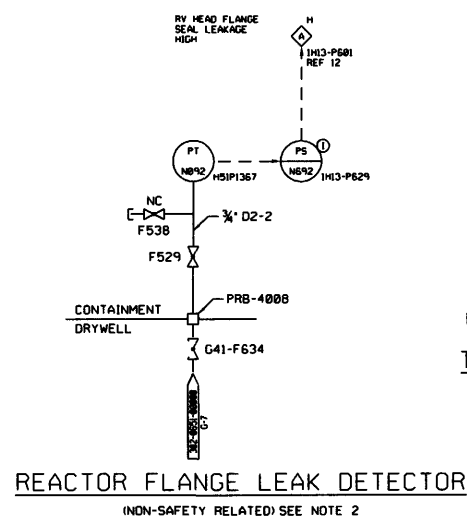
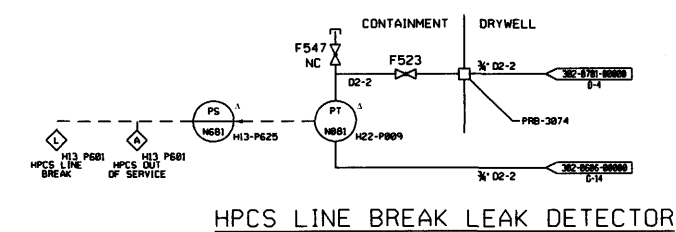
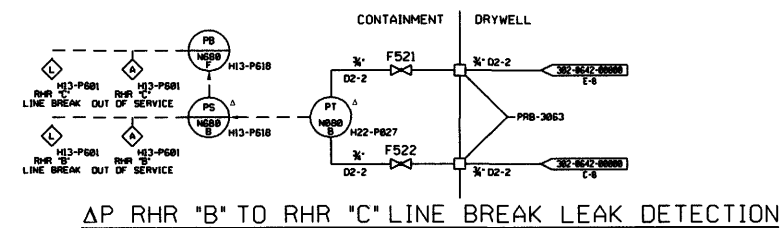
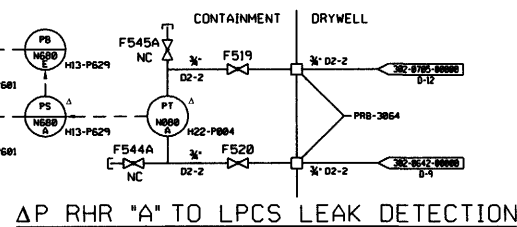
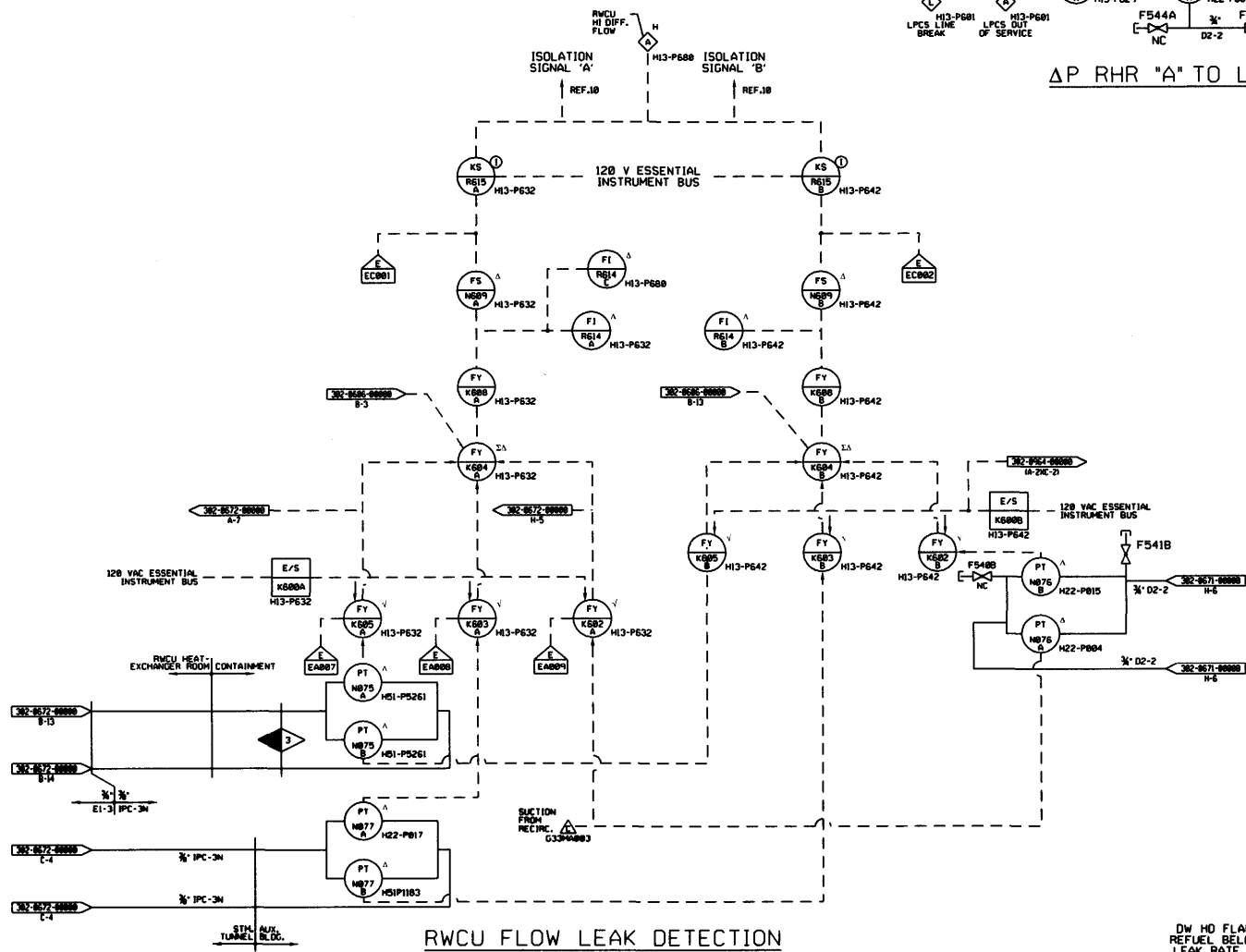
- REFERENCES:
1. 302-0601-00000 REACTOR WATER RECIRCULATION SYSTEM P&ID
 2. 302-0602-00000 REACTOR WATER RECIRCULATION SYSTEM P&ID
 3. 302-0605-00000 NUCLEAR BOILER SYSTEM P&ID
 4. 302-0631-00000 REACTOR CORE ISOLATION COOLING SYSTEM P&ID
 5. 302-0632-00000 REACTOR CORE ISOLATION COOLING SYSTEM P&ID
 6. 302-0642-00000 RESIDUAL HEAT REMOVAL SYSTEM P&ID
 7. 302-0671-00000 REACTOR WATER CLEANUP SYSTEM P&ID
 8. 302-0675-00000 LOW PRESSURE CORE SPRAY SYSTEM P&ID
 9. 814-0639-00000 SAFETY RELATED AREA TEMPERATURE MONITORING INSTALLATION DETAIL FOR LEAK DETECTION SYSTEM E31
 10. 208-0013-00000 NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM ELEMENTARY
 11. 208-0055-00000 RWR SYSTEM ELEMENTARY
 12. 208-0060-00000 LPCS SYSTEM ELEMENTARY
 13. 208-0065-00000 HPCS SYSTEM ELEMENTARY
 14. 208-0075-00000 RCIC SYSTEM ELEMENTARY
 15. C91-4830-00000 PROCESS COMPUTER I/O LISTING
 16. 911-0601-00000 REACTOR BUILDING DRAINS
 17. 912-0684-00000 CONTAINMENT VESSEL AND DRYWELL PURGE

- SUPPORTING DOCUMENTS:
- | MPL NUMBER | DESCRIPTION |
|------------|--|
| A42-1010 | PIPING AND INSTRUMENT SYMBOLS |
| A62-4030 | PRESSURE INTEGRITY OF NUCLEAR COMPONENTS SPECIFICATION |
| A62-4070 | PROCESS INSTRUMENT SPECIFICATION |
| A62-4200 | DRYWELL COOLING SYSTEM DESIGN SPECIFICATION |
| A62-4050 | ELECTRICAL SEPARATION SPECIFICATION |
| A62-4350 | MECHANICAL EQUIPMENT SEPARATION |

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LEAK DETECTION SYSTEM
FIGURE 7.6-1 (SHEET 1 OF 4)
(DWG. D-302-0961-00000)



- REFERENCES:**
- 302-0606-00000 NUCLEAR BOILER SYSTEM B21
 - 302-0642-00000 RESIDUAL HEAT REMOVAL SYSTEM IE12
 - 302-0651-00000 FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
 - 302-0671-00000 REACTOR WATER CLEANUP SYSTEM G33
 - 302-0672-00000 REACTOR WATER CLEANUP SYSTEM G33
 - 302-0701-00000 HIGH PRESSURE CORE SPRAY SYSTEM E22
 - 302-0705-00000 LOW PRESSURE CORE SPRAY SYSTEM E21
 - 302-0961-00000 LEAK DETECTION SYSTEM E31
 - 302-0964-00000 LEAK DETECTION SYSTEM E31

- NOTES:**
- FOR NOTES, SEE DRAWING 302-0961-00000
 - ALTHOUGH THERE ARE SAFETY RELATED COMPONENTS, THIS PROVIDES A NON-SAFETY FUNCTION.

(REV. 19 10/2015)

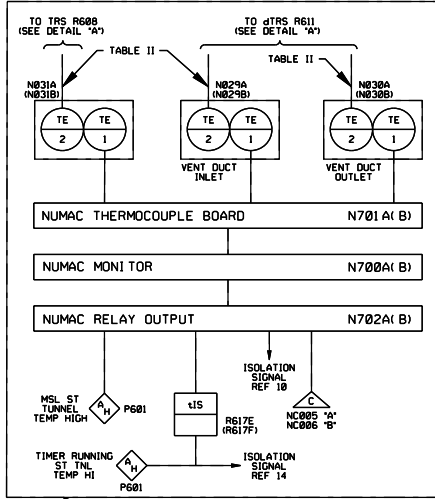
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LEAK DETECTION SYSTEM
FIGURE 7.6-1 (SHEET 2 OF 4)
(DWG. D-302-0962-00000)

TABLE II
RECORDED EQUIPMENT AREA TEMPERATURE MONITORING AND VALVES CLOSED

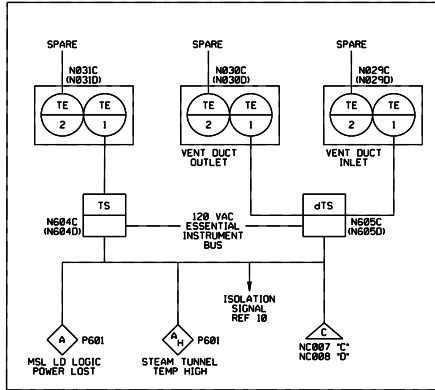
AREA MONITORED	DIV	AMBIENT TEMPERATURE			ALARM GROUPING	DIFFERENTIAL TEMPERATURE			VALVES CLOSED (DIFFERENTIAL TEMPERATURE WILL NOT CLOSE VALVES AND PROVIDES ALARM FUNCTION ONLY.)		
		TS	TE	TRS CH. NO.		dTS	TE INLET	TE OUTLET		dTRS POINT NO.	
MSL PIPE TUNNEL	1	N700A - A5-2, A5-3	N831A	R608-1	1	N700A - A5-2, A5-3	N829A	N830A	R611-1	B21-F022A-D, F028A-D, F019, F067A-D, E51-F064, F031, G33-F004, F034, F039, F054	
MSL PIPE TUNNEL	2	N700B - A5-2, A5-3	N831B			N700B - A5-2, A5-3	N829B	N830B			B21-F022A-D, F028A-D, F016, E51-F063, F076, G33-F001, F028, F040, F053
MSL PIPE TUNNEL	3	N804C	N831C				N829C	N830C			B21-F022A-D, F028A-D, F016
MSL PIPE TUNNEL	4	N804D	N831D				N829D	N830D			B21-F022A-D, F028A-D, F019, F067A-D
DRYWELL	-		N817A	R608-2	2					NONE	
DRYWELL	-		N817B	R608-3							
DRYWELL	-		N817C	R608-4							
DRYWELL	-		N817D	R608-5							
RHR EQUIPMENT AREA 1	1	N700A - A5-4	N818A	R608-6	3	N700A - A5-4	N827A	N828A	R611-2	E12-F008, F023, F037A, F040, F053A, F075A/B, E51-F031, F064	
RHR EQUIPMENT AREA 1	2	N700B - A5-4	N818B			N700B - A5-4	N827B	N828B			E12-F009, F037B, F049, F053B, F060A/B, E51-F063, F076
RHR EQUIPMENT AREA 2	1	N700A - A5-5	N801A	R608-7		N700A - A5-5	N802A	N803A	R611-3	E12-F008, F023, F037A, F040, F053A, F075A/B, E51-F031, F064	
RHR EQUIPMENT AREA 2	2	N700B - A5-5	N801B			N700B - A5-5	N802B	N803B			E12-F009, F037B, F049, F053B, F060A/B, E51-F063, F076
RCIC EQUIPMENT AREA	1	N700A - A6-1	N804A	R608-9	4	N700A - A5-1	N805A	N806A	R611-4	E51-F064, F031	
RCIC EQUIPMENT AREA	2	N700B - A6-1	N804B			N700B - A5-1	N805B	N806B			E51-F063, F076
RWCU HEAT EXCHANGER ROOM	1	N700A - A2-3	N834A	R608-10	6	N700A - A1-3	N836A	N835A	R611-5	G33-F004, F034, F039, F054	
RWCU HEAT EXCHANGER ROOM	2	N700B - A2-3	N834B			N700B - A1-3	N836B	N835B			G33-F001, F040, F053, F028
RWCU PUMP B ROOM	1	N700A - A2-2	N837A	R608-11	5	N700A - A1-2	N838A	N839A	R611-6	G33-F004, F034, F039, F054	
RWCU PUMP B ROOM	2	N700B - A2-2	N837B			N700B - A1-2	N838B	N839B			G33-F001, F040, F053, F028
RWCU PUMP A ROOM	1	N700A - A2-1	N840A	R608-12		N700A - A1-1	N841A	N842A	R611-7	G33-F004, F034, F039, F054	
RWCU PUMP A ROOM	2	N700B - A2-1	N840B			N700B - A1-1	N841B	N842B			G33-F001, F040, F053, F028
RWCU VALVE NEST ROOM	1	N700A - A4-1	N843A	R608-13	6	N700A - A3-1	N844A	N845A	R611-8	G33-F004, F034, F039, F054	
RWCU VALVE NEST ROOM	2	N700B - A4-1	N843B			N700B - A3-1	N844B	N845B			G33-F001, F040, F053, F028
RWCU DEMIN ROOM 1	1	N700A - A4-2	N846A	R608-14	6	N700A - A3-2	N848A	N849A	R611-9	G33-F004, F034, F039, F054	
RWCU DEMIN ROOM 1	2	N700B - A4-2	N846B			N700B - A3-2	N848B	N849B			G33-F001, F040, F053, F028
RWCU DEMIN ROOM 2	1	N700A - A4-3	N849A	R608-15		N700A - A3-3	N851A	N850A	R611-10	G33-F004, F034, F039, F054	
RWCU DEMIN ROOM 2	2	N700B - A4-3	N849B			N700B - A3-3	N851B	N850B			G33-F001, F040, F053, F028
RWCU DEMIN VALVE ROOM	1	N700A - A4-5	N852A	R608-16	6	N700A - A3-5	N854A	N853A	R611-11	G33-F004, F034, F039, F054	
RWCU DEMIN VALVE ROOM	2	N700B - A4-5	N852B			N700B - A3-5	N854B	N853B			G33-F001, F040, F053, F028
RWCU DEMIN REC TANK	1	N700A - A4-4	N855A	R608-17		N700A - A3-4	N857A	N856A	R611-12	G33-F004, F034, F039, F054	
RWCU DEMIN REC TANK	2	N700B - A4-4	N855B			N700B - A3-4	N857B	N856B			G33-F001, F040, F053, F028
GUARD PIPE MONITORED	-										
MAIN STEAM LINE 'A'	-		N815A	R608-18	2						
MAIN STEAM LINE 'B'	-		N815B	R608-19							
MAIN STEAM LINE 'C'	-		N815C	R608-20							
MAIN STEAM LINE 'D'	-		N815D	R608-21							

AREA LEAK DETECTION FOR MAIN STEAM LINE PIPE TUNNEL
AMBIENT TEMPERATURE DIFFERENTIAL TEMPERATURE

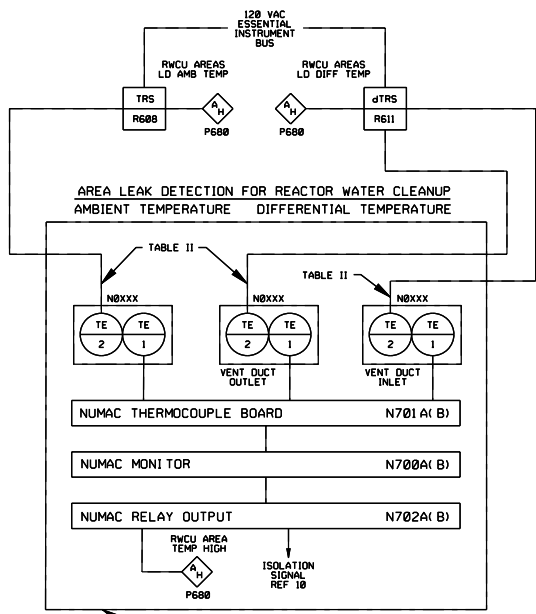
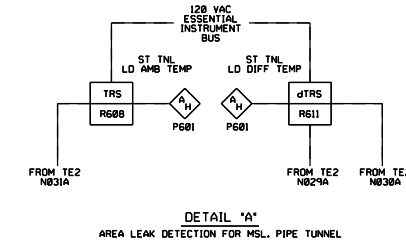
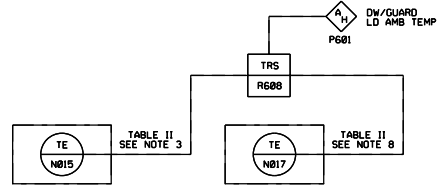


TYPICAL OF 2, MINIMUM OF 1 PER ISOLATION CHANNEL DIV. 1 & 2
SEE TABLE II AND NOTES 2 AND 12
DIV. 1 SHOWN
DIV. 2 SHOWN IN PARENTHESIS

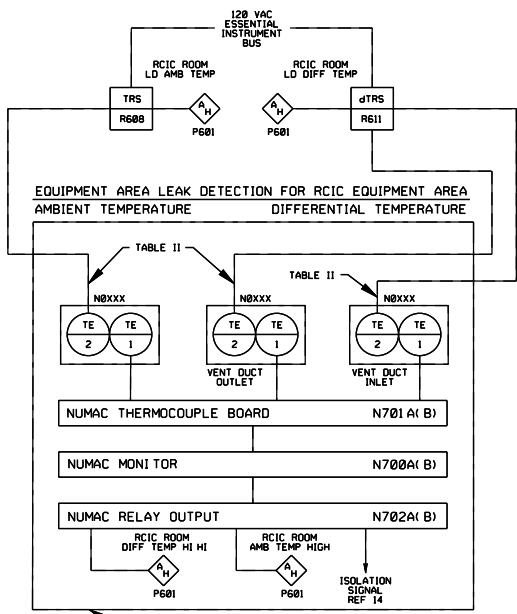
AREA LEAK DETECTION FOR MAIN STEAM LINE PIPE TUNNEL
AMBIENT TEMPERATURE DIFFERENTIAL TEMPERATURE



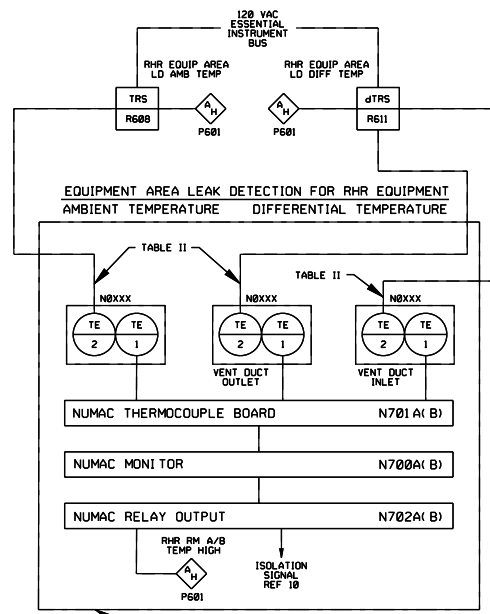
TYPICAL OF 2, MINIMUM OF 1 PER ISOLATION CHANNEL DIV. 3 & 4
SEE TABLE II AND NOTE 2
DIV. 3 SHOWN
DIV. 4 SHOWN IN PARENTHESIS



SEE TABLE II AND NOTES 2 AND 12



SEE TABLE II AND NOTES 2 AND 12



SEE TABLE II AND NOTES 2 AND 12

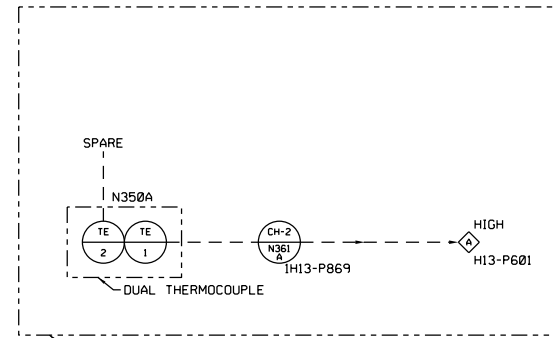
NOTES:
1. FOR NOTES AND REFERENCES, SEE DRAWING D-302-961.

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

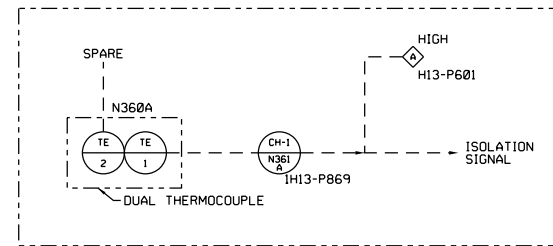
Leak Detection System
Figure 7.6-1 (Sheet 3 of 4)
(Dwg. 302-0963-00000)

AREA LEAK DETECTION FOR MAIN STEAM LINE IN STEAM TURBINE POWER COMPLEX



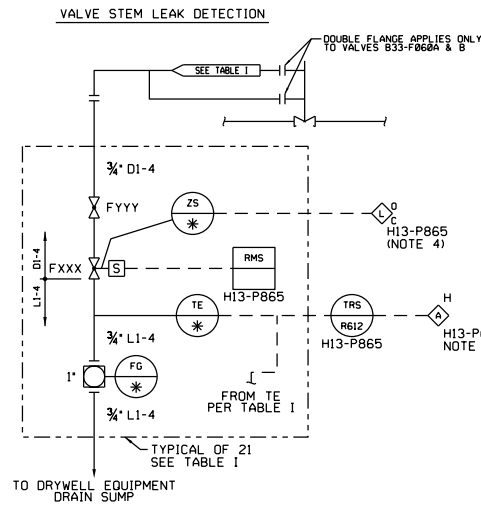
TYPICAL OF 4, IDENTICAL FOR CHANNEL B, C, & D
SEE TABLE III

AREA LEAK DETECTION FOR MAIN STEAM LINE IN TURBINE BUILDING



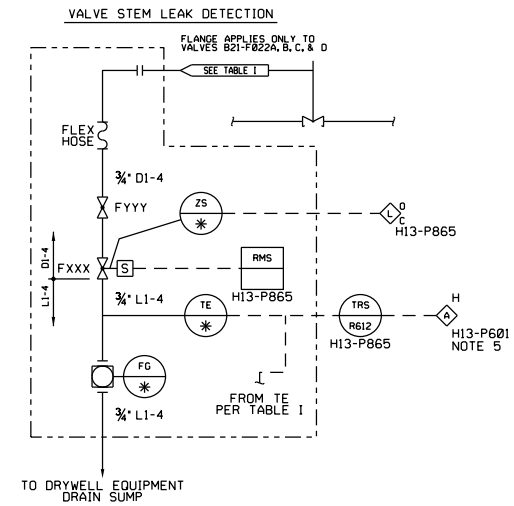
TYPICAL OF 4, IDENTICAL FOR CHANNEL B, C, & D
SEE TABLE III

DETAIL "A"



TYPICAL OF 21
SEE TABLE I

DETAIL "B"



TYPICAL OF 21
SEE TABLE I

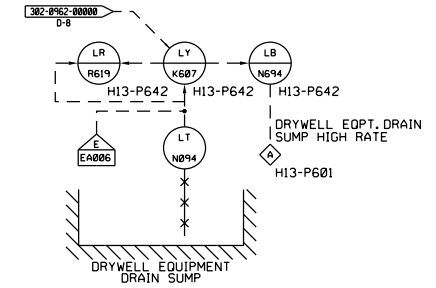
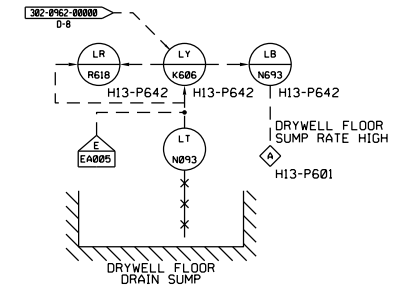
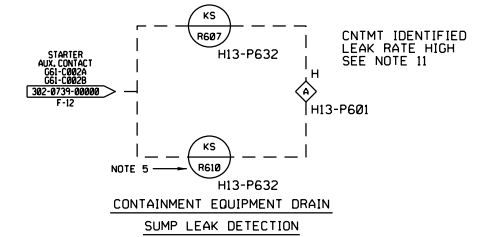
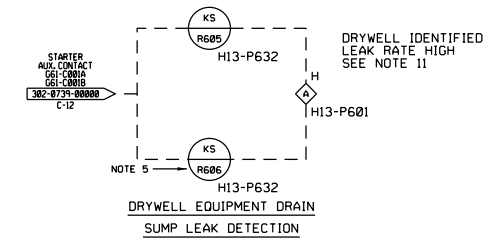
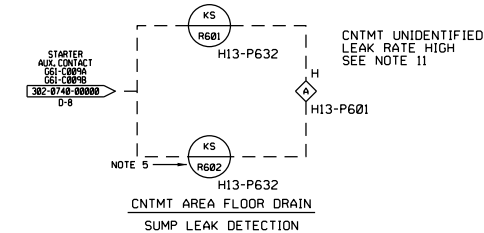


TABLE I

THE FOLLOWING VALVES, INSIDE THE DRYWELL, ARE EQUIPPED WITH VALVE STEM LEAK-OFF. TYPICAL ARRANGEMENT SHOWN DETAIL "A" OR "B" AS NOTED

VALVES WITH LEAKOFF	LOCATION	LEAK-OFF EQUIP. SUFFIX	TR POINT NO.	ALARM GROUPING	TE E31-	SCV FXXX	FG	VALVE FYYY	ZS	FLEX HOSE E31-	DETAIL
B21-F022A	302-0605-00000, C-7	A1	R612-23	ALM1	N370	F400	D430	F460	N400	D008	B
B21-F022B	302-0605-00000, E-9	A2	R612-24	ALM1	N371	F401	D431	F461	N401	D009	B
B21-F022C	302-0605-00000, F-9	A3	R612-25	ALM1	N372	F402	D432	F462	N402	D006	B
B21-F022D	302-0605-00000, F-9	A4	R612-26	ALM1	N373	F403	D433	F463	N403	D010	B
B33-F023A	302-0602-00000, D-7	B1	R612-01	ALM1	N374	F404	D434	F464	N404	D012	B
B33-F023B	302-0602-00000, D-9	B2	R612-02	ALM1	N375	F405	D435	F465	N405	D011	B
B33-F060A	302-0602-00000, C-4	B3	R612-03	ALM1	N376	F406	D436	F466	N406	A	A
B33-F060B	302-0602-00000, C-11	B4	R612-04	ALM1	N377	F407	D437	F467	N407	A	A
B33-F067A	302-0602-00000, C-4	B7	R612-07	ALM1	N380	F410	D440	F470	N410	D005	B
B33-F067B	302-0602-00000, C-11	B8	R612-08	ALM1	N381	F411	D441	F471	N411	D017	B
E12-F009	302-0642-00000, G-10	C1	R612-09	ALM1	N382	F412	D442	F472	N412	D007	B
E51-F063	302-0632-00000, B-6	E1	R612-16	ALM1	N387	F417	D447	F477	N417	A	A
G33-F001	302-0671-00000, J-8	F1	R612-18	ALM1	N389	F419	D449	F479	N419	D016	B
G33-F100	302-0671-00000, H-13	F2	R612-19	ALM1	N390	F420	D450	F480	N420	D013	B
G33-F101	302-0671-00000, J-13	F3	R612-20	ALM1	N391	F421	D451	F481	N421	A	A
G33-F102	302-0671-00000, J-11	F4	R612-05	ALM1	N392	F422	D452	F482	N422	A	A
G33-F106	302-0671-00000, G-12	F5	R612-06	ALM1	N393	F423	D453	F483	N423	D014	B
B21-F001	302-0605-00000, E-13	A5	R612-27	ALM1	N395	F425	D455	F485	N425	D019	B
B21-F002	302-0605-00000, E-13	A6	R612-28	ALM1	N396	F426	D456	F486	N426	D018	B
B21-F005	302-0605-00000, D-13	A7	R612-29	ALM1	N397	F427	D457	F487	N427	D020	B
B21-F016	302-0121-00000, D-11	A8	R612-30	ALM1	N398	F428	D458	F488	N428	D015	B



NOTES:

- DELETED
- THIS DRAWING WAS ADAPTED FROM GE DRAWING NUMBER 762E293CA SHEETS 1-5.
- FOR OTHER NOTES AND REFERENCES SEE DWG. 302-0961-00000.
- FOR IE31F0407, THE OPEN AND CLOSED POSITION INDICATION IS DISABLED UNDER ECP 18-0246.
- OUTPUT FROM THE LIQUID RADWASTE DISTRIBUTED CONTROL SYSTEM.

REFERENCES:

- 302-0739-00000 LIQUID RADWASTE SUMPS SYSTEM EQUIPMENT DRAIN SUMPS AND OIL SEPARATORS G61
- 302-0740-00000 LIQUID RADWASTE SUMPS SYSTEM FLOOR DRAIN SUMPS G61
- 302-0962-00000 LEAK DETECTION SYSTEM E31

TABLE III

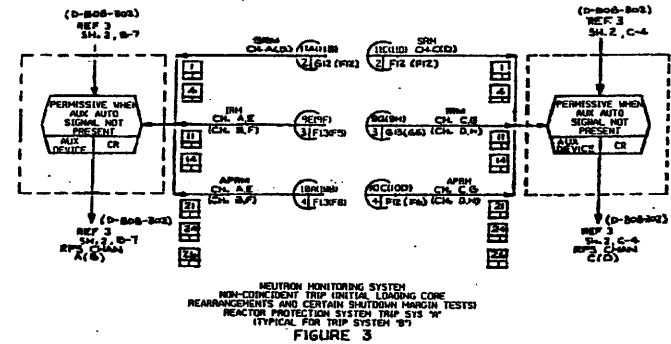
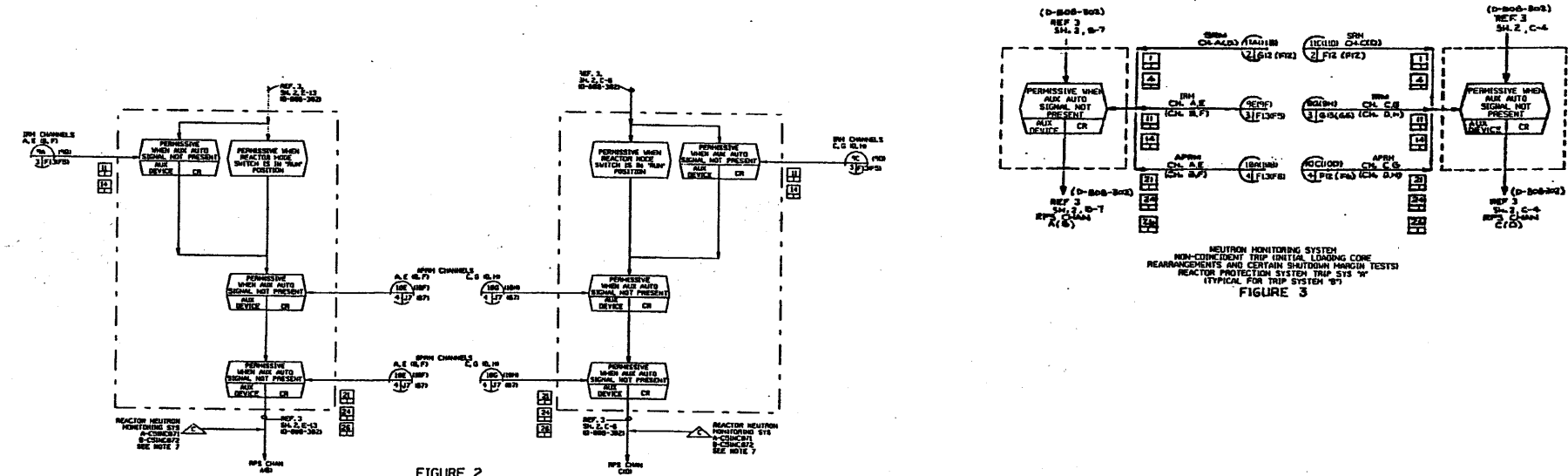
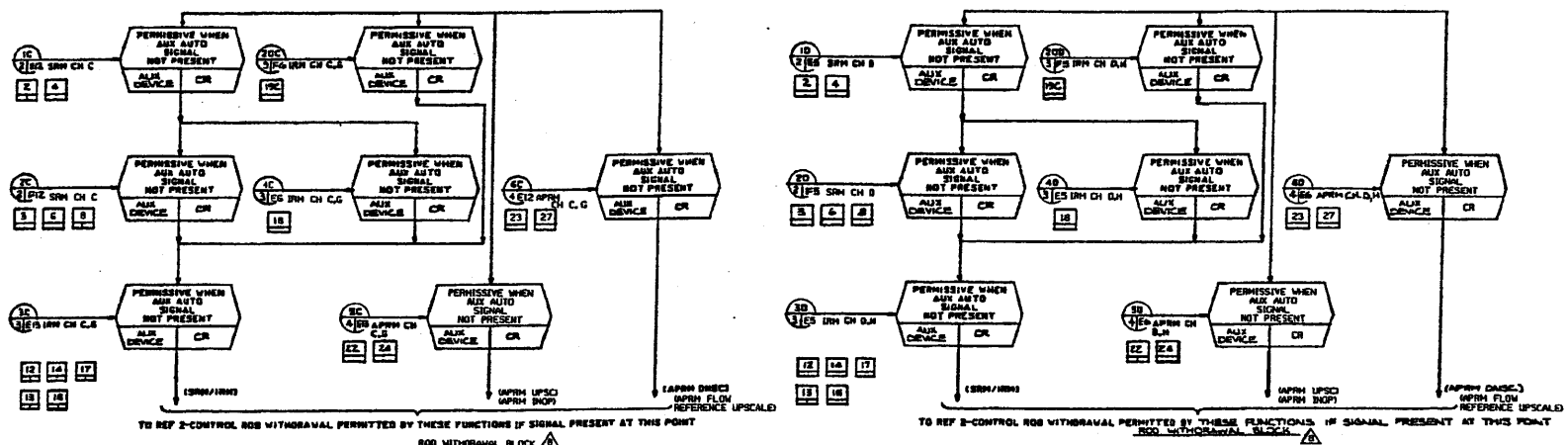
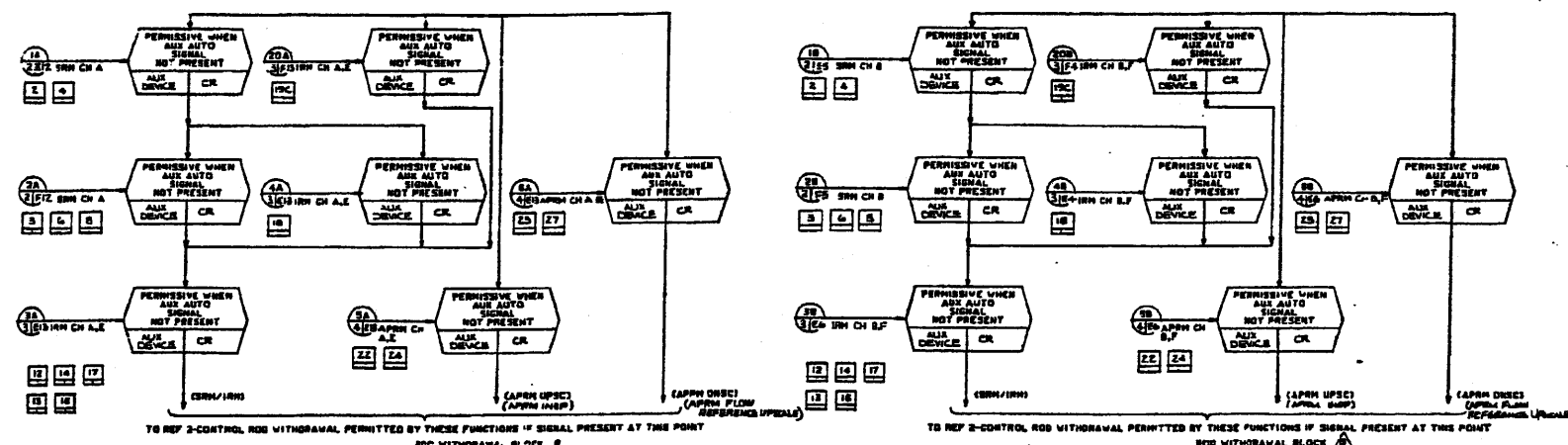
AREA TEMPERATURE MONITORING & VALVES CLOSED

AREA MONITORED	AMBIENT TEMPERATURE					DEVICE LOCATION			VALVES CLOSED
	DIV.	TS	TE	TI	TY	TS PANEL LOCATION	ALARM LOCATION	TI PANEL LOCATION	
TURBINE POWER COMPLEX									
MSL STEAM TUNNEL	1	N361A	N350A			H13-P869	H13-P601	H13-P869	
MSL STEAM TUNNEL	2	N361B	N350B			H13-P868	H13-P601	H13-P868	
MSL STEAM TUNNEL	3	N361C	N350C			H13-P868	H13-P601	H13-P868	
MSL STEAM TUNNEL	4	N361D	N350D			H13-P869	H13-P601	H13-P869	
TURBINE BUILDING									
MSL TURBINE BUILDING	1	N361A	N360A			H13-P869	H13-P601	H13-P869	B21-F022A-D, B21-F028A-D
MSL TURBINE BUILDING	2	N361B	N360B			H13-P868	H13-P601	H13-P868	B21-F022A-D, B21-F028A-D
MSL TURBINE BUILDING	3	N361C	N360C			H13-P868	H13-P601	H13-P868	B21-F022A-D, B21-F028A-D
MSL TURBINE BUILDING	4	N361D	N360D			H13-P869	H13-P601	H13-P869	B21-F022A-D, B21-F028A-D

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LEAK
DETECTION SYSTEM
FIGURE 7.6-1 (SHEET 4 OF 4)
(DWG. D-302-964-00000)



- NOTES:
1. INPUTS TO COMPUTER ARE ISOLATED CLOSE TO ALARM CONTACTS.
 2. IN THE EVENT THAT POWER IS LOST, THE FOLLOWING ACTIONS WILL BE INITIATED AFTER POWER IS RESTORED:
 - A. IN AUTOMATIC MODE, DETECTOR RETURNS TO "0001" VIA AUTOMATIC MODE PATH. DETECTOR MUST THEN BE RETURNED TO STORAGE POSITION TO REPROGRAM DETECTOR.
 - B. IN MANUAL MODE, MUST RESSET BY MANUAL SWITCH IN REVERSE AND RETURN TO STORAGE POSITION TO REPROGRAM DETECTOR.
 3. THE TIME DURATION OF THE PERMISSIVE ASSOCIATED WITH COMPUTER INTERFACE SHALL BE COMPATIBLE WITH THE ASSOCIATED COMPUTER.
 4. THE ENTIRE NEUTRON MONITORING SYSTEM IS A FULLY AUTOMATIC SYSTEM EXCEPT FOR MANUAL OPERATED SWITCHES.
 5. ALL EQUIPMENT & INSTRUMENTS ARE PREFIXED BY CR UNLESS OTHERWISE NOTED.
 6. CHANNELS A, C, E & G ARE FOR TRIP SYSTEM A. CHANNELS B, D, F & H ARE FOR TRIP SYSTEM B.
 7. DELETED

△ ROD WITHDRAWAL BLOCKS SUBJECT TO BYPASSING AT SUBSEQUENT LEVELS - SEE SHEETS 2.3.4 & 5.

- LEGEND:
- -- INITIATOR BLOCK (SEE DETAILS CORRESPONDING WITH NUMBERS)
 - IRH -- INTERMEDIATE RANGE MONITOR
 - APM -- AVERAGE POWER RANGE MONITOR
 - SRM -- SOURCE RANGE MONITOR
 - LRM -- LOCAL POWER RANGE MONITOR
 - TRP -- TRIP REACTOR PROTECTION SYSTEM
 - AMCC -- ANALOG MULTIPLE OUTPUT CONTROLLER
 - RPV -- REACTOR PRESSURE VESSEL
 - ERS -- EMERGENCY RESPONSE INFORMATION SYSTEM
 - OPM -- OSCILLATION POWER RANGE MONITOR

- REFERENCE DOCUMENTS:
- | REF. NO. | DESCRIPTION | REF. NO. | DESCRIPTION |
|----------|--------------------------------------|----------|-------------|
| 1. | PERFORMANCE MONITORING | CR-1000 | D-808-302 |
| 2. | CONTROL ROD DRIVE SYS FCD | CR-1000 | D-808-305 |
| 3. | REACTOR PROTECTION SYS FCD | CR-1000 | D-808-306 |
| 4. | REDUNDANT REACTIVITY CONTROL SYS FCD | CR-1000 | D-808-307 |
| 5. | ERS ELEMENTARY DIAGRAM | CR-1000 | D-808-308 |
| 6. | PERFORMANCE MONITORING | CR-1000 | D-808-309 |

SUPPORTING DOCUMENTS:

- 1. LOGIC SYMBOLS - A12-1038

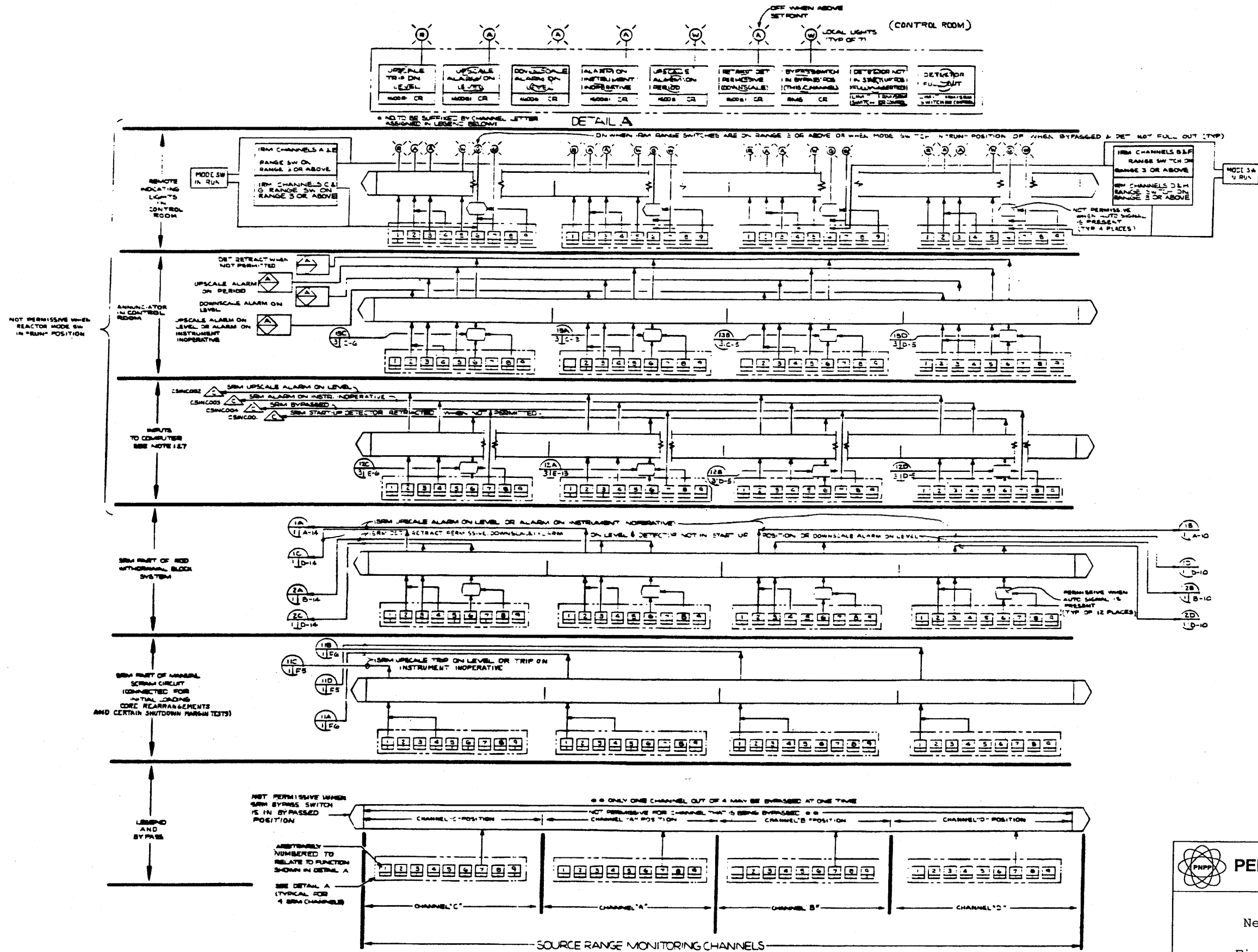
- LEGEND (CONT.):
- DCU -- DRIVE CONTROL UNIT
 - △ -- COMPUTER INPUT

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT


Neutron Monitoring System
Figure 7.6-2 (Sheet 1 of 7)

[Dwg. D-808-307(1)]

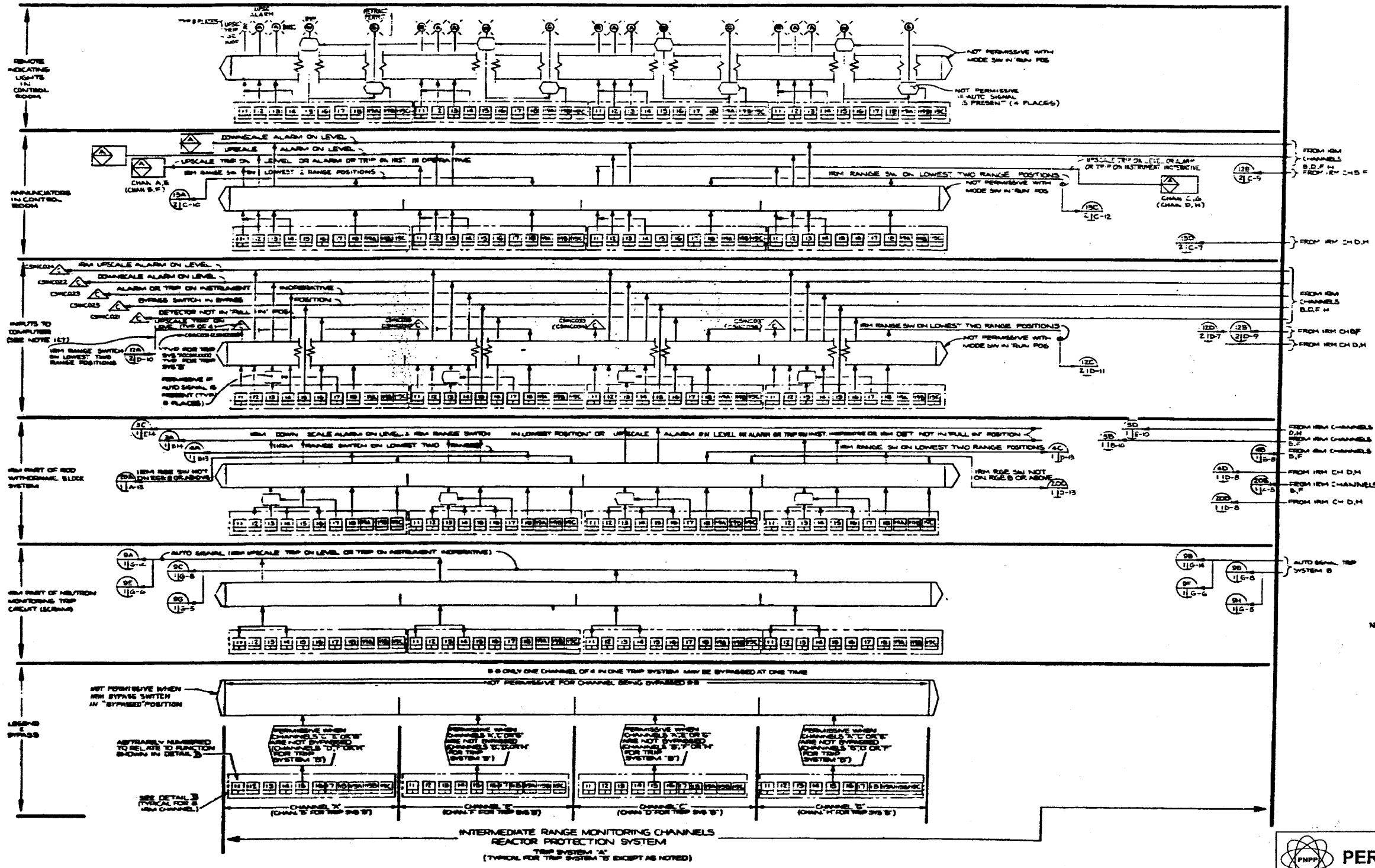
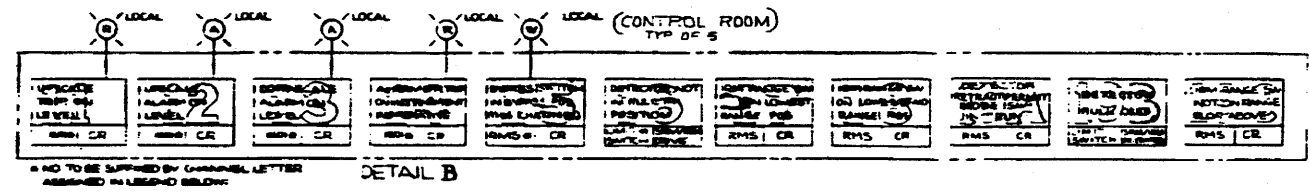


NOTES:
 1. FOR GENERAL NOTES & REFERENCES SEE THIS DWG. SH. 1.

(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
 Figure 7.6-2 (Sheet 2 of 7)
 [Dwg. D-808-307(2)]



NOTES:
1. FOR GENERAL NOTES AND REFERENCES, SEE THIS DWG SH. 1.

(Rev. 12 1/03)

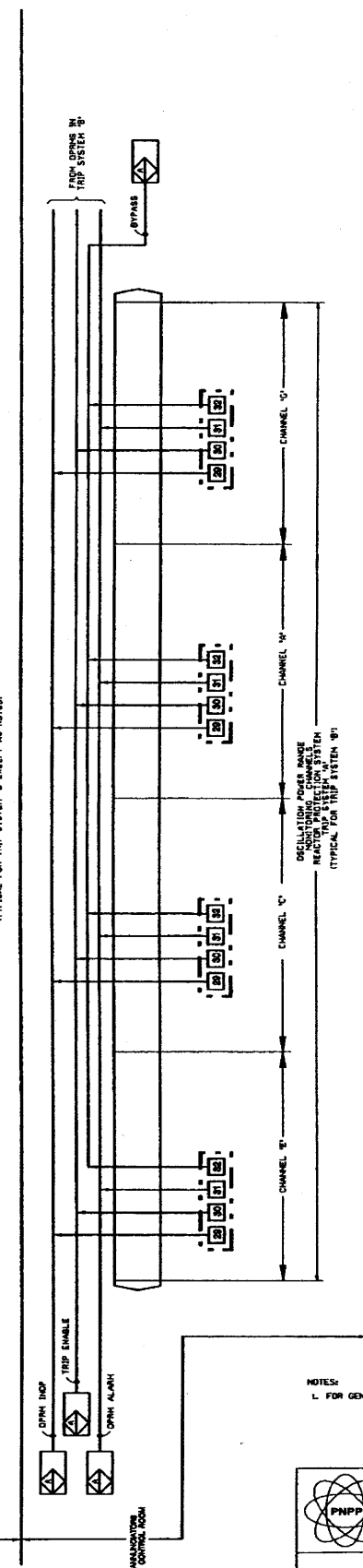
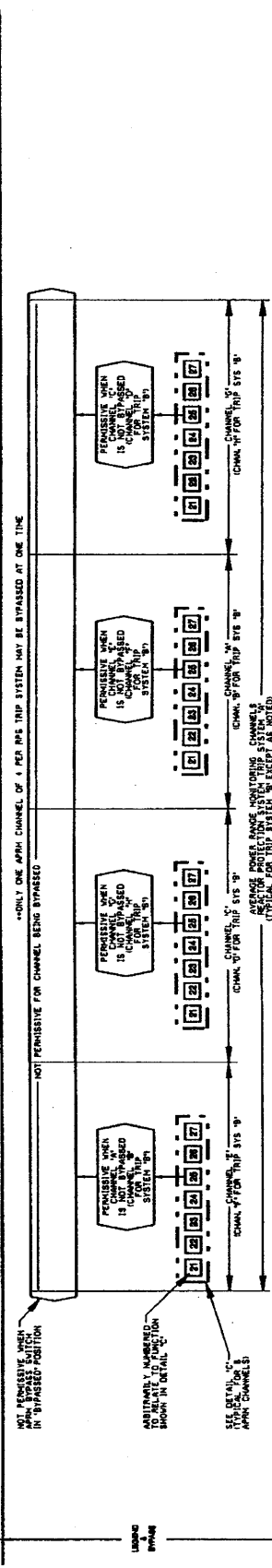
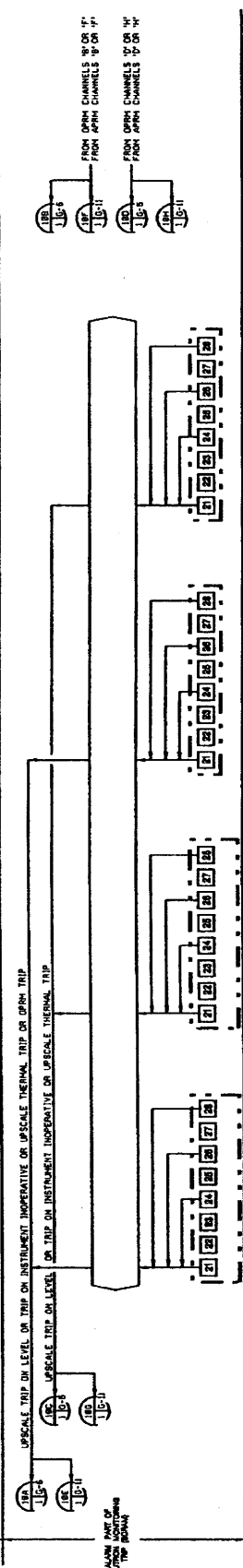
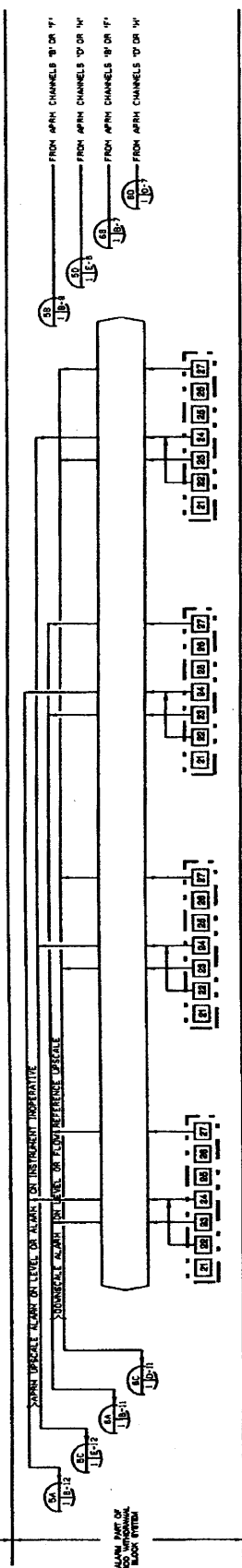
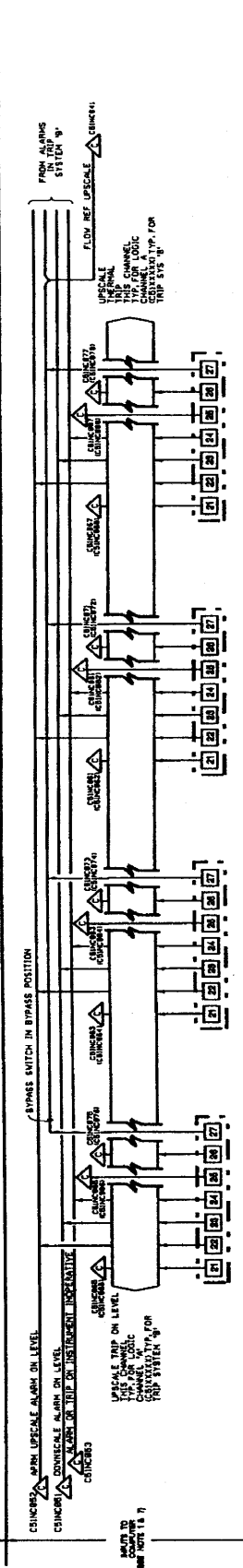
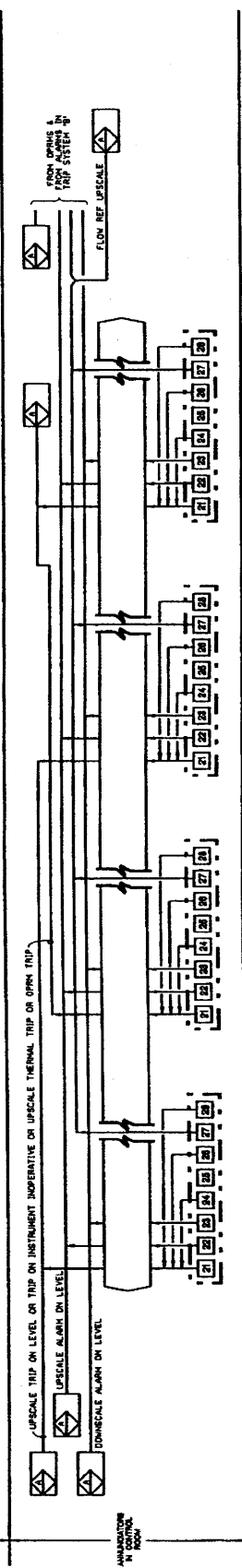
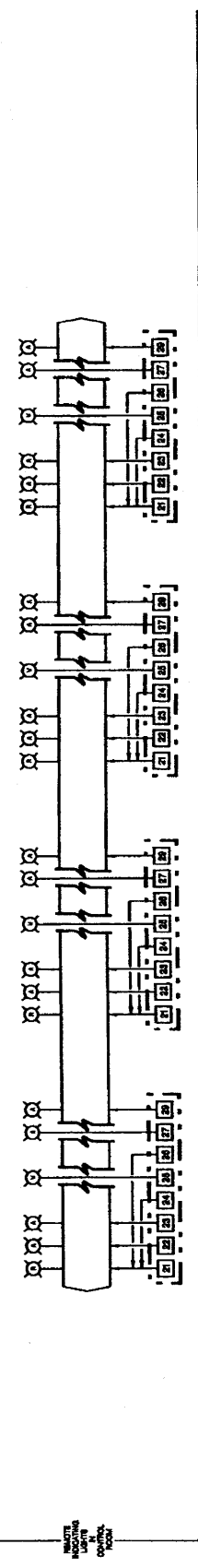
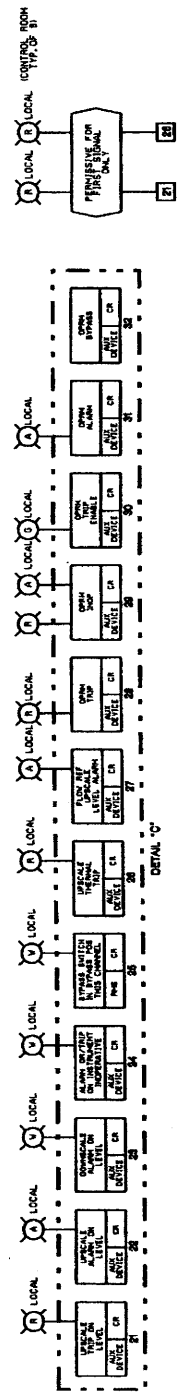


PERRY NUCLEAR POWER PLANT

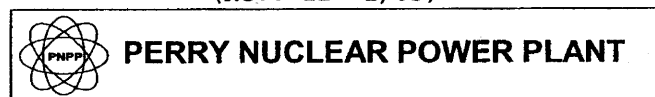
Neutron Monitoring System

Figure 7.6-2 (Sheet 3 of 7)

[Dwg. D-808-307(3)]



NOTES:
L FOR GENERAL NOTES AND REFERENCES, SEE THIS DWG. SHEET.



PERRY NUCLEAR POWER PLANT

Neutron Monitoring System

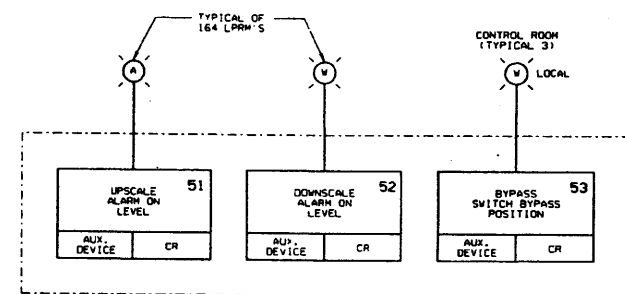
Figure 7.6-2 (Sheet 4 of 7)

[Dwg. D-808-307(4)]

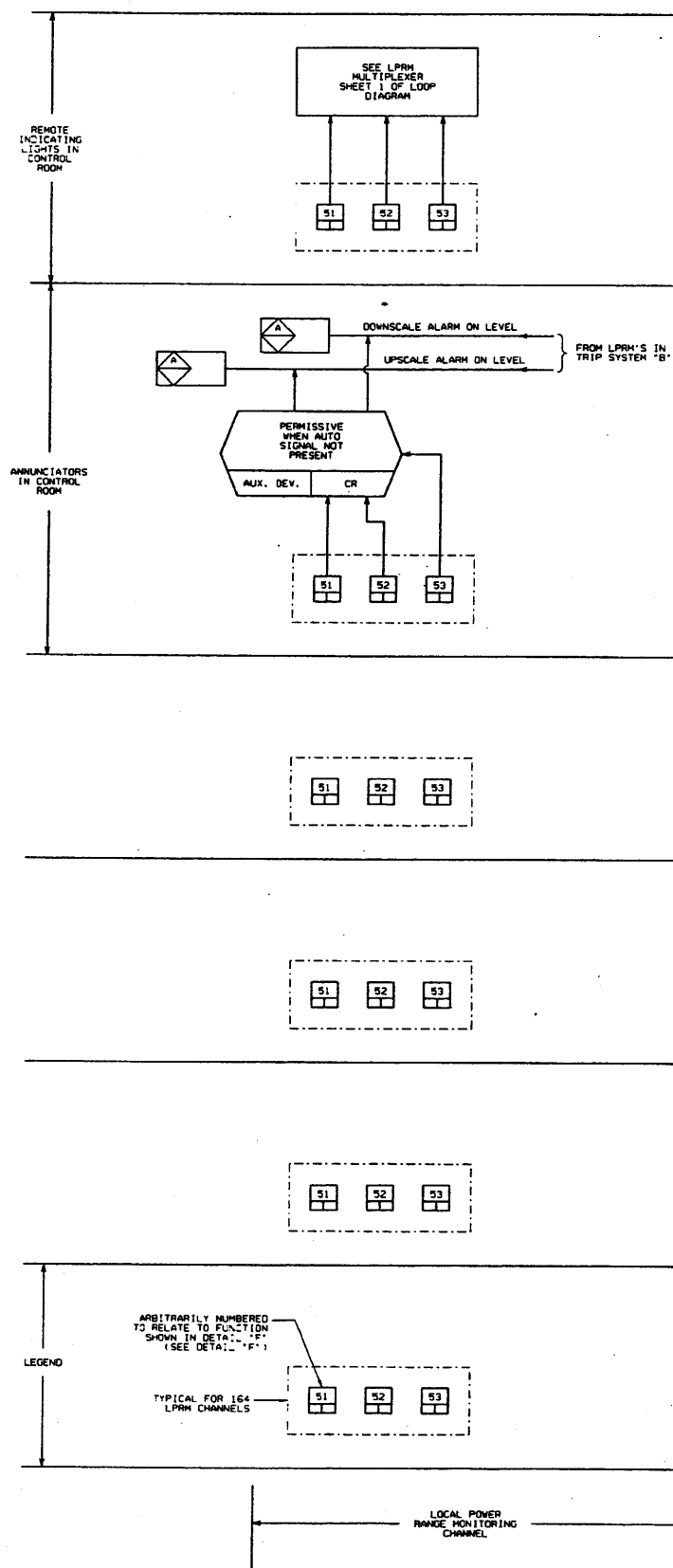
(Rev. 12 1/03)

PERFORMANCE MONITORING SYSTEM
COMPUTER INPUT / OUTPUT NUMBERS

CS1NC001	CS1NC076	CS1NC142
CS1NC002	CS1NC077	CS1NC143
CS1NC003	CS1NC078	CS1NC144
CS1NC004	CS1NC080	CS1NC151
CS1NC021	CS1NC082	CS1NC152
CS1NC022	CS1NC083	CS1NC153
CS1NC023	CS1NC084	CS1NC154
CS1NC024	CS1NC085	
CS1NC025	CS1NC086	CS1NL101
CS1NC031	CS1NC087	CS1NL102
CS1NC032	CS1NC088	CS1NL103
CS1NC033	CS1NC091	CS1NL104
CS1NC034	CS1NC092	CS1NL105
CS1NC035	CS1NC093	CS1NL111
CS1NC036	CS1NC094	CS1NL112
CS1NC037	CS1NC097	CS1NL113
CS1NC038	CS1NC100	CS1NL114
CS1NC041	CS1NC103	CS1NL115
CS1NC051	CS1NC104	CS1NL121
CS1NC052	CS1NC105	CS1NL122
CS1NC053	CS1NC106	CS1NL123
CS1NC061	CS1NC111	CS1NL124
CS1NC062	CS1NC112	CS1NL125
CS1NC063	CS1NC113	
CS1NC064	CS1NC114	CS1NP001
CS1NC065	CS1NC121	CS1NP002
CS1NC066	CS1NC122	
CS1NC067	CS1NC123	SPARES
CS1NC068	CS1NC124	CS1NL106
CS1NC071	CS1NC131	CS1NL116
CS1NC072	CS1NC132	CS1NL126
CS1NC073	CS1NC133	CS1NC135
CS1NC074	CS1NC134	CS1NC156
CS1NC075	CS1NC141	CS1NC157
		CS1NC158



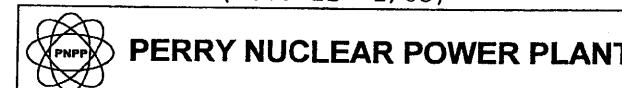
DETAIL "F"



NUCLEAR SAFETY RELATED

NOTES:
1. FOR GENERAL NOTES AND REFERENCES, SEE THIS DRAWING SHEET 1.

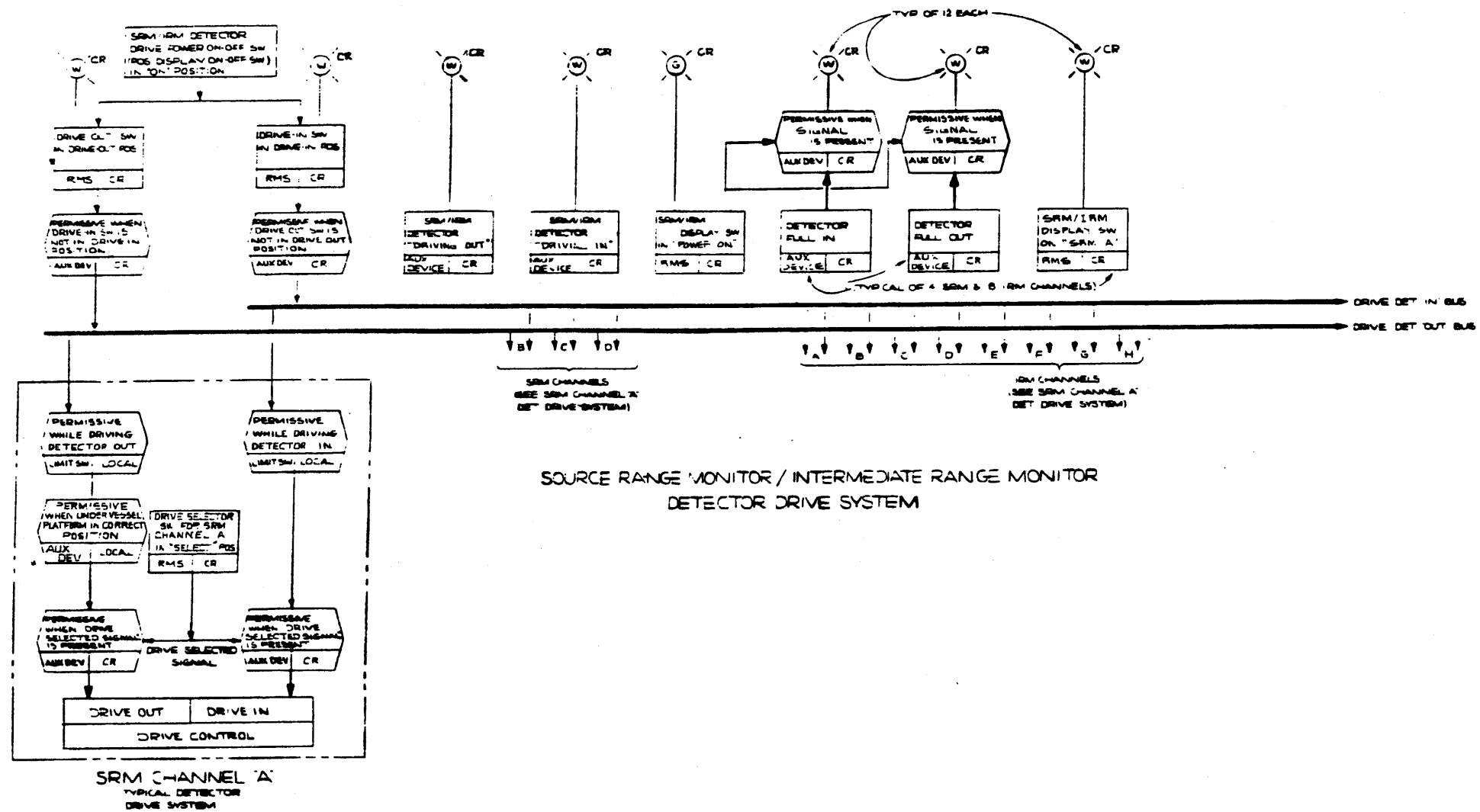
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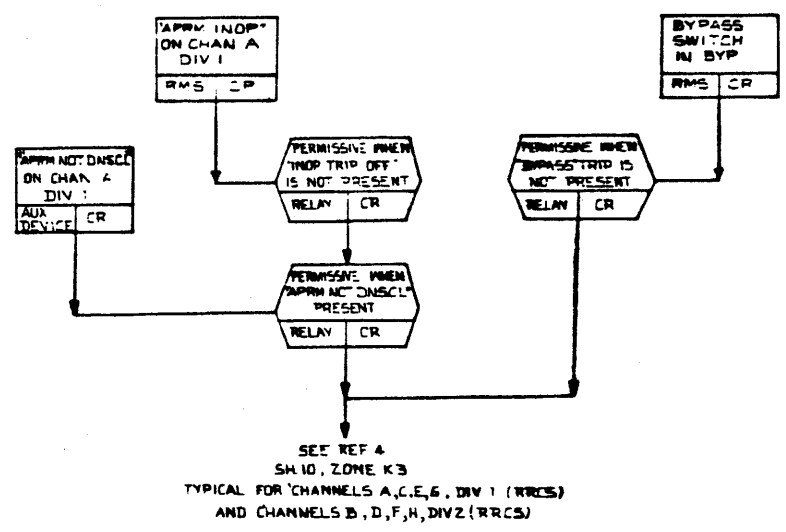
Neutron Monitoring System

Figure 7.6-2 (Sheet 5 of 7)

[Dwg. D-808-307(5)]



SOURCE RANGE MONITOR / INTERMEDIATE RANGE MONITOR
DETECTOR DRIVE SYSTEM



APRM NOT DOWNSCALE INPUTS TO RRCS

NOTES:
1. FOR GENERAL NOTES AND REFERENCE, SEE THIS DWG SH. 1.

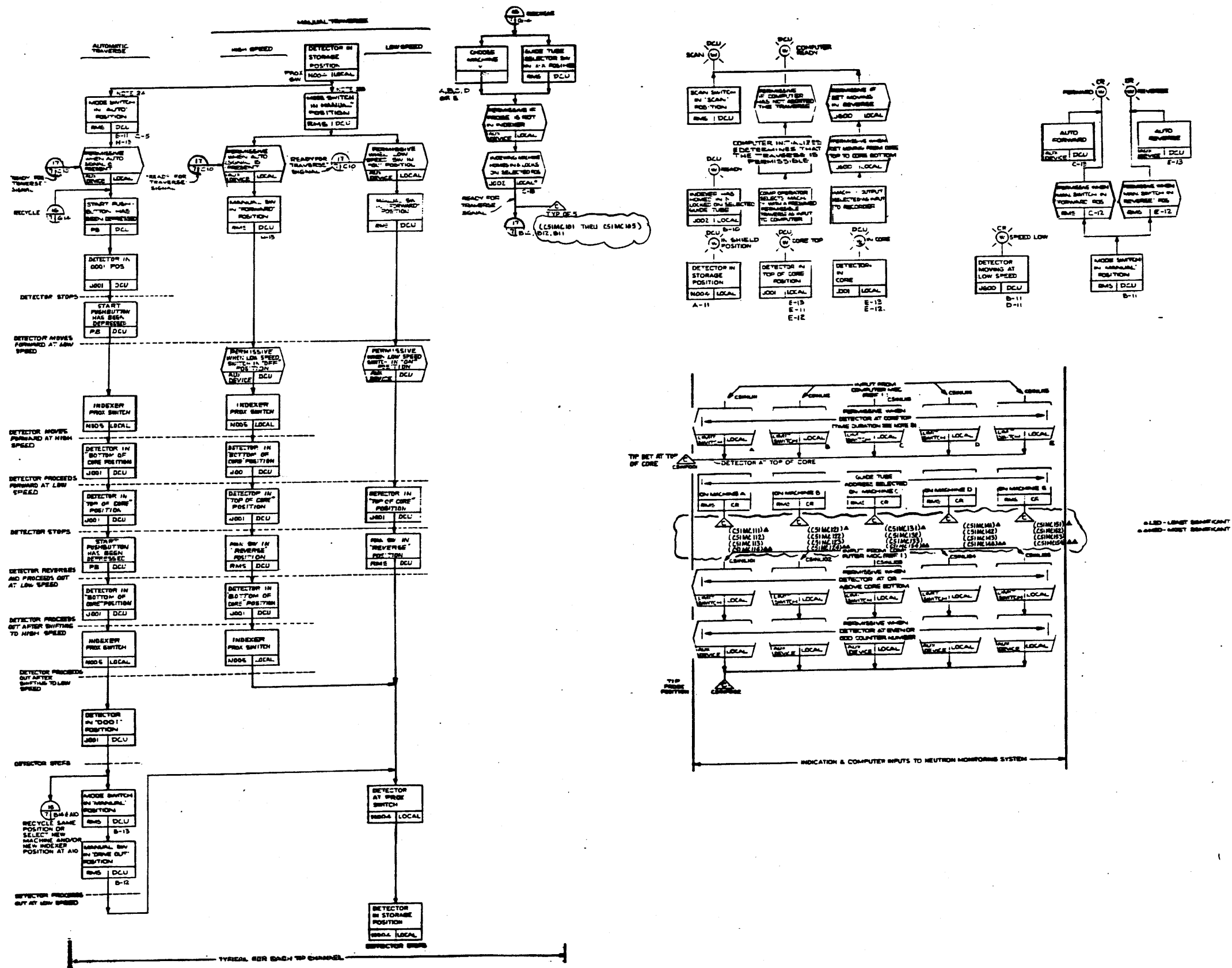
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Neutron Monitoring System


Figure 7.6-2 (Sheet 6 of 7)

[Dwg. D-808-307(6)]

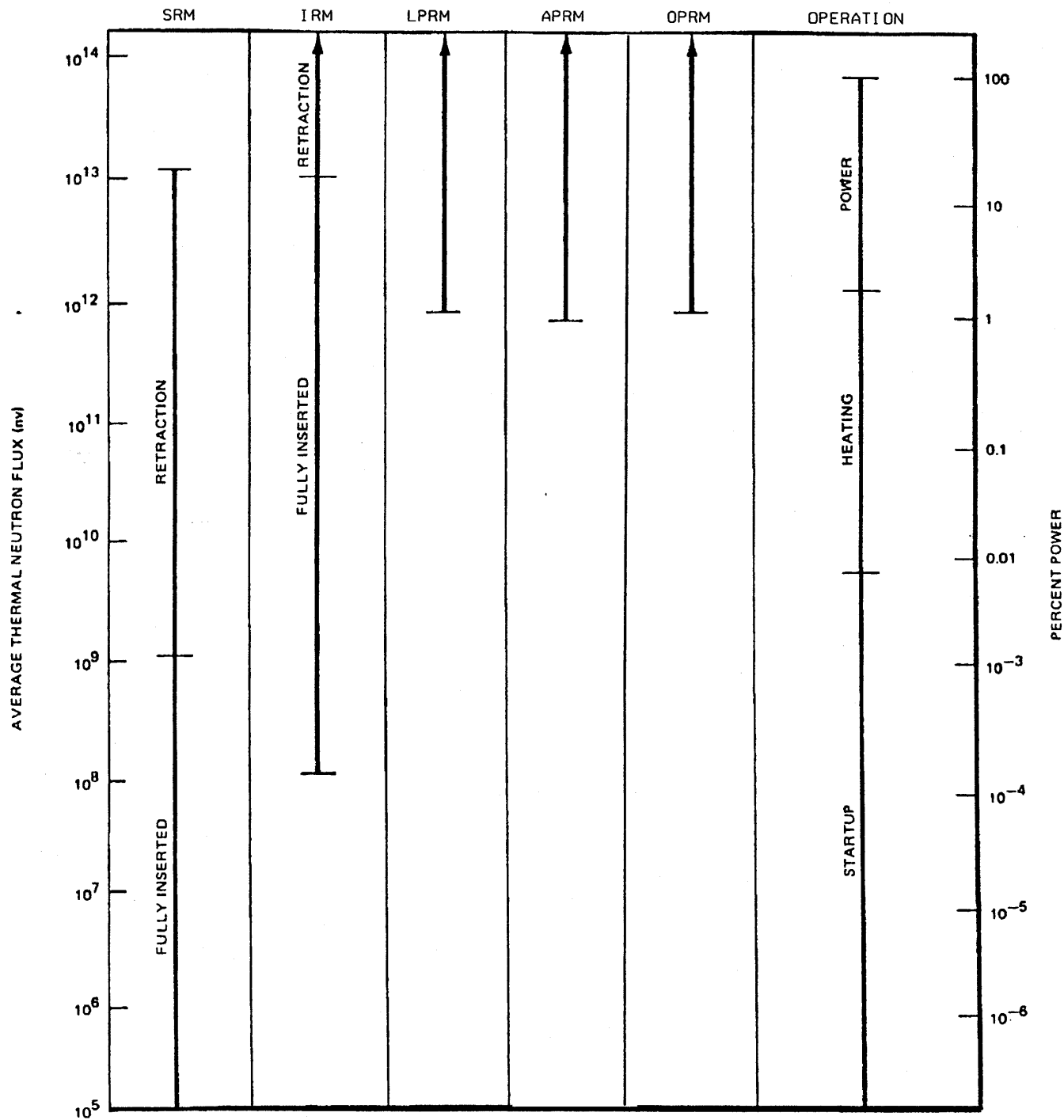


NOTES:
 1. FOR GENERAL NOTES AND REFERENCES, SEE THIS DWG SHEET.

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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
 Figure 7.6-2 (Sheet 7 of 7)
 [Dwg. D-808-307(7)]



SOURCE

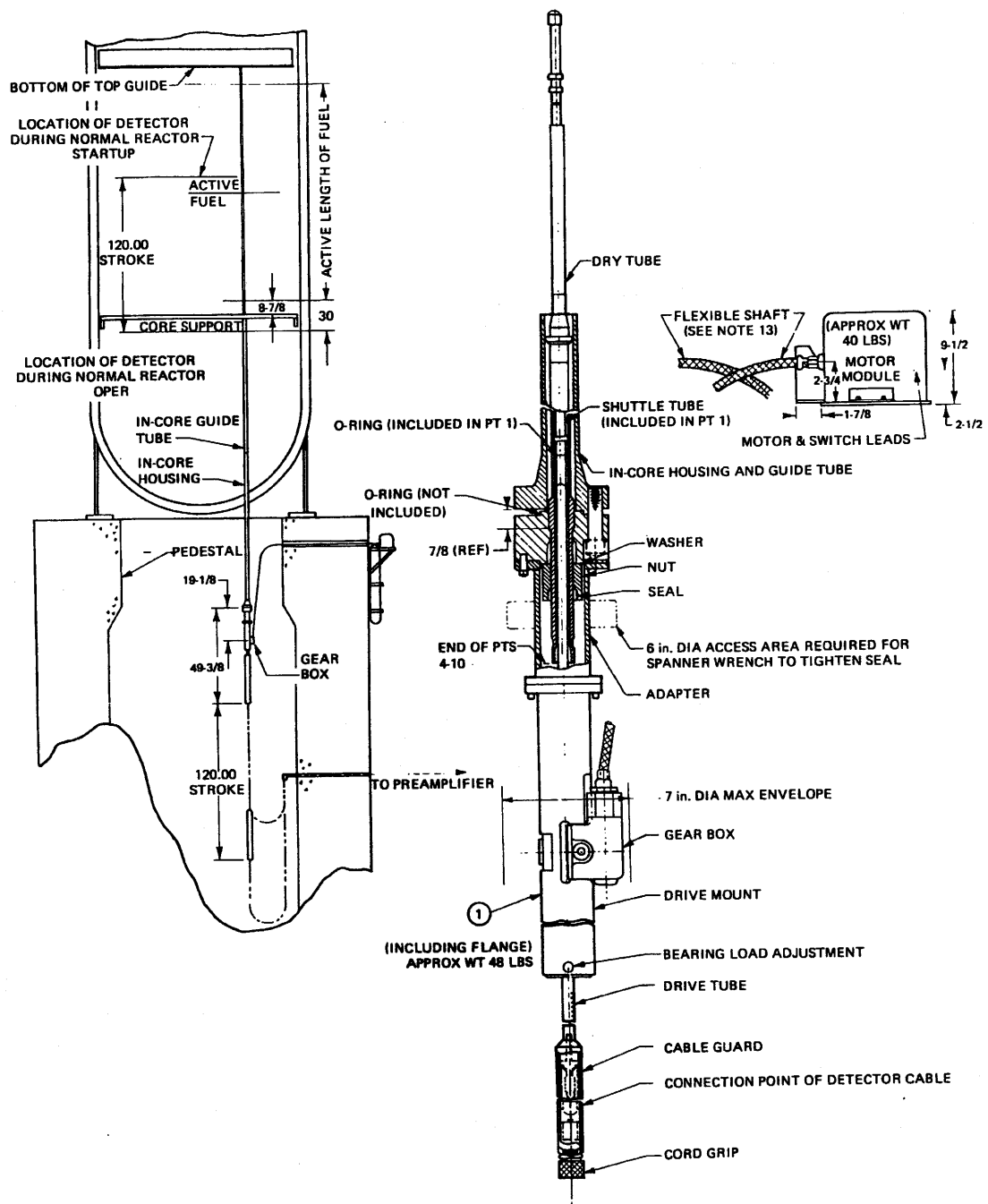
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ranges of Neutron
Monitoring System

Figure 7.6-3



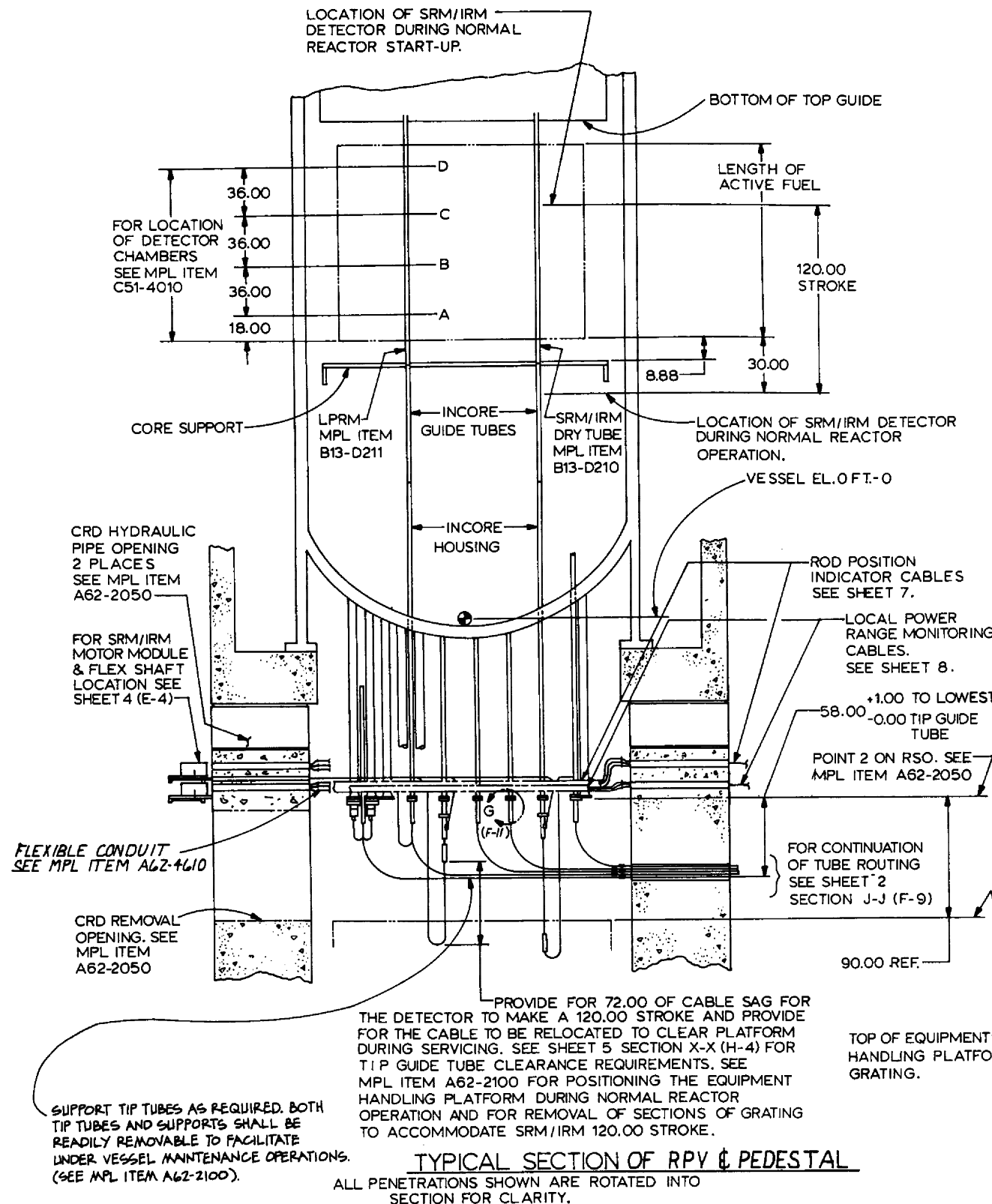
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PERRY NUCLEAR POWER PLANT

SRM/IRM Neutron
Monitoring Unit

Figure 7.6-4



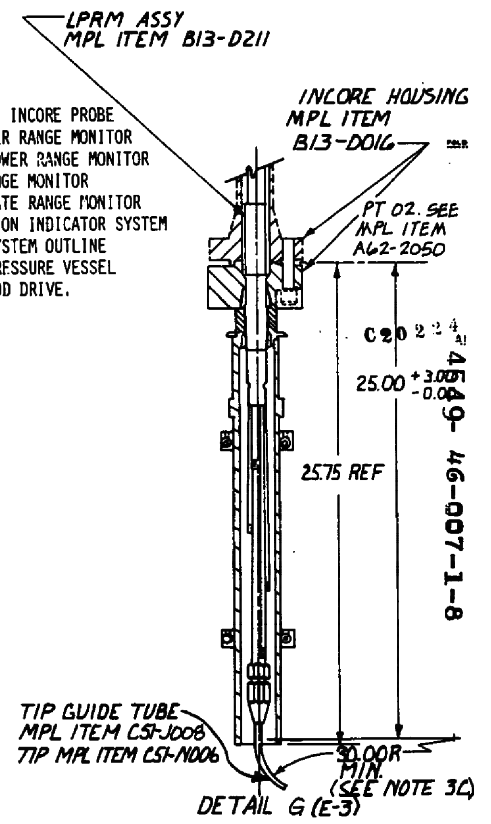
- NOTES:
- TIP TUBE RUN FROM IN-CORE HOUSING FLANGE TO DRIVE MECHANISM. SEE MPL ITEM C51-N006.
 - TUBE UNIONS MAY BE LOCATED AS REQUIRED BETWEEN REACTOR PEDESTAL WALL AND DRYWELL PENETRATION. THE NUMBER OF UNIONS SHALL BE HELD TO A MINIMUM.
 - THE NUMBER AND DEGREE OF BENDS FOR TIP GUIDE TUBES SHALL BE HELD TO A MINIMUM.
 - A. MAX. DEGREE OF BENDS IN THIS AREA SH2(A-3) IN ALL PLANES SHALL BE 60° AND MINIMUM RADIUS SHALL BE 60.00 MIN, EXCEPT FOR TIP STORAGE GUIDE TUBES WHICH MAY HAVE 220° MAX. DEGREE OF BENDS AND 30.00 MIN. BEND RADIUS.
 - B. MAX. DEGREE OF BENDS IN THIS AREA SH.2(B-2) IN ALL PLANES SHALL BE 180° AND MINIMUM RADIUS SHALL BE 60.00.
 - C. MAX. DEGREE OF BENDS IN THIS AREA SH 2 (C-1) IN ALL PLANES SHALL BE 145° AND MIN. RADIUS SHALL BE 60.00, ONE BEND 90°-100° MAY BE 30.00 RADIUS MIN.
 - COMPLETED GUIDE TUBE INSTALLATION SHALL BE CHECKED BY MANUALLY DRIVING DUMMY TIP FULL LENGTH THROUGH EACH GUIDE TUBE PATH ACCORDING TO MPL ITEM A42-3750 BEFORE INSTALLING TRAVERSING DETECTOR, MPL ITEM C51-J010.
 - THE TIP GUIDE TUBES SHALL BE HELD AT 60.00 MAXIMUM INTERVALS BY A SUPPORT (FURNISHED BY OTHERS).
 - BENDS MUST BE SMOOTH, MADE WITH A FIXTURE, AND FREE OF INTERNAL DEFORMATIONS. TUBE FLARES TO BE FORMED WITH PROPER TOOLS. WHEN ASSEMBLED WITH FITTINGS, TEST WITH A .273 + .000 DIA. ROD 3.00" LONG (FURNISHED BY OTHERS) FOR PROPER CLEARANCE AND ALIGNMENT.
 - ALL TUBING AND FITTINGS ARE TO BE SHIPPED TO SITE FOR MODIFICATION AND INSTALLATION.
 - ALL TIP TUBE RUNS TO BE TESTED AND BE BUBBLE TIGHT AT 45 PSI INTERNAL AIR PRESSURE AFTER FINAL ASSEMBLY.
 - FOR SRM/IRM FLEXIBLE SHAFT ROUTING, CARE MUST BE TAKEN TO PREVENT JAMMING THE INNER SHAFT WHEN CLAMPING. MOTOR MODULE DRIVE CABLE LENGTH SUPPLIED IS 33 FT-0. TOTAL BENDS FOR LENGTH OF CABLE IS 90° MAX. (SEE SH.4 (F-4) FOR DETAILS). MIN BEND RADIUS IS 9.00 INCHES.
 - PURGE AIR PIPING FROM PURGE AIR SUPPLY TO THE PURGE AIR CONTROL UNIT MPL ITEM C51-J009 SHALL BE FURNISHED BY OTHERS AND BE DESIGNED AND FABRICATED FOR SERVICE COMPATIBLE WITH AIR SUPPLY REQUIREMENTS (SEE NOTE 14). PURGE AIR TUBING, FITTINGS AND VALVES FROM PURGE AIR CONTROL UNIT TO TIP INDEXING MECHANISM MPL ITEM C51-J002 AND THE TIP GUIDE TUBES SHALL BE SUPPLIED BY OTHERS AND BE OF SIZE AND MATERIAL COMPATIBLE WITH TIP GUIDE TUBES. (SEE MPL ITEM C51-J008).
 - MECHANICAL PROTECTION FOR TIP GUIDE TUBING SHALL BE PROVIDED (BY OTHERS) TO PREVENT DAMAGE DURING MAINTENANCE.
 - DIMENSIONS GIVEN ARE NOMINAL UNLESS OTHERWISE NOTED.
 - ALL DIMENSIONS ARE IN INCHES EXCEPT WHERE NOTED.
 - PURGE AIR SUPPLY SHALL BE PROVIDED BY OTHERS. THE AIR SHALL HAVE (-) 15°F OR LOWER DEMPPOINT AND PRESSURE OF 40 PSIG MIN. TO 100 PSIG MAX. WITH FLOW RATE 0 TO 10 CFM.
 - THE DISTANCE OF 15 FT FROM INDEXING MECHANISM TO OUTER FACE OF DRYWELL IS THE RECOMMENDED MINIMUM DISTANCE. ACTUAL DISTANCE TO BE DETERMINED BY OTHERS TO BE CONSISTENT WITH THE RADIOLOGICAL DESIGN REQUIREMENTS OF THE PLANT.
 - TYPE 3 FITTING IS A QUICK DISCONNECT FITTING INSTALLED ON TIP TUBING AT PEDESTAL WALL AND LPRM FOR TIP TUBING REMOVAL TO FACILITATE UNDER VESSEL MAINTENANCE OPERATIONS.

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THESE DRAWINGS:

TITLE	REFERENCE DESIGNATOR
1. REACTOR SYSTEM OUTLINE-----	MPL ITEM A62-2050
2. PROCESS INSTRUMENTATION-----	MPL ITEM A62-4070
3. RECIRC. LOOP ROUTING-----	MPL ITEM A13-2011
4. REF. CONTAINMENT DEF.-----	MPL ITEM A42-5170
5. NUCLEAR INSTRUMENTATION INSTALL. INSTRUCTION-----	MPL ITEM A42-3750
6. REACTOR PRESSURE VESSEL CABLING PROTECTION-----	MPL ITEM A62-4610

ABBREVIATIONS

TIP	---TRAVERSING IN-CORE PROBE
LPRM	---LOCAL POWER RANGE MONITOR
APRM	---AVERAGE POWER RANGE MONITOR
SRM	---SOURCE RANGE MONITOR
IRM	---INTERMEDIATE RANGE MONITOR
RPI S	---ROD POSITION INDICATOR SYSTEM
RSO	---REACTOR SYSTEM OUTLINE
RPV	---REACTOR PRESSURE VESSEL
CRD	---CONTROL ROD DRIVE.

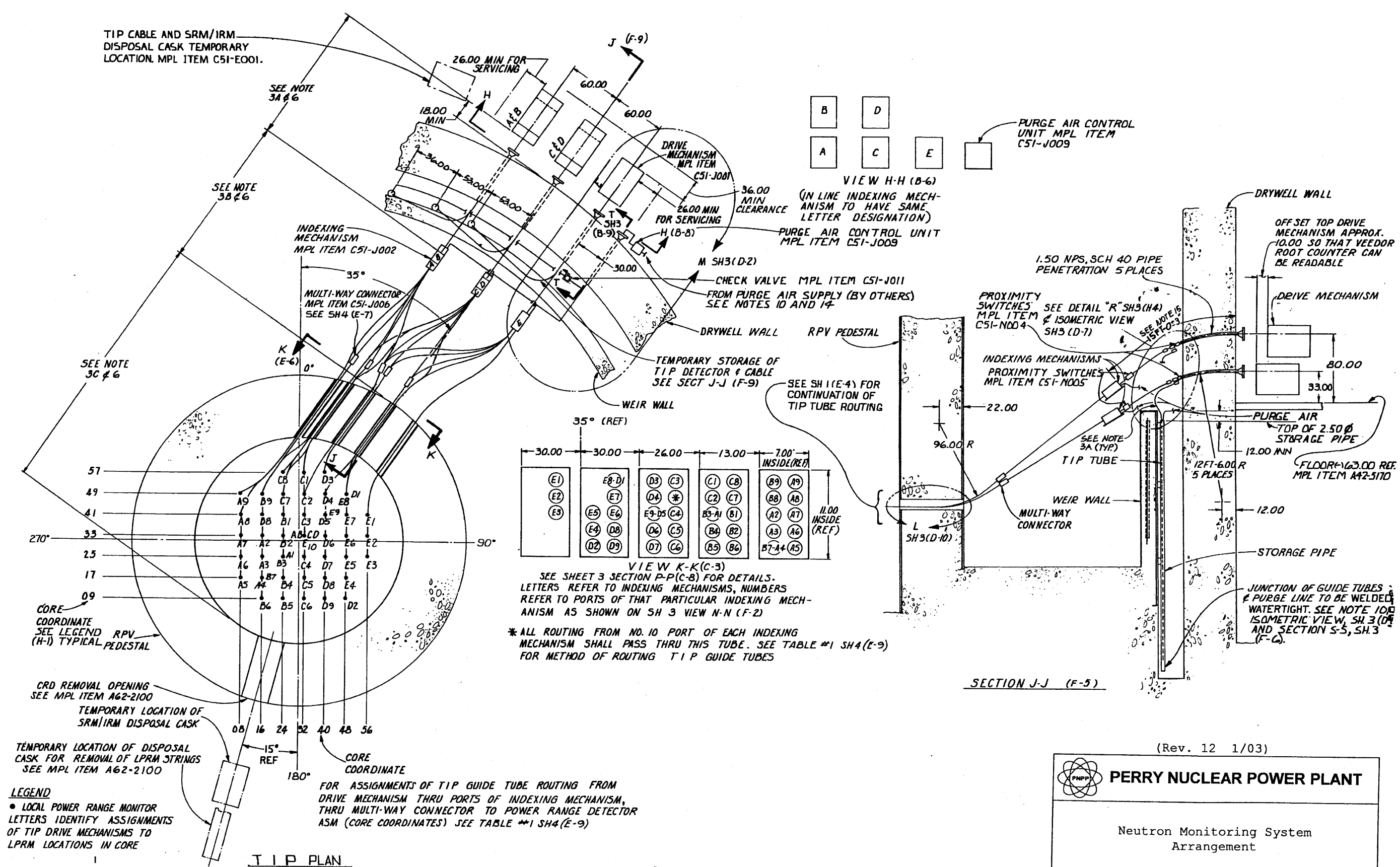


TYPICAL SECTION OF RPV & PEDESTAL
 ALL PENETRATIONS SHOWN ARE ROTATED INTO SECTION FOR CLARITY.

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PERRY NUCLEAR POWER PLANT
 10 CENTER RD., PERRY, OHIO 44081

NEUTRON MONITORING SYSTEM
 ARRANGEMENT
 Figure 7.6-5 (SHEET 1 OF 8)

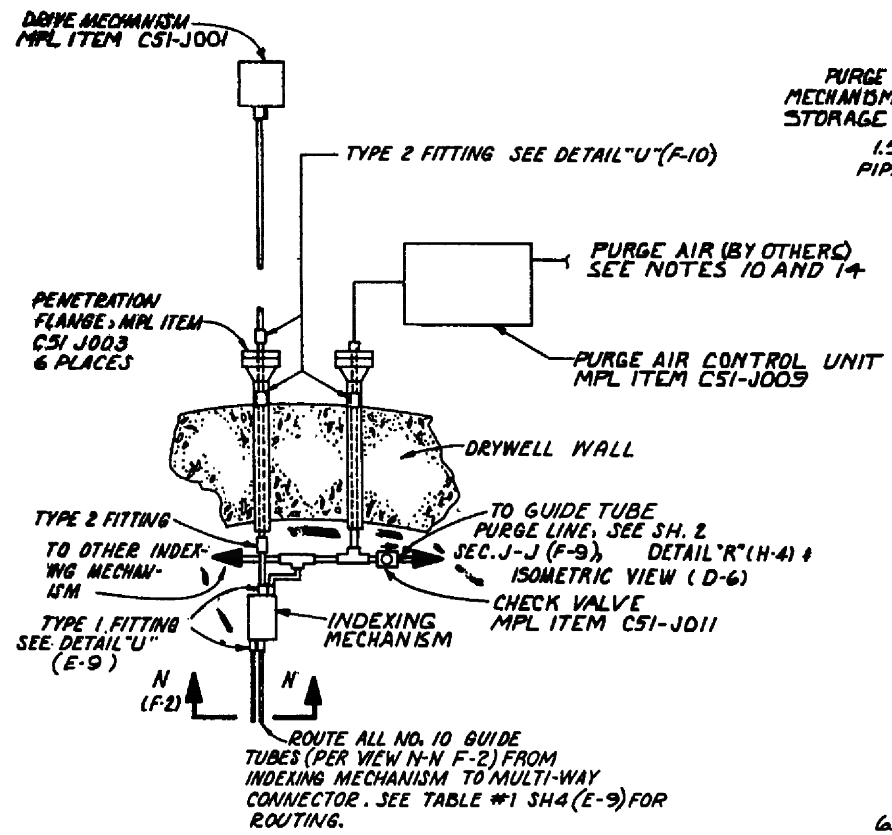


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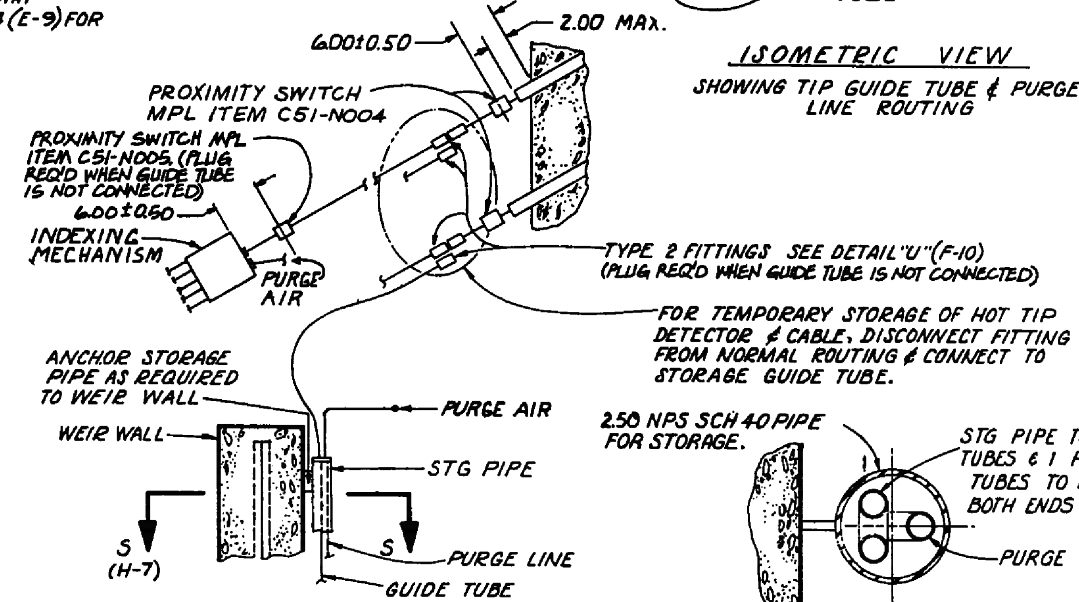
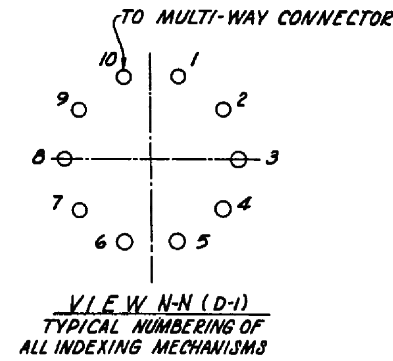
PERRY NUCLEAR POWER PLANT

Neutron Monitoring System Arrangement

Figure 7.6-5 (Sheet 2 of 8)

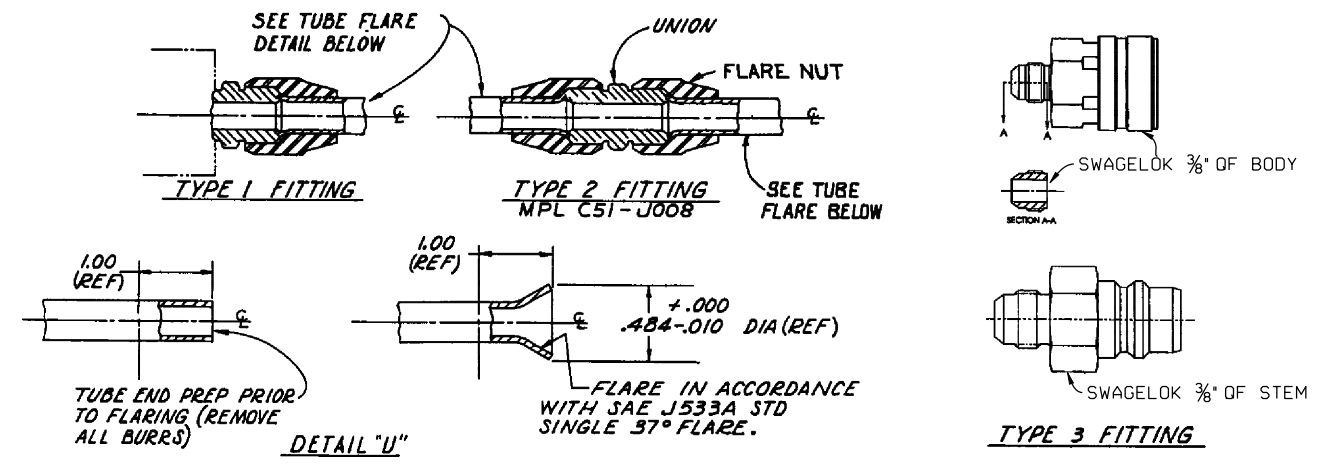


DETAIL "M" SH2 (C-6)



DETAIL "R" SH2 (C-9)

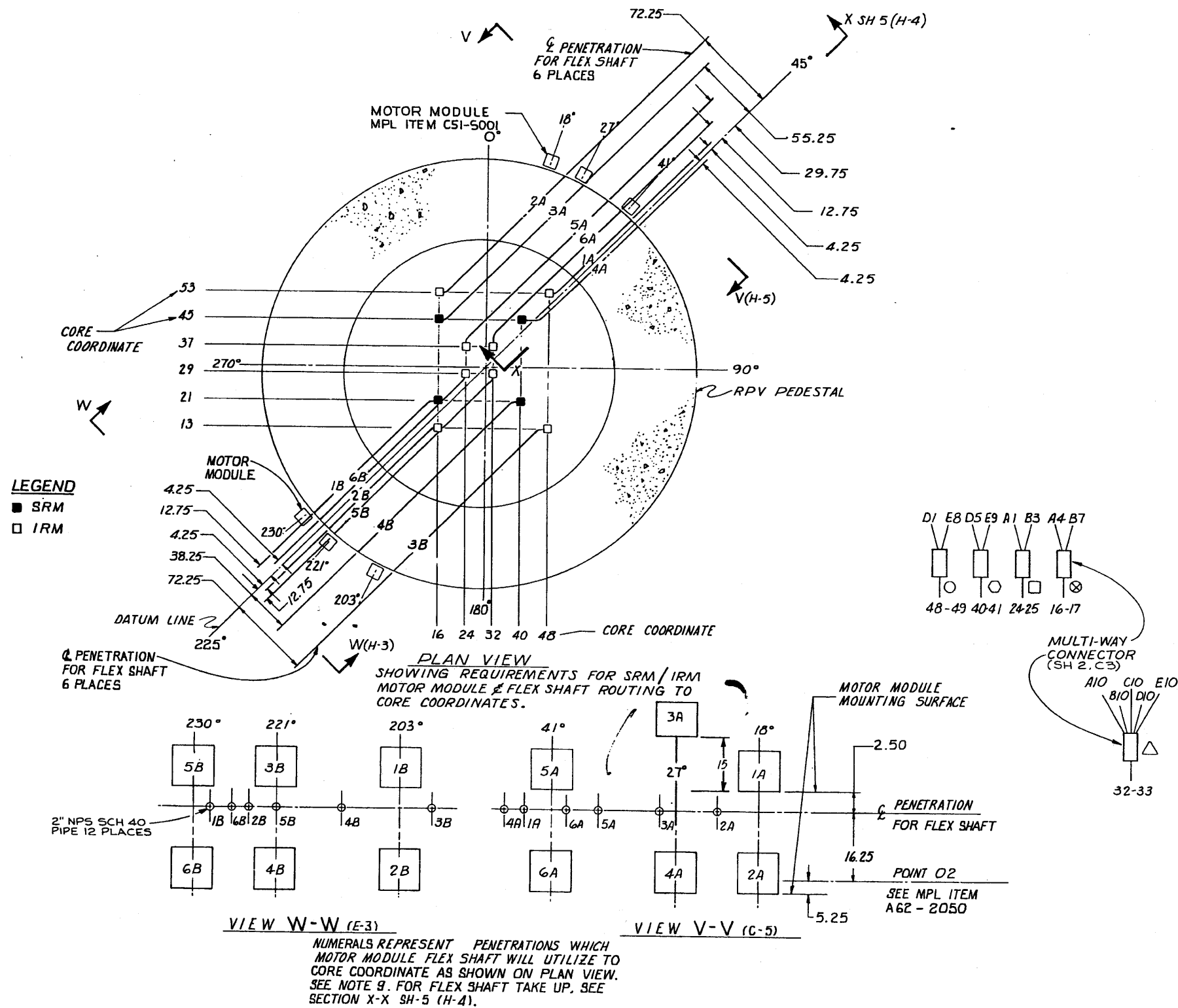
SECTION S-S (F-3)
3 PLACES



(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

NEUTRON MONITORING SYSTEM
ARRANGEMENT
Figure 7.6-5 (SHEET 3 OF 8)



CORE COORDINATES FOR POWER RANGE DETECTOR ASSEMBLIES					
DRIVE & INDEXING MECHANISM	PORTS OF INDEXING MECHANISM	COORDINATES	DRIVE & INDEXING MECHANISM	PORTS OF INDEXING MECHANISM	COORDINATES
A	1	24-25 □	D	1	48-49 ○
	2	16-33		2	48-09
	3	16-25		3	40-57
	4	16-17 ⊗		4	40-49
	5	08-17		5	40-41 ○
	6	08-25		6	40-33
	7	08-33		7	40-25
	8	08-41		8	40-17
	9	08-49		9	40-09
	10	32-33 △		10	32-33 △
B	1	24-41	E	1	56-41
	2	24-33		2	56-33
	3	24-25 □		3	56-25
	4	24-17		4	48-17
	5	24-09		5	48-25
	6	16-09		6	48-33
	7	16-17 ⊗		7	48-41
	8	16-41		8	48-49 ○
	9	16-49		9	40-41 ○
	10	32-33 △		10	32-33 △
C	1	32-57			
	2	32-49			
	3	32-41			
	4	32-25			
	5	32-17			
	6	32-09			
	7	24-49			
	8	24-57			
	9				
	10	32-33 △			

TABLE #1 SEE SH 2(H-4) & VIEW K-K(E-6)
T I P GUIDE TUBE ROUTING

- ROUTE THRU MULTI-WAY CONNECTOR (UTILIZE 2 OUT OF 5 PORTS) FROM PORTS OF INDEXER WHICH HAVE IDENTICAL SYMBOLS (SEE TABULATION ABOVE), THEN ROUTE TO SPECIFIED CORE COORDINATE
-
- ⊗
- △ ROUTE THRU MULTI-WAY CONNECTOR (UTILIZE ALL 5 PORTS) FROM PORTS OF INDEXER WHICH HAVE IDENTICAL SYMBOLS (SEE TABULATION ABOVE), THEN ROUTE TO SPECIFIED CORE COORDINATE

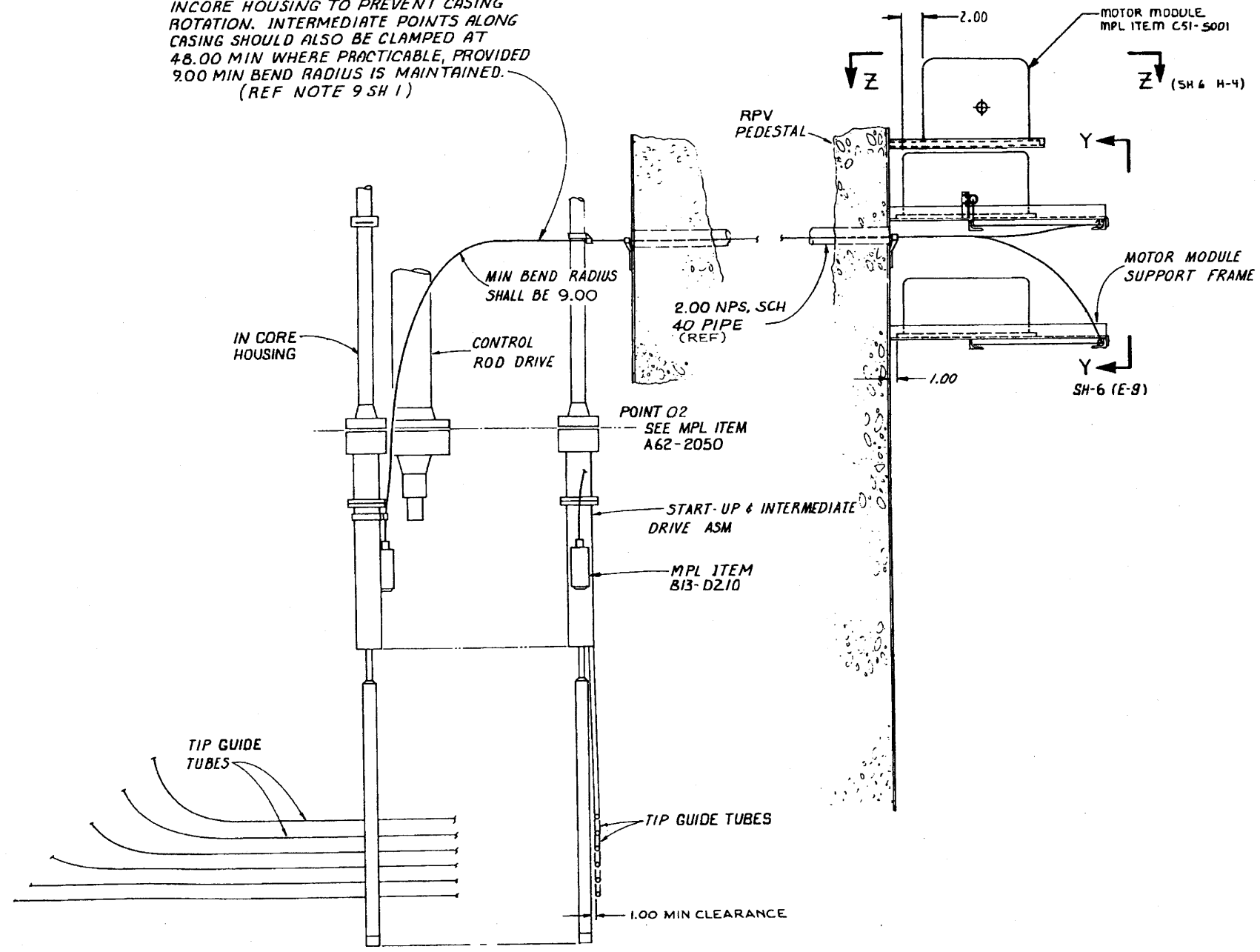
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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 4 of 8)

BOTH ENDS OF FLEXIBLE SHAFT CASING SHOULD BE CLAMPED TO STRUCTURE OR IN CORE HOUSING TO PREVENT CASING ROTATION. INTERMEDIATE POINTS ALONG CASING SHOULD ALSO BE CLAMPED AT 48.00 MIN WHERE PRACTICABLE, PROVIDED 9.00 MIN BEND RADIUS IS MAINTAINED. (REF NOTE 9 SH 1)



SECTION X-X SH-4 (A-6)
 MATERIAL FOR FRAME SUPPORTS ETC.
 CONCERNING MOTOR MODULES AND FLEX
 SHAFT TO BE AS REQUIRED.

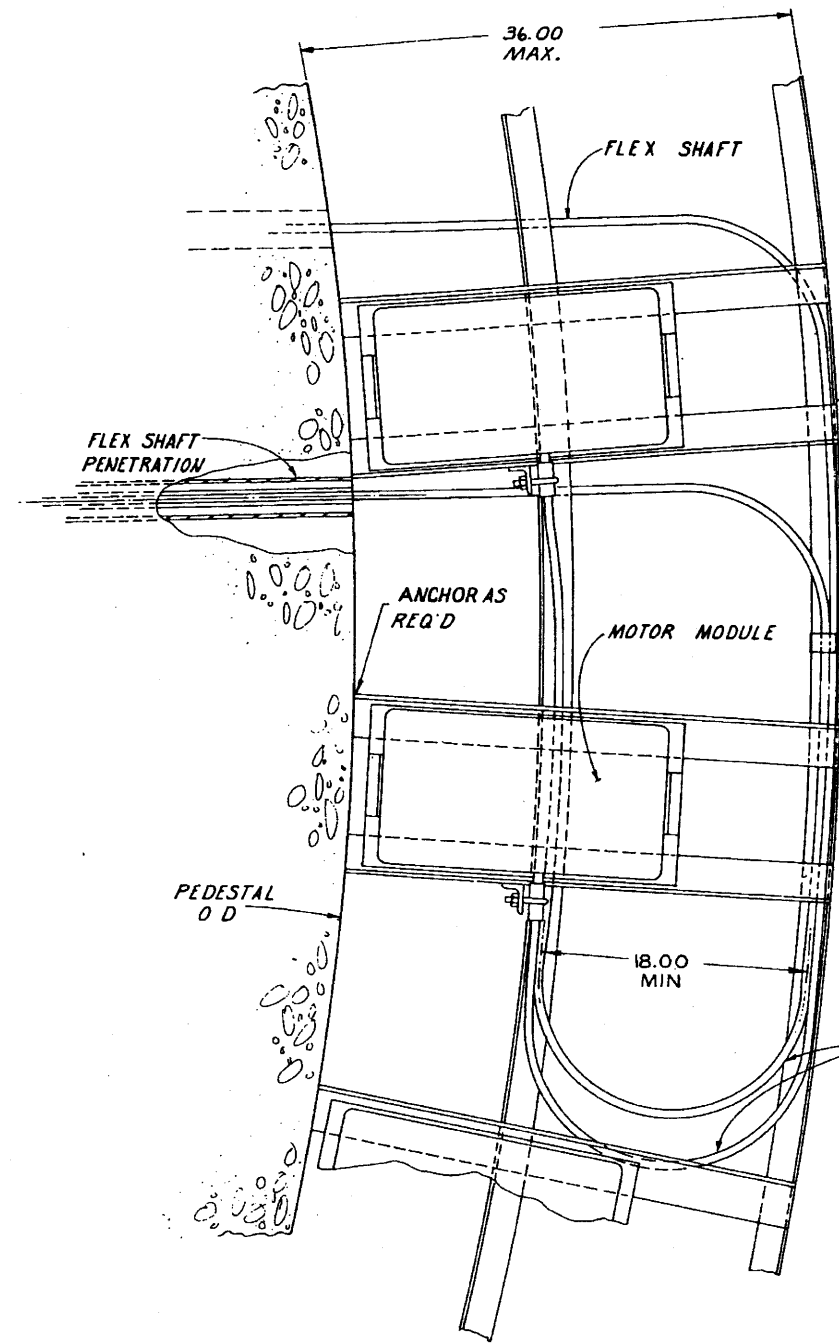
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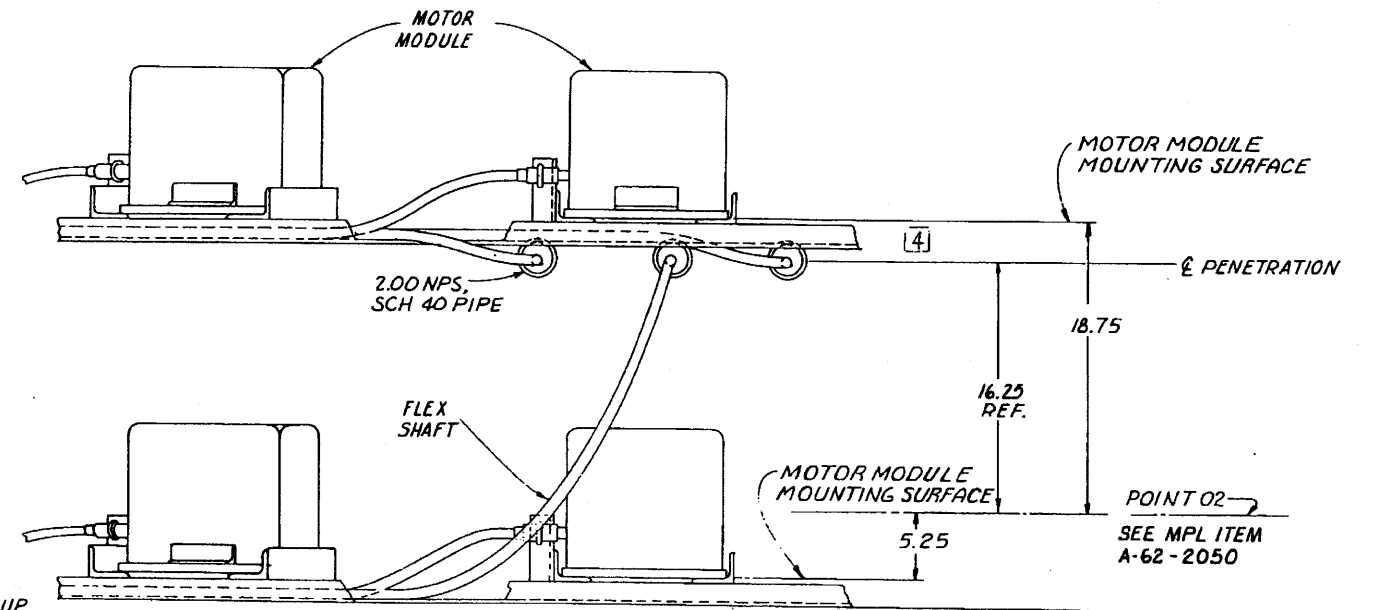
PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
 Arrangement

Figure 7.6-5 (Sheet 5 of 8)



CLAMP FLEXIBLE SHAFT TO FRAME AT 4'-0" MAX INTERVALS SEE NOTE 9



FLEXIBLE SHAFT TAKE-UP LOOP TO VARY IN ACCORDANCE WITH LOCATION OF DRIVES & PENETRATIONS SEE VIEW W-W SH-4 (H-2) & V-V SH-4 (H-5) FOR ASSIGNMENTS

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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System Arrangement

Figure 7.6-5 (Sheet 6 of 8)

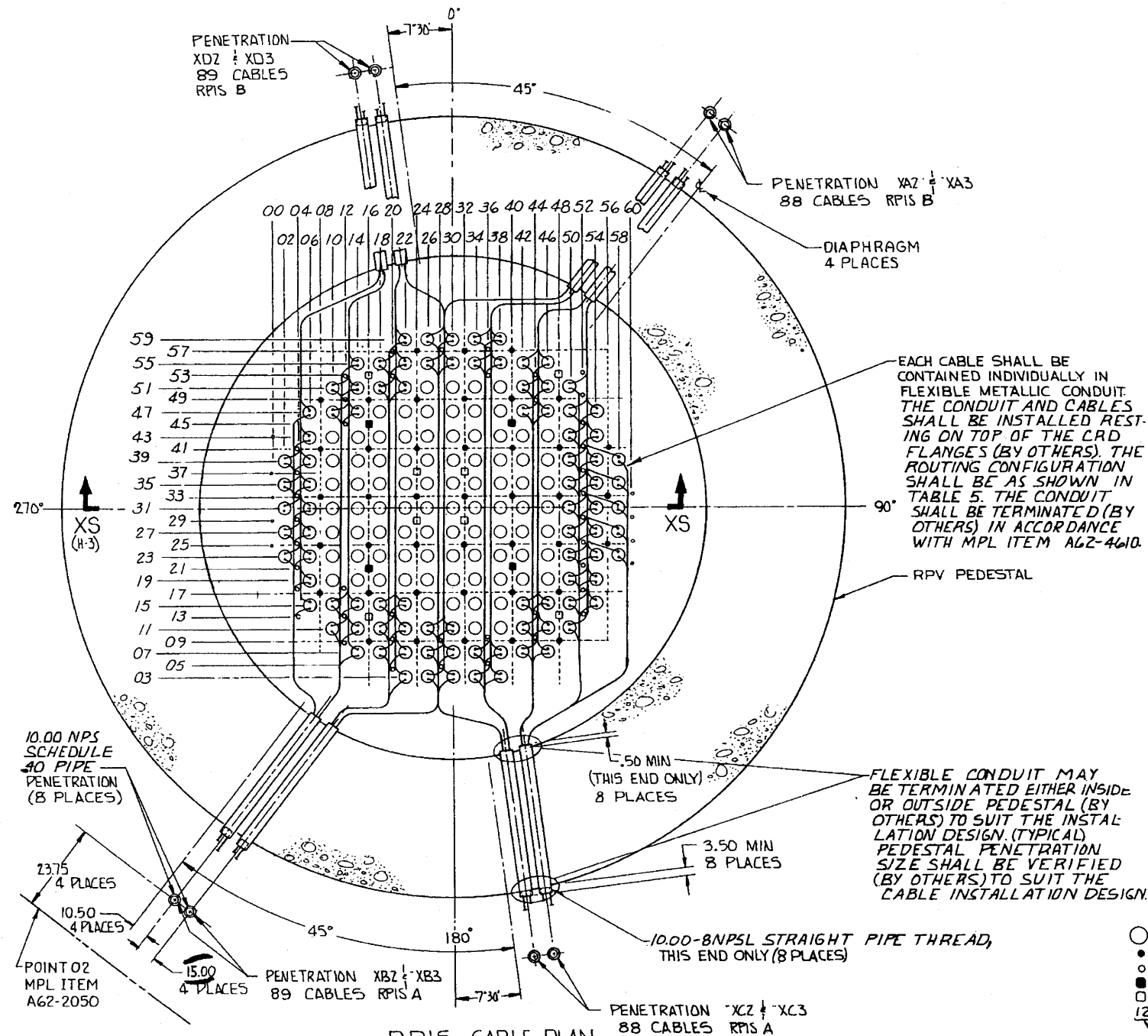
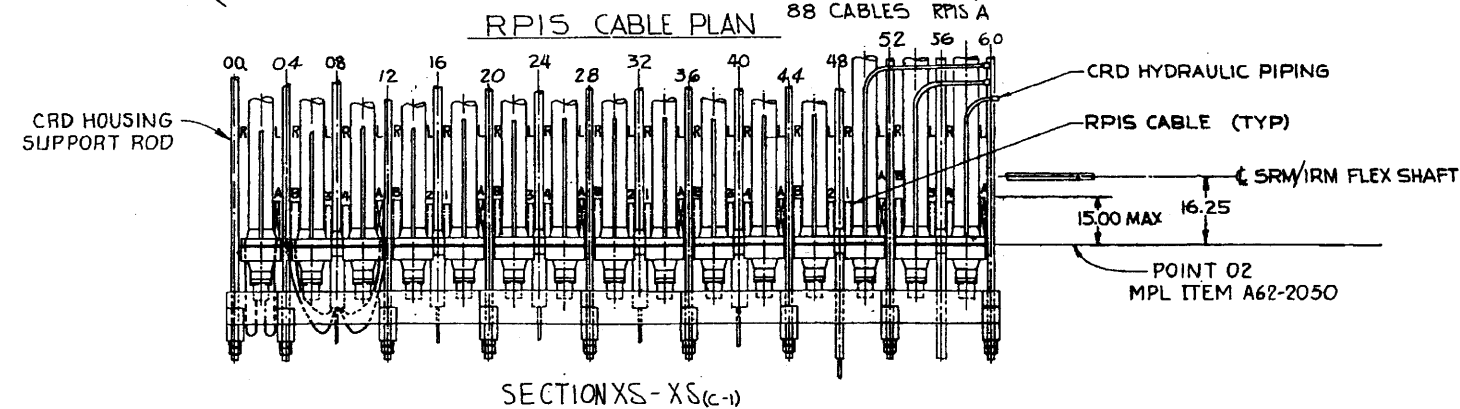


TABLE 5
ROUTING OF CABLES FROM CRD TO RPIS

CABLE			CABLE			CABLE			CABLE		
PENETRATION	RPIS 'B'	RPIS 'A'	PENETRATION	RPIS 'B'	RPIS 'A'	PENETRATION	RPIS 'B'	RPIS 'A'	PENETRATION	RPIS 'B'	RPIS 'A'
CRD LOCATION	RACE WAY NO.	RACE WAY NO.	CRD LOCATION	RACE WAY NO.	RACE WAY NO.	CRD LOCATION	RACE WAY NO.	RACE WAY NO.	CRD LOCATION	RACE WAY NO.	RACE WAY NO.
02-23	04R	04L	18-47	20R	20L	34-03	36R	36L	46-07	44R	44L
27			51			07			11		
31			18-55			11			15		
35			22-03			15			19		
02-39			07			19			23		
06-15			11			23			27		
19			15			27			31		
23			19			31			35		
27			23			35			39		
31			27			39			43		
35			31			43			47		
39			35			47			51		
43			39			51			46-55	44-R	44L
47			43			55			50-11	52-R	52L
51	04R	04L	55			59			15		
55	12R	12L	43			34-59			19		
06-47			47			38-03			23		
10-11			51			07			27		
15			22-59	20R	20L	11			31		
19			26-03	28R	28L	15			35		
23			07			19			39		
27			11			23			43		
31			15			27			47		
35			19			31			50-51		
39			23			35			54-15		
43			27			39			19		
47			31			43			23		
10-51			35			47			27		
14-07			39			51			31		
11			43			55			35		
15			47			59			39		
19			51			38-59	36R	36L	43		
23			26-59			42-07	44R	44L	47		
27			30-03			11			54-47		
31			07			15			58-23		
35			11			19			27		
39			15			23			31		
43			19			27			35		
47			23			31			39		
51			27			35			58-39	52R	60L
14-55	12R	12L	31			39			30-35	28R	28L
18-07	20R	20L	35			43			47		
11			43			47			51		
15			51			51			55		
19			26-31	28R	28L	42-55	44R	44L	30-59	28R	28L
23											
27											
31											
35											
39											
43											
47											
51											
18-43	20R	20L									

LEGEND

- - CONTROL ROD DRIVE.
- - LOCAL POWER RANGE MONITOR.
- - CRD HOUSING SUPPORT ROD.
- ◐ - SOURCE RANGE MONITOR.
- ◑ - INTERMEDIATE RANGE MONITOR.
- ◒ - INDICATES AREA TO LEFT OF COORDINATE LOOKING TOWARD 0° AZIMUTH.
- (with number) - NUMERIC COORDINATE LOCATOR.

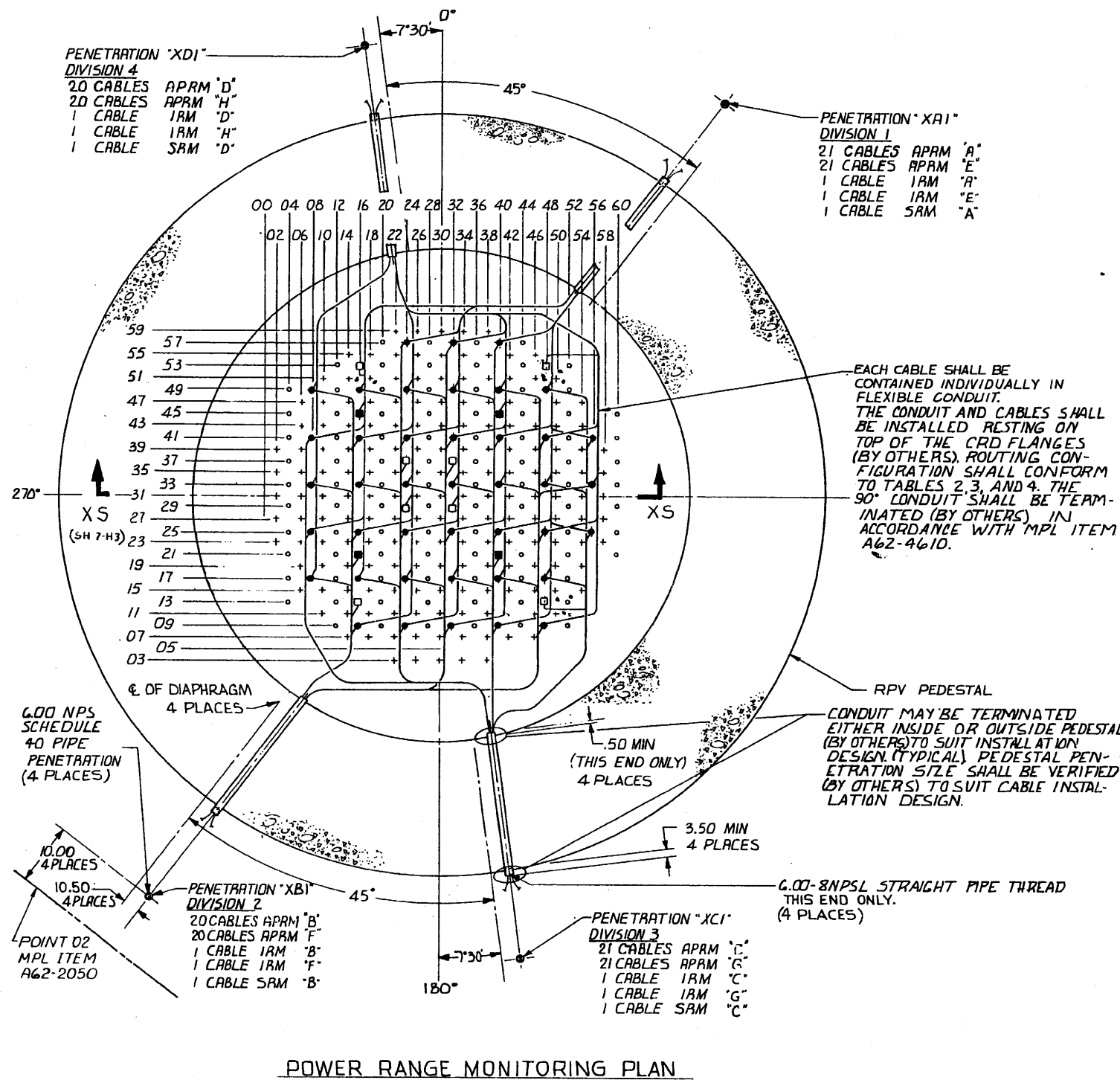


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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 7 of 8)



POWER RANGE MONITORING PLAN

TABLE 2
ROUTING OF CABLES
FROM LPRM DETECTORS TO APRM CHANNELS

(APRM TRIP SYSTEM A)								(APRM TRIP SYSTEM B)											
CHANNEL	APRM "A"	APRM "C"	APRM "E"	APRM "G"	CHANNEL	APRM "B"	APRM "D"	APRM "F"	APRM "H"	DIV. PEN.	LPRM	RACE	LPRM	RACE	LPRM	RACE	LPRM	RACE	
DET	WAY	WAY	WAY	WAY	DET	WAY	WAY	WAY	WAY		DET	WAY	WAY	DET	WAY	WAY	DET	WAY	
LOCATION	HGT	HGT	HGT	HGT	LOCATION	HGT	HGT	HGT	HGT		LOCATION	HGT	HGT	LOCATION	HGT	HGT	LOCATION	HGT	
08-25	C	16R	D	08L	A	16R	B	08L	C		08-17	B	16L	C	08R	D	16L	A	08R
41	A	B	08L	C	D	08L	D	08L	D		33	D	A	08R	B	A	C	08R	
16-17	D	A	24L	B	A	C	24L				49	B	C	08R	D	A	D	08R	
33	B	C	D	D	A						16-09	A	B	24R	C	D	D	24R	
49	D	16R	A	B	16R	C					25	C	D	A	A	B	D	B	
24-09	C	32R	D	A	32R	B					41	A	16L	B	C	16L	D		
25	A	B	C	D	D						24-17	D	32L	A	B	32L	C		
41	C	D	A	B							33	B	C	D	D	A			
57	A	B	24L	C	D	24L					49	D	A	24R	B	C	24R		
32-17	B	C	40L	D	A	40L					32-09	C	D	40R	A	B	40R		
39	D	A	B	C	D						25	A	B	C	D	D			
49	B	32R	C	D	32R	A					41	C	D	A	A	B			
40-09	A	48R	B	C	48R	D					57	A	32L	B	C	32L	D		
25	C	D	A	B							40-17	B	48L	C	D	48L	A		
41	A	B	C	D							33	D	A	B	C	D			
57	C	D	40L	A	B	40L					49	B	C	40R	D	A	40R		
48-17	D	A	56L	B	C	56L					48-09	A	B	56R	C	D	56R		
33	B	C	D	A							25	C	D	A	B	D			
49	D	A	B	C							41	A	B	C	D	D			
56-25	A	B	C	D							56-33	B	48L	C	56R	D	48L	A	56R
41	C	48R	D	56L	A	48R	B	56L											

TABLE 3
ROUTING OF CABLES

CHANNEL	IRM "A"	IRM "B"	IRM "C"	IRM "D"	IRM "E"	IRM "F"	IRM "G"	IRM "H"
DIV. PEN.	1, XAI	2, XBI	3, XCI	4, XDI	1, XAI	2, XBI	3, XCI	4, XDI
IRM DET.	RACE	RACE	RACE	RACE	RACE	RACE	RACE	RACE
LOCATION	WAY NO.	WAY NO.	WAY NO.	WAY NO.	WAY NO.	WAY NO.	WAY NO.	WAY NO.
16-13		16L						
53	(16R)							
24-29				24R				
37			24L					
32-29					32R			
37						32L		
48-13							56L	
53								56R

* RUN AND SUPPORT SEPARATELY TO AVOID INTERFERENCE WITH UNDER VESSEL MAINTENANCE PLATFORM.

TABLE 4
ROUTING OF CABLES

CHANNEL	SRM "A"	SRM "B"	SRM "C"	SRM "D"
DIV. PEN.	1, XAI	2, XBI	3, XCI	4, XDI
SRM DET.	RACE	RACE	RACE	RACE
LOCATION	WAY NO.	WAY NO.	WAY NO.	WAY NO.
16-21		16L		
45	16R			
40-21			40L	
45				40R

LEGEND

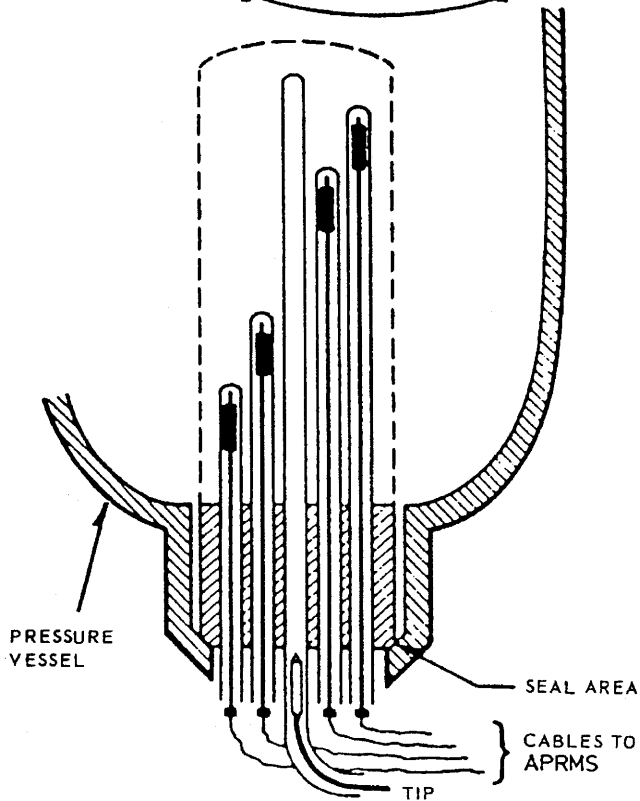
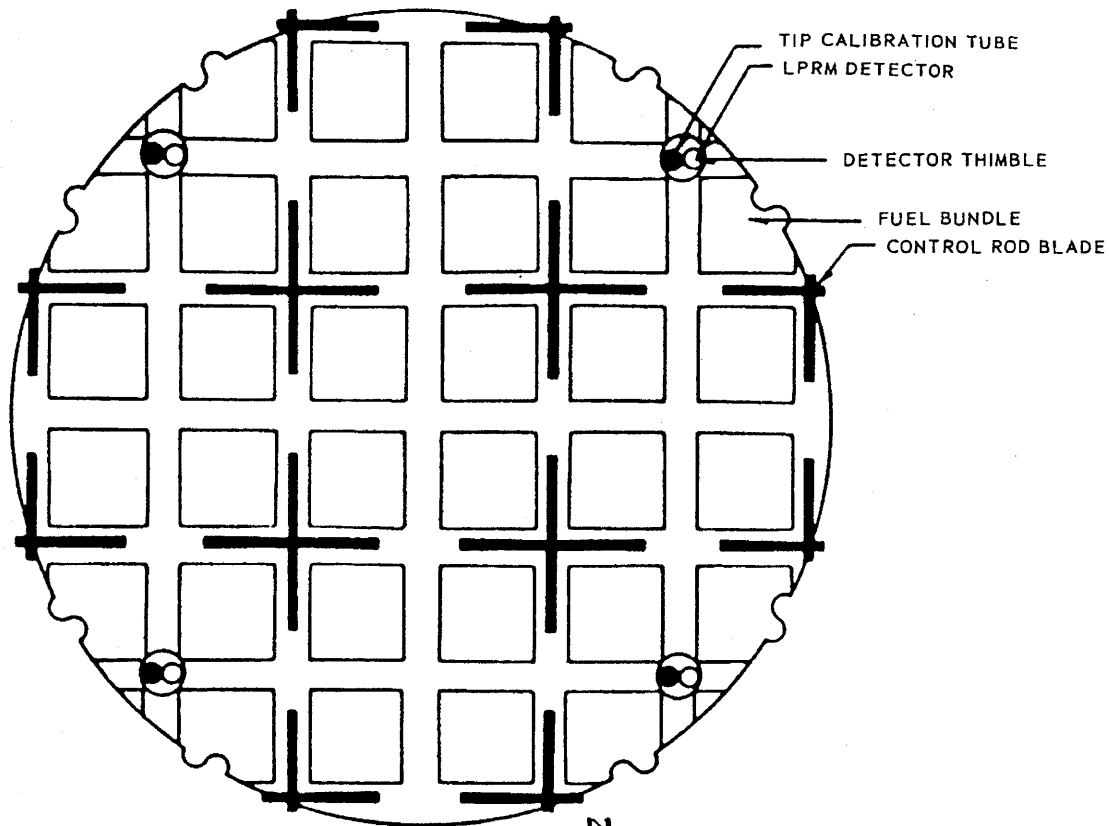
- +--CONTROL ROD DRIVE.
- LOCAL POWER RANGE MONITOR. (LPRM)
- CRD HOUSING SUPPORT ROD
- SOURCE RANGE MONITOR. (SRM)
- INTERMEDIATE RANGE MONITOR. (IRM)

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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 8 of 8)



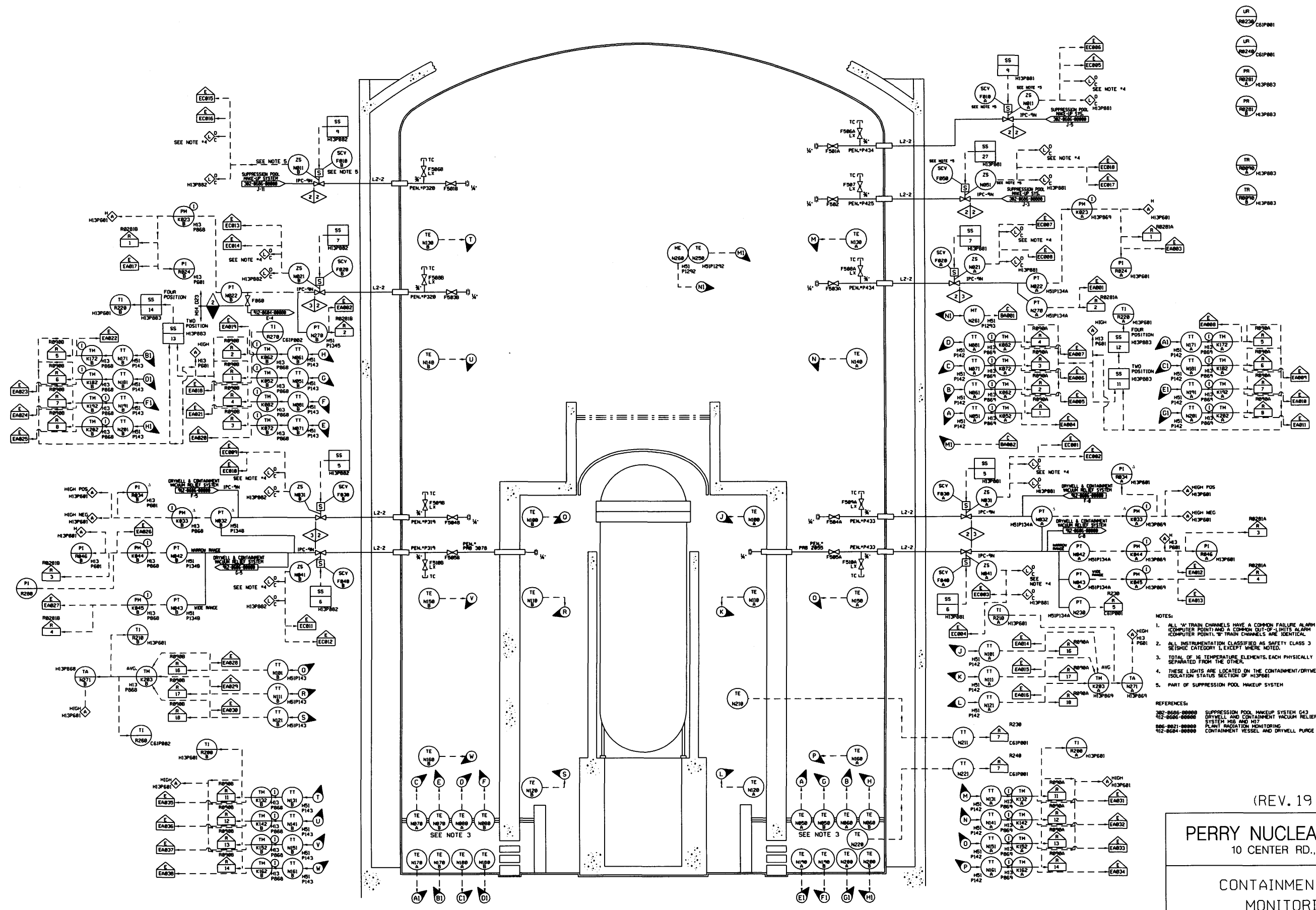
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PERRY NUCLEAR POWER PLANT

Power Range Monitor
Director Assembly Location

Figure 7.6-6



- LR R229 C61P001
- LR R249 C61P001
- PR R251 A H13P683
- PR R251 B H13P683
- TR R251 A H13P683
- TR R251 B H13P683

NOTES:

1. ALL 'W' TRAIN CHANNELS HAVE A COMMON FAILURE ALARM (COMPUTER POINT) AND A COMMON OUT-OF-LIMITS ALARM (COMPUTER POINT). 'W' TRAIN CHANNELS ARE IDENTICAL.
2. ALL INSTRUMENTATION CLASSIFIED AS SAFETY CLASS 3 SEISMIC CATEGORY I, EXCEPT WHERE NOTED.
3. TOTAL OF 16 TEMPERATURE ELEMENTS, EACH PHYSICALLY SEPARATED FROM THE OTHER.
4. THESE LIGHTS ARE LOCATED ON THE CONTAINMENT/DRYWELL ISOLATION STATUS SECTION OF H13P681
5. PART OF SUPPRESSION POOL MAKEUP SYSTEM

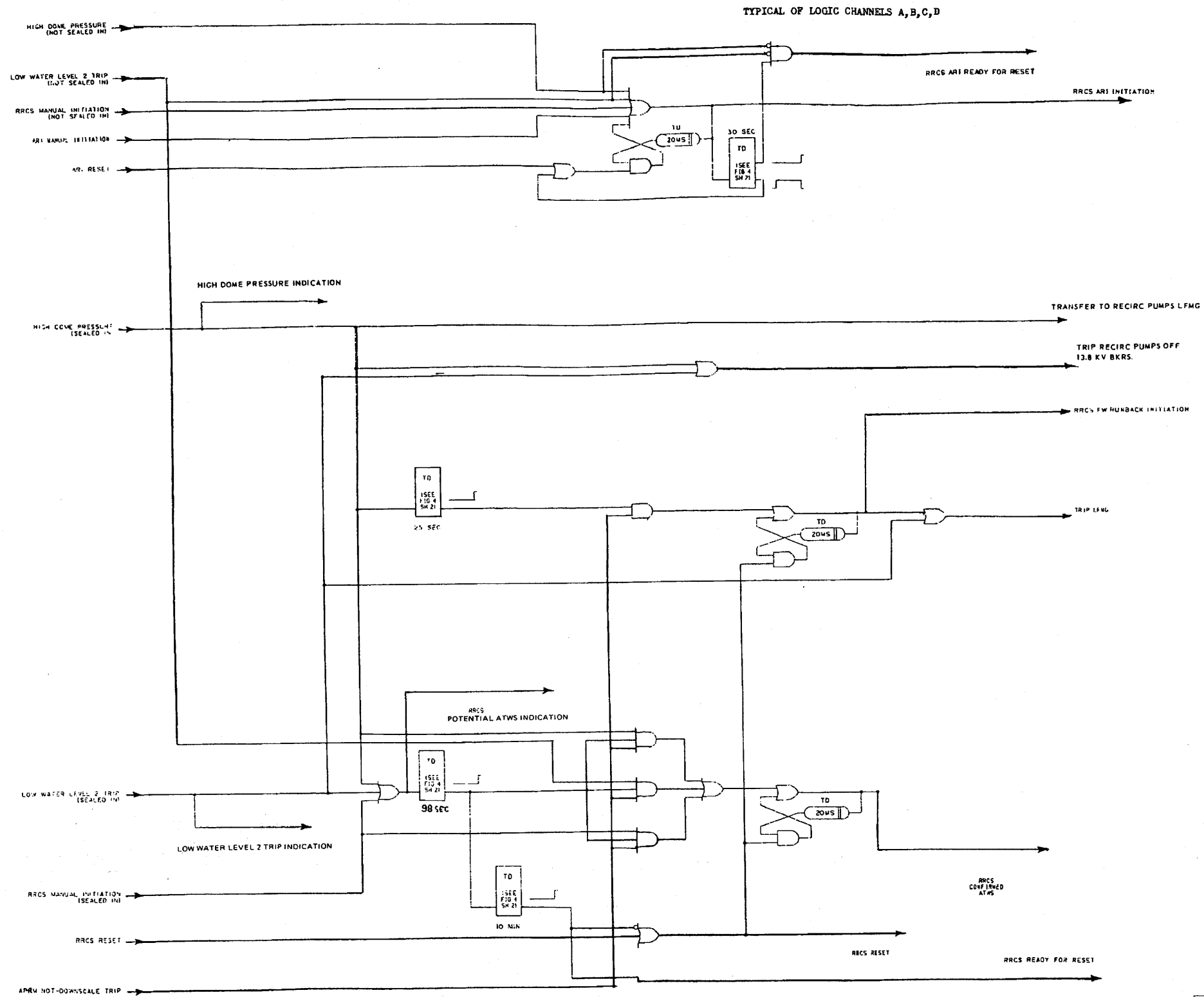
REFERENCES:

- 302-0505-00000 SUPPRESSION POOL MAKEUP SYSTEM C43
- 412-0500-00000 DRYWELL AND CONTAINMENT VACUUM RELIEF SYSTEM H13 AND H17
- 506-0021-00000 SLANT RADIATION MONITORING
- 912-0504-00000 CONTAINMENT VESSEL AND DRYWELL PURGE

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONTAINMENT ATMOSPHERE
MONITORING SYSTEM
FIGURE 7.6-7
(DWG. D-302-0881-00000)



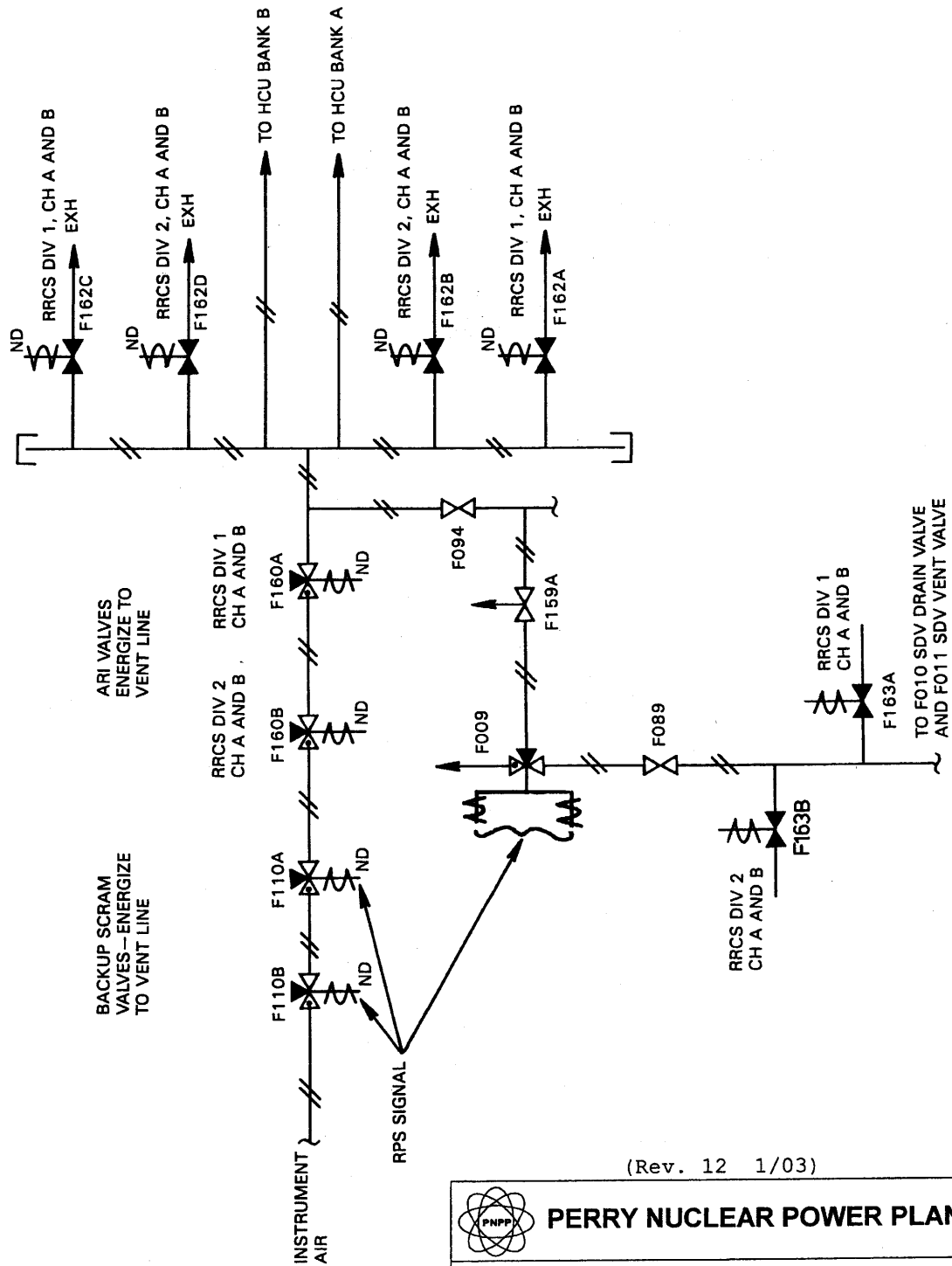
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PERRY NUCLEAR POWER PLANT

RRCS Initiation Logic

Figure 7.6-8



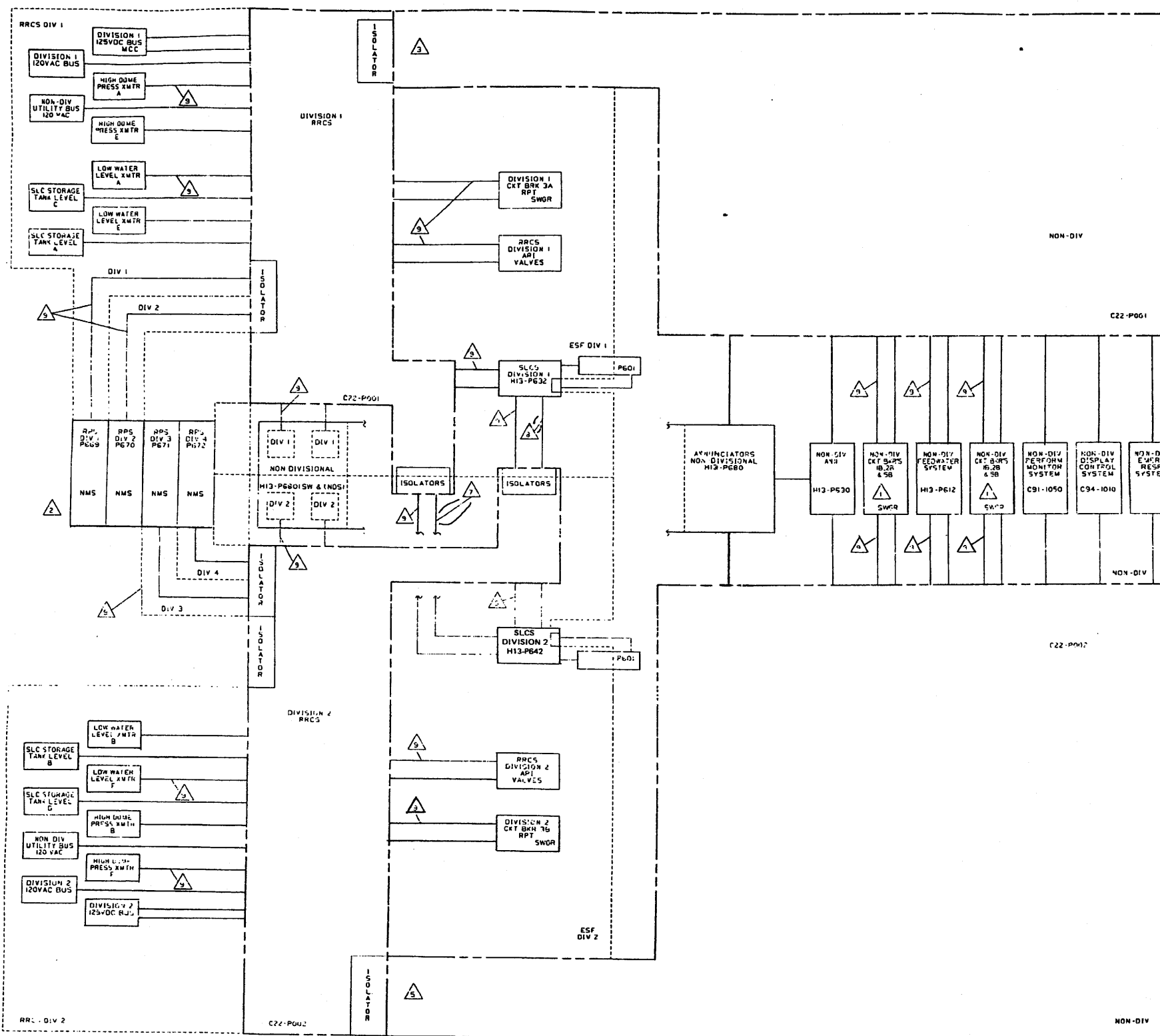
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PERRY NUCLEAR POWER PLANT

Perry RRCS ARI Valves

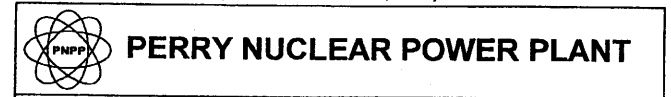
Figure 7.6-9



NOTES APPLY TO THIS SHEET ONLY

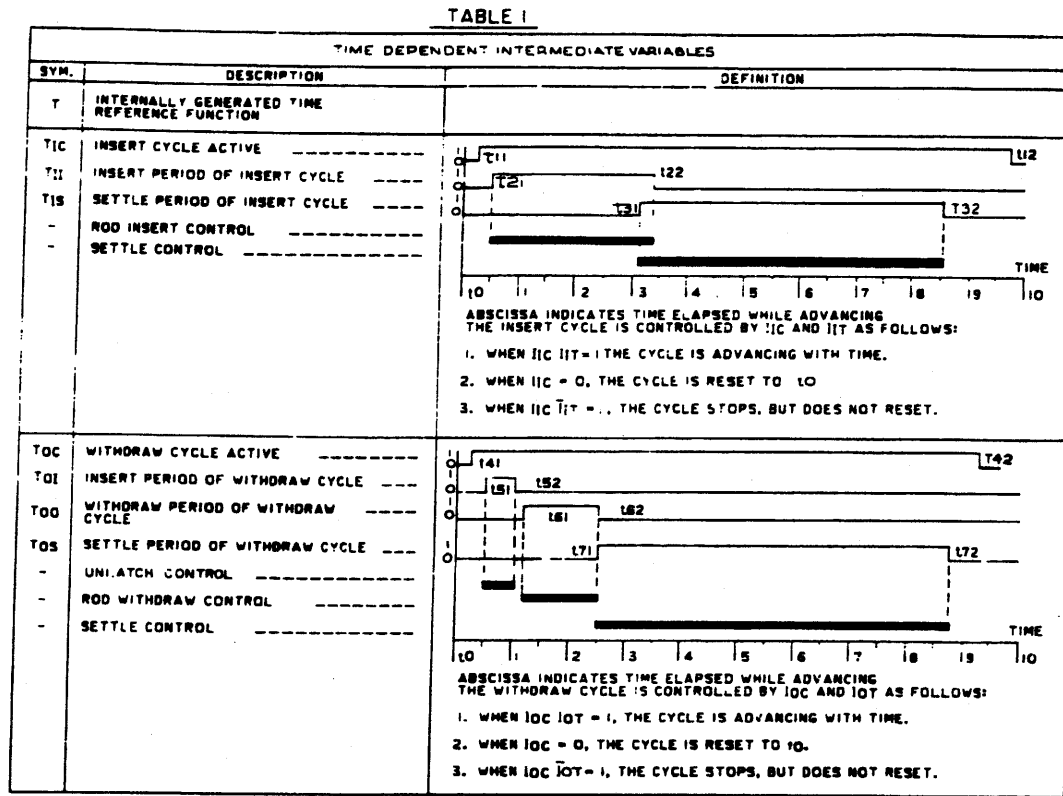
- ⚠ DIVISION 1 OR DIVISION 2 RRCS SIGNALS WILL TRIP BREAKERS
- ⚠ RRCS APRM SIGNALS FOR EACH DIV ARE SEPARATE FROM RPS, ALL WIRING SHALL BE SEPARATED
- ⚠ ALL SIGNALS FROM DIVISION 1 TO NON-DIVISIONAL ARE THROUGH OPTICAL ISOLATORS LOCATED AT RRCS PANEL
- ⚠ ALL SIGNALS FROM DIVISION 2 TO NON-DIVISIONAL ARE THROUGH OPTICAL ISOLATORS LOCATED AT RRCS PANEL
- ⚠ RRCS SIGNALS FROM DIVISION 2 TO DIVISION 4 RPT ARE THROUGH OPTICAL ISOLATORS LOCATED AT RRCS PANEL
- ⚠ RRCS SIGNALS FROM DIVISION 1 TO SLC5 DIVISION 2 (H13-P642) ARE THROUGH OPTICAL ISOLATORS LOCATED IN DIV 1 RRCS PANEL
- ⚠ RRCS SIGNALS FROM DIVISION 2 TO SLC5 DIVISION 1 (H13-P632) ARE THROUGH OPTICAL ISOLATORS LOCATED IN DIV 2 RRCS PANEL
- ⚠ WIRING SHALL BE INSTALLED IN GROUNDED METALLIC CONDUIT, ALL TERMINATIONS AT RRCS PANEL(S) SHALL BE TO THE CHANNEL "B" LOGIC SECTION

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RRCS Separation Block Diagram

Figure 7.6-10



SEE TABLE 2

TABLE 3
SYSTEM PERFORMANCE

	INTERVAL	PARAMETER (SEE TABLE 2)	VALUE	MAX ALLOWED TIMES TO ASSURE PROPER DRIVE PERFORMANCE	UNITS
INSERT CYCLE	TIME DELAY TO ROD INSERT CONTROL	L21	0.42	—	SEC
	ROD INSERT CONTROL	L22-121	2.98	2.5-3.1	SEC
	SWITCHING OVERLAP	L22-131	0.10	0.0-1.5	SEC
	SETTLE CONTROL	L32-122	5.30	4.2-6.3	SEC
WITHDRAW CYCLE	TIME DELAY TO UNLATCH CONTROL	L51	0.42	—	SEC
	UNLATCH CONTROL	L52-151	0.40	0.3-0.9	SEC
	INTERVAL BETWEEN UNLATCH AND SETTLE CONTROL	L61-158	0.10	0.0-0.15	SEC
	ROD WITHDRAWAL CONTROL	L62-161	1.99	1.3-1.7	SEC
	SWITCH OVERLAP FROM WITHDRAWAL TO SETTLE CONTROL	L72-171	0.10	0.0-1.5	SEC
	SETTLE CONTROL	L72-162	6.00	4.2-6.3	SEC

TABLE 2
SYSTEM PARAMETER VALUES

	PARAMETER	VALUE	TOLERANCE	UNITS
INSERT CYCLE	111	0.36	± 0.02	SEC.
	112	9.6		
	121	0.42		
	122	3.32		
	131	3.22		
WITHDRAW CYCLE	132	8.62	± 0.02	SEC.
	141	0.36	± 0.02	SEC.
	142	9.16		
	151	0.42		
	152	0.2		
	161	0.12		
	162	2.62		
171	2.52			
172	8.62	± 0.02	SEC.	

INSERT CYCLE

L21-111 = DELAY UNTIL ROD MOTION BEGINS
L22-121 = DRIVE IN TIME
L32-122 = SETTLE TIME
10 <<< L22, 1 = TIME WHEN CONTINUOUS INSERT CAN BE REQUESTED
131 <<< L22, 1 = CYCLE STOP POINT FOR CONTINUOUS INSERT

WITHDRAW CYCLE

L51-141 = DELAY UNTIL ROD MOTION BEGINS
L52-151 = DRIVE IN TIME (UNLATCH)
L61-152 = DELAY AFTER UNLATCH
L62-161 = DRIVE OUT TIME
L72-162 = SETTLE TIME
10 <<< L62, 1 = TIME WHEN CONTINUOUS WITHDRAW CAN BE REQUESTED
171 <<< L62, 1 = CYCLE STOP POINT FOR CONTINUOUS WITHDRAW

TABLE 4

SYMBOL	DESCRIPTION
C0	ROD BEING CONTINUOUSLY WITHDRAWN
F1	ALL RODS FULLY IN
G0	ROD WITHDRAWAL IS REQUESTED
G1	ROD INSERT REQUESTED
G2	NOTCH OVERRIDE ROD WITHDRAWAL REQUESTED
G3	CONTINUOUS ROD INSERT REQUESTED
H0	SCRAM DISCHARGE VOLUME HIGH LEVEL TRIP "BYPASS" REQUESTED
H1	SCRAM DISCHARGE VOLUME HI WATER LEVEL
I0	ANY ROD SELECTED
I0R	ROD WITHDRAWAL IS REQUESTED
I0I	ROD INSERT REQUESTED
I1C	IN-CLOCK IS ACTIVE
I10	A ROD IS IN MOTION
KPS	REFUEL ROD SELECT IS INHIBITED
KP	REFUEL PLATFORM CONTROL PERMISSIVE
M0	REACTOR SYSTEM MODE SWITCH IN START-UP
M1	REACTOR SYSTEM MODE SWITCH IN "REFUEL" GAIN MODE
M2	REACTOR SYSTEM MODE SWITCH IN "RUN" PERMITTED STATE
M3	NMS DOWNSCALE PRIM EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
M4	NMS UPSCALE PRIM EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
M5	NMS STARTUP RANGE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
M6	ROD MOTION PERMISSIVE
Op	RPS IS OPERABLE
P0	REFUEL PLATFORM OVER CORE AREA
P1	REFUEL PLATFORM GRAPPLE LOADED
R0	REQUESTED ROD IDENT
S0	ROD IS BEING DRIVEN
TIC	INSERT CYCLE ACTIVE
T11	INSERT PERIOD OF INSERT CYCLE
T12	SETTLE PERIOD OF INSERT CYCLE
TOC	WITHDRAW CYCLE ACTIVE
TO1	INSERT PERIOD OF WITHDRAW CYCLE
TO2	WITHDRAW PERIOD OF WITHDRAW CYCLE
TO3	SETTLE PERIOD OF WITHDRAW CYCLE

LEGEND:

- = SWITCHGEAR DEVICE FUNCTION NUMBER ANSI SPEC C37.2
- RMS = REMOTE MANUAL SWITCH
- RPI = ROD POSITION INFORMATION SYSTEM
- NMS = NEUTRON MONITORING SYSTEM
- PRM = POWER RANGE MONITOR
- △ = PMS INPUT (PERFORMANCE MONITORING SYSTEM)
- LPSP = LOW POWER SET POINT
- HPSP = HIGH POWER SET POINT
- RPC = ROD PATTERN CONTROLLER
- △ = EMERGENCY RESPONSE INFORMATION SYSTEM

NOTES:

- EACH CRD MECHANISM, AS IT TRAVELS UP (INSERTED) OR DOWN (WITHDRAWN), ACTIVATES INTERNAL POSITION SWITCHES. THE TOP TWO POSITION SWITCHES ARE CALLED "FULL-IN" AND THE BOTTOM TWO POSITIONS ARE CALLED "FULL-OUT (DISCONNECTED)" RESPECTIVELY. SWITCHES IN BETWEEN ARE DIVIDED INTO ODD (DRIFT) AND EVEN (LATCH) POSITIONS. AS THE ROD TRAVELS OVER ANY SWITCH AN INDICATING SIGNAL IS ACTUATED. ANY EVEN SWITCH WILL INDICATE NUMERIC POSITION (eg, 00, 02, ..., 48) AND ANY ODD SWITCH WILL INDICATE "ODD".
- WIRING FROM HCU (SCRAM VALVES AND ACCUMULATOR) TO CONTROL ROOM FOR ANNUNCIATION SHALL BE IN SERIES CONNECTION FOR ALL HCUs.
- WIRING FROM HCU (ROD SCRAM TEST SWITCH IN TEST POSITION) SHALL BE IN SERIES CONNECTION FOR ALL HCUs.
- EACH ACCUMULATOR FAILURE WILL INITIATE AN ANNUNCIATION (ANNUNCIATOR HORN & FLASHING ANNUNCIATOR WINDOW) AND AN INDIVIDUAL FLASHING INDICATOR (PART OF THE WHOLE CORE DISPLAY). OPERATION OF THE "ACCUMULATOR TROUBLE ACKNOWLEDGE" SWITCH WILL CLEAR THE INPUT TO THE ANNUNCIATOR AND CHANGE THE INDIVIDUAL INDICATOR FROM FLASHING TO STEADY. CLEARING THE ACCUMULATOR TROUBLE WILL CLEAR THE INDIVIDUAL INDICATORS.
- SEE TABLE 4 FOR DEFINITIONS OF VARIABLES APPEARING ON THIS FCB.
- A LOGICAL "1" INDICATES A FAILED COMPARISON
- GROUP 1 THRU 10 REFERS TO ROD ASSIGNMENTS WHICH ARE PRE-DETERMINED AND FIXED.
- TERMS: F₁ = FULL IN
F₂ = FULL OUT
N₁, N₂, N₃, N₄, N₅ = PREDETERMINED AND FIXED INTERMEDIATE OR BANK POSITIONS
- THE CENTER CONTROL ROD AND THE FOUR CONTROL RODS DIAGONALLY ADJACENT TO THE CENTER ROD WILL ALWAYS BE MOVED IN THE SINGLE ROD MODE. (REF. 15)

REFERENCE DOCUMENTS:

DESCRIPTION	RPL ITEM NUMBERS	DWG. NR.
1. CONTROL ROD DRIVE HYDRAULIC SYS. PMS	-----C11-1010	D-302-571
2. NEUTRON MONITORING SYS. IED	-----C51-1018	D-302-501
3. REMOVED.		
4. REMOVED.		
5. CONTROL ROD DRIVE HYDRAULIC SYS. DESIGN SPEC.	-----C11-4010	
6. PERFORMANCE MONITORING SYS. INPUT/OUTPUT REQUIREMENTS	-----13AC8978	
7. POSITION INDICATOR PROBE CONNECTION DIAG.	-----10482504	
8. ROD CONTROL AND INFORMATION SYS ELEM DIAG	-----C11-1030	
9. NEUTRON MONITORING SYS. FCB	-----C51-1020	B-208-020 D-808-307
10. REACTOR PROTECTION SYS. IED	-----C71-1010	
11. DISPLAY CONTROL SYSTEM I/O LISTING	-----C94-4030	
12. MOV AND MCC STANDARDS	-----163C1723	
13. CRD ELEMENTARY	-----C81-1060	B-208-021
14. RPS ELEMENTARY	-----C71-1050	B-208-040
15. REACTIVITY CONTROL	-----A13-5121	
16. ERIS ELEMENTARY DIAGRAM	-----C95-1050	B-208-046

SYMBOL DEFINITIONS:

INVERTER GATE: $[\bar{a}] = [\bar{a}] = [Y = \text{NOT } a]$

AND GATE: $[a \cdot b] = [Y = a \cdot b] = [Y = a \text{ AND } b]$

OR GATE: $[a + b] = [Y = a + b] = [Y = a \text{ OR } b]$

MAJORITY GATE: $[a \cdot b \cdot c] = [Y = a \cdot b \cdot c] = [Y = \text{NOT } a \text{ OR NOT } b]$

MINORITY GATE: $[\bar{a} \cdot \bar{b} \cdot \bar{c}] = [Y = \bar{a} \cdot \bar{b} \cdot \bar{c}] = [Y = \text{NOT } a \text{ AND NOT } b]$

EXCLUSIVE OR GATE: $[a \oplus b] = [Y = a \oplus b] = [Y = a \text{ AND NOT } b \text{ OR } b \text{ AND NOT } a]$

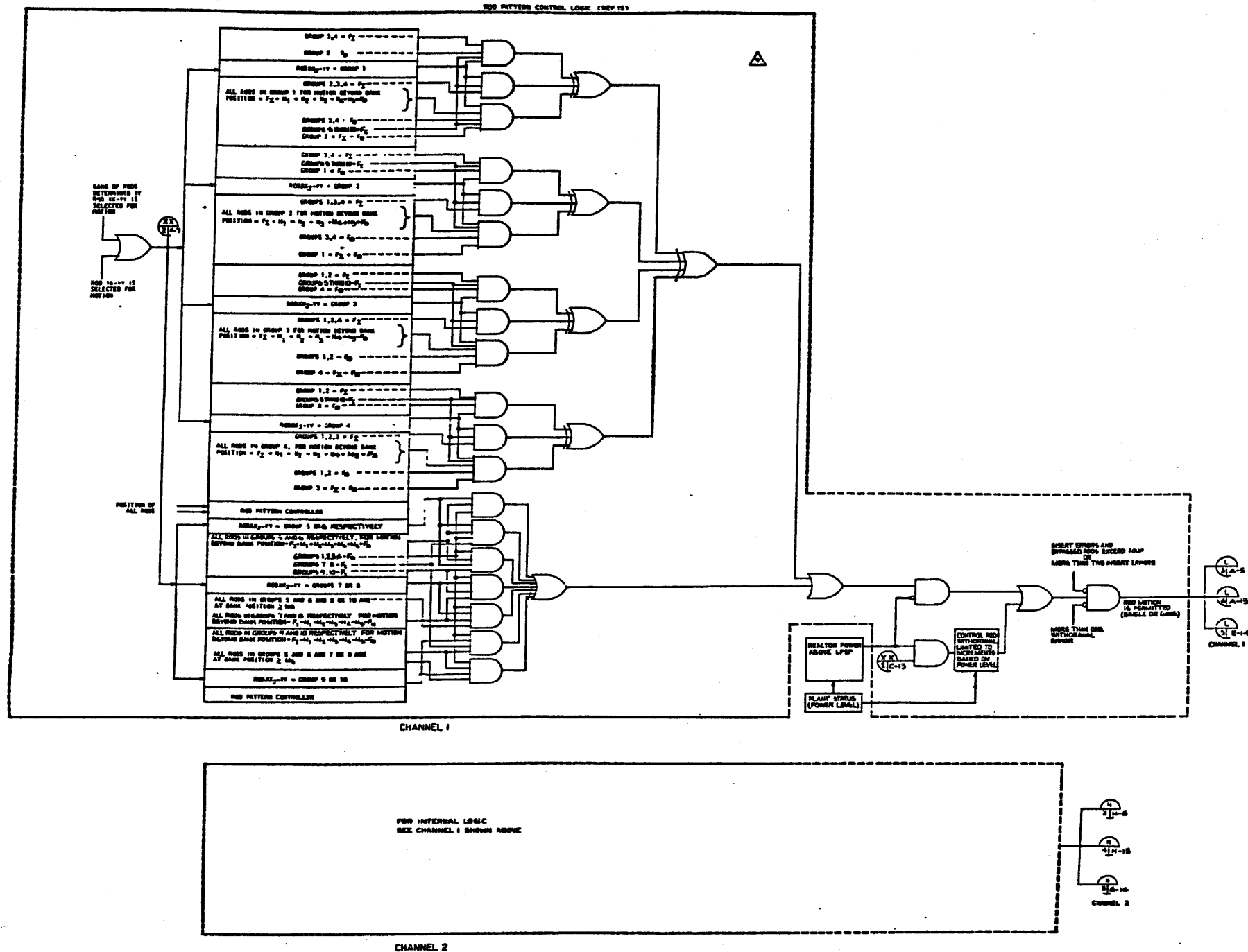
(Rev. 12 1/03)

NUCLEAR SAFETY RELATED

PERRY NUCLEAR POWER PLANT

Control Rod Drive Hydraulic System

Figure 7.7-1 (Sheet 1 of 7)
[Dwg. D-808-305(1)]

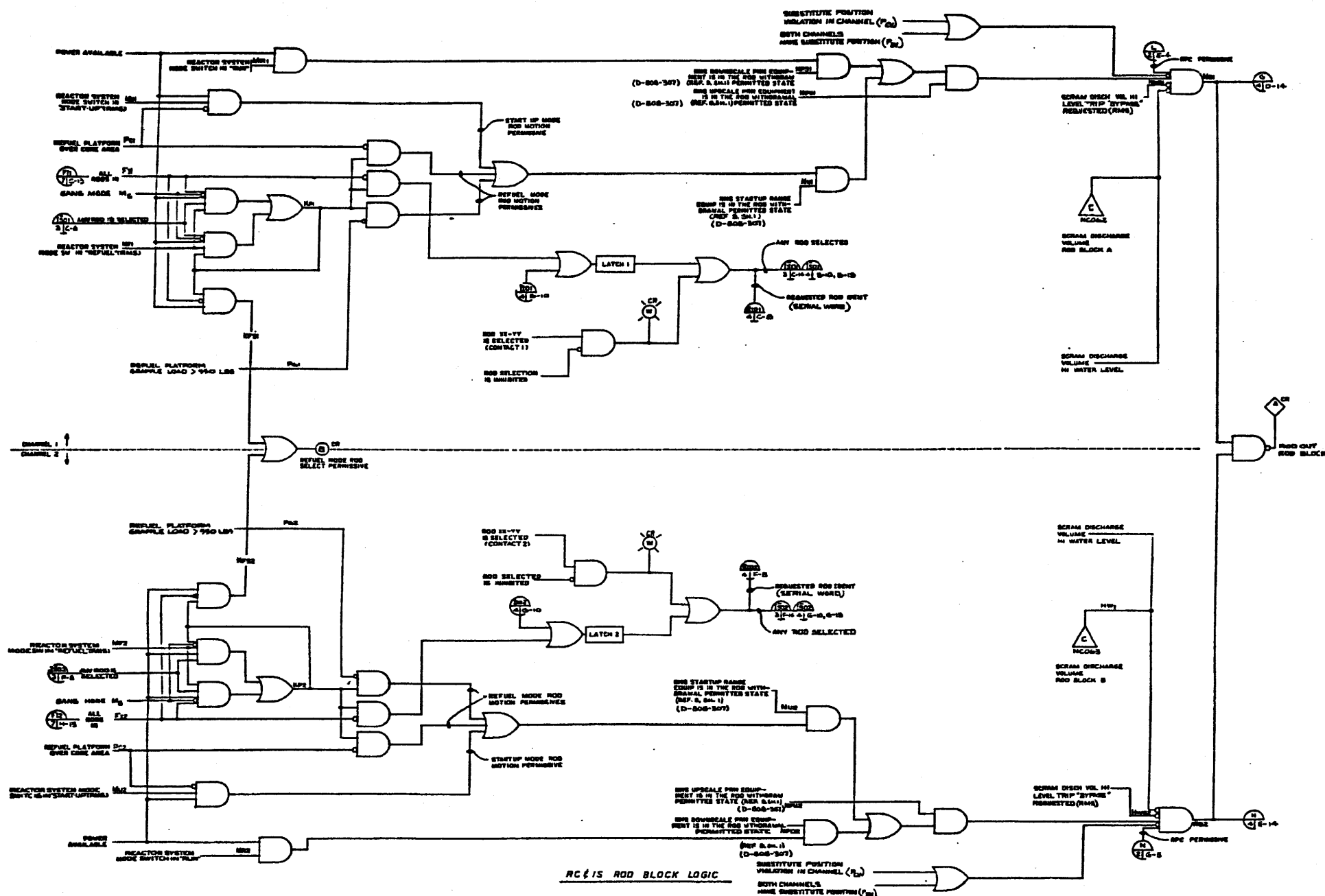


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

Figure 7.7-1 (Sheet 2 of 7)
[Dwg. D-808-305(2)]



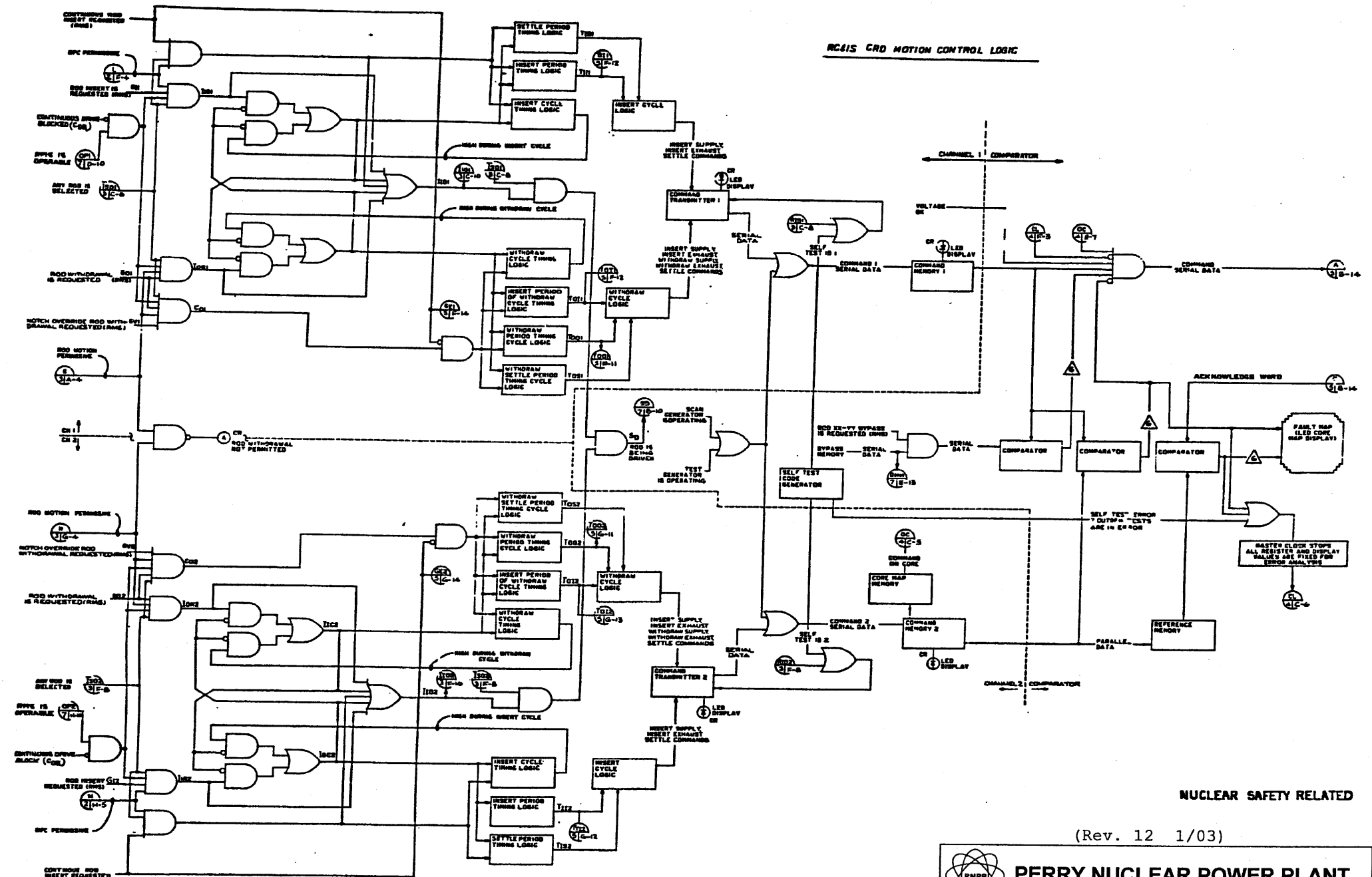
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

Figure 7.7-1 (Sheet 3 of 7)
[Dwg. D-808-305(3)]



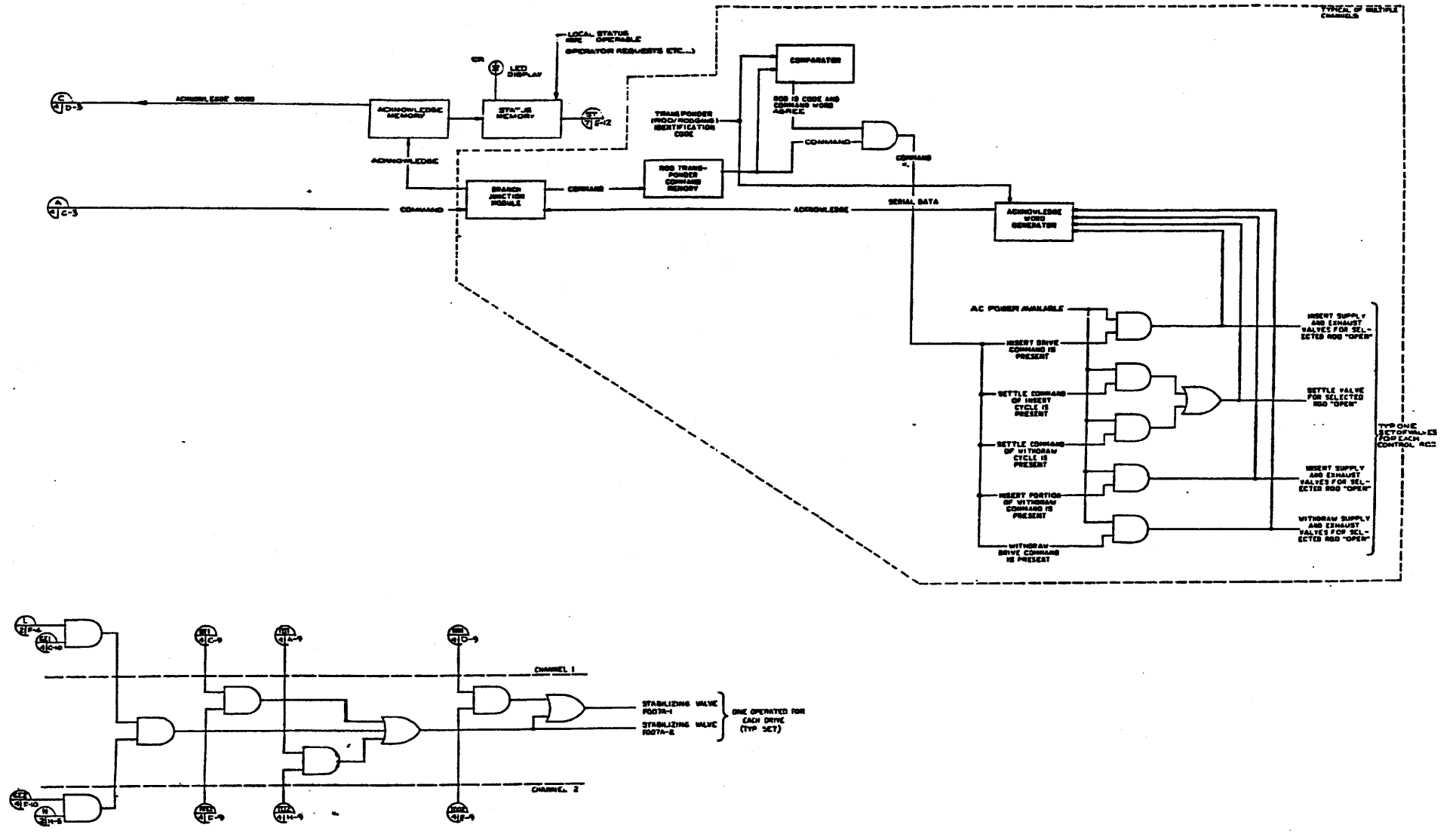
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

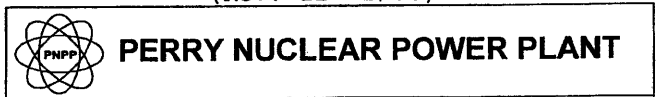
Control Rod Drive
Hydraulic System

Figure 7.7-1 (Sheet 4 of 7)
[Dwg. D-808-305(4)]



NUCLEAR SAFETY RELATED

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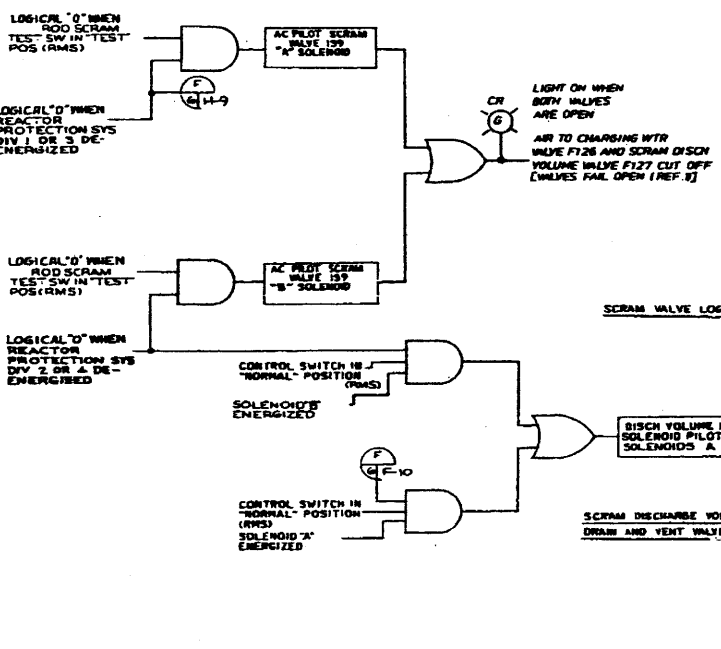
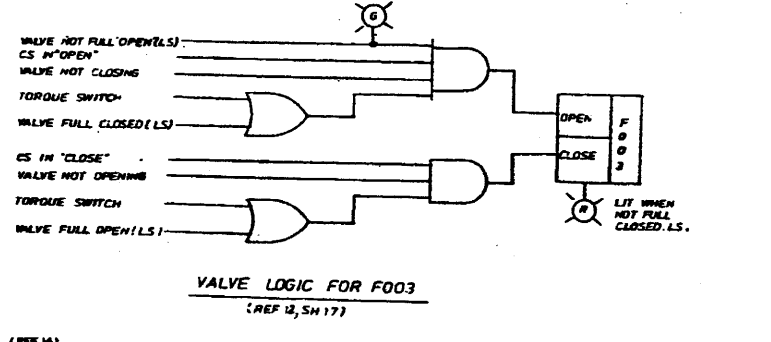
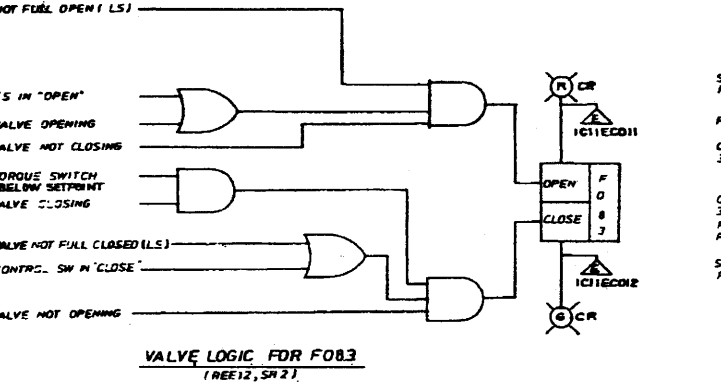
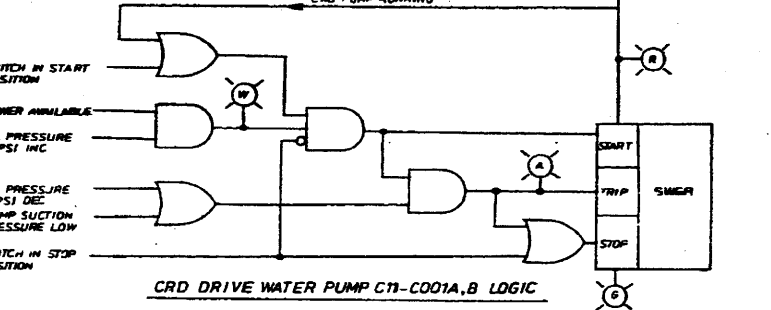
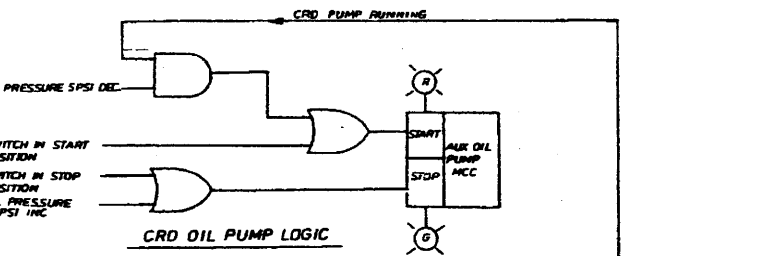
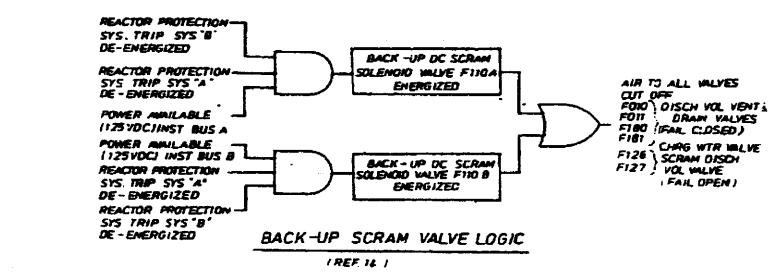
PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

Figure 7.7-1 (Sheet 5 of 7)
[Dwg. D-808-305(5)]

FUNCTION	INITIATING DEVICE	TYPE	COMPUTER INPUTS PWS	ERIS INPUTS
LOW POWER ALARM POINT	PRESS SW N655A/B	ANN.	---	---
LOW POWER SET POINT	PT5 N654 A/B	ANN.	---	---
HIGH POWER SET POINT	PT5 N654 C/D	SIGNAL TO RC & IS	---	---
SCRAM DISCH VOL NOT DRAINED	LIS N602C LIS N602D	SDV NOT DRAINED	NC040 NC041	---
SCRAM DISCH VOL HI LVL ROD BLOCK	LIS N602A LIS N602B	ROD WITH-DRAWAL BLOCK	NC062 NC063	---
DRIVE WATER FILTER HIGH DIFF PRESSURE	DIFF PRESS. IND SW N002	ANAL.	---	---
CHARGING WATER LOW PRESSURE	PRESS. IND SW N600 DT-N005	ANAL. ANALOG	---	C11EA011
DRIVE WATER PUMP'S SUCTION LOW PRESS. HIGH SEAL LEAKAGE LOW OIL PRESS.	PRESS. SW N001A PUMP CO01A PUMP CO01B	ANN. ANN. ANN.	---	---
DRIVE WATER PUMP'S SUCTION LOW PRESS. HIGH SEAL LEAKAGE LOW OIL PRESS.	PRESS. SW N001B PUMP CO01B PUMP CO01B	ANN. ANN.	---	---
SCRAM VALVE PILOT AIR HEADER HIGH PRESS.	PRESS. SW N062 FT-N002	ANN.	---	C11EA015
SCRAM VALVE PILOT AIR HEADER LOW PRESS.	PS N062 FT-N002	ANN.	---	---
CRD PUMP SECTION FILTER HIGH DIFF PRESSURE	DIFF PRESS. IND SW N015	ANAL.	---	---
ROD WITHDRAWAL BLOCK	RC & IS LOGIC	ANN.	---	---
ROD WITHDRAWAL SEQUENCE A/B SELECTED	SEQUENCE SELECTION PUSHBUTTON	---	---	---
VALVE NO F003	LIMIT SWITCH ON VALVES	IND LAMP'S ANN. ANN.	---	CHECO01 CHECO02
VALVES AD. F001, F100 & F101 OPEN FULLY OR FULLY CLOSED	LIMIT SWITCH ON VALVES	IND LAMP'S ANN. ANN.	NC064 NC065 NC066 NC067	---
ACCUMULATOR LOW PRESS OR LEAK DETECTION (TYPE FOR EACH ACCUMULATOR) (REF 1) (NOTE 2)	PRESS SW 130 OR LEVEL SW 129	INDICATOR (NOTE 4)	NC049	---
ANY ACCUMULATOR LOW PRESS OR ANY ACCUMULATOR LEAKAGE	PRESS SW 130 OR LEVEL SW 129	ANN. N/L (NOTE 4)	NC028	---
VALVES CV-127 & CV-128 OPEN	POSITION SWITCH ON VALVES	INDICATOR	NC037	---
CRD SYSTEM FLOW	FT-N006	---	M001	C11EA001
DRIVE WATER HEADER A FLOW	FT-N007A	---	---	C11EA002
DRIVE WATER HEADER B FLOW	FT-N007B	---	---	C11EA003
DRIVE WATER HEADER C FLOW	FT-N007C	---	---	C11EA004
DRIVE WATER HEADER D FLOW	FT-N007D	---	---	C11EA005
DRIVE WATER DIFF. PRESS.	DPT-N006	---	---	C11EA006
COOLING WATER HEADER FLOW	FT-N009	---	---	C11EA004
COOLING WATER HEADER DIFF PRESS	DPT-N011	---	---	C11EA007
RC & IS STATUS	RC & IS LOGIC	---	NC028	---
RC & IC INOP	RC & IC LOGIC	ANN.	---	---
CONTROL ROD TEMP HIGH	RO10	ANN.	---	---
DRIVE WATER PUMP'S STOP READY	SW 3A/B	ANN. ALTO TRIP IND LAMP 3 IND LAMP 3 IND LAMP 3 IND LAMP 3	---	IND LAMP R C11EC002 (A) C11EC003 (B)
ROD DRIFT	SWITCHES ON ROD DRIVES	ANAL.	NC031	---
ROD OVER TRAVEL	SWITCHES ON ROD DRIVES	ANAL.	NC029	---
AUXILIARY OIL PUMP A/B STOP START	SW 7 A & B	IND LAMP G IND LAMP R	---	---

FUNCTION	INITIATING DEVICE	TYPE	COMPUTER INPUTS PWS	ERIS INPUTS
VALVE AD F002A	LIMIT SWITCH ON VALVES	IND LAMP R IND LAMP G	---	C11EC016 C11EC017
VALVE AD F002B	LIMIT SWITCH ON VALVES	IND LAMP R IND LAMP G	---	C11EC008 C11EC009
VALVE NO F003	LIMIT SWITCH ON VALVES	IND LAMP R IND LAMP G	---	C11EC010



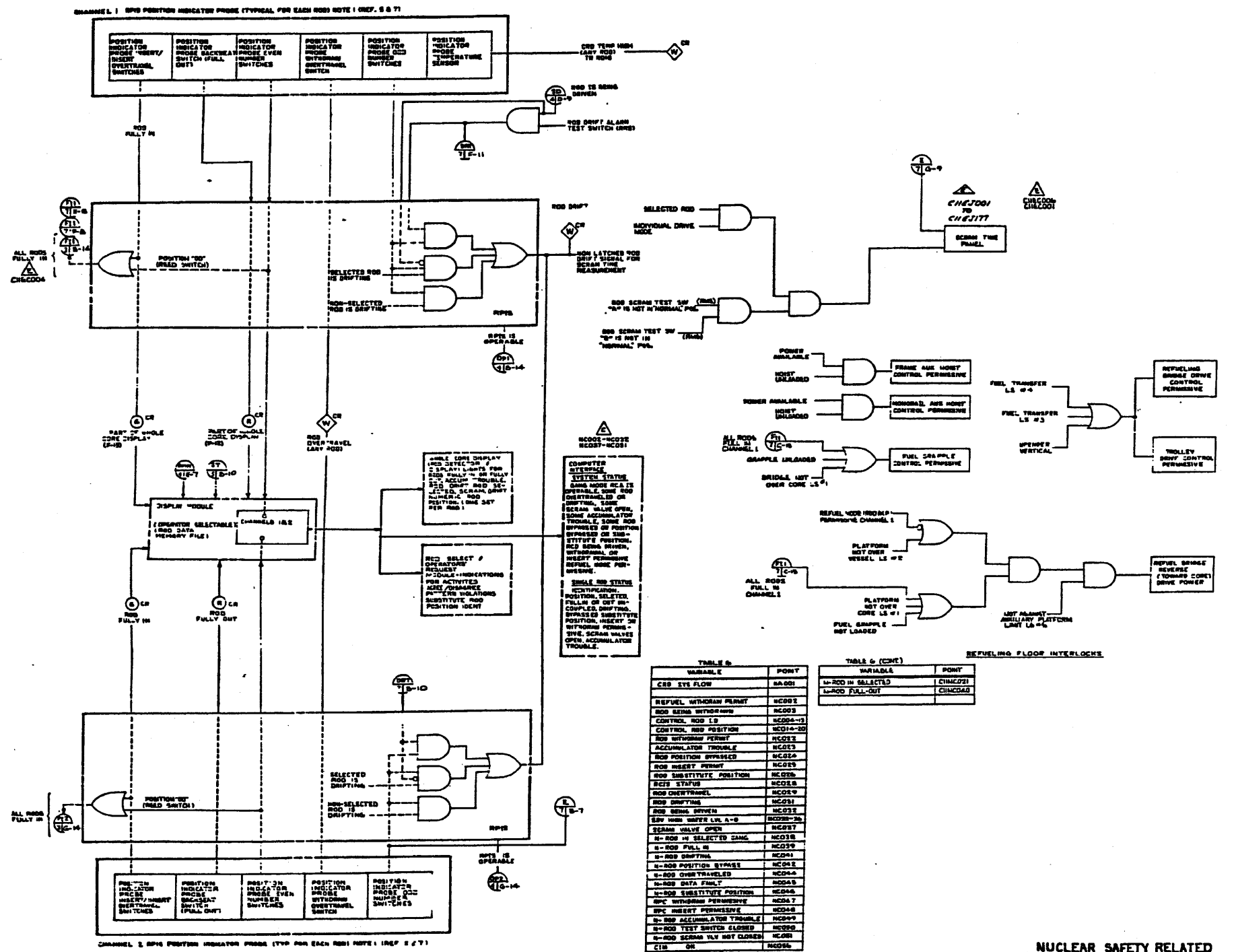
(Rev. 12 1/03)



NUCLEAR SAFETY RELATED

Control Rod Drive Hydraulic System

Figure 7.7-1 (Sheet 6 of 7)
[Dwg. D-808-305(6)]



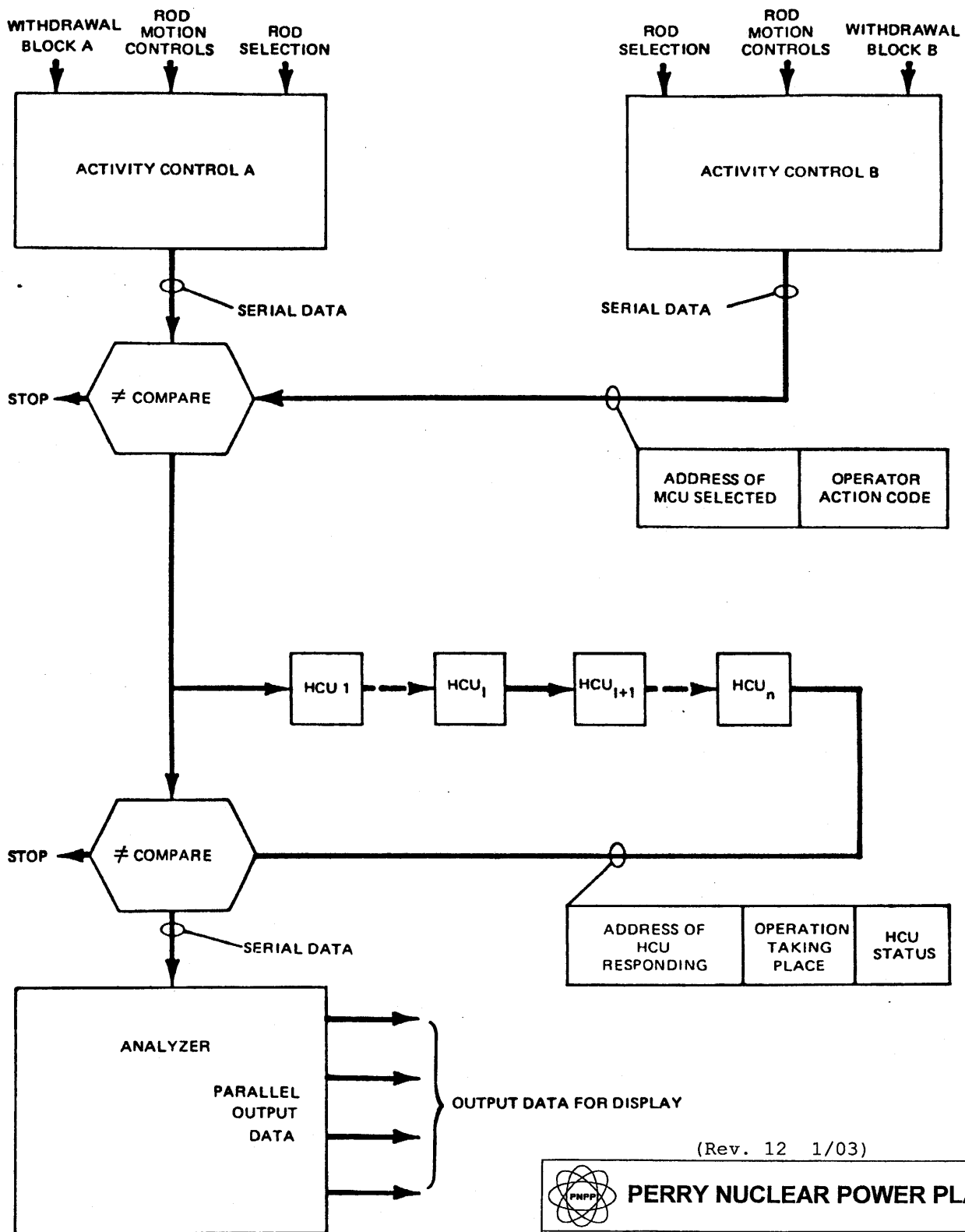
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)



Control Rod Drive Hydraulic System

Figure 7.7-1 (Sheet 7 of 7)
[Dwg. D-808-305(7)]



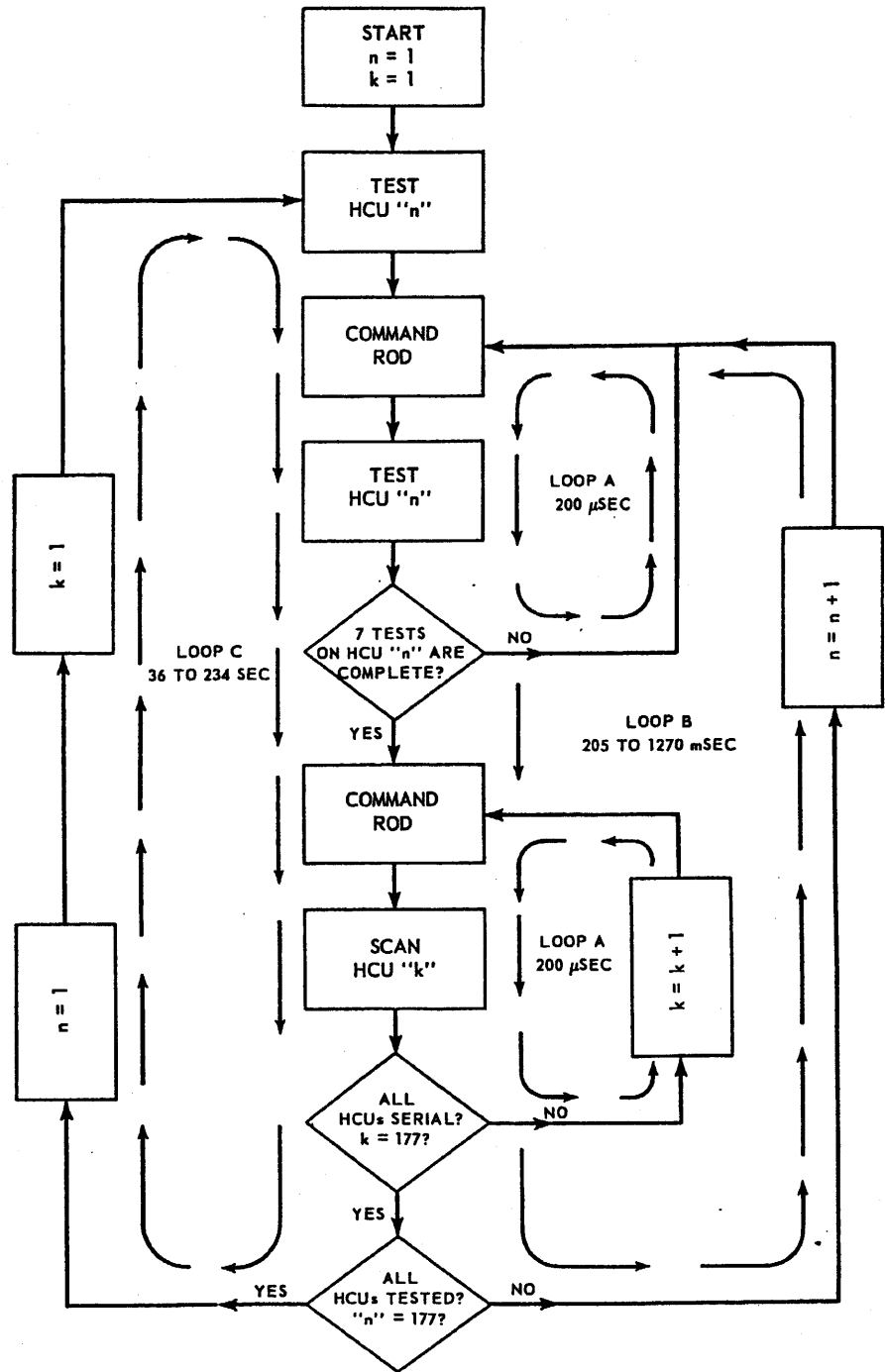
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PERRY NUCLEAR POWER PLANT

Rod Control and Information System Logic Diagram

Figure 7.7-2



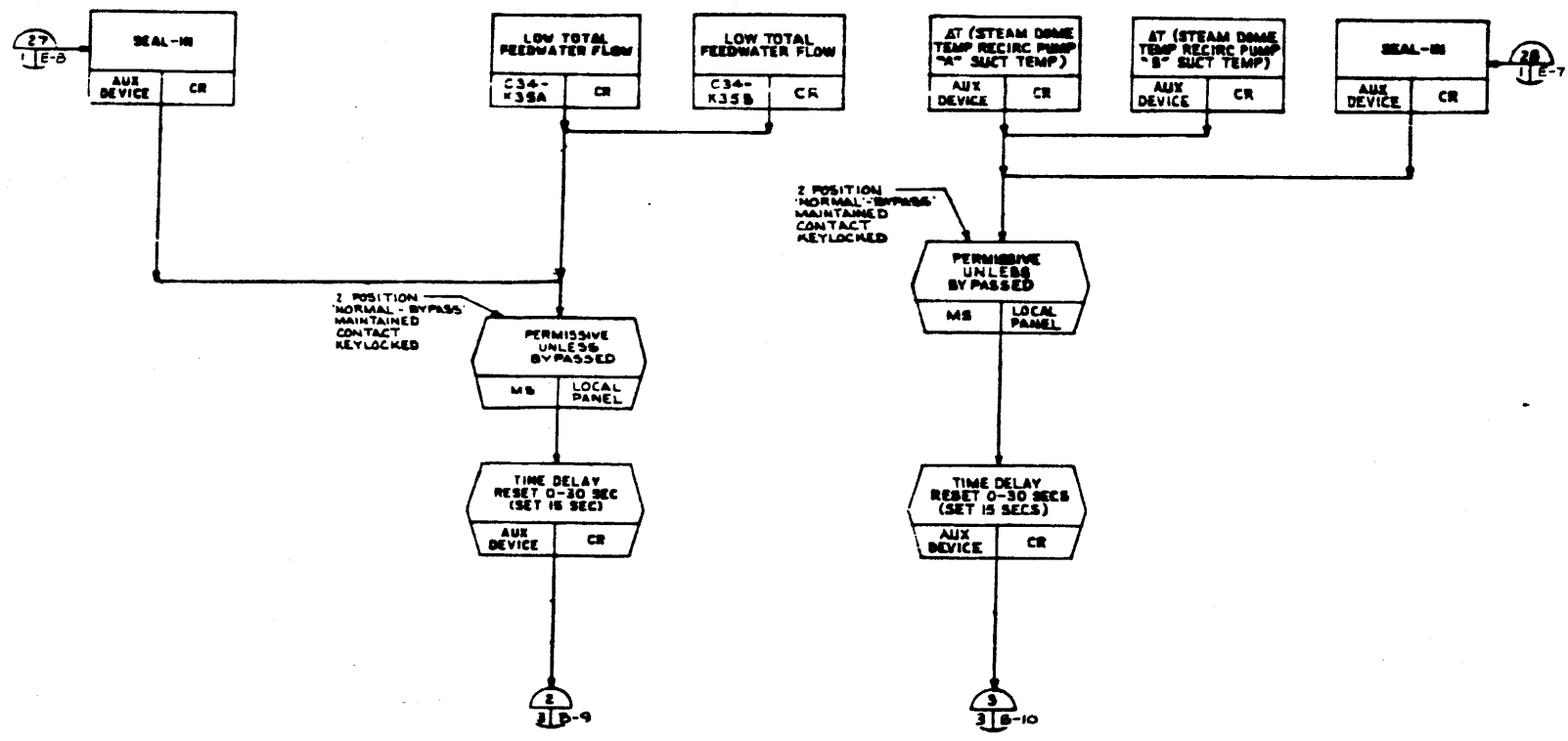
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PERRY NUCLEAR POWER PLANT

Rod Control and Information
System Self-Test Provisions

Figure 7.7-3



PUMP SPEED INTERLOCKS, PUMP SUCTION TO STEAM DOME ΔT, LOW TOTAL FEEDWATER FLOW

NOTES:

1. FUNCTION IS SHOWN FOR RECIRCULATION SYSTEM "A" & IS TYPICAL FOR RECIRCULATION SYSTEM "B" EXCEPT FOR LETTER SUFFIXES.
2. AUXILIARY DEVICES ARE SHOWN WHERE NECESSARY TO CLARIFY THE FUNCTION.
3. DETECTION OF REACTOR FEED PUMP TRIP, AND COINCIDENT OR SUBSEQUENT LOW-REACTOR WATER LEVEL LOGIC IS PROVIDED TO INITIATE CLOSURE OF THE RECIRCULATION FLOW CONTROL VALVE TO REDUCE THE REACTOR POWER LEVEL TO WITHIN THE CAPACITY OF THE REMAINING FEEDWATER PUMP. THE TURBINE OR MOTOR DRIVEN PUMP FAILURE CONTACTS SHALL BE PROVIDED BY THE AE/CUSTOMER. (SEE SUPPL. DOC 1)
4. NUMEROUS PILOT LAMP ALARM INDICATIONS ARE ALSO PROVIDED ON THE ANALOG CONTROL SYSTEM PANEL N13-P634 TO COMPLIMENT THESE REMOTE ALARMS. THE INDICATIONS ARE MORE EXTENSIVE & INDICATE ALL FAULTS THAT GIVE RISE TO THESE FUNCTIONALLY GROUPED CONTROL ROOM ALARMS.
5. DELETED

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

- | | | |
|-------------|--------------------------------------|-----------|
| 1. C34-1040 | FEEDWATER CONTROL SYS IED | |
| 2. B33-1010 | REACTOR RECIRC SYS PBID | D-302-601 |
| 3. C71-1010 | REACTOR PROTECTION SYS IED | |
| 4. B33-1030 | REACTOR RECIRC SYS IED | |
| 5. C22-1030 | REDUNDANT REACTIVITY CONTROL SYS FCD | |
| 6. C95-1050 | ERIS ELEMENTARY DIAGRAM | B-208-046 |

SUPPORTING DOCUMENTS:

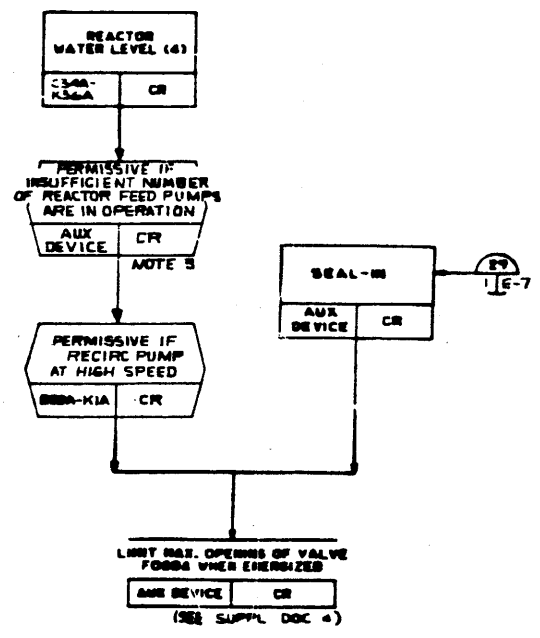
1. Z0944756 LOGIC SYMBOLS
2. Z1A35804U PURCHASE SPECIFICATION DATA SHEET
3. Z1A35800 PURCHASE SPECIFICATION

CODES AND STANDARDS:

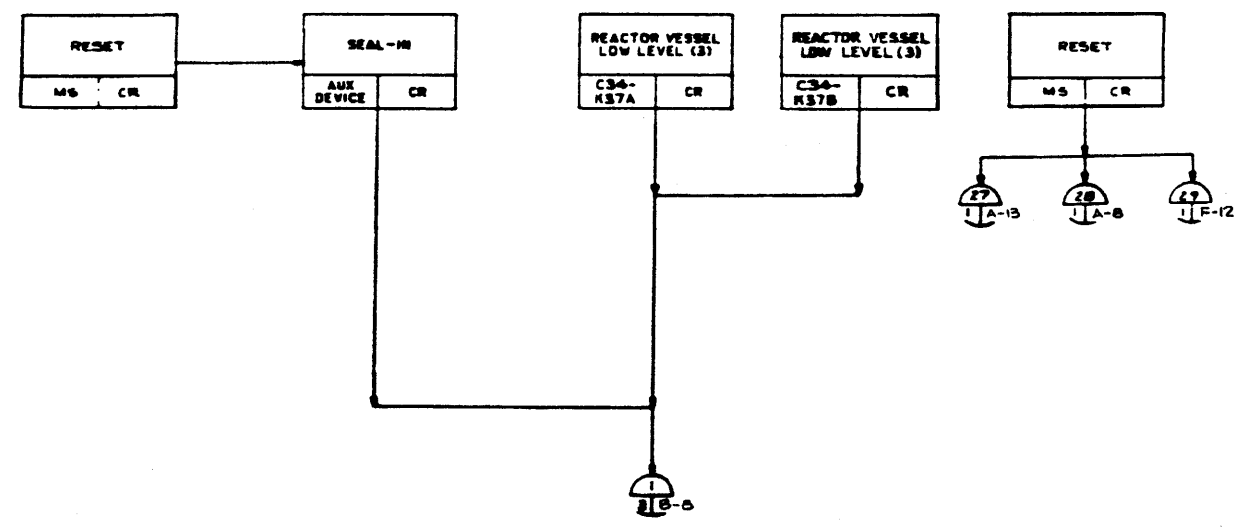
1. ANSI/IEEE C37.2 1979 ELECTRICAL POWER SYS DEVICE FUNCTION NUMBERS

LEGEND:

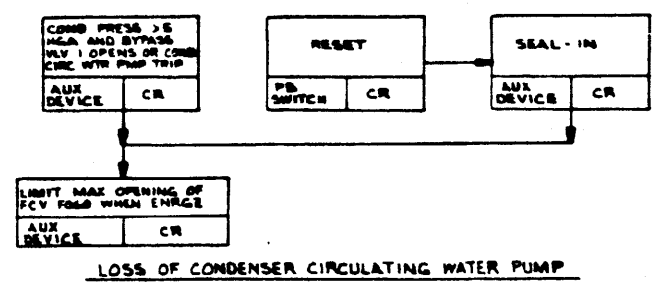
- ② - MATCH NUMBER
- ②/XX - ZONE
- SHEET NO
- - MATCH CIRCLE, LAST USED 3'
- - SWITCHING DEVICE FUNCTION (SEE CODES AND STDS 1)
- CR - CONTROL ROOM
- LP - LOCAL PANEL
- SWDR - PUMP DRIVE MOTOR SWITCH DEGR
- MS - MANUAL SWITCH
- PB - PUSHBUTTON
- SOL - SOLENOID
- POS - POSITION
- ASD - AUTOMATIC SWITCHING DEVICE
- SUCT-SUCTION
- ⚡ - EMERGENCY RESPONSE INFORMATION SYSTEM (SEE NOTE 5) TYP



**INSUFFICIENT NUMBER OF REACTOR FEED PUMPS
REACTOR WATER LEVEL AUX DEVICE**



**REACTOR VESSEL LOW LEVEL
AUX DEVICE**



LOSS OF CONDENSER CIRCULATING WATER PUMP

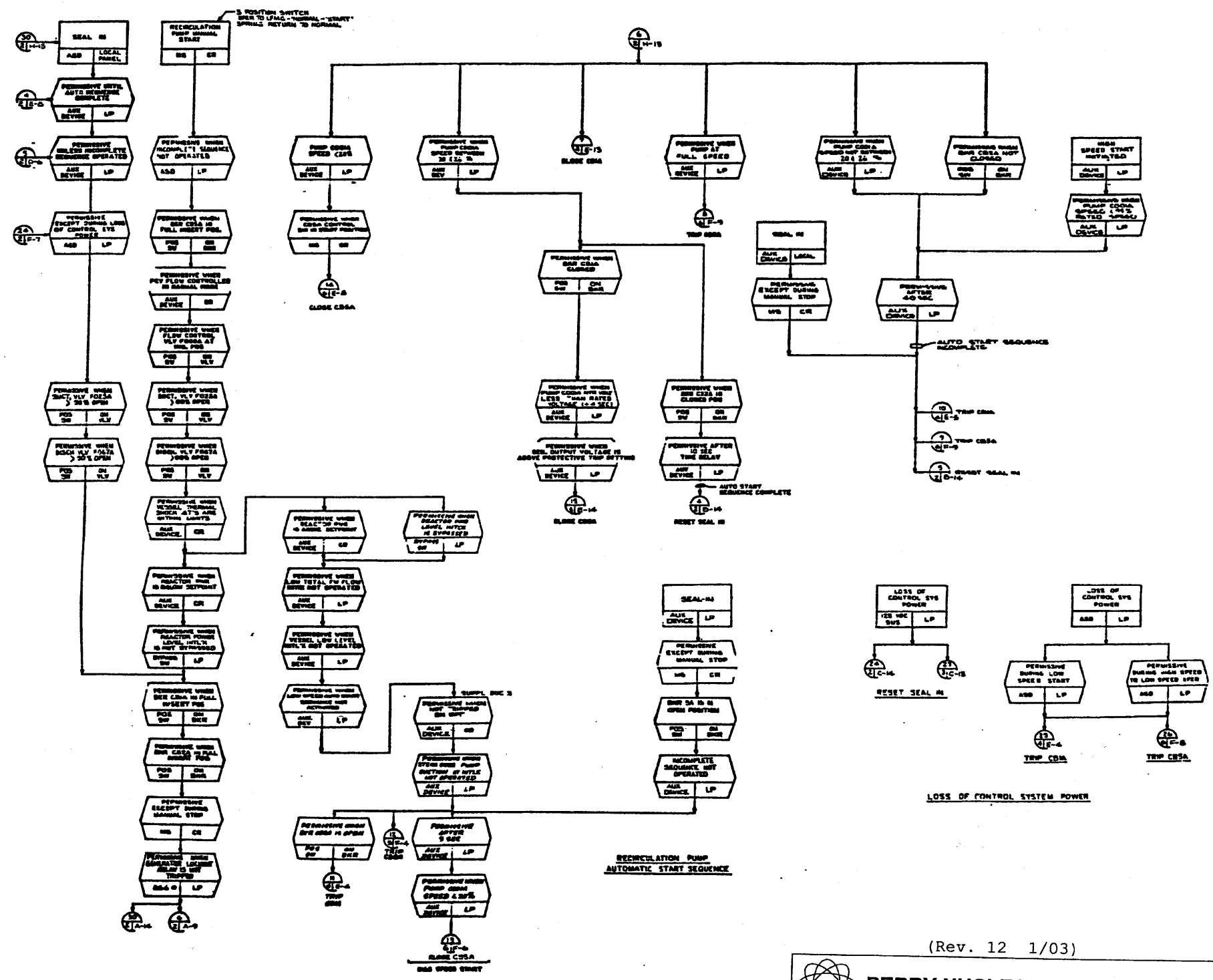
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

Figure 7.7-4 (Sheet 1 of 7)

[Dwg. D-808-304(1)]



(Rev. 12 1/03)

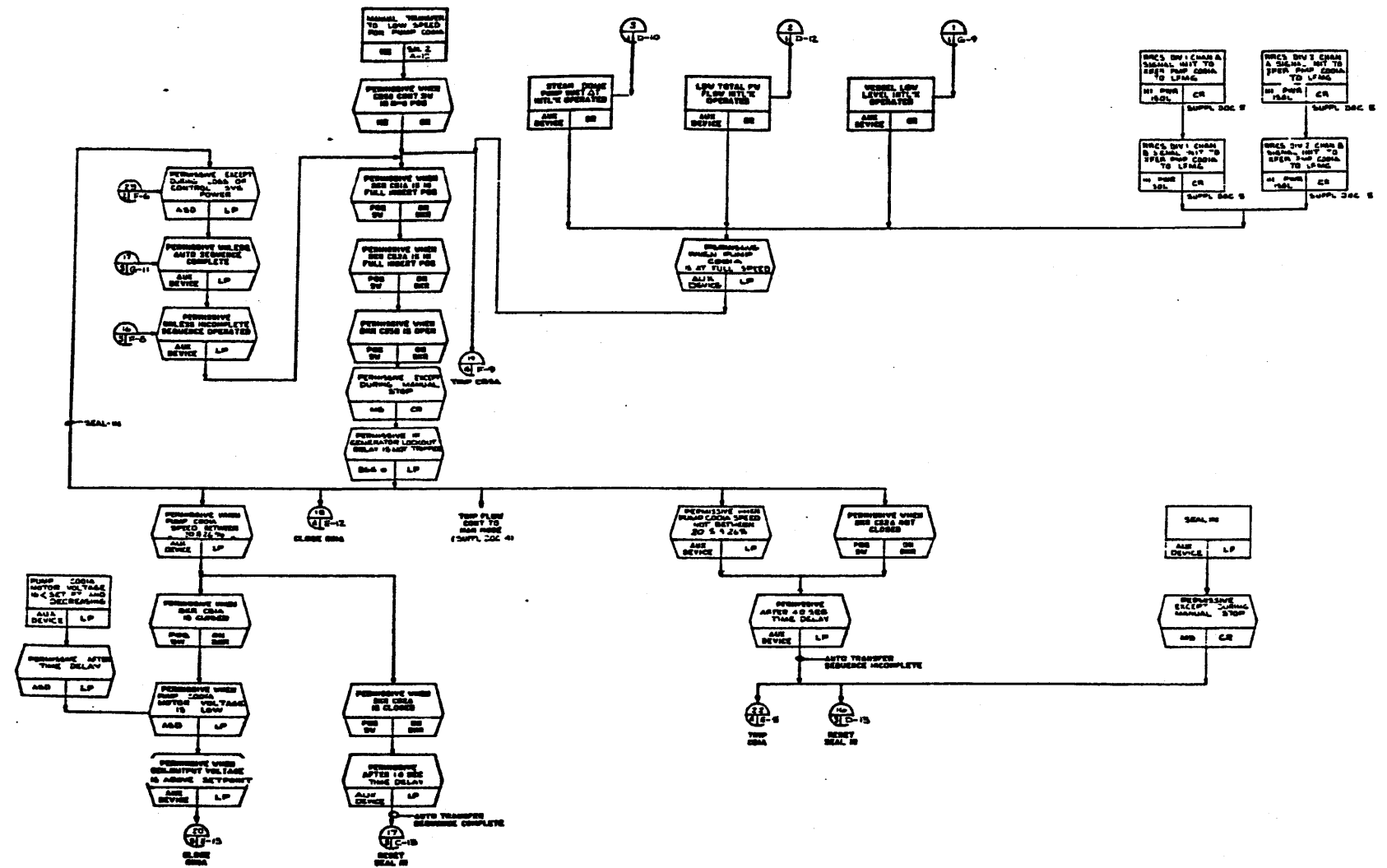
PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

Figure 7.7-4 (Sheet 2 of 7)

[Dwg. D-808-304(2)]

TRIP OR TRANSFER PUMP FROM HIGH SPEED TO LOW SPEED
(TYPICAL FOR CSD-6)



(Rev. 12 1/03)

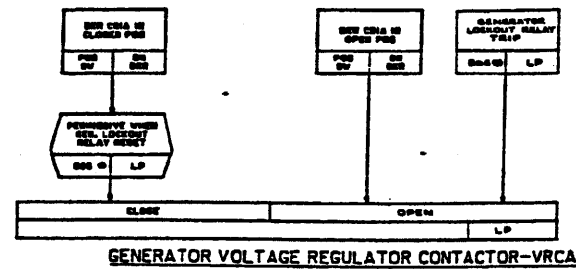


PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

Figure 7.7-4 (Sheet 3 of 7)

[Dwg. D-808-304 (3)]



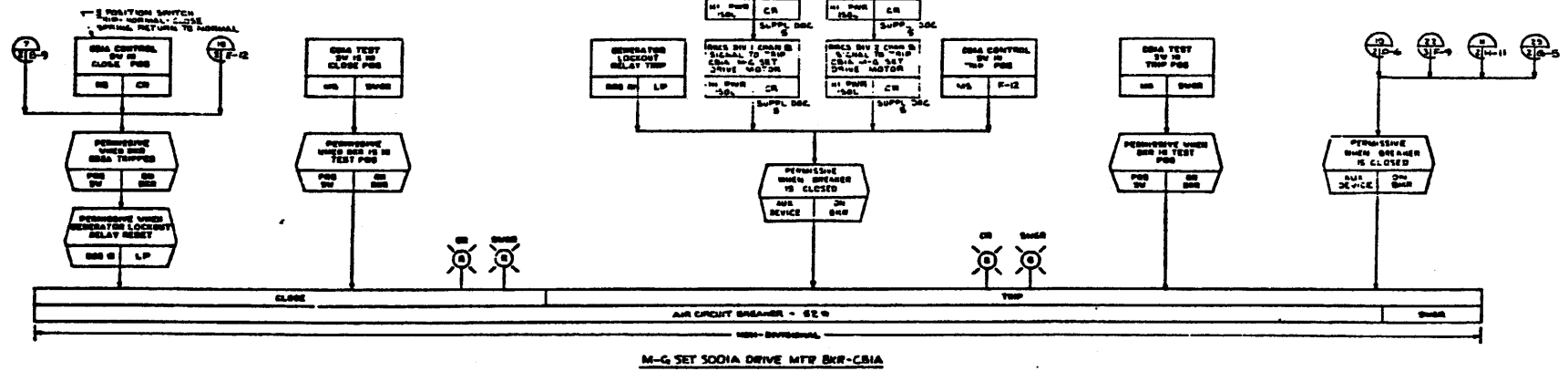
ERIS SIGNALS - JET PUMP DIFFERENTIAL PRESSURE

LOOP A			LOOP B		
JET PUMP	SVTR	ERIS SIGNAL	JET PUMP	SVTR	ERIS SIGNAL
JPI	NO37A	B33A032	JPI	NO37B	B33A044
JPI	NO37E	B33A033	JPI	NO37F	B33A045
JPI	NO37J	B33A034	JPI	NO37M	B33A046
JPI	NO37N	B33A035	JPI	NO37P	B33A047
JPIA	NO37Y	B33A036	JPIA	NO37U	B33A048
JPI	NO37C	B33A038	JPI	NO37D	B33A049
JPI	NO37L	B33A039	JPI	NO37H	B33A051
JPI	NO37I	B33A040	JPI	NO37K	B33A052
JPI	NO37R	B33A041	JPI	NO37S	B33A053
JPIA	NO37V	B33A042	JPIA	NO37T	B33A054

TABLE I

ERIS SIGNALS - JET PUMP DIFFERENTIAL PRESSURE

JET PUMP	SVTR	ERIS SIGNAL
JPI	NO38A	B33A037
JPI	NO38C	B33A038
JPI	NO38B	B33A039
JPI	NO38D	B33A040



M-G SET SOOIA DRIVE MTR BKR-CBIA

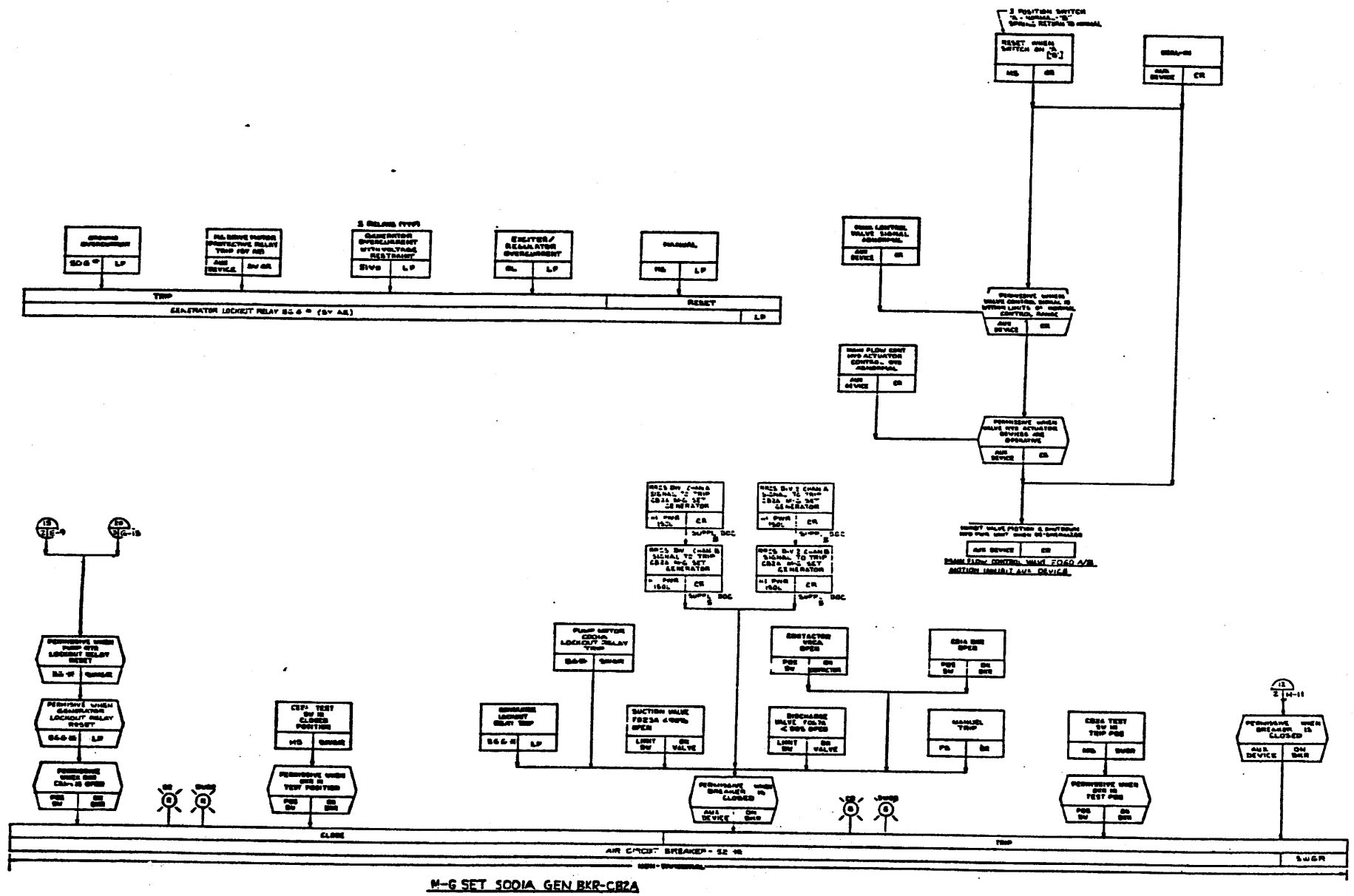
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT


Reactor Recirculation System

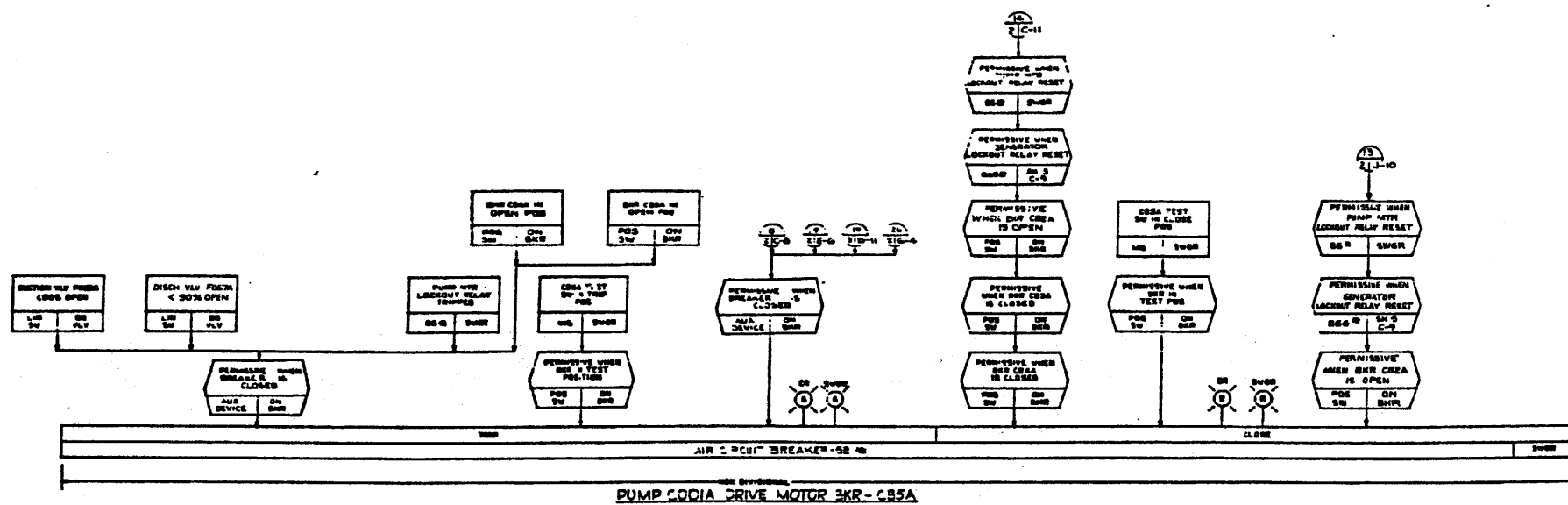
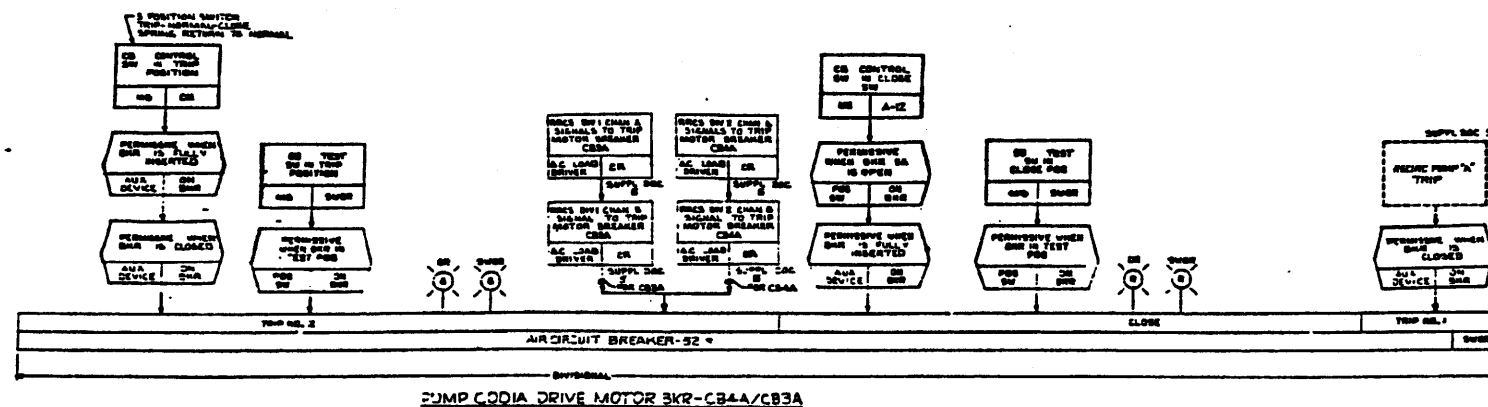
Figure 7.7-4 (Sheet 4 of 7)

[Dwg. D-808-304(4)]



(Rev. 12 1/03)

	PERRY NUCLEAR POWER PLANT
Reactor Recirculation System	
Figure 7.7-4 (Sheet 5 of 7)	
[Dwg. D-808-304(5)]	



(Rev. 12 1/03)



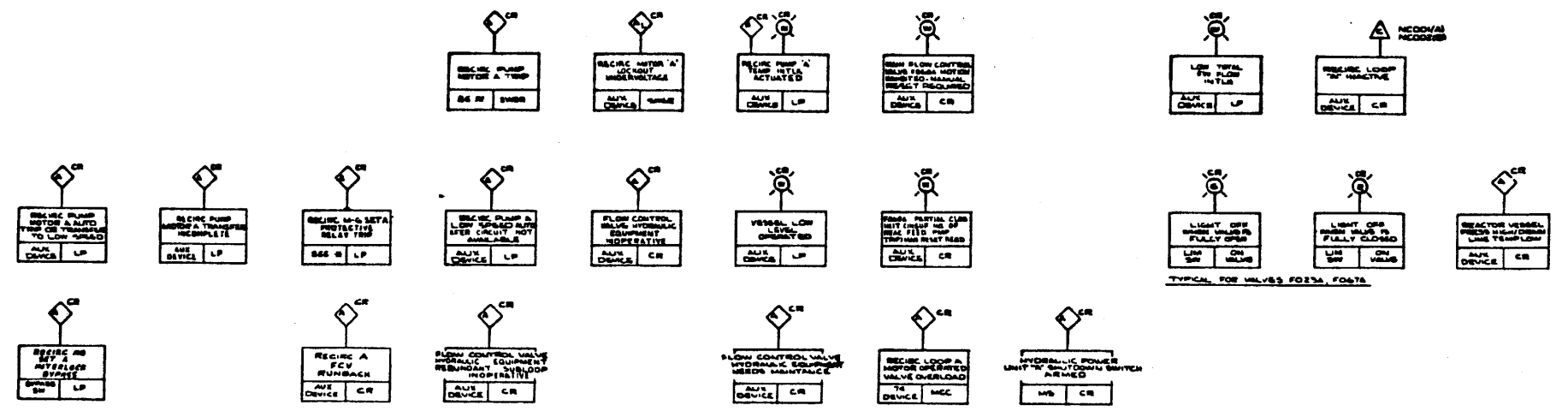
PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

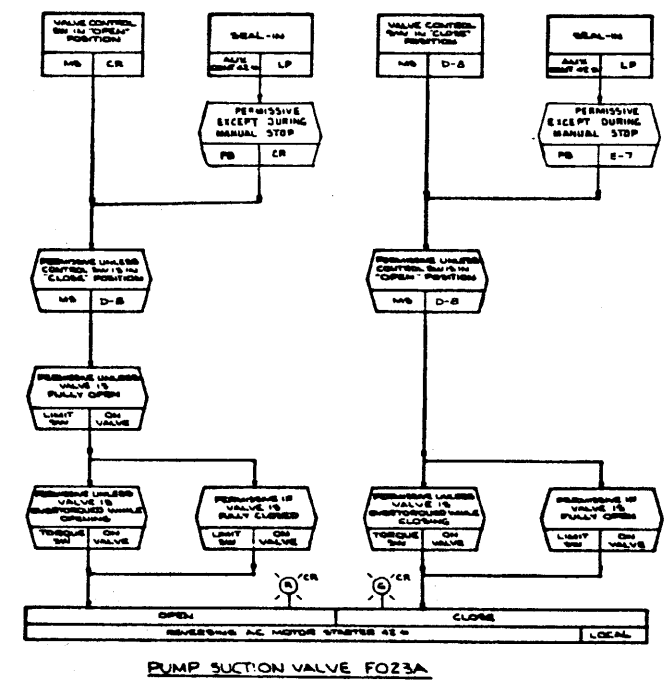
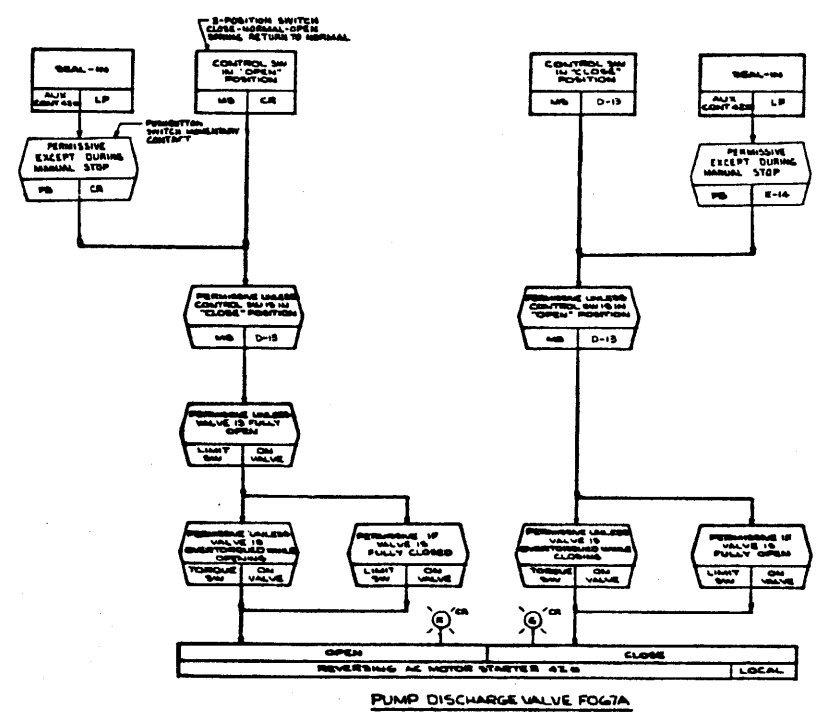
Figure 7.7-4 (Sheet 6 of 7)

[Dwg. D-808-304(6)]

FOR ADDITIONAL ALARM AND INDICATION REQUIREMENTS SEE SUPPL. QDC 1 AND 2



TYPICAL FOR VALVES FO21A, FO22A



(Rev. 12 1/03)

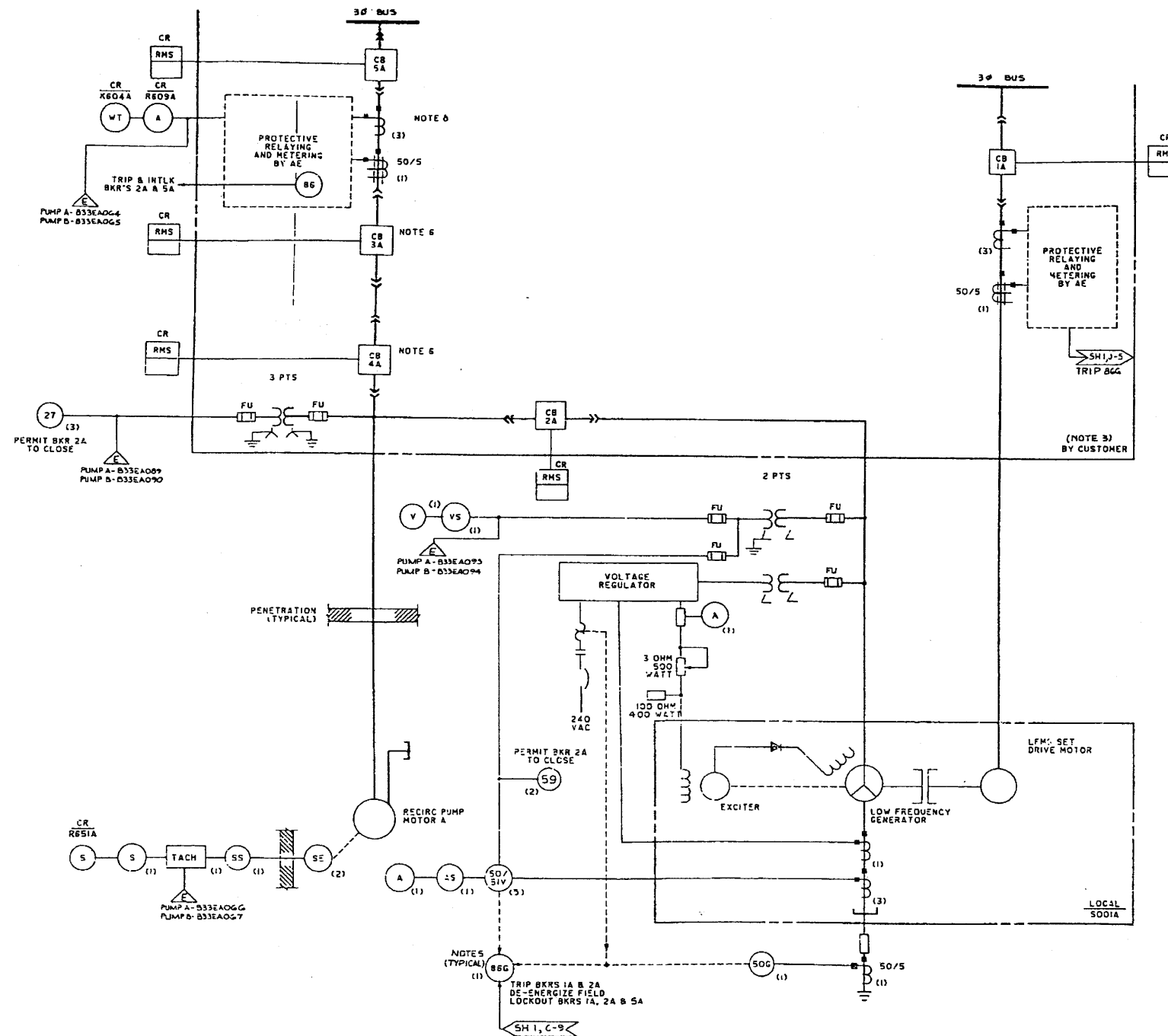
PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

Figure 7.7-4 (Sheet 7 of 7)

[Dwg. D-808-304(7)]

CNE LINE DIAGRAM



MPL NO: (833-1040)

NOTES:

1. SWITCH-GEAR DEVICE FUNCTION NUMBERS ARE PER ANSI C37.2.
2. FUNCTION IS SHOWN FOR RECIRCULATION SYSTEM A AND IS TYPICAL FOR RECIRCULATION SYSTEM B EXCEPT FOR LETTER SUFFIXES.
3. THE CUSTOMER / AE SHALL BE RESPONSIBLE FOR THE INDICATED PORTION. THE RELAYING IN CUSTOMER'S SWITCH GEAR IS FOR REFERENCE ONLY AND DETAIL DESIGN IS BY CUSTOMER / AE.
4. CR DEVICES ARE LOCATED IN PLANT CONTROL ROOM.
5. EXCEPT AS NOTED, ALL DEVICES SHOWN IN THE DIAGRAM ARE LOCATED IN THE LOCAL MG SET CONTROL CUBICLE POOLA.
6. BOTH BREAKERS 3 & 4 SHALL BE PROVIDED WITH DUAL TRIP COILS AND ONE OF THE COILS SHALL BE FOR ESSENTIAL APPLICATION. SEE REF 9.
7. NUMBERS IN () INDICATE QUANTITY.
8. ANSI METERING ACCURACY CLASS SHALL BE 0.5. BURDEN OF THE WATT TRANSDUCER IS 1. POTENTIAL CIRCUIT - 4 VA AND CURRENT CIRCUIT - 0.25 VA.
9. THE MANUAL SWITCH IS USED TO SELECT THE SIGNAL FROM THE (H) OR (L) SET OF FILTER AND LEAD/LAG UNITS DEPENDING UPON WHETHER THE PLANT IS OPERATING HIGHER OR LOWER THAN THE POWER FLOW ROD LINE AS DEFINED IN REF. DOC. II.
10. THE LOGIC UNIT SELECTS THE FLUX APPRM SIGNAL WHEN THE ABSOLUTE MAGNITUDE OF THE DIFFERENCE BETWEEN THE FLUX ESTIMATED / FLUX APPRM SIGNALS IS GREATER THAN THE VALUE DEFINED IN REF. DOC. II. / SELECTS THE FLUX ESTIMATED SIGNAL WHEN THE ABSOLUTE MAGNITUDE IS LESS THAN THE VALUE DEFINED IN REF. DOC. II. THE LOGIC UNIT ALSO SELECTS THE FLUX APPRM SIGNAL IF THE FLUX APPRM SIGNAL IS GREATER THAN THE VALUE DEFINED IN REF. DOC. II. / SELECTS THE FLUX ESTIMATED SIGNAL IF THE FLUX APPRM SIGNAL IS LESS THAN THE VALUE DEFINED IN REF. DOC. II.
11. EACH TIME THE LOGIC UNIT SELECTS FLUX APPRM, THE TIMER MEASURES THE TOTAL DURATION OVER WHICH THE FLUX APPRM SIGNAL IS PRESENT AT THE OUTPUT OF THE LOGIC UNIT. THE COILS COUNTS THE NUMBER OF TIMES (ON A GIVEN TIME PERIOD) THAT THE LOGIC UNIT SWITCHES BETWEEN THE FLUX APPRM AND FLUX ESTIMATED SIGNALS.

LEGEND:

- A = AMMETER
- AS = AMMETER SWITCH
- V = VOLTMETER
- WT = WATT TRANSDUCER
- SE = SPEED SENSOR
- SI = SPEED INDICATOR
- SS = SPEED SENSOR SWITCH
- VS = VOLTMETER SWITCH
- △ = ANALOG SIGNAL GENERATOR
- = HYDRAULIC LINE
- POS = POSITION SWITCH
- POT = POSITION TRANSMITTER
- WT = VELOCITY TRANSMITTER
- ↑ = EMERGENCY RESPONSE INFORMATION SYSTEM

REFERENCE DOCUMENTS:

1. 833-1010 REACTOR RECIRCULATION SYS PA10
2. 221-1010 NUCLEAR BOILER SYSTEM PS10
3. C51-1010 NEUTRON MONITORING SYS 1ED
4. 833-1030 REACTOR RECIRCULATION SYS ELEM DIAG
5. 833-1020 REACTOR RECIRCULATION SYSTEM FCD
6. 095-1050 ERIS ELEMENTARY DIAG.
7. C03/C04-1010 FEEDWATER SYSTEM 1ED
8. 442-1050 INSTRUMENT SYMBOLS
9. 833-1060 RPI INTERCONNECTION DIAGRAM
10. 402-412C TURBINE GENERATOR CONTROL REQUIREMENTS
11. 833-0010 REACTOR RECIRCULATION SYS VALVE FLOW CONT. DESIGN SPEC.

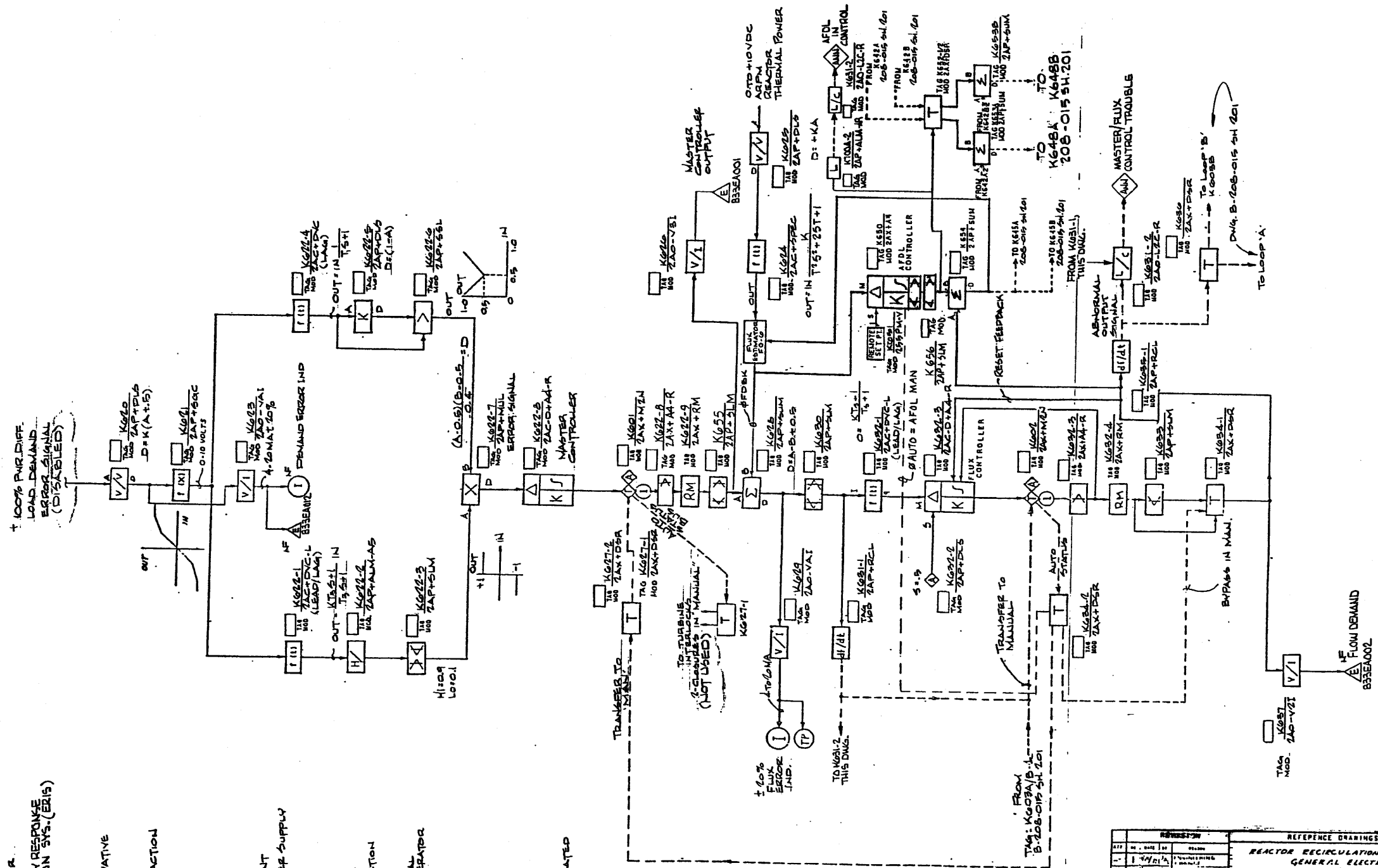
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Recirculation Flow Control
Illustrations

Figure 7.7-5 (Sheet 1 of 6)

- LEGEND**
- MEASURING OF READOUT
 - AUTOMATIC SIGNAL PROCESSING
 - ◇ MANUAL SIGNAL PROCESSING
 - FINAL CONTROLLING
 - SIGNAL REPEATER
 - Σ SUMMING
 - Δ DIFFERENCE
 - K, K PROPORTIONAL, REVERSE PROPORTIONAL
 - X MULTIPLYING, DIVIDING, ROOT EXTRACTION
 - f(x) NON-LINEAR OR UNSPECIFIED FUNCTION
 - f(t) TIME FUNCTION
 - ⊗ HIGH SELECTING
 - ⊗ LOW SELECTING
 - ⊗ HIGH LIMITING
 - ⊗ LOW LIMITING
 - ∇ VELOCITY OR RATE LIMITED
 - ±, ± BIAS
 - T TRANSFORMER
 - H/L, H/L, H/L SIGNAL MONITOR TP TEST POINT
 - ◇ 115V ± 10%, 115V ± 2% REGULATED GO HI POWER SUPPLY
 - ◇ SOLENOID
 - ⊗ NOT BY FOXBORO
 - ⊗ THREE WAY VALVE
 - ⊗ FOUR WAY VALVE
 - 1/2 CURRENT TO PNEUMATIC
 - 1/2 EMF TO PNEUMATIC
 - 1/2 EMF TO CURRENT
 - 1/2 RESISTANCE TO CURRENT
 - 1/2 QUOTE ITEM NUMBER
 - PS POWER SUPPLY (XDEC) SIGNAL ACTION
 - 3/0 INCREASING SIGNAL
 - 3/0 DECREASING SIGNAL
 - 3/0 OPERATOR FINAL OPERATOR
 - 3/0 CLOSURE FINAL OPERATOR
 - ⊗ RACK MOUNTED DEVICE
 - ⊗ REAR OF MAIN PANEL MOUNTED DEVICE
 - ⊗ REAR OF MAIN PANEL MOUNTED DEVICE
 - ⊗ FILLED THERMAL SYSTEM
 - ⊗ 50 to 100 PSIG TRANSMISSION SIGNAL
 - ⊗ 0 TO 10 VDC TRANSMISSION SIGNAL
 - ⊗ OTHER ELECTRICAL SIGNAL
 - △ PLANT AIR SUPPLY - CLEAN, DRY 50-100 PSIG
 - INSTRUMENT AIR SUPPLY - CLEAN DRY 20 PSIG REGULATED
 - CONNECTION
 - ⊗ UNION
 - ⊗ SHUTOFF OR ISOLATING VALVE
 - ⊗ TEST TEE, w/GAUGE
 - ⊗ CAPACITY TANK
 - ⊗ DIAGRAM OPERATOR
 - ⊗ AIR SUPPLY REGULATED, FILTER w/GAUGE
 - ⊗ SET AT 20 PSIG
 - ⊗ 50-100 PSIG
 - ⊗ LEADS SHIELDED WITH UNLESS OTHERWISE NOTED



NOTE:
THIS DRAWING AS BUILT REV (-) PER
ENGINEERING REVIEW

REVISION		REFERENCE DRAWINGS	
1	REVISED	205-A3110	REV D
2	REVISED	205-AH 927	REV D
3	REVISED	77N-62632/3	REV D

(Rev. 12 1/03)

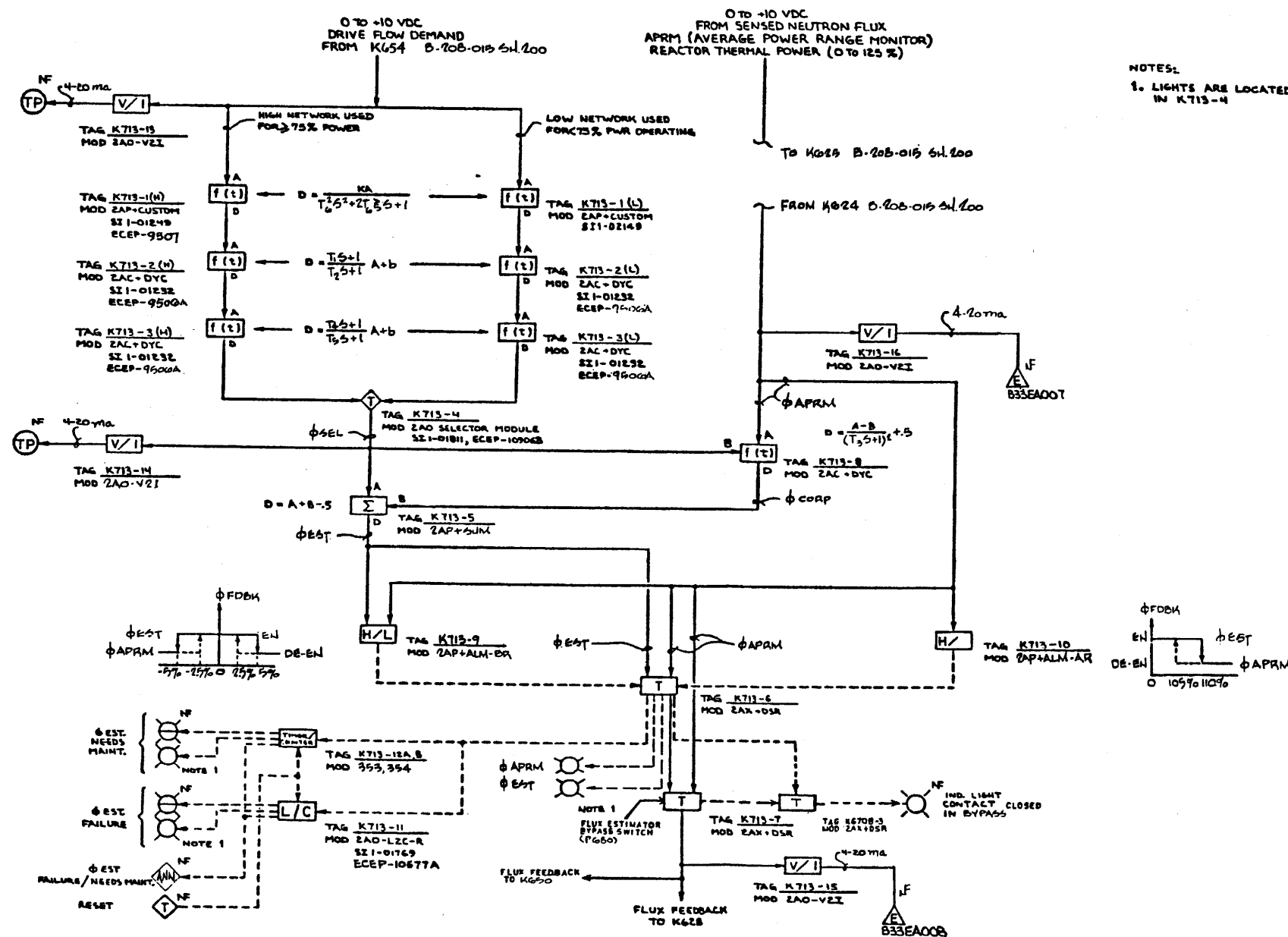
PERRY NUCLEAR POWER PLANT

Recirculation Flow
Control Illustrations

Figure 7.7-5 (Sheet 2 of 6)
[Dwg. B-208-015(200)]

NOTE:
THIS DRAWING AS BUILT REV(-) PER
ENGINEERING REVIEW

NOTES:
1. LIGHTS ARE LOCATED
IN K713-4



(Rev. 12 1/03)



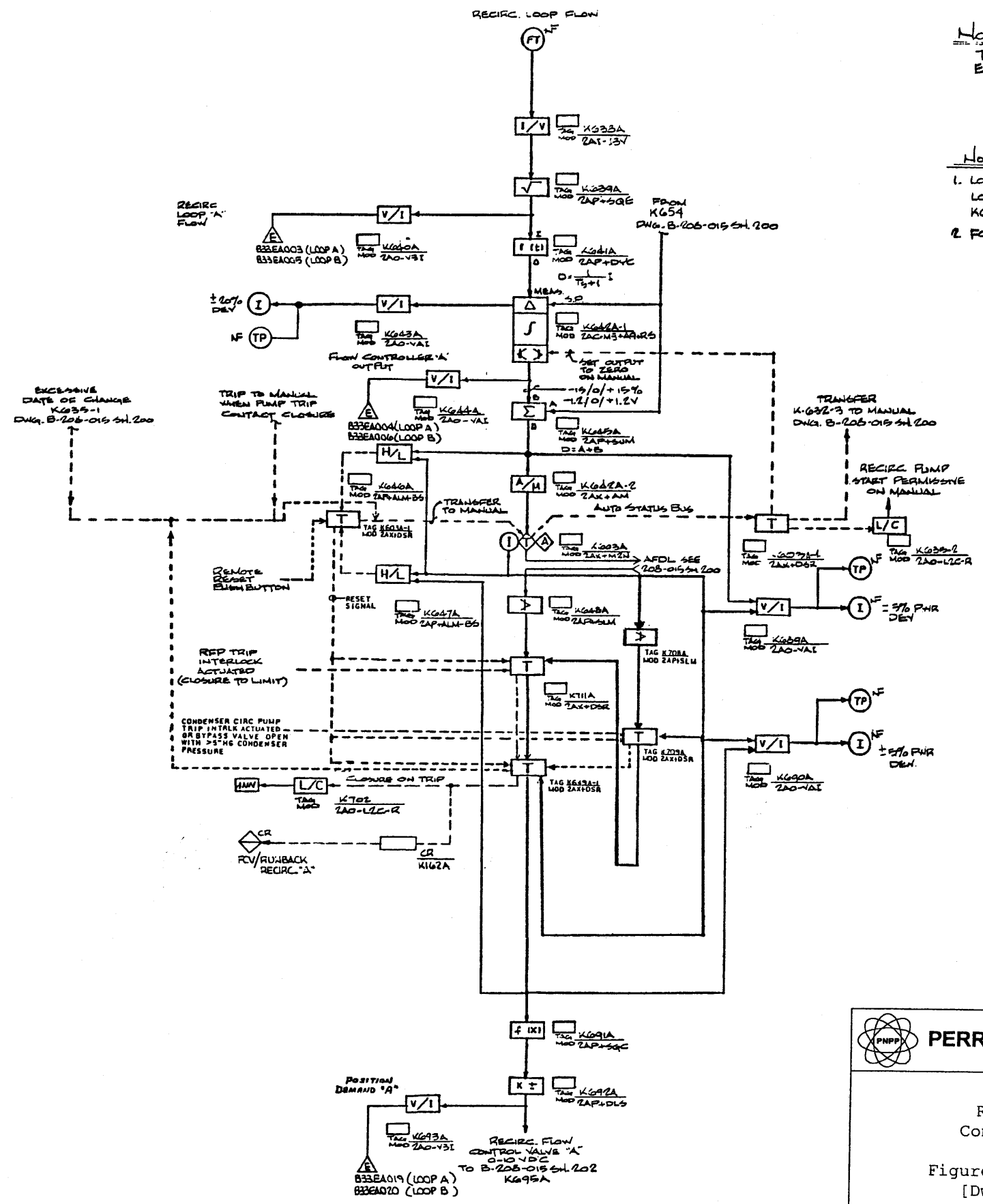
PERRY NUCLEAR POWER PLANT

Recirculation Flow
Control Illustrations

Figure 7.7-5 (Sheet 3 of 6)
[Dwg. B-208-015(205)]

NOTE:
THIS DRAWING AS BUILT REV(-) PER
ENGINEERING REVIEW

NOTES:
1. LOOP 'B' SAME AS LOOP 'A' EXCEPT FOR TAGS.
LOOP 'A' LOOP 'B'
K652A CHANGES TO K652B
2. FOR LEGEND SEE DWG. B-208-015 SH. 200



(Rev. 12 1/03)

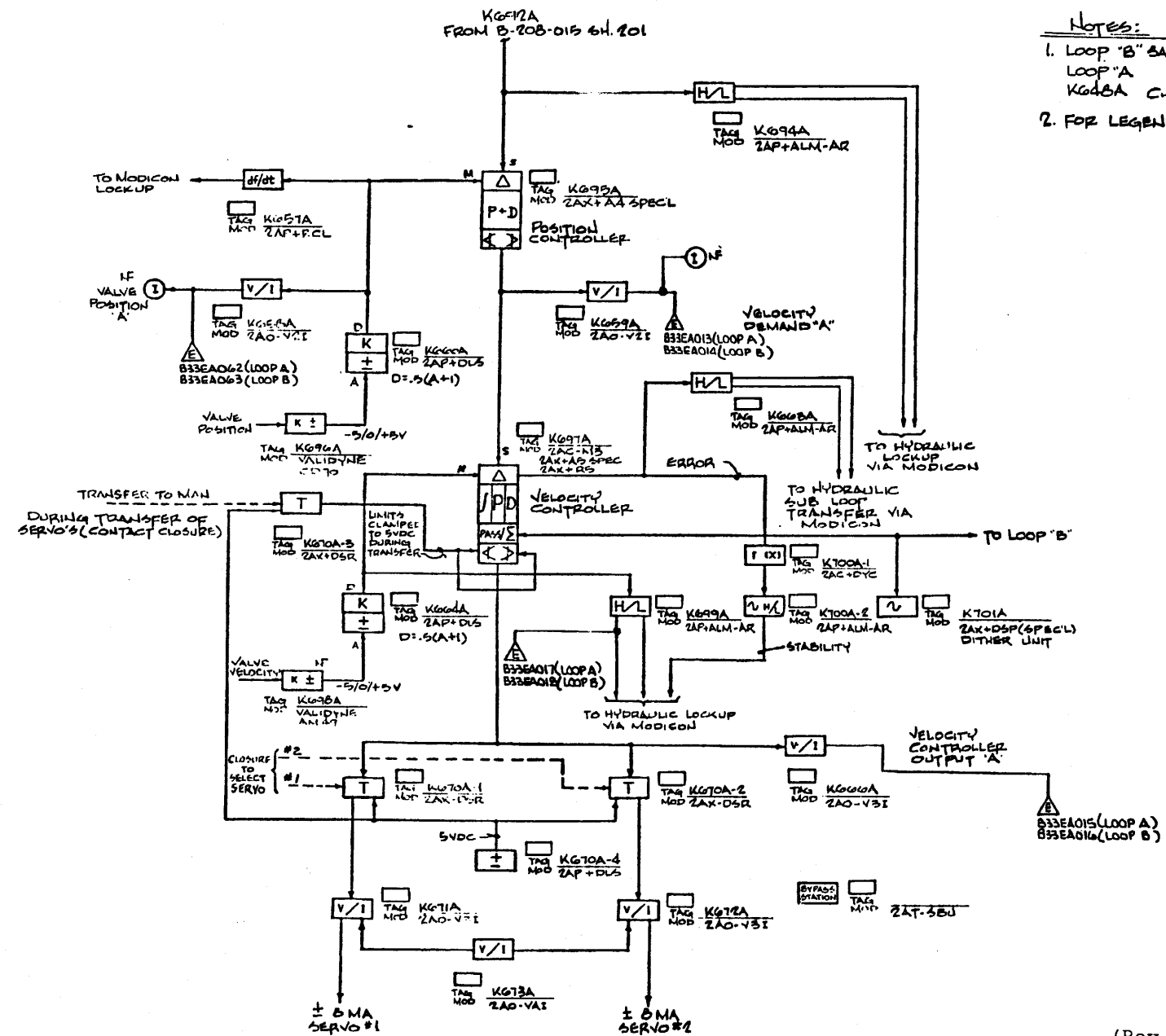
PERRY NUCLEAR POWER PLANT

Recirculation Flow
Control Illustrations

Figure 7.7-5 (Sheet 4 of 6)
[Dwg. B-208-015(201)]

NOTE:
THIS DRAWING AS BUILT REV (L) PER
ENGINEERING REVIEW

- NOTES:
1. LOOP "B" SAME AS LOOP "A" EXCEPT FOR TAGS
LOOP "A" K048A CHANGES TO K048B
 2. FOR LEGEND SEE DWG. B-208-015 SH. 200

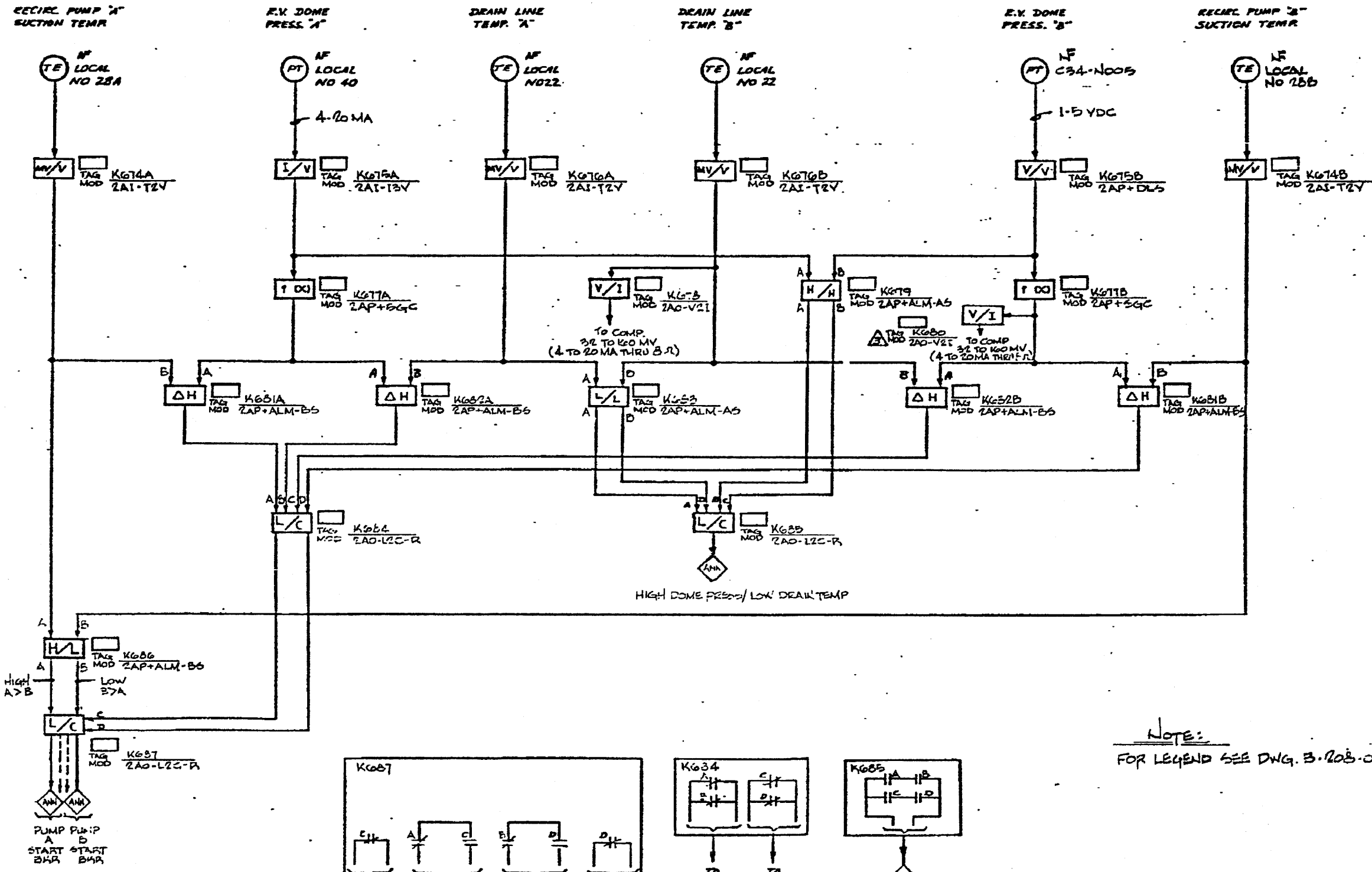


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT


Recirculation Flow
Control Illustrations

Figure 7.7-5 (Sheet 5 of 6)
[Dwg. B-208-015(202)]



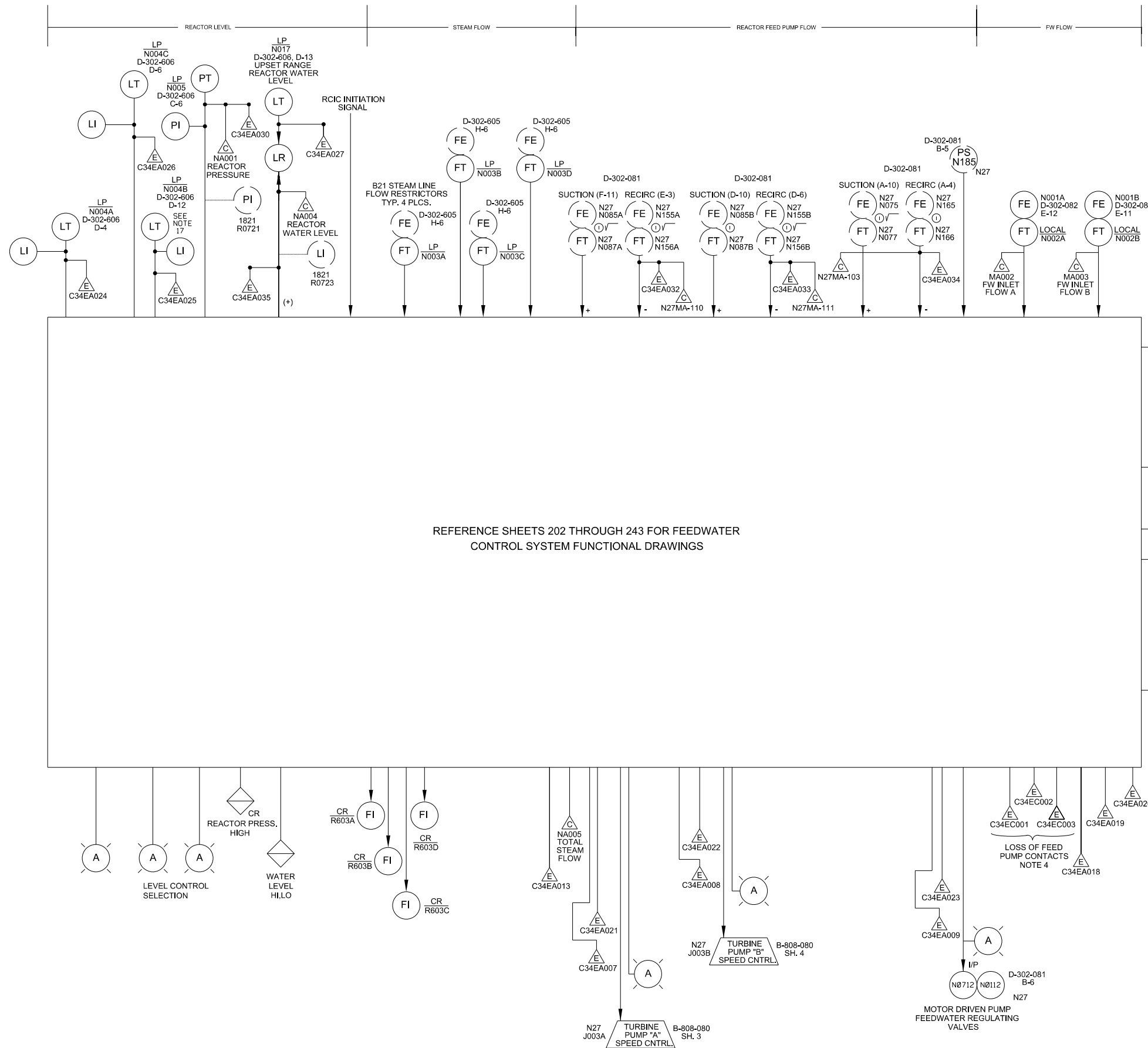
NOTE:
FOR LEGEND SEE DWG. B-208-015 SH. 200

(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

Recirculation Flow
 Control Illustrations

Figure 7.7-5 (Sheet 6 of 6)
 [Dwg. B-208-015(203)]



REFERENCE SHEETS 202 THROUGH 243 FOR FEEDWATER CONTROL SYSTEM FUNCTIONAL DRAWINGS

- NOTES:**
1. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY SYSTEM NO. C34, UNLESS OTHERWISE NOTED.
 2. DEVICES K624A, B AND C TRIP CONTACTS TO BE WIRED IN 2/3 LOGIC SO THAT ANY 2 DEVICES MUST TRIP TO INITIATE MAIN AND AUXILIARY TURBINE STEAM STOP VALVE TRIP. POWER SOURCES TO THE LEVEL TRIP CHANNELS MUST BE FROM INDEPENDENT SOURCES.
 3. THE POWER SOURCE FOR THE FEEDWATER INSTRUMENTATION AND CONTROL SYSTEM SHALL HAVE AT LEAST THE SAME DEGREE OF RELIABILITY AS THE POWER SOURCE FOR THE REACTOR FEED/BOOSTER/CONDENSATE PUMPS.
 4. CONTACTS FROM EACH TRIP AND DISCHARGE VALVE INDICATE WHEN PUMP IS OPERATING AND CAPABLE OF DELIVERING WATER. THE LOGIC TO INDICATE THE TRIP IS OPERATING UTILIZES THE TRIP SYSTEM OIL PRESSURE SWITCH. THE L.P. STOP VALVE CLOSES PARTIALLY DURING VALVE TESTING; WHEREAS THE H.P. STOP VALVE CLOSES COMPLETELY WHEN TESTED.
 5. SWITCHES SHALL BE SNAP ACTION SWITCHES, CONTACT OPERATION BEING INDEPENDENT OF SPEED OF CONTROL ROOM OPERATOR ACTION TO AVOID CONTROL SYSTEM TRANSIENTS DURING SWITCHING.
 6. FUNCTION GENERATORS SPECIALLY CHARACTERIZED BASED ON TURBINE RP PUMP UNIT MA SIGNAL VS FW FLOW LB/MR CHARACTERISTICS TO BE SUBMITTED TO G.E. BY CUSTOMER/A.E. FOR G.E. DESIGN COMPLETION.
 7. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS, SEE INSTRUMENT DATA SHEET C34-3050.
 8. INITIATING SIGNAL FOR SET POINT SET DOWN SHALL BE LEVEL 3 (K626A) UNTIL SCRAM SIGNAL ISOLATION DEVICE BECOMES AVAILABLE.
 13. THIS SYSTEM DIAGRAM IS A PHOTOGRAPHIC REPRODUCTION OF G.E. DRAWING B51E567, SHEETS 1 AND 2. SPECIFIC REVISION IS SHOWN BENEATH GAI TITLE BLOCK.
 14. REFER TO INSTRUMENT INDEX FOR INSTRUMENT RACK AND PANEL IDENTIFICATION NUMBERS.
 15. SELECTOR SWITCHES, INDICATING LIGHTS, AND ANNUNCIATOR POINTS SHOWN ON THESE DIAGRAMS, ARE LOCATED ON 1M13-P68B.
 16. SYMBOL = EMERGENCY RESPONSE INFORMATION SYSTEM (ERIS).
 17. THIS SIGNAL MAY BE DELAYED BY A MAXIMUM OF 5 MINUTES WHEN STEAM LINE FLOWS ARE ≥ 100 FEET/SECOND, AS SENSED BY MAIN TURBINE FIRST STAGE PRESSURE.

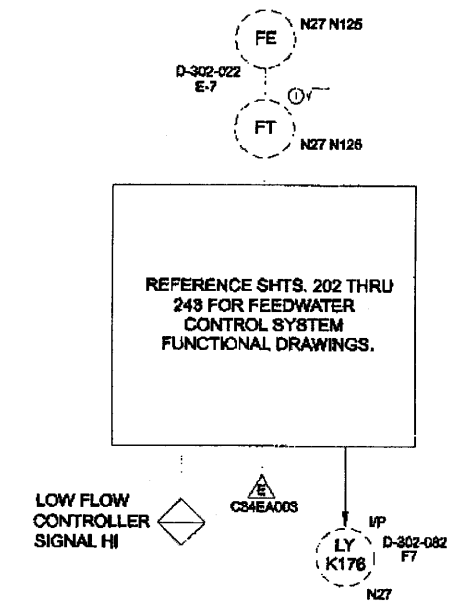
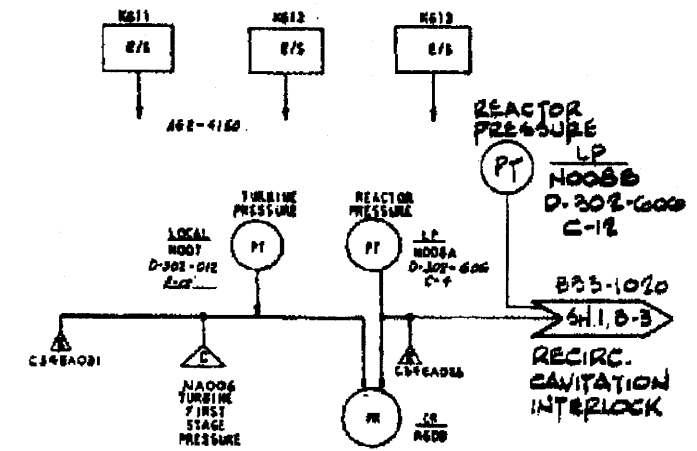
- REFERENCES:-**
- C34-4010 FEEDWATER CONTROL SYSTEM DESIGN SPECIFICATION
 - D-302-605 NUCLEAR BOILER SYSTEM B21
 - D-302-606 NUCLEAR BOILER SYSTEM B21
 - D-302-607 NUCLEAR BOILER SYSTEM B21
 - B33-1020 REACTOR RECIRCULATION SYSTEM FCD
 - A62-4150 AUXILIARY AND STANDBY AC POWER
 - D-302-081 FEEDWATER SYSTEM N27
 - D-302-082 FEEDWATER SYSTEM N27
 - D-802-009 REACTOR - TURBINE - GENERATOR TRIP DIAGRAM
 - D-302-121 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
 - D-302-012 REHEAT STEAM SYSTEM N11
 - B-808-080 FEEDWATER SYSTEM LOOP DIAGRAM
 - B-808-101 CONDENSATE SYSTEM LOOP DIAGRAM
 - A42-1030 LOGIC SYMBOLS
 - A42-1050 INSTRUMENT SYMBOLS
 - C34-3050 INSTRUMENT DATA SHEETS
 - C91-4030 COMPUTER I/O LIST
 - B-208-025 FEEDWATER CONTROL SYSTEM ELEMENTARY DIAGRAM (C34)
 - B-208-149 FEEDWATER SYSTEM ELEMENTARY DIAGRAM (N27)
 - D-302-124 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
 - A62-4530 TRANSIENT TEST INSTRUMENTATION REQUIREMENTS
 - C95-1050 ERIS ELEMENTARY DIAGRAM

NOTE:
THIS DRAWING REPLACES DRAWING
D-808-0081 SH. 1.

(REV. 20 10/2017)


PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

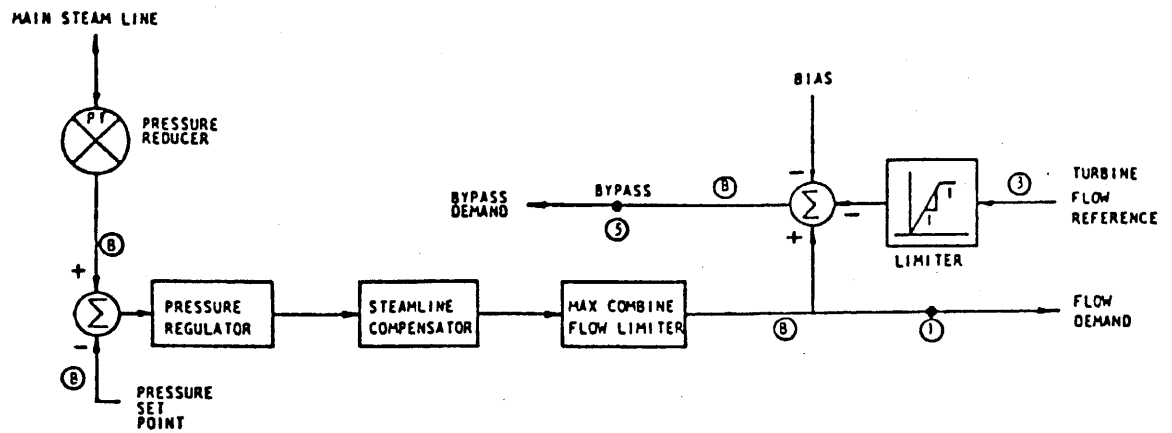
FEEDWATER CONTROL SYSTEM INSTRUMENTATION AND ELECTRICAL DIAGRAM
FIGURE 7.7-6 (SHEET 1 OF 2)
(DWG. B-208-0025-00200)



NOTE:
 THIS DRAWING REPLACES DRAWING
 D-302-081 SH. 2

(Rev. 14 10/05)

	PERRY NUCLEAR POWER PLANT
	Feedwater Control System Instrumentation and Electrical Diagram Figure 7.7-6 (Sheet 2 of 2) [Dwg. B-208-025(A201)]



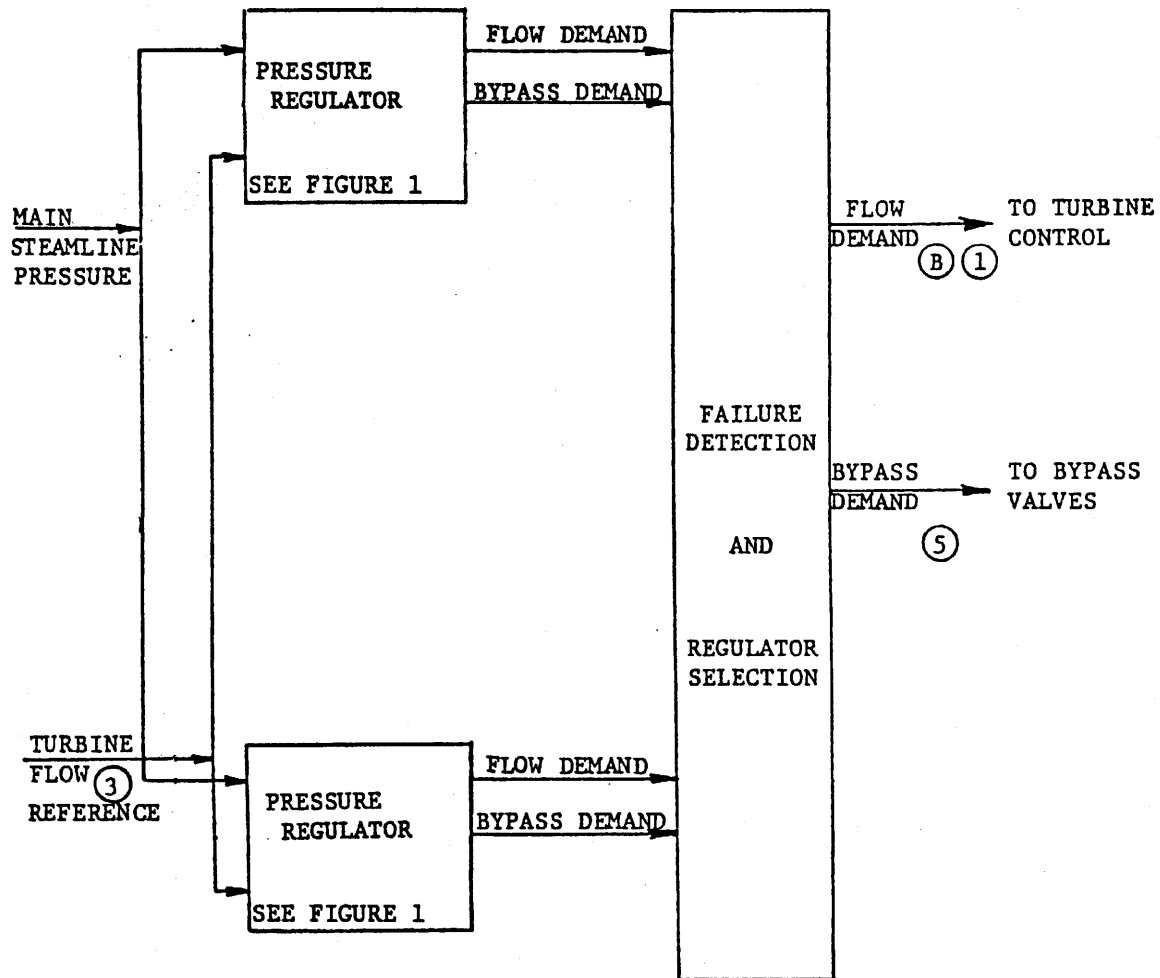
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Pressure Regulator/Turbine Control
System Diagram

Figure 7.7-7 (Sheet 1 of 2)



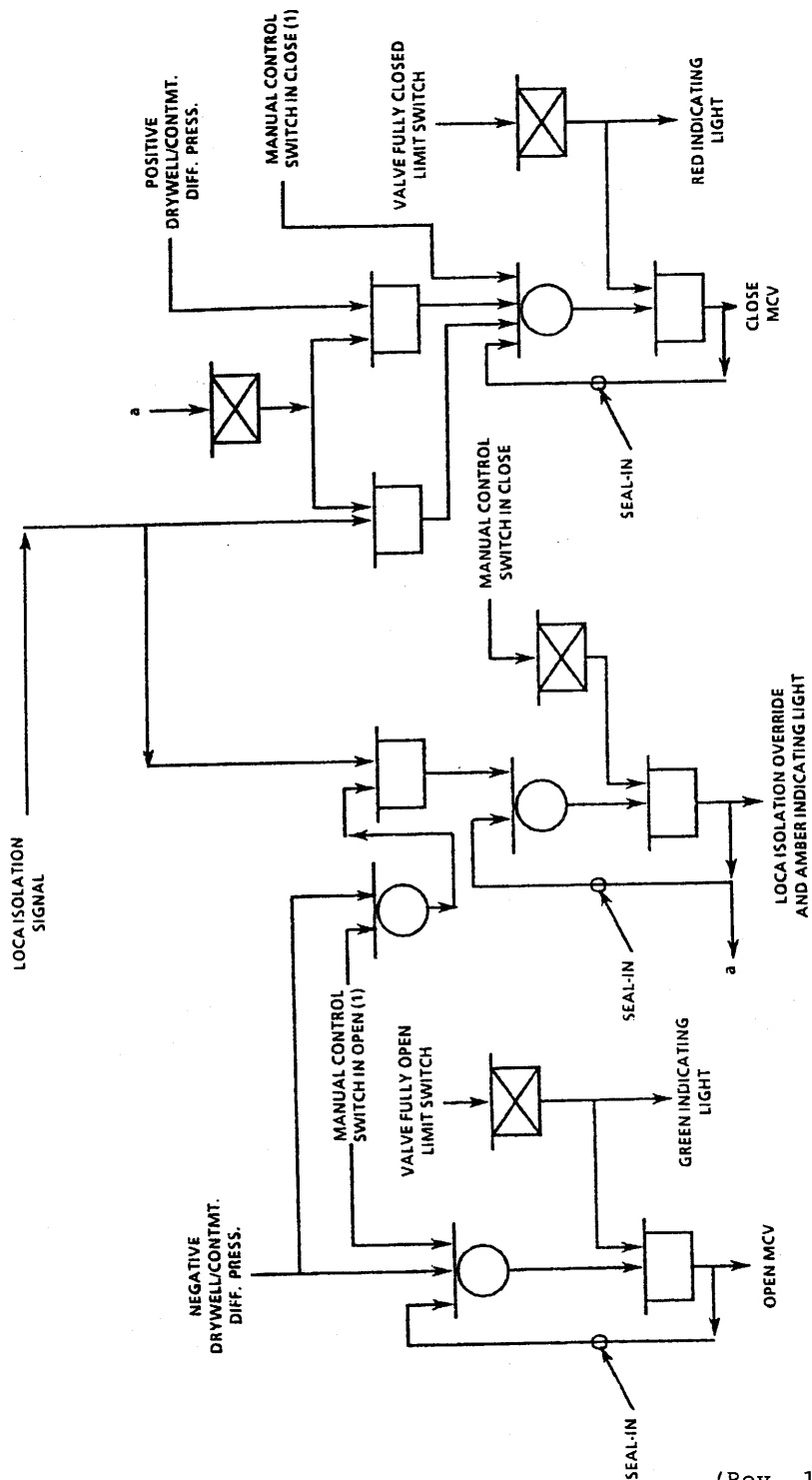
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT


Pressure Regulator/Turbine Control
System Diagram

Figure 7.7-7 (Sheet 2 of 2)



NOTE:
 (1) Manual Control Switches are Spring Return to Neutral or Center Position.

(Rev. 12 1/03)

	PERRY NUCLEAR POWER PLANT
Drywell Vacuum Relief System Control Logic for Motor Operated Isolation Valves	
Figure 7.7-8	