

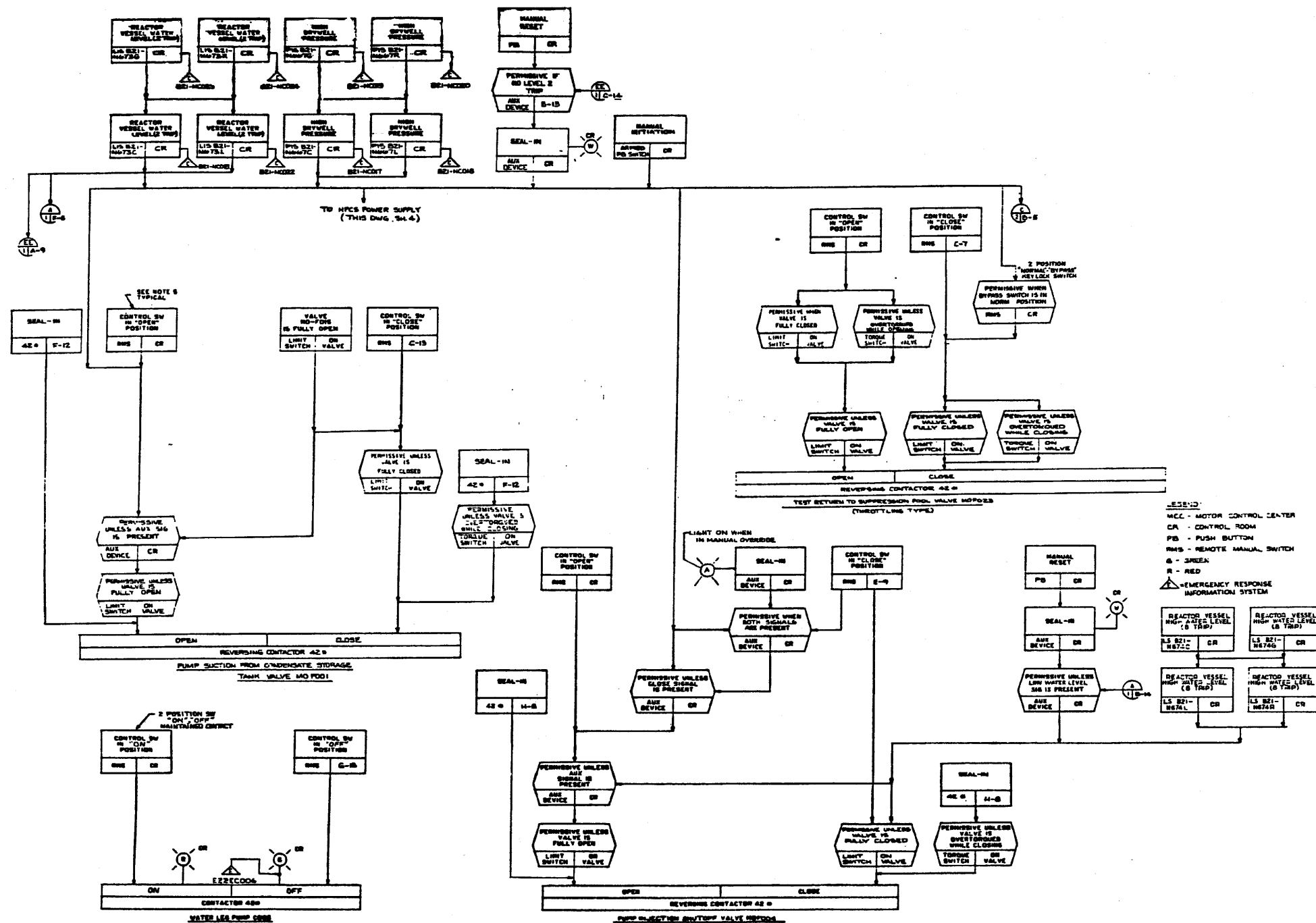
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Reactor Protection System
Instrumentation and Electrical
Diagram

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



- NOTES:
1. A) 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. 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 PREVIEWED BY SYSTEM NUMBER 222 UNLESS OTHERWISE NOTED.
 4. FOR ADDITIONAL ALARMS & PROCESS INSTRUMENTATION NOT SHOWN SEE REF. 1.
 5. UNLESS OTHERWISE NOTED ALL SWs SHALL BE 3 POSITION SWITCHES. "CLOSE" - "OPEN" - "STOP" (RETURN TO "STOP"). FROM "CLOSE" - "OPEN".
 6. THE HPCS SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH: (HNP-2791071) & (HNP-2791072).
 7. LABEL "2" IS PART OF LIGHT AND LOCATED BELOW REGULAR HPCS ANNUNCIATION LABEL AS SHOWN.

- REFERENCE DOCUMENTS:
- | NO. | DOCUMENT | REV. | DATE |
|-----|-----------------------------------|----------|---------|
| 1. | HPCSS POWER SUPPLY PWD | 122-1000 | 02-1-80 |
| 2. | HPCSS CONTROL SYSTEM PWD | 122-1000 | 02-1-80 |
| 3. | DELETED | | |
| 4. | LEAK DETECTION SYS. PWD | 122-1000 | 02-1-80 |
| 5. | ELECTRICAL POWER SYSTEM PWD | 122-1000 | 02-1-80 |
| 6. | LOGIC SYMBOLS | 122-1000 | 02-1-80 |
| 7. | REDAUNDANT REACTIVITY CONTROL SYS | 122-1000 | 02-1-80 |
| 8. | END ELEMENTARY DIAGRAM | 122-1000 | 02-1-80 |

NUCLEAR SAFETY RELATED

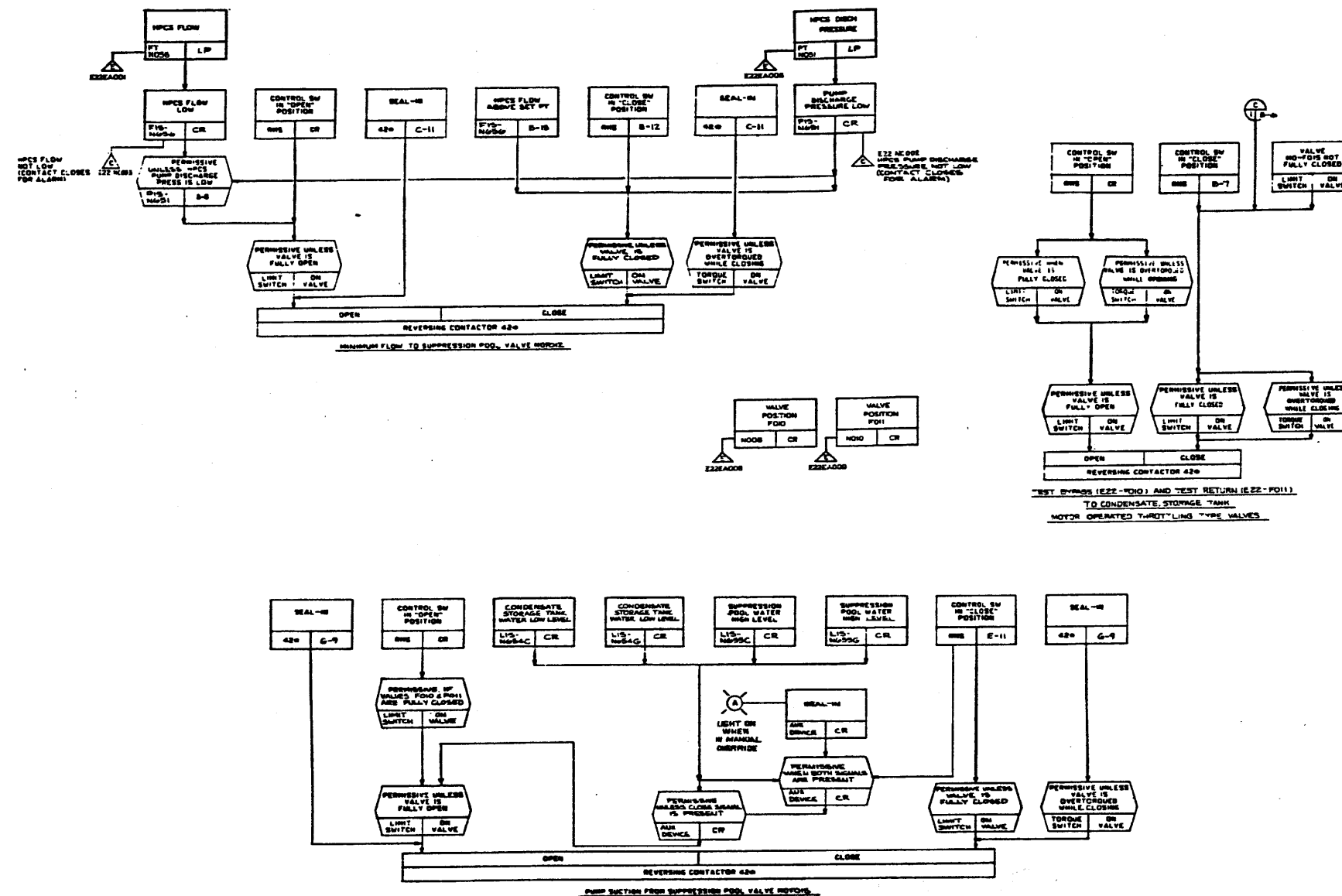
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

High Pressure Core Spray System

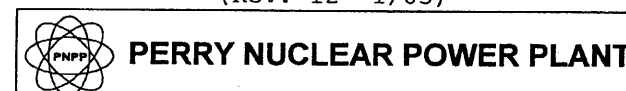
Figure 7.3-1 (Sheet 1 of 3)

(Dwg. D-808-311)



NUCLEAR SAFETY RELATED

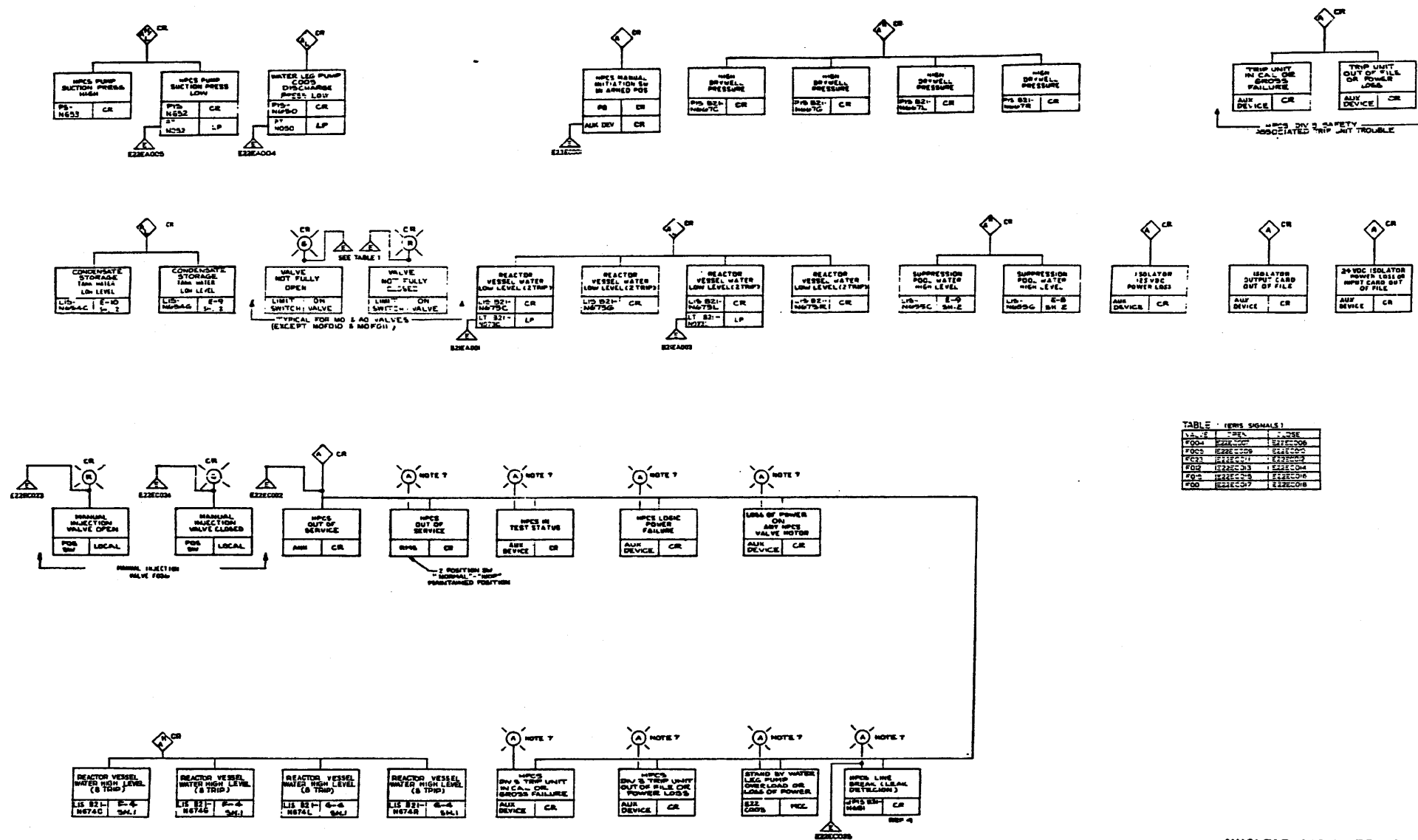
(Rev. 12 1/03)



High Pressure Core Spray System

Figure 7.3-1 (Sheet 2 of 3)

(Dwg. D-808-311)



NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

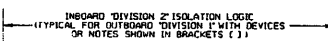
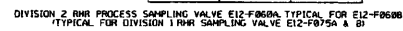
PERRY NUCLEAR POWER PLANT

High Pressure Core Spray System

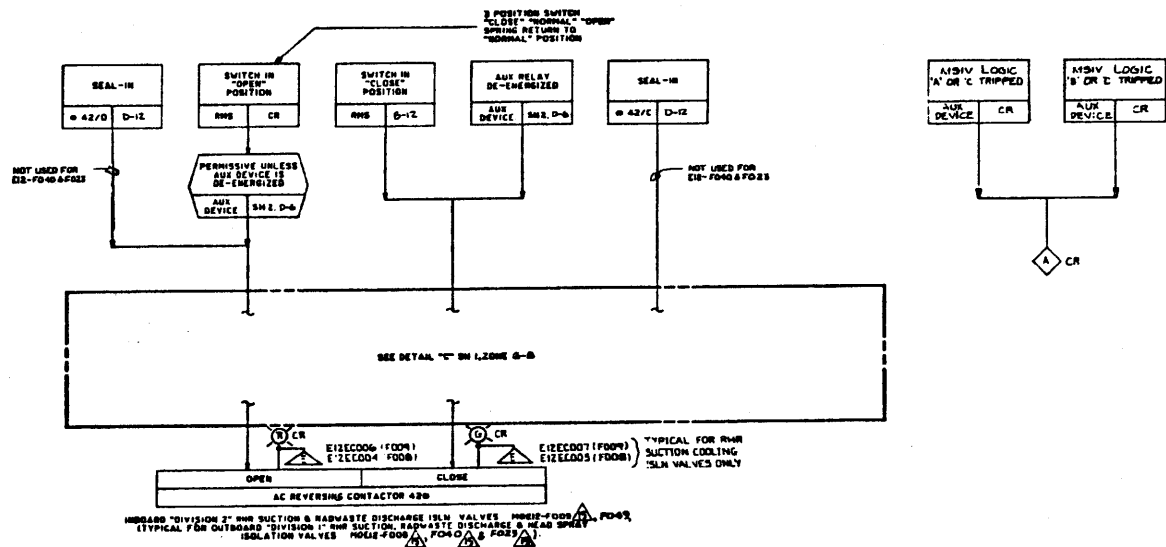
Figure 7.3-1 (Sheet 3 of 3)

(Dwg. D-808-311)

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



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



NUCLEAR SAFETY RELATED

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 3 of 7)

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

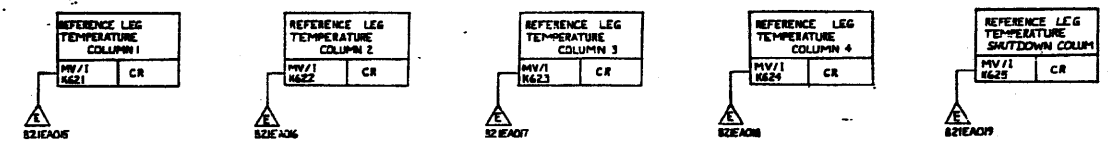
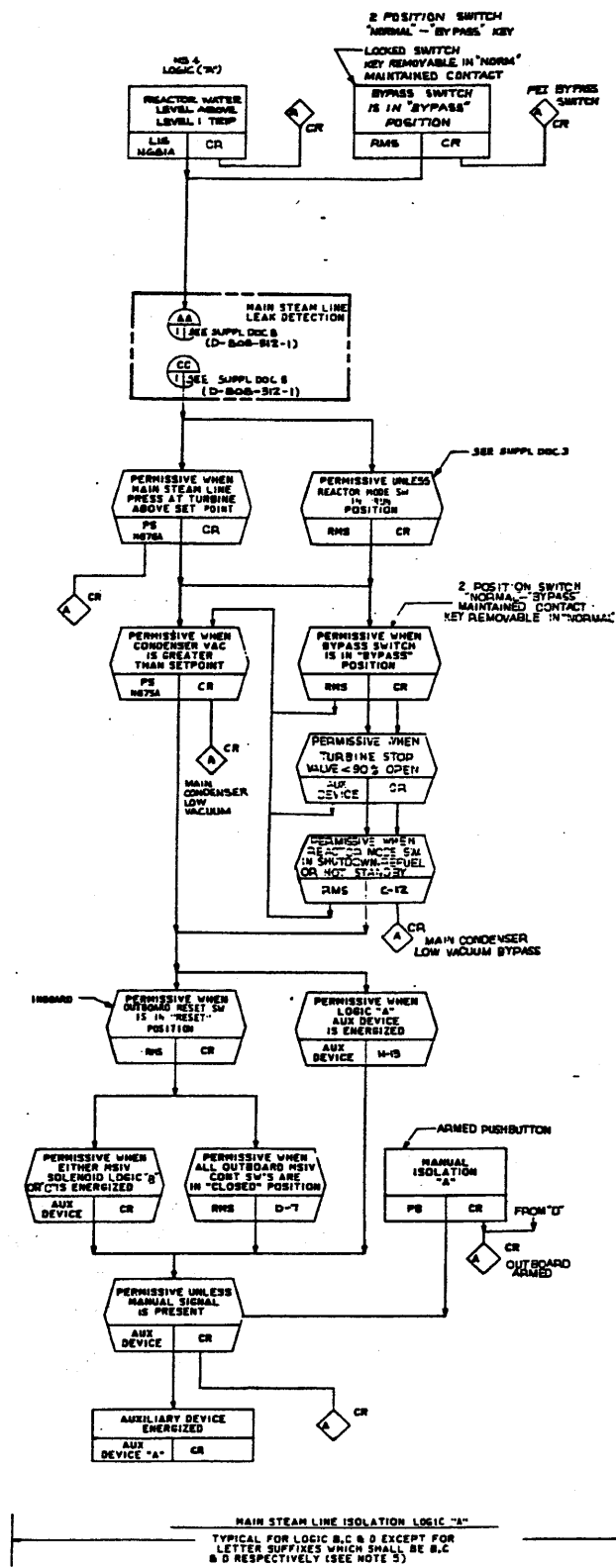
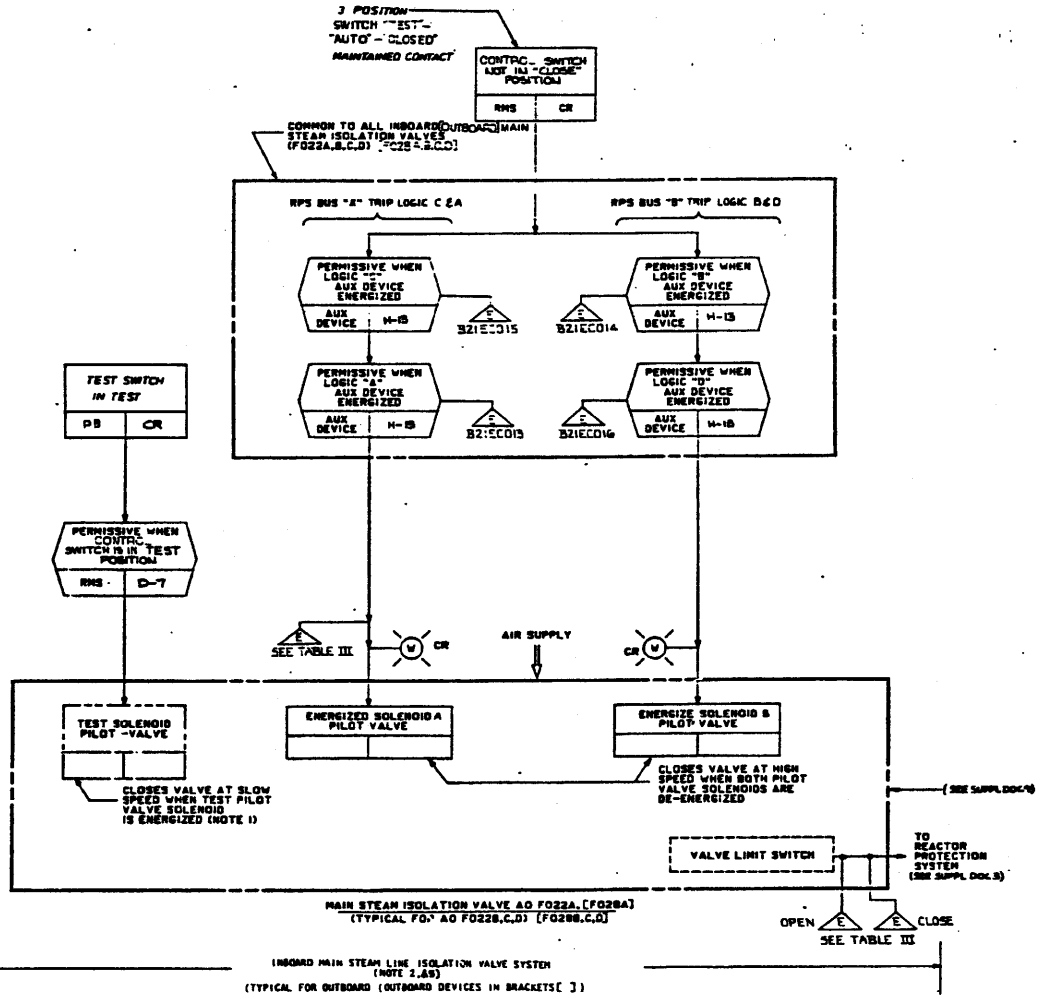


TABLE III - ERIS SIGNALS - MSIV

ALVE	PILOT	SOLENOID	VALVE >90% OPEN	VALVE <90% OPEN
INBOARD	B21-F022A	B21E006A	B21E007C	B21E007I
	B21-F022B	B21E007C	B21E007S	B21E007T
	B21-F022C	B21E007S	B21E007T	B21E0080
	B21-F022D	B21E0080	B21E0081	B21E0082
OUTBOARD	B21-F028A	B21E0081	B21E0082	B21E0083
	B21-F028B	B21E0082	B21E0083	B21E0084
	B21-F028C	B21E0083	B21E0084	B21E0085
	B21-F028D	B21E0084	B21E0085	B21E0086



NUCLEAR SAFETY RELATED

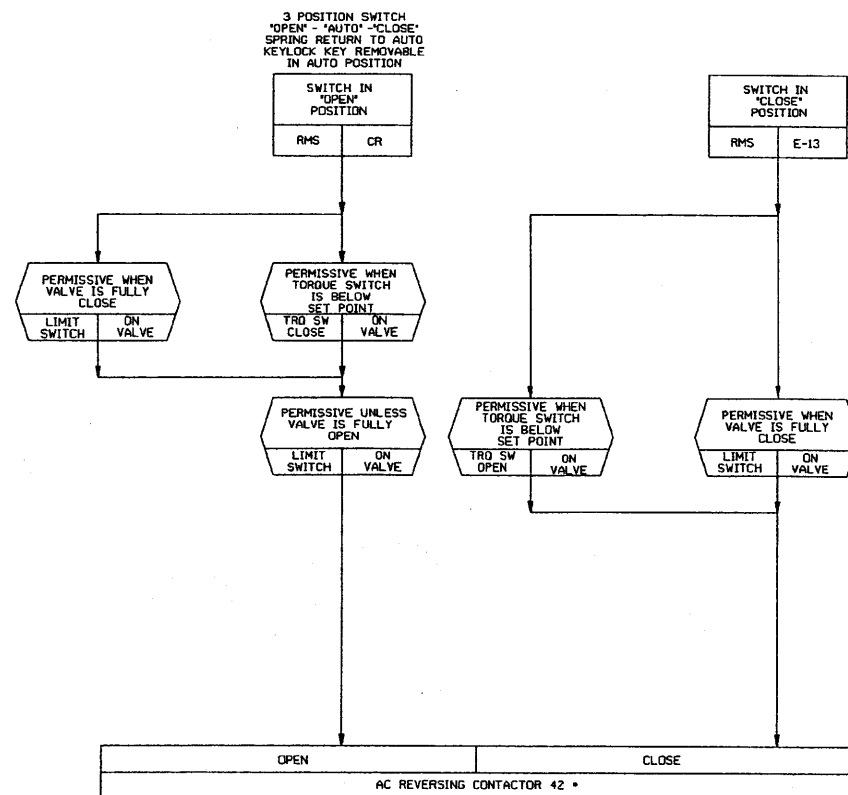
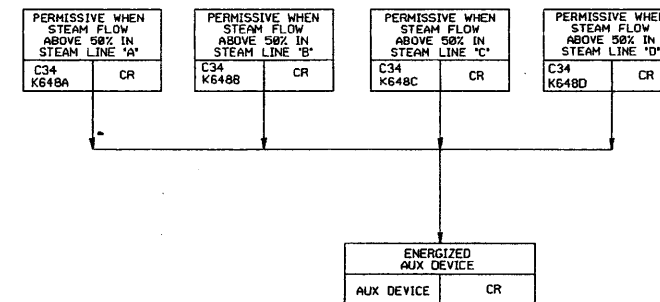
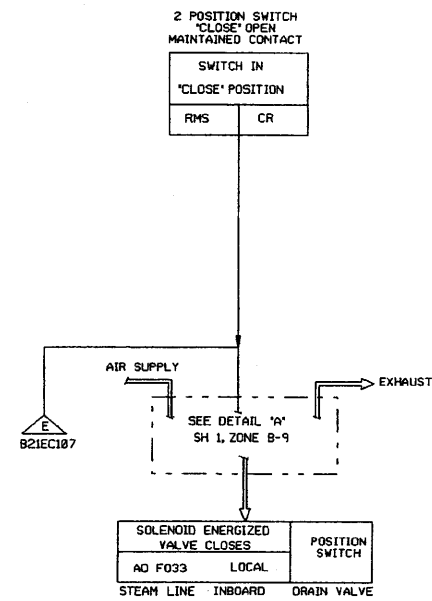
(Rev. 12 1/03)

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 MO INU-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)



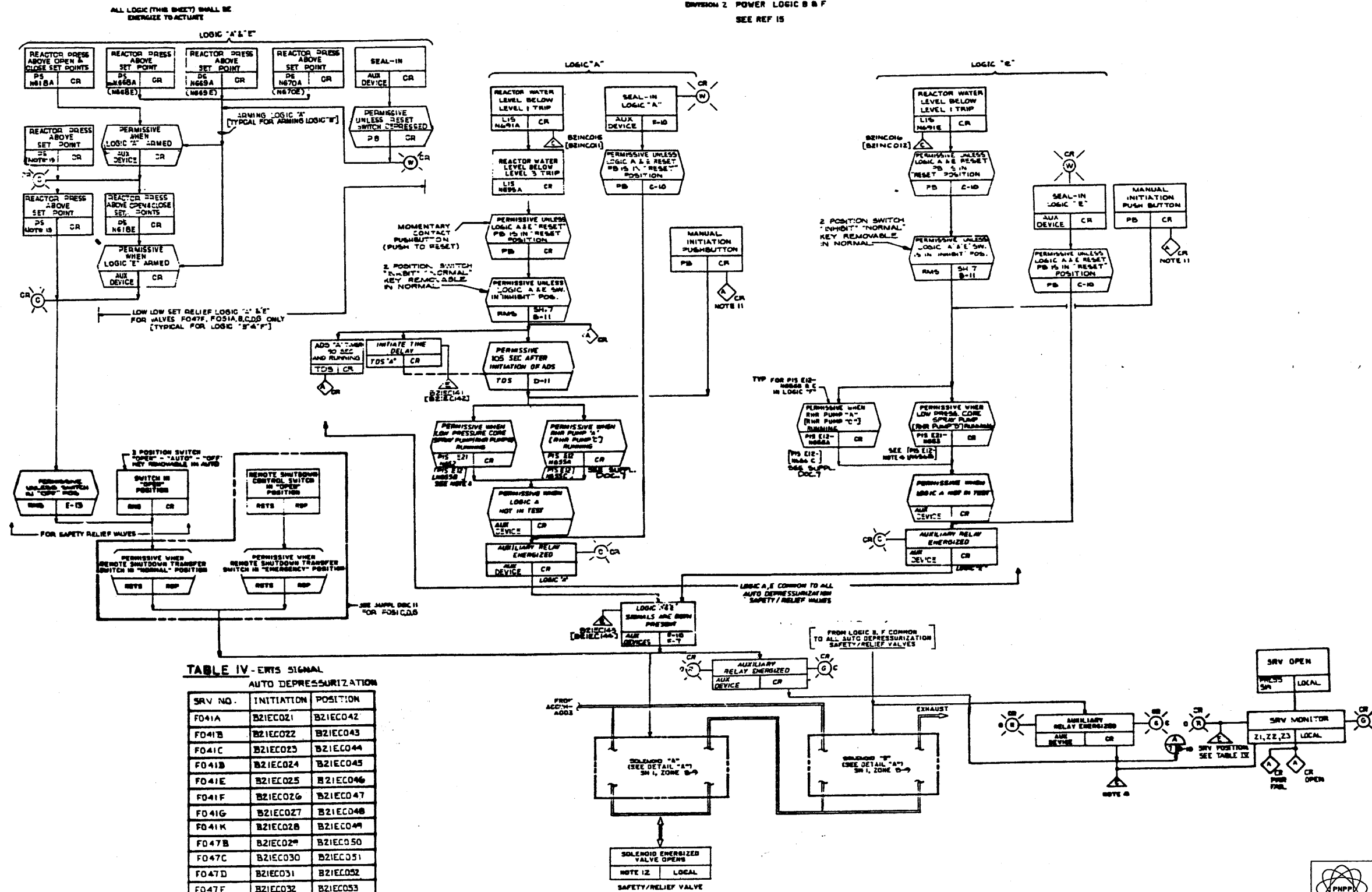
PERRY NUCLEAR POWER PLANT

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



NUCLEAR SAFETY RELATED

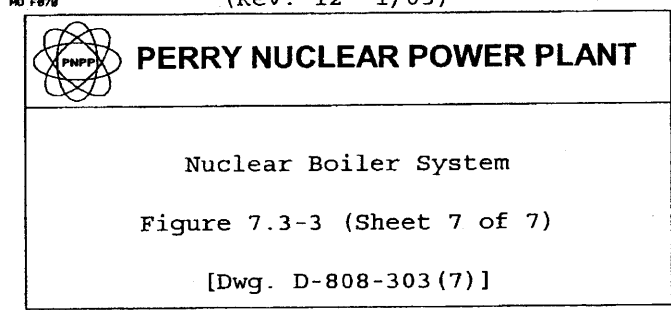
(Rev. 12 1/03)

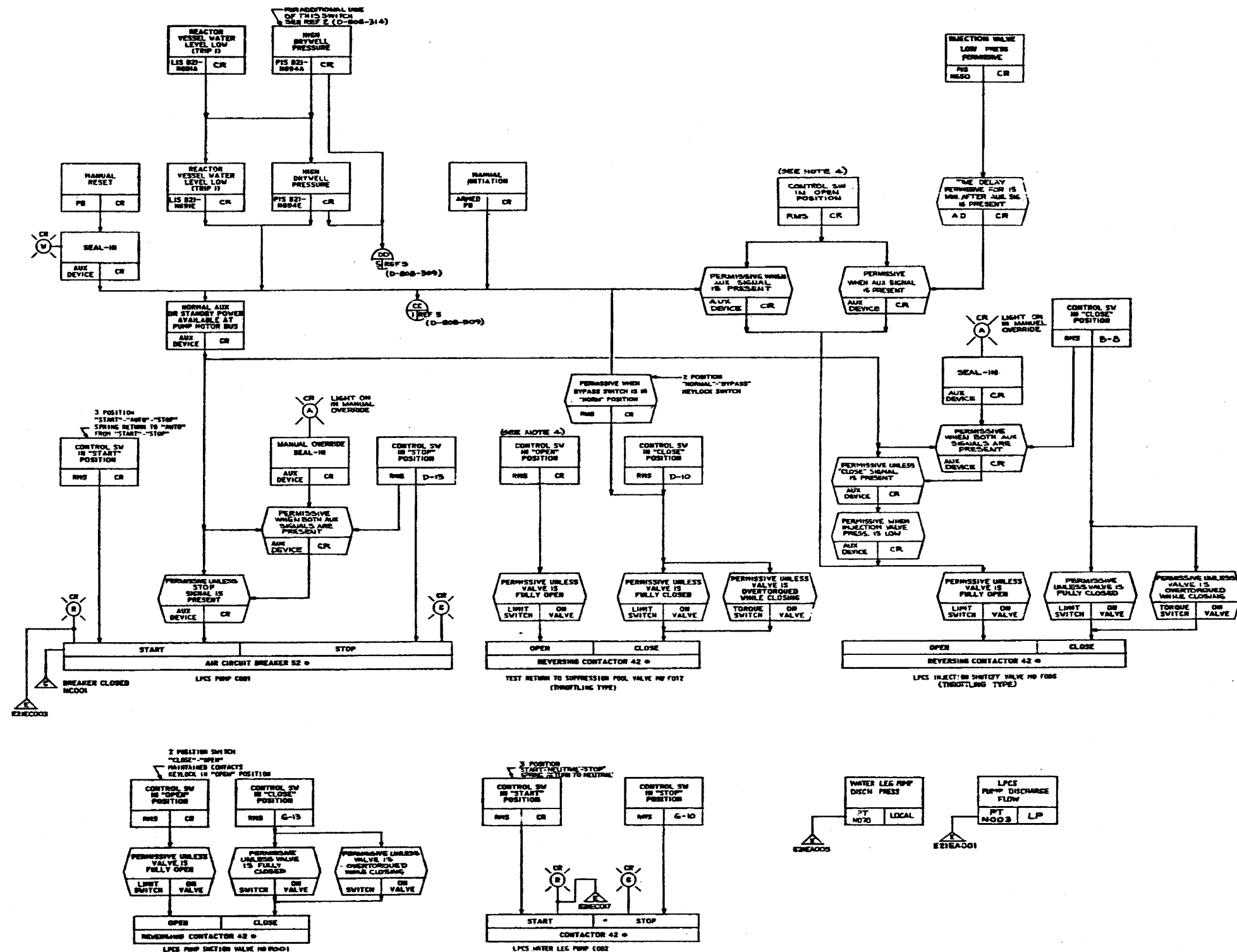
PERRY NUCLEAR POWER PLANT

Nuclear Boiler System

Figure 7.3-3 (Sheet 6 of 7)

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





- 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 SHORT-CIRCUIT CURRENT PROTECTIVE TRIPS.
 3. FOR ADDITIONAL PROCESS INSTRUMENTATION NOT SHOWN, SEE REF. 1.
 4. UNLESS OTHERWISE NOTED, ALL RVS SHALL BE 3 POSITION SWITCHES, "CLOSE" "AUTO" "OPEN". SPRINGS RETURN TO "AUTO" FROM "CLOSE" OR "OPEN".
 5. CONTROL AND MOTIVE POWER FOR LPCS SHALL BE FROM SAME SOURCE AS THE PWB LOOP "AP EQUIPMENT" (REF. 5).
 6. THE LPCS SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH IEEE 275-1971 AND REF. 7.

REFERENCE DOCUMENTS	REF. LITER. NO.
1. LOW PRESSURE CORE SPRAY SYSTEM PWB	E21-1010
2. REAC. CORE, MAIN CLO. SYSTEM PWB	E21-1010
3. NUCLEAR ROILER SYSTEM PWB	E21-1010
4. RESIDUAL HEAT REMOVAL SYSTEM PWB	E21-1010
5. RESIDUAL HEAT REMOVAL SYSTEM PWB	E21-1010
6. NUCLEAR ROILER SYS. PWB	E21-1010
7. ELECTRICAL EQUIPMENT SEPARATION FOR SAFEGUARD SYSTEM	AE2-4030
8. LEAK DETECTION SYS. (NEEP)	E21-1010
9. EPS ELEMENTARY DIAGRAM	C20-1000

LEGEND:
 RVS - SWITCHING DEVICE FUNCTION NO. AND SPEC. CST. 2
 IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEER.
 E21EAC001 - EMERGENCY RESPONSE INFORMATION SYSTEM

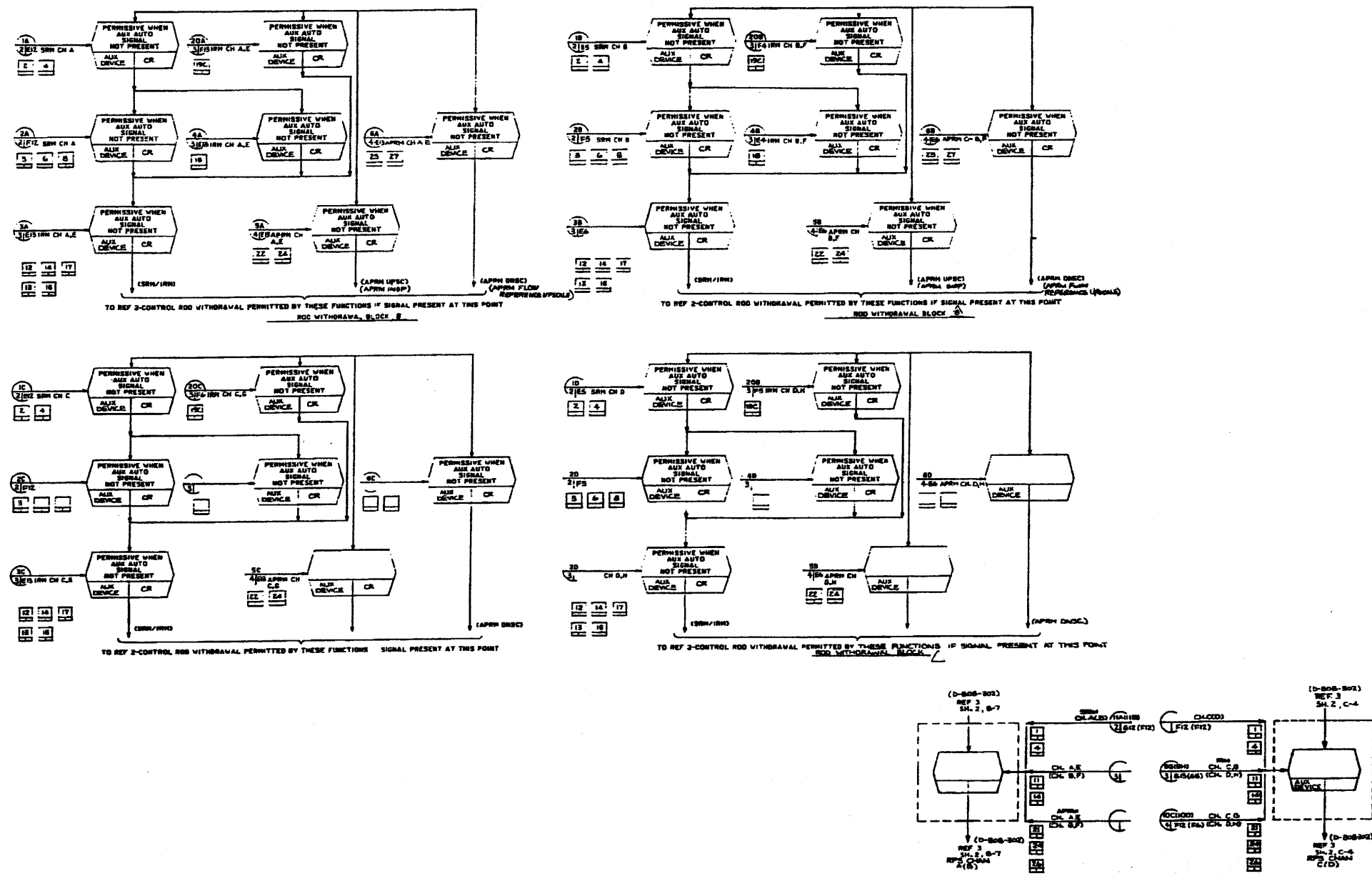
NUCLEAR SAFETY RELATED

(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)]



1. THE EVENT THAT POWER IS LOST. FOLLOWING ACTIONS WILL BE INITIATED AFTER POWER IS RESTORED.
2. IN AUTOMATIC MODE, DETECTOR RETURNS TO "000" VIA AUTOMATIC WIDE PATH. DETECTOR MUST THEN BE RETURNED TO STORAGE POSITION TO REPROGRAM DETECTOR.
3. IN MANUAL MODE, MUST RESTART MANUAL SWITCH IN REVERSE AND RETURN TO STORAGE POSITION TO REPROGRAM DETECTOR.
4. THE TIME DURATION OF THE RESPONSE SHALL BE COMPATIBLE WITH ASSOCIATED COMPUTER.
5. EQUIPMENT & INSTRUMENTS BY
6. CHANNELS A, C, E & G CHANNELS B, D, F & H
- 7.

△ ROD WITHDRAWAL BLOCKS SUBJECT TO BYPASSING AT SUBSYSTEM LEVEL - SEE SHEETS

LEGEND

□ -- WITHIN BLOCK (SEE DETAILS WITH NUMBERS)

--- INTERMEDIATE RANGE

--- AVERAGE POWER

--- SOURCE RANGE

--- LOCAL POWER RANGE

--- TRIMMING IN-CORE

MOC -- MULTIPLE OUTPUT

△ --

REFERENCE DOCUMENTS

1. PERFORMANCE DESIGN SPEC --- HPL ITEM No. / DWG. No.

2. CONTROL ROD WTD SYS --- C11-1030 / D-808-305

3. REACTOR PROTE SYS --- C11-1040 / D-808-306

4. REDUNDANT REACTIVITY --- C22-1030 / D-808-307

5. DIS ELEMENT DIAGRAM --- / D-808-308

6. PERFORMANCE MONITORING SYS ---

LEGEND (CONT.)

DCU --

△ --

FIGURE 3

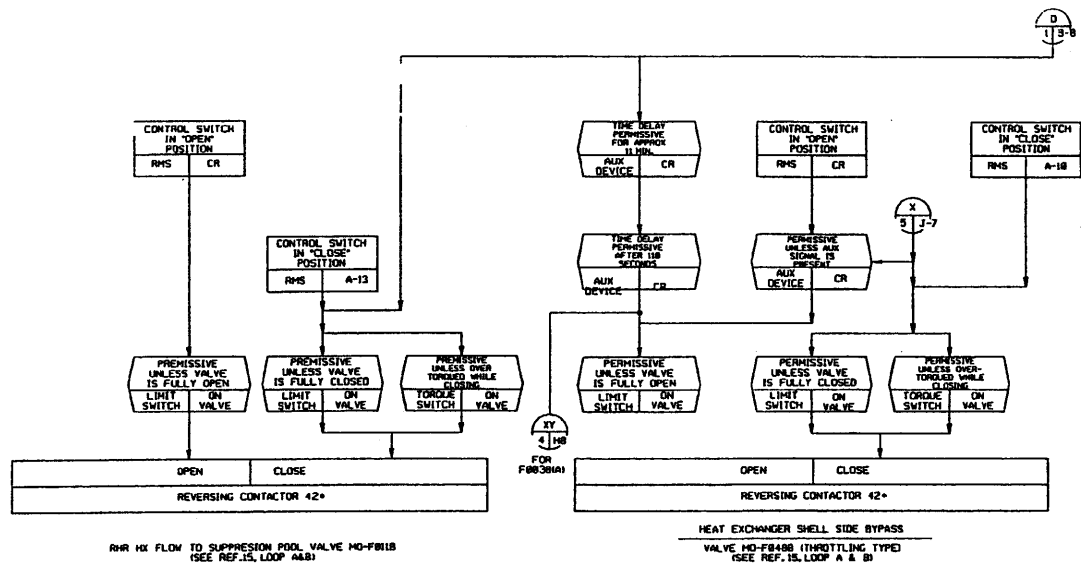
(Rev. 12 1/03)

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)

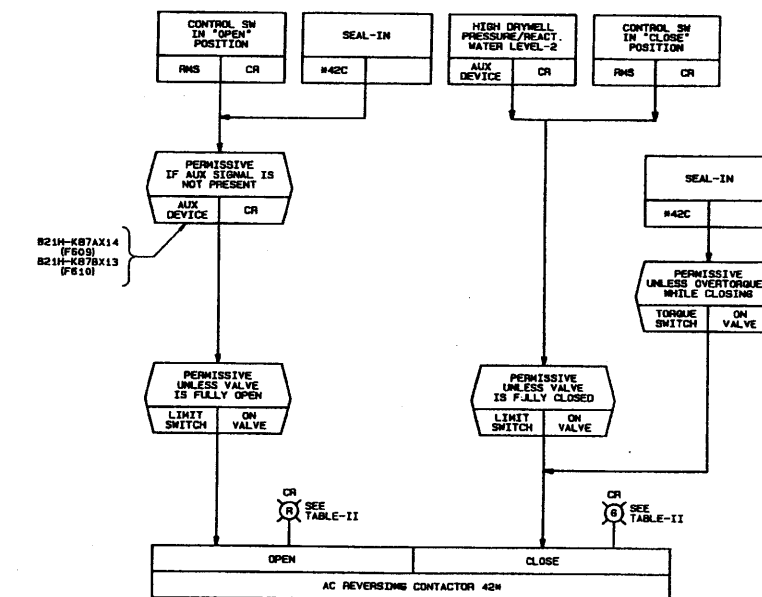
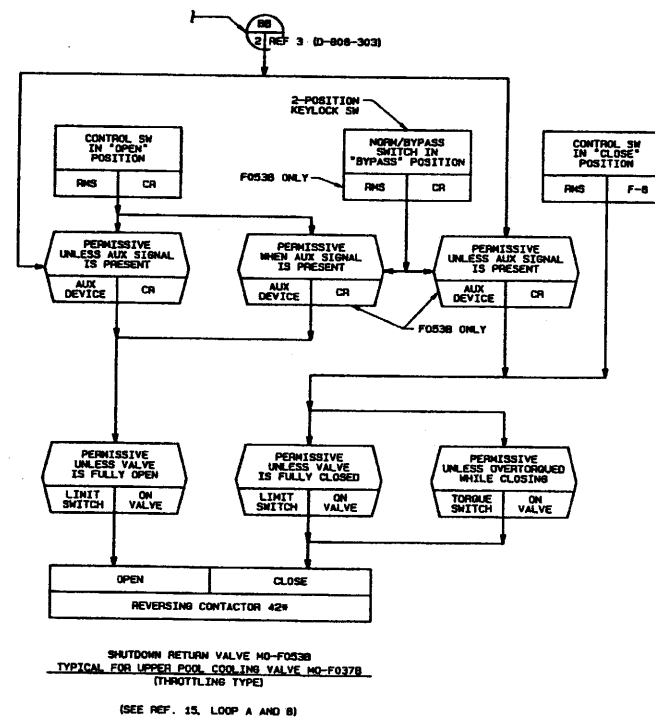
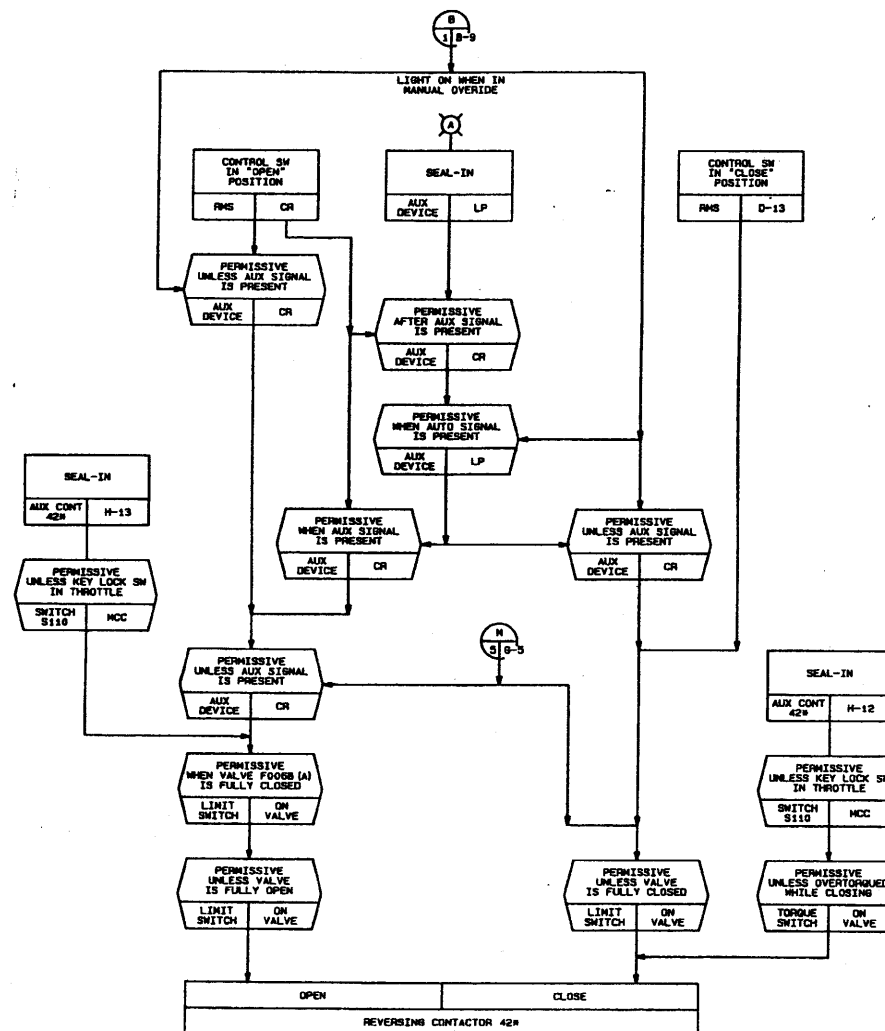
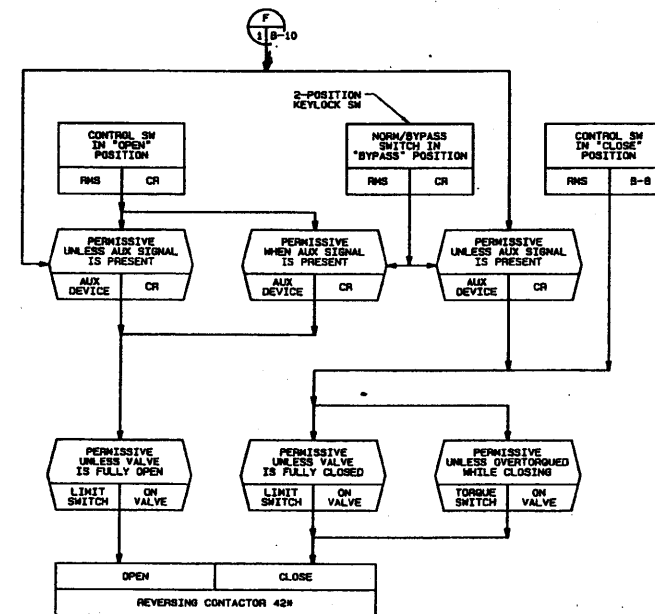
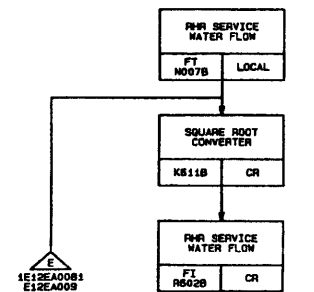


PERRY NUCLEAR POWER PLANT

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

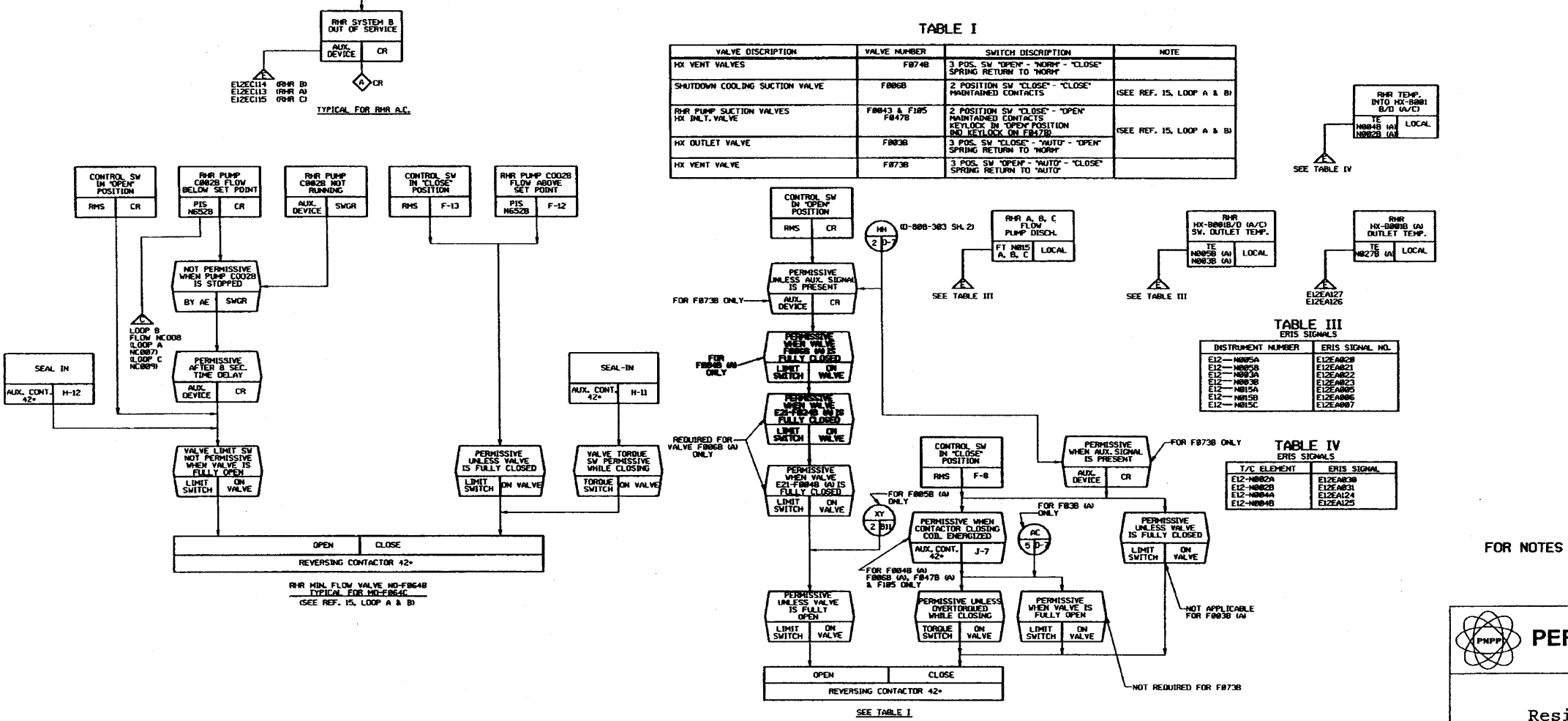
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System

Figure 7.3-5 (Sheet 3 of 5)

[Dwg. D-808-309(3)]



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

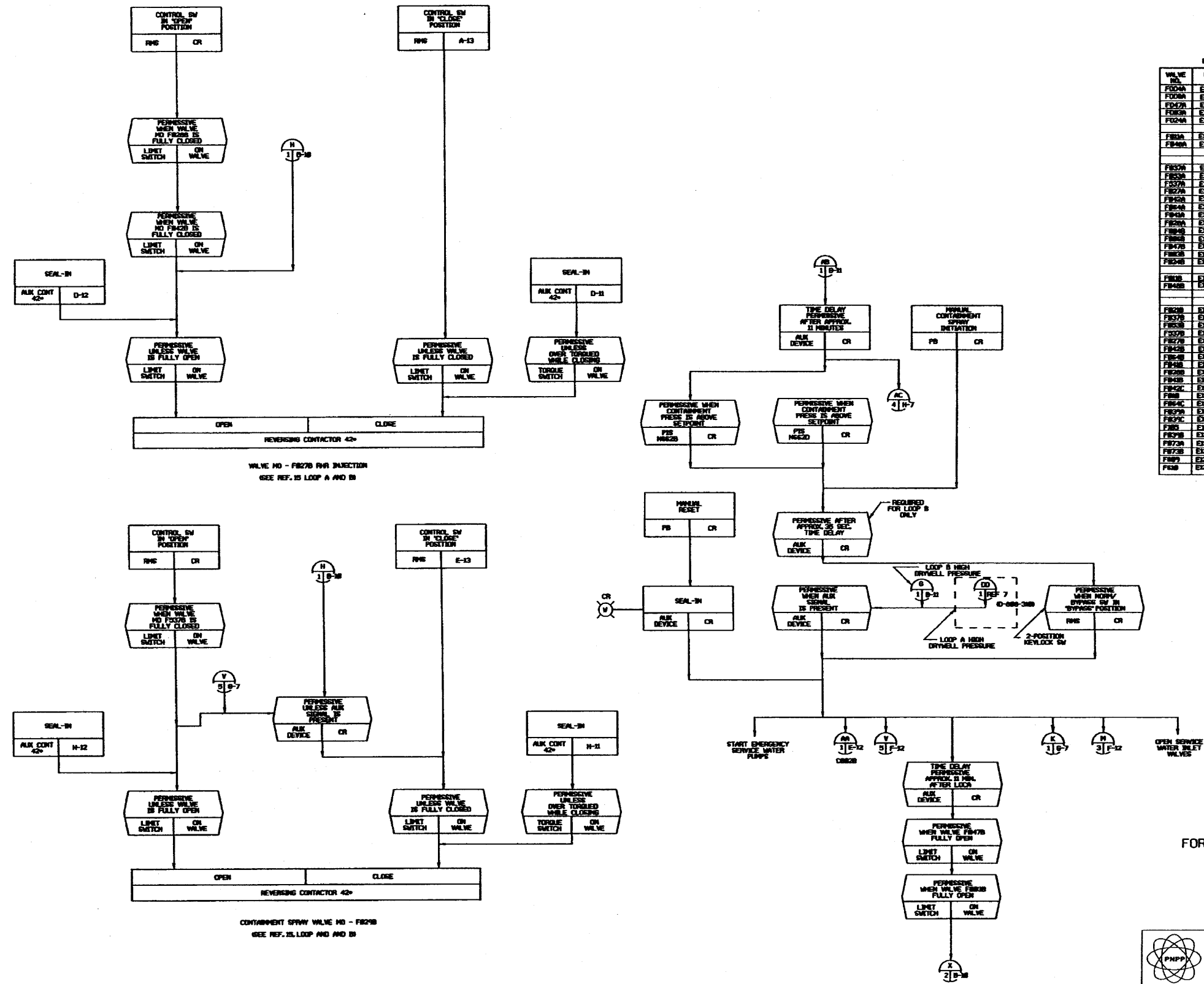


TABLE D
ENS SIGNALS

VALVE NO.	ENS NO.	ENS NO.
FB27B	E12C001	E12C002
FB27B	E12C003	E12C004
FB27B	E12C005	E12C006
FB27B	E12C007	E12C008
FB27B	E12C009	E12C010
FB27B	E12C011	E12C012
FB27B	E12C013	E12C014
FB27B	E12C015	E12C016
FB27B	E12C017	E12C018
FB27B	E12C019	E12C020
FB27B	E12C021	E12C022
FB27B	E12C023	E12C024
FB27B	E12C025	E12C026
FB27B	E12C027	E12C028
FB27B	E12C029	E12C030
FB27B	E12C031	E12C032
FB27B	E12C033	E12C034
FB27B	E12C035	E12C036
FB27B	E12C037	E12C038
FB27B	E12C039	E12C040
FB27B	E12C041	E12C042
FB27B	E12C043	E12C044
FB27B	E12C045	E12C046
FB27B	E12C047	E12C048
FB27B	E12C049	E12C050
FB27B	E12C051	E12C052
FB27B	E12C053	E12C054
FB27B	E12C055	E12C056
FB27B	E12C057	E12C058
FB27B	E12C059	E12C060
FB27B	E12C061	E12C062
FB27B	E12C063	E12C064
FB27B	E12C065	E12C066
FB27B	E12C067	E12C068
FB27B	E12C069	E12C070
FB27B	E12C071	E12C072
FB27B	E12C073	E12C074
FB27B	E12C075	E12C076
FB27B	E12C077	E12C078
FB27B	E12C079	E12C080
FB27B	E12C081	E12C082
FB27B	E12C083	E12C084
FB27B	E12C085	E12C086
FB27B	E12C087	E12C088
FB27B	E12C089	E12C090
FB27B	E12C091	E12C092
FB27B	E12C093	E12C094
FB27B	E12C095	E12C096
FB27B	E12C097	E12C098
FB27B	E12C099	E12C100
FB27B	E12C101	E12C102
FB27B	E12C103	E12C104
FB27B	E12C105	E12C106
FB27B	E12C107	E12C108
FB27B	E12C109	E12C110
FB27B	E12C111	E12C112
FB27B	E12C113	E12C114
FB27B	E12C115	E12C116
FB27B	E12C117	E12C118
FB27B	E12C119	E12C120
FB27B	E12C121	E12C122
FB27B	E12C123	E12C124
FB27B	E12C125	E12C126
FB27B	E12C127	E12C128
FB27B	E12C129	E12C130
FB27B	E12C131	E12C132
FB27B	E12C133	E12C134
FB27B	E12C135	E12C136
FB27B	E12C137	E12C138
FB27B	E12C139	E12C140
FB27B	E12C141	E12C142
FB27B	E12C143	E12C144
FB27B	E12C145	E12C146
FB27B	E12C147	E12C148
FB27B	E12C149	E12C150
FB27B	E12C151	E12C152
FB27B	E12C153	E12C154
FB27B	E12C155	E12C156
FB27B	E12C157	E12C158
FB27B	E12C159	E12C160
FB27B	E12C161	E12C162
FB27B	E12C163	E12C164
FB27B	E12C165	E12C166
FB27B	E12C167	E12C168
FB27B	E12C169	E12C170
FB27B	E12C171	E12C172
FB27B	E12C173	E12C174
FB27B	E12C175	E12C176
FB27B	E12C177	E12C178
FB27B	E12C179	E12C180
FB27B	E12C181	E12C182
FB27B	E12C183	E12C184
FB27B	E12C185	E12C186
FB27B	E12C187	E12C188
FB27B	E12C189	E12C190
FB27B	E12C191	E12C192
FB27B	E12C193	E12C194
FB27B	E12C195	E12C196
FB27B	E12C197	E12C198
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FOR NOTES AND LEGEND SEE THIS DWG. SHEET 1

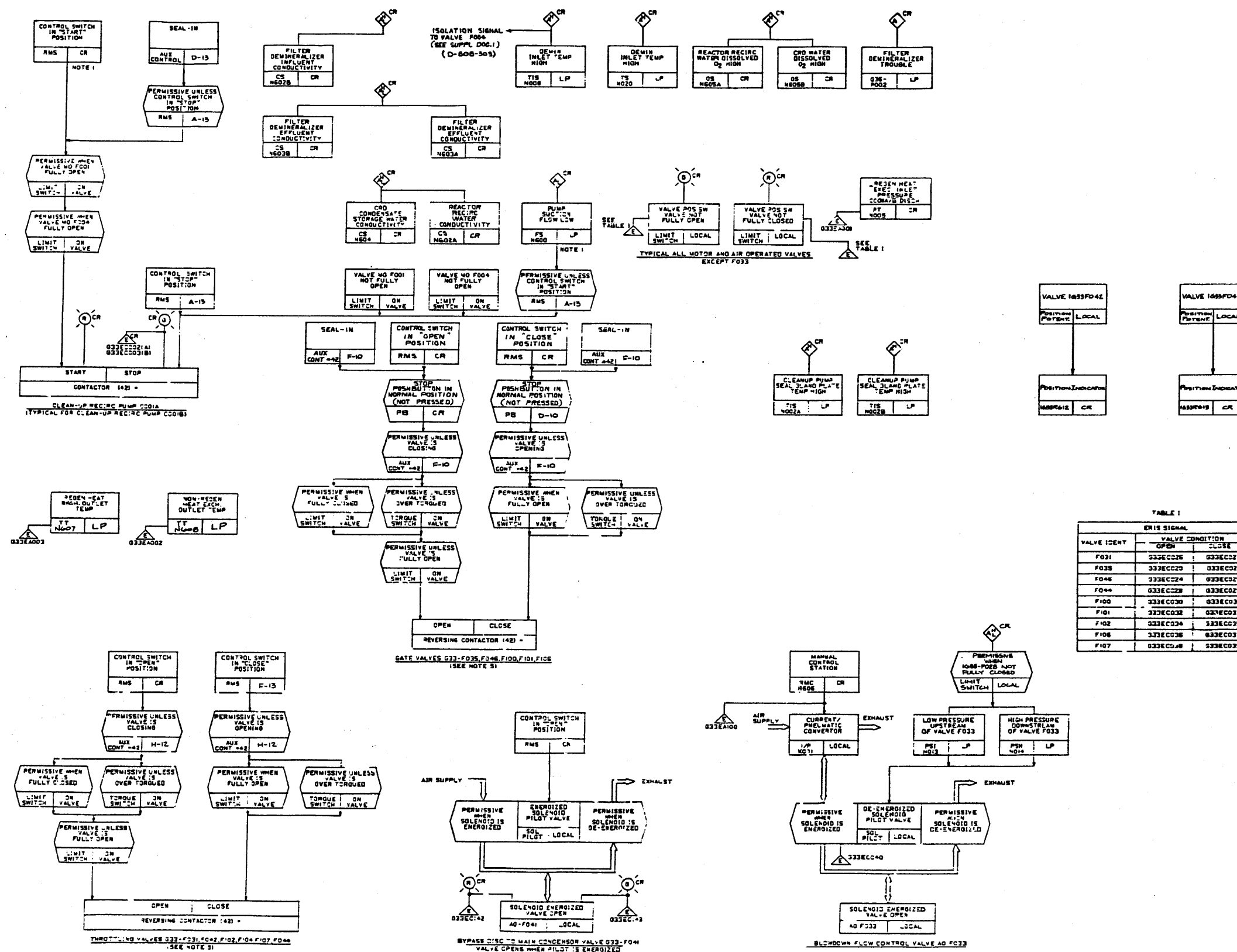
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Residual Heat Removal System

Figure 7.3-5 (Sheet 5 of 5)

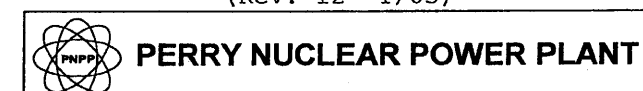
[Dwg. D-808-309(5)]



- NOTES:**
1. INTERLOCK PUMP START-UP CIRCUIT WITH PUMP SECTION 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.
- WPL ITEM NO.
1. 821-1030 NUCLEAR BOILER SYSTEM FCD
 2. CSB-1050 ERS ELEM DIAG (CSB4)
 3. DELETE

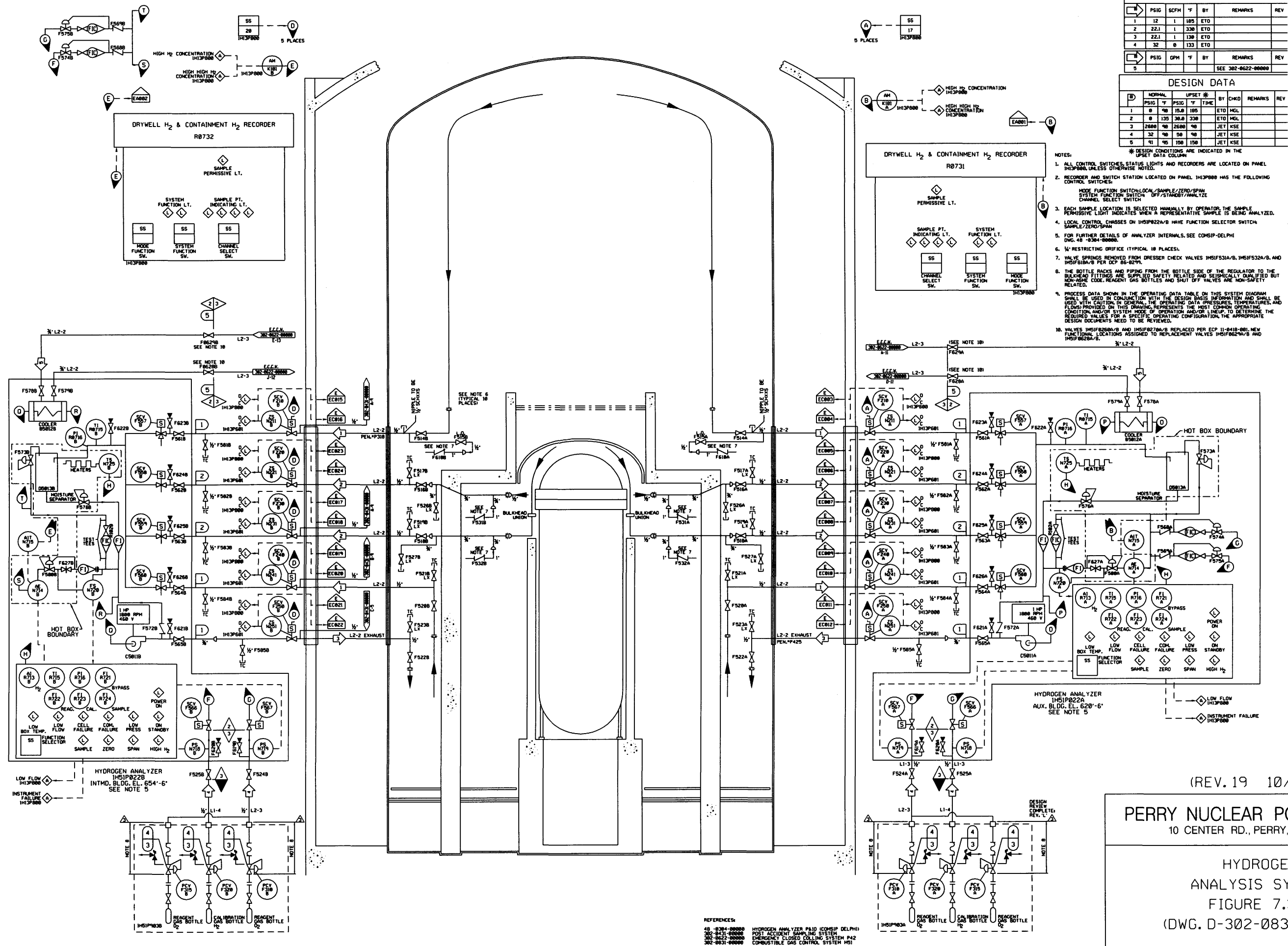
(Rev. 12 1/03)



Reactor Water Cleanup System

Figure 7.3-6

(Dwg. D-808-315)



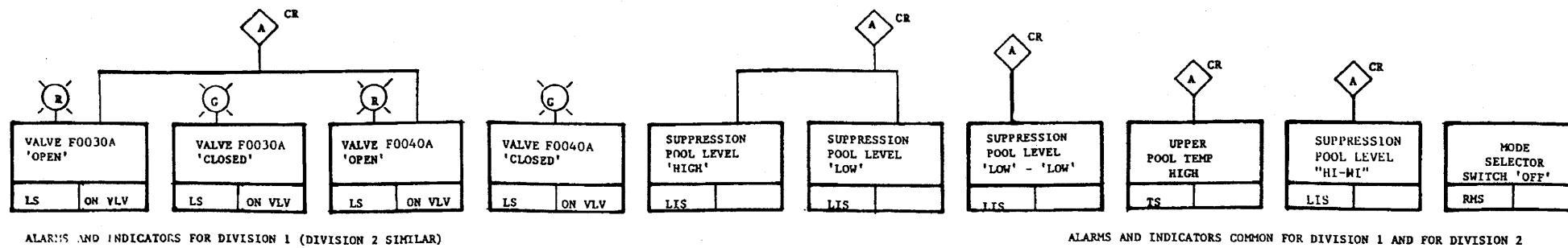
(REV. 19 10/2015)

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

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

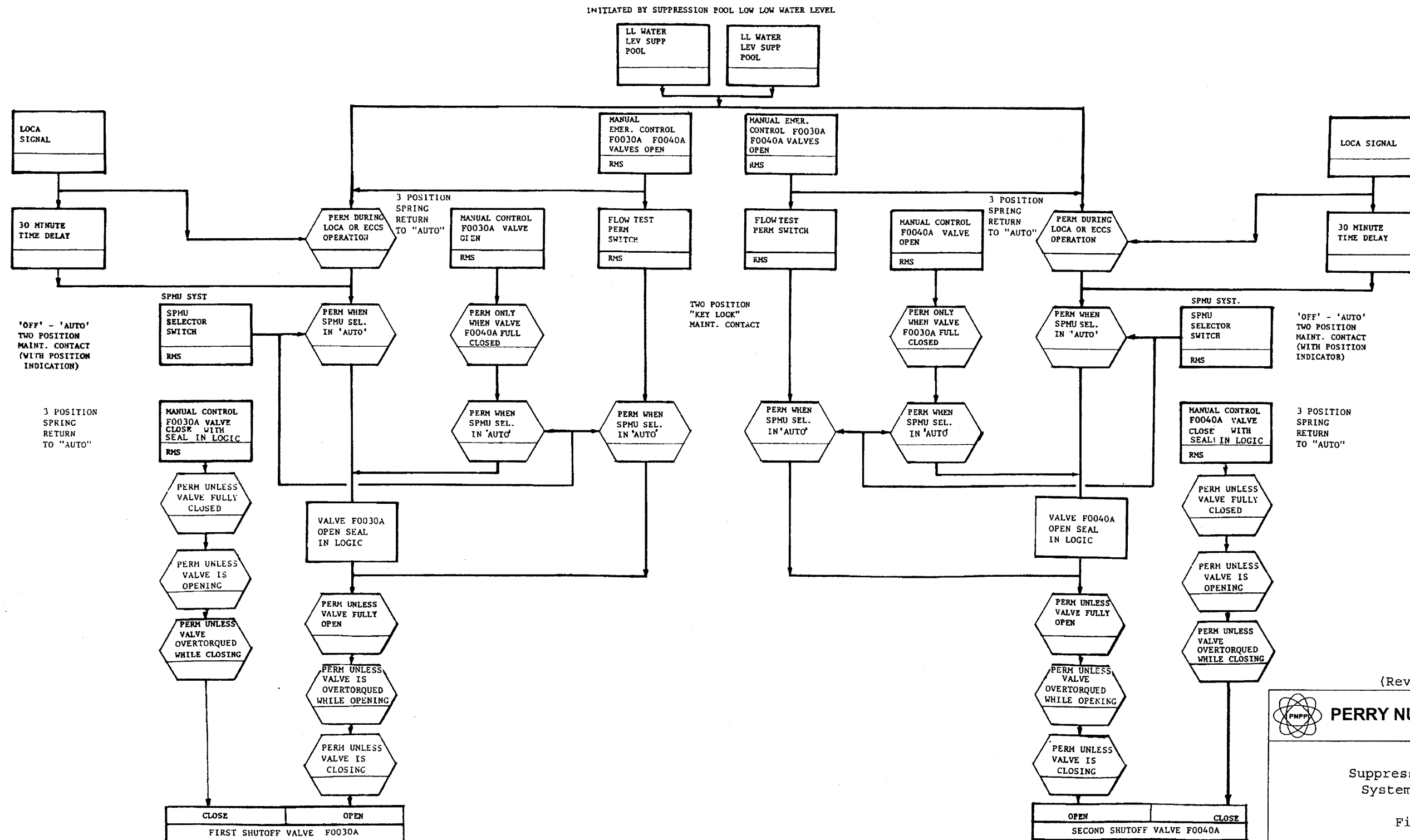
REFERENCES:

48-0384-00000	HYDROGEN ANALYZER P&ID (COMSP DELPHI)
302-0431-00000	POST ACCIDENT SAMPLING SYSTEM
302-0622-00000	EMERGENCY CLOSED COLLING SYSTEM P&I
302-0031-00000	COMBUSTIBLE GAS CONTROL SYSTEM M&I



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.



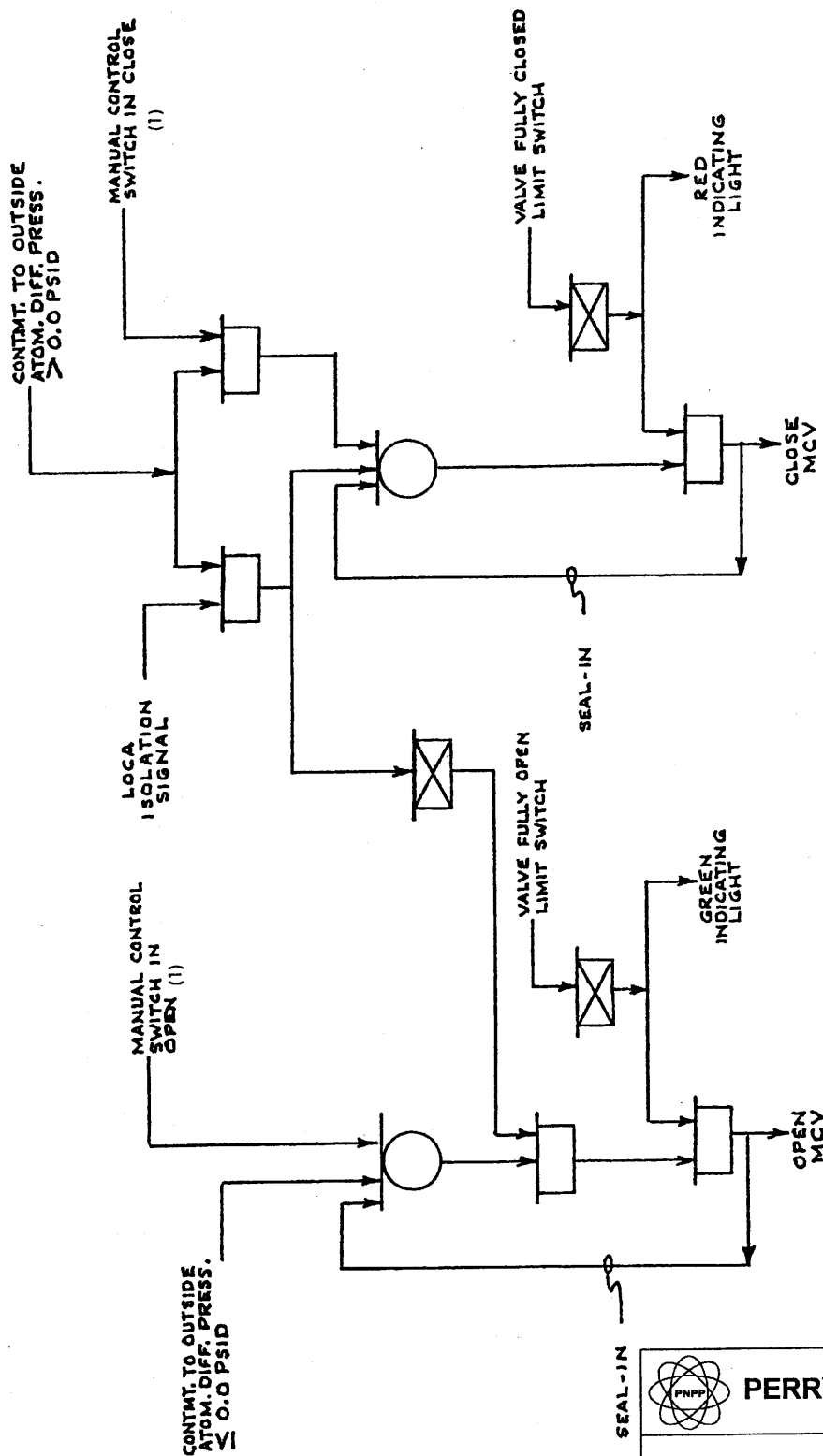
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Suppression Pool Makeup
System Logic Diagram

Figure 7.3-9



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

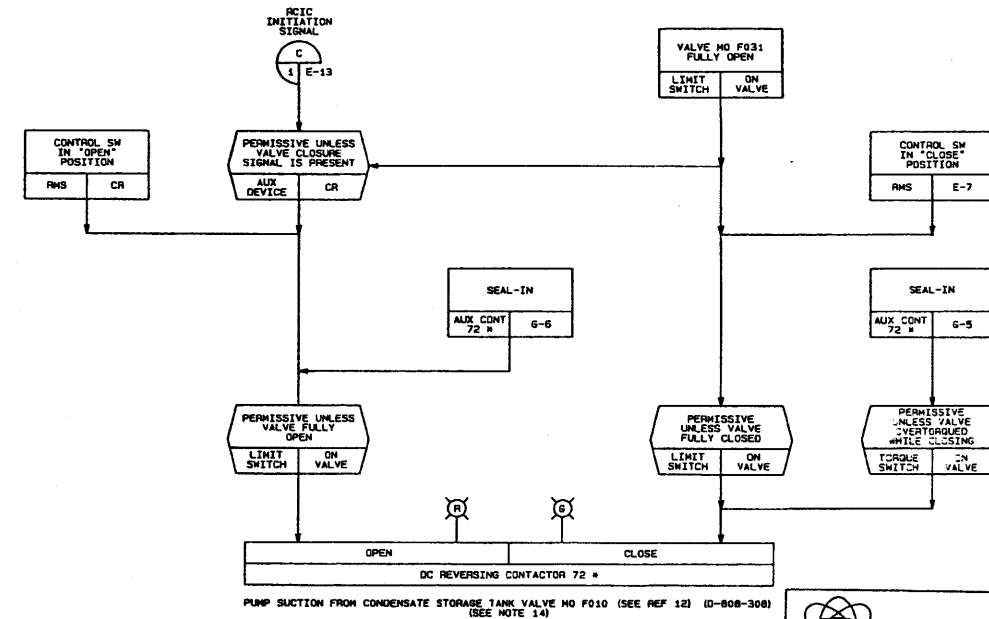
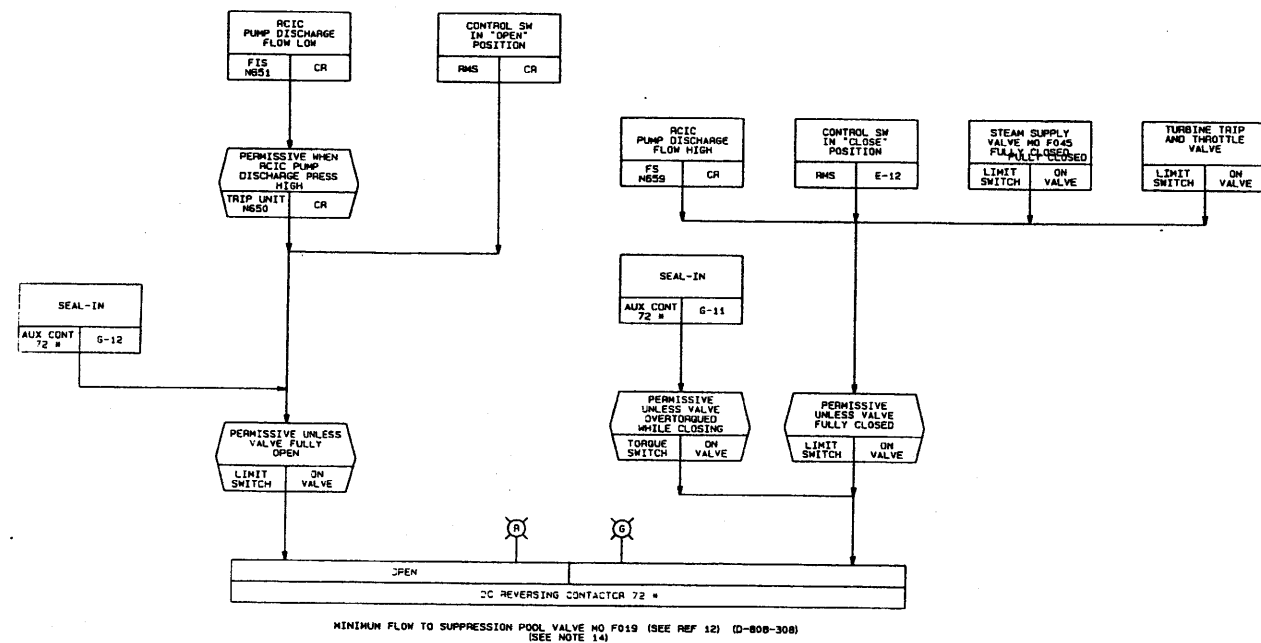
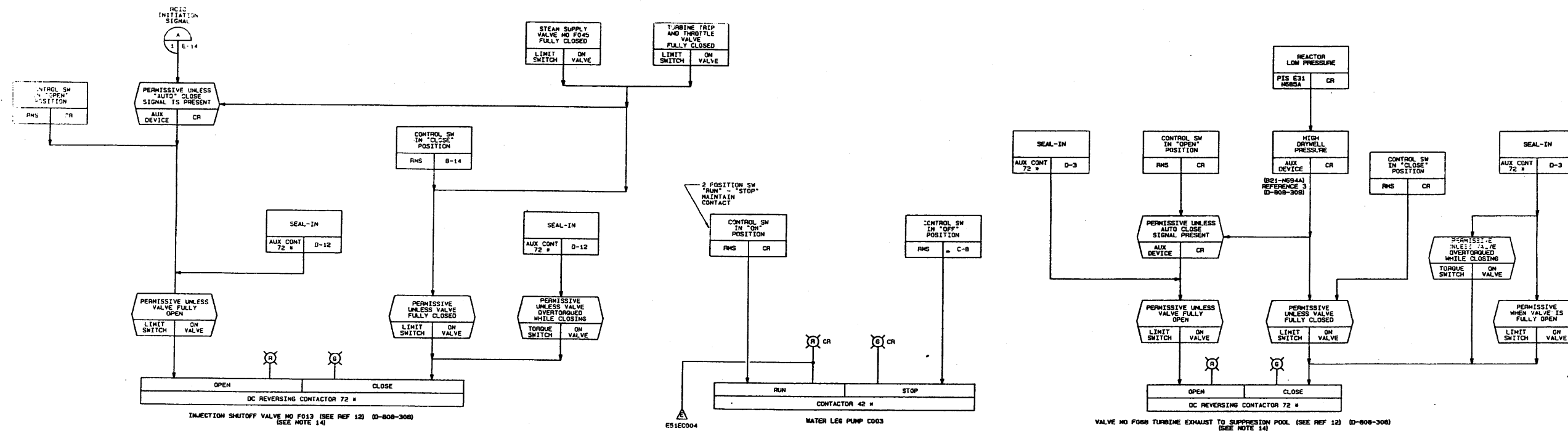
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

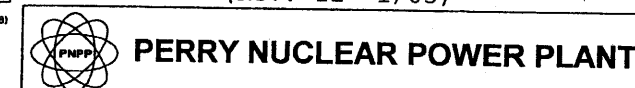
Containment Vacuum Relief
System Control Logic

Figure 7.3-11



NUCLEAR SAFETY RELATED

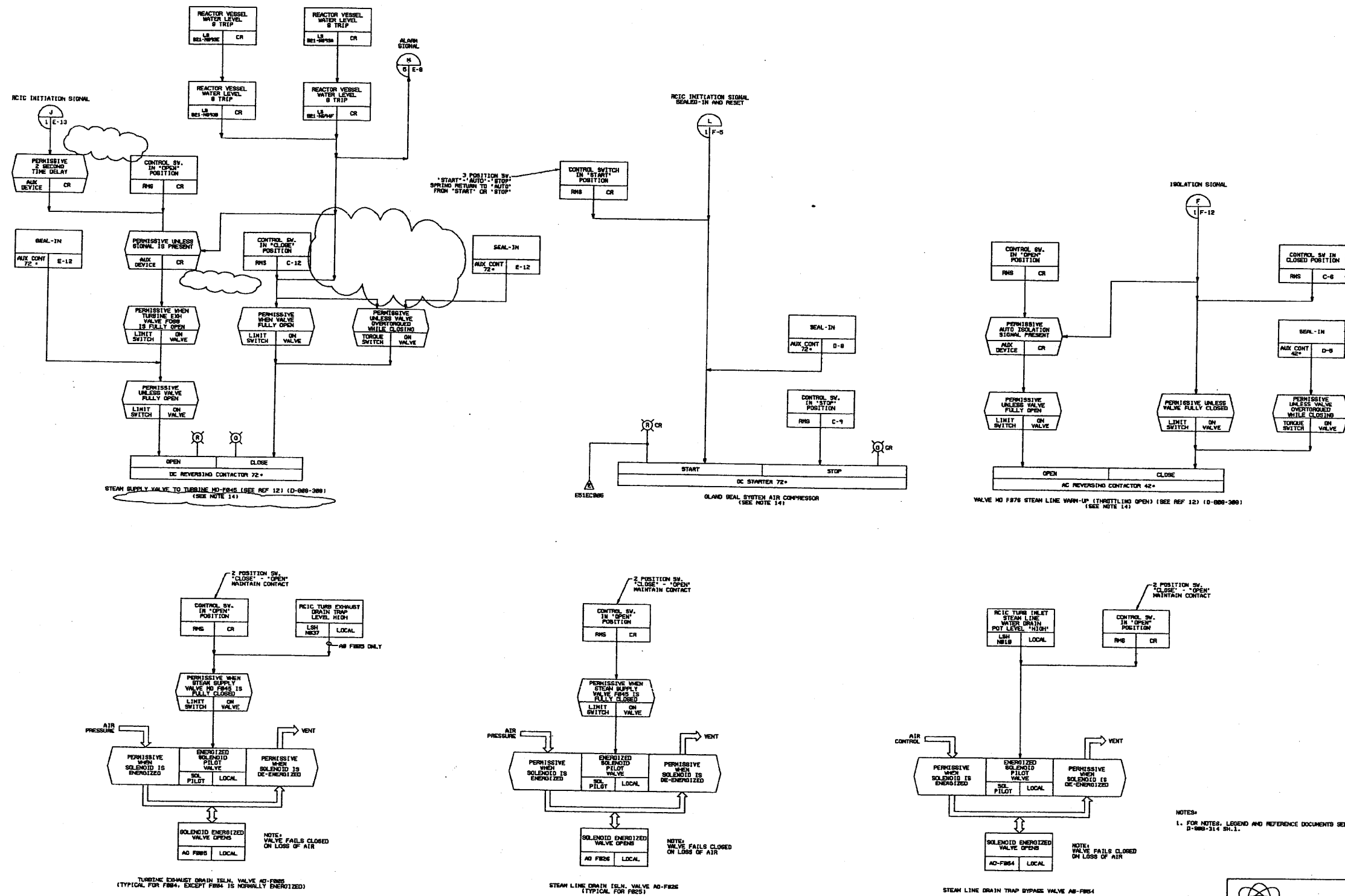
(Rev. 12 1/03)



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 (2-11)



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

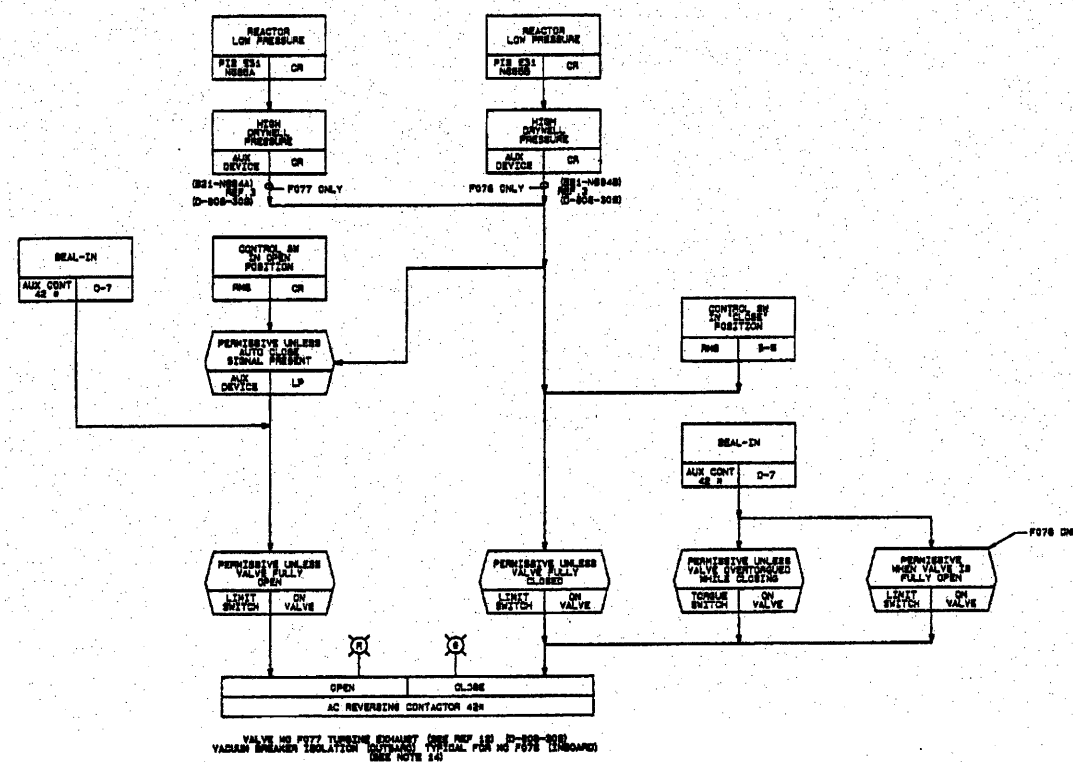
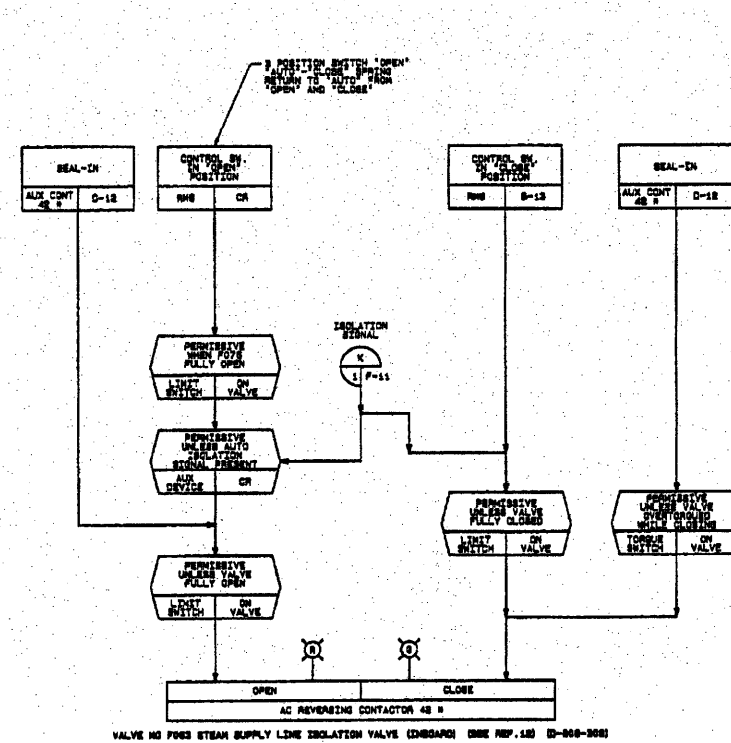
(Rev. 12 1/03)

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

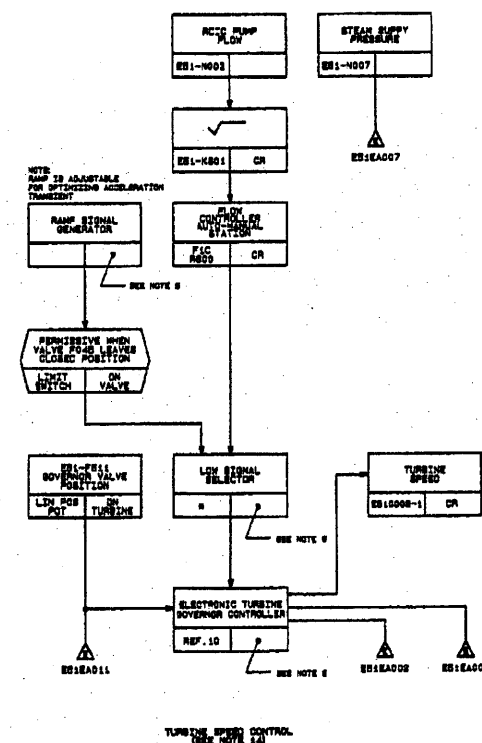
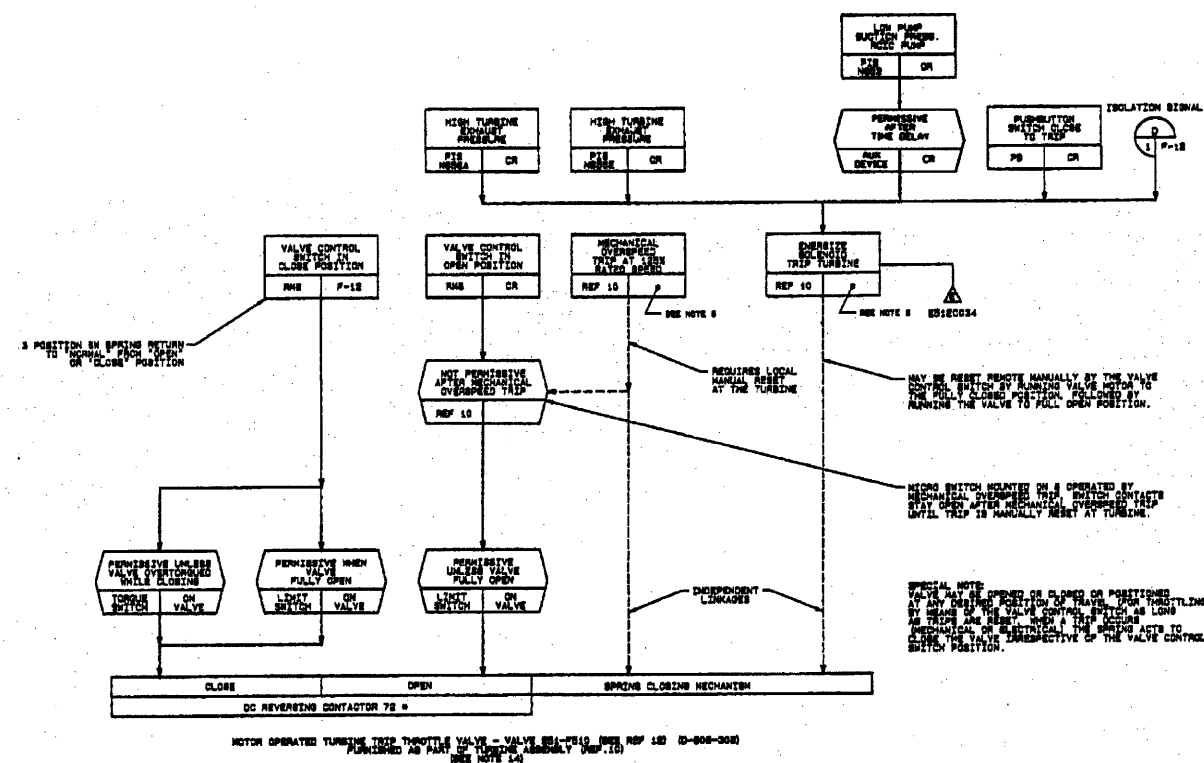
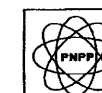


TABLE III - ERIS SIGNALS

VALVE NO.	OPEN	CLOSE
ES1-P003 (ACT)	ES1EC004	ES1EC005
ES1-P078 (ACT)	ES1EC006	ES1EC007
ES1-P084 (ACT)	ES1EC008	ES1EC009
ES1-P017 (ACT)	ES1EC009	ES1EC010
ES1-P079 (ACT)	ES1EC008	ES1EC009
ES1-P088	ES1EC010	ES1EC011
ES1-P010	ES1EC012	ES1EC013
ES1-P010	ES1EC014	ES1EC015
ES1-P088	ES1EC016	ES1EC017
ES1-P006	ES1EC018	ES1EC019
ES1-P084	ES1EC020	ES1EC021
ES1-P088	ES1EC022	ES1EC023
ES1-P004	ES1EC024	ES1EC025
ES1-P013	ES1EC026	ES1EC027
ES1-P081	ES1EC028	ES1EC029
ES1-P010	ES1EC030	ES1EC031
ES1-P088	ES1EC032	ES1EC033
ES1-P082	ES1EC034	ES1EC035
ES1-P088	ES1EC036	ES1EC037

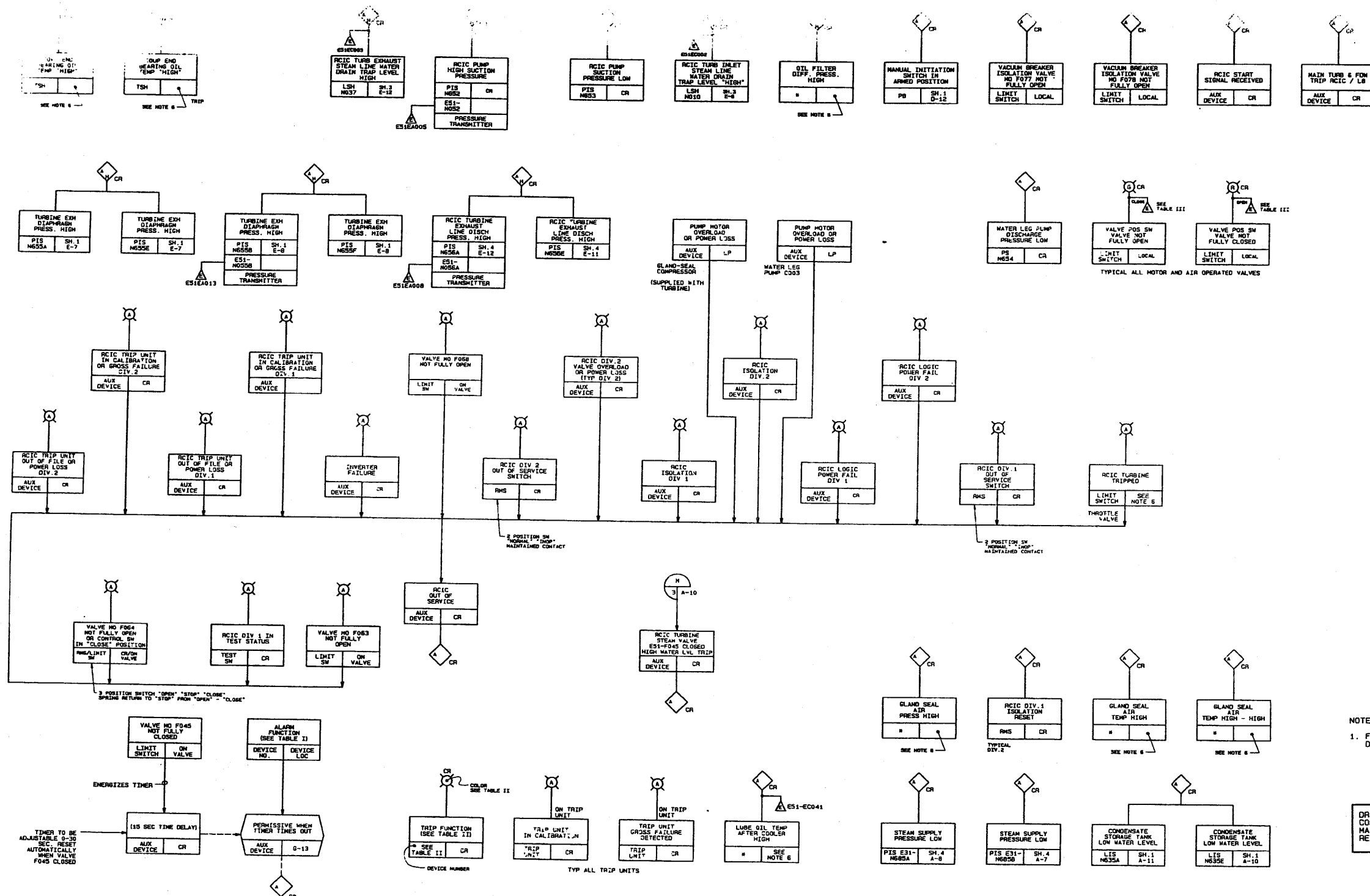
(Rev. 16 10/09)



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 CEI/RE DRAWING
RECONCILIATION PER SRM NO.
AMP-0017 AS OF REV. A

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 AIP PRESSURE LOW	SH #	SEE NOTE 6	LOW
CONDENSATE STORAGE TANK LOW WATER LEVEL	LIS #	SEE NOTE 6	LOW

TABLE II

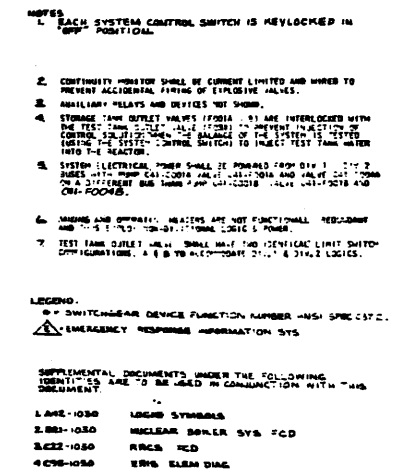
ACTUATING DEVICE	TRIP FUNCTION	COLOR
REF. 10	TRIP THROTTLE VALVE OPEN	RED
	TRIP THROTTLE VALVE CLOSED	GREEN
	GOVERNOR VALVE OPEN	RED
	GOVERNOR VALVE CLOSED	GREEN

(Rev. 12 1/03)

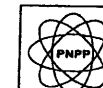
PERRY NUCLEAR POWER PLANT

Reactor Core Isolation Cooling System

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



(Rev. 12 1/03)

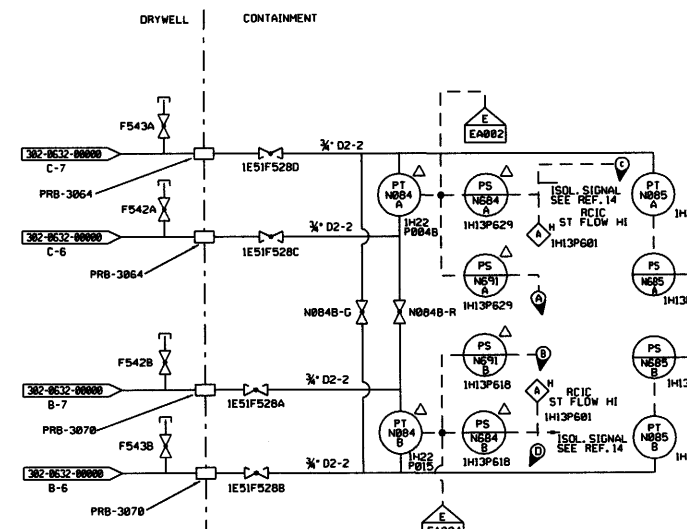


PERRY NUCLEAR POWER PLANT

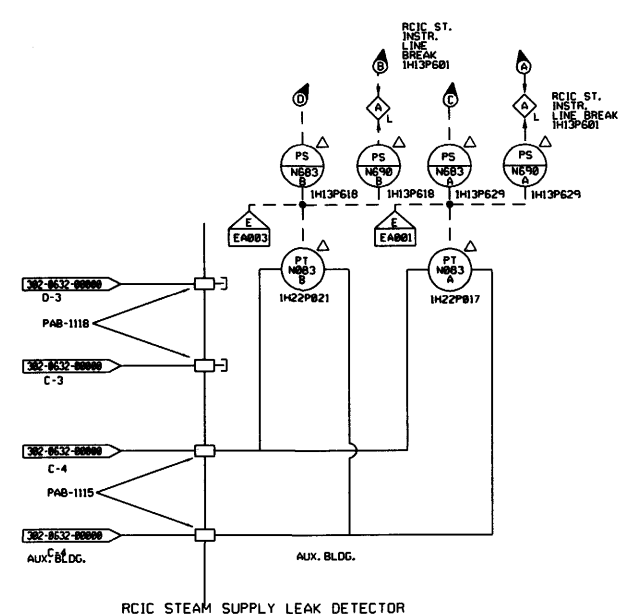
Standby Liquid Control System

Figure 7.4-2 (Sheet 1 of 2)

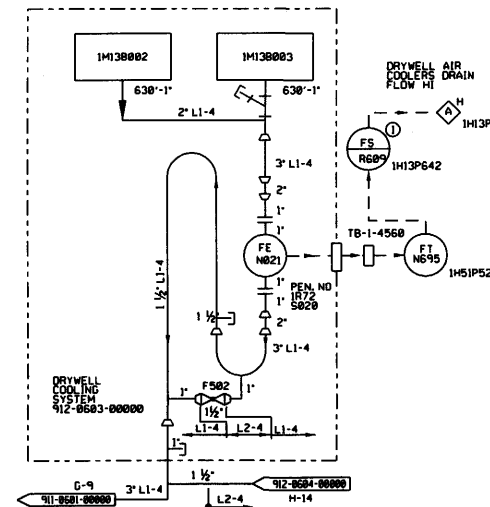
[Dwg. D-808-306(1)]



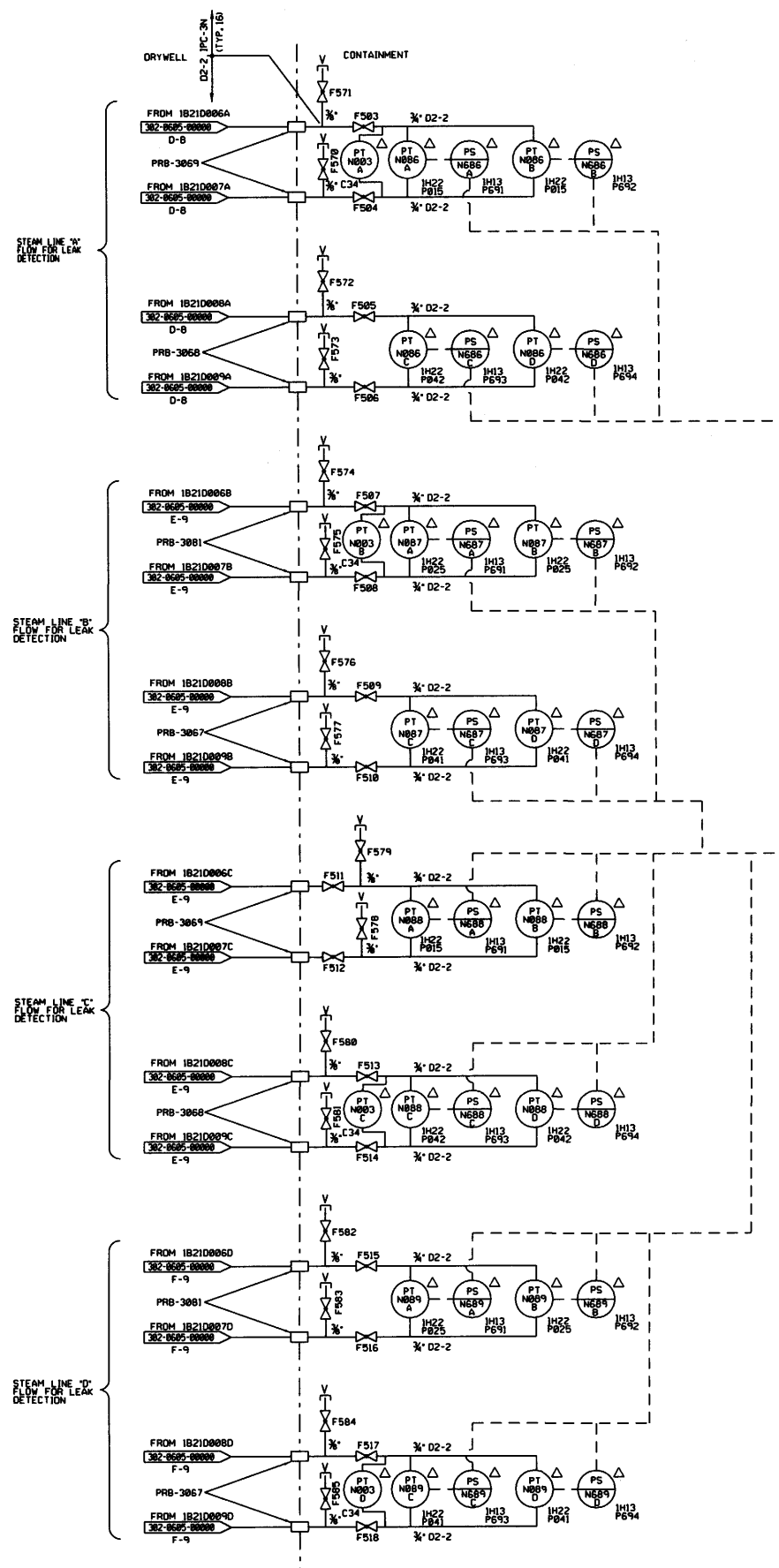
RCIC STEAM SUPPLY FLOW LEAK DETECTOR



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 A62-4078.
 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 A62-4038.
 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 PUMP-OUT TIME.
 12. TE2 SPARE FOR NOXXB

- REFERENCES:
1. 302-0601-00000 REACTOR WATER RECIRCULATION SYSTEM P&ID
 2. 302-0602-00000 REACTOR WATER RECIRCULATION SYSTEM P&ID
 3. 302-0603-00000 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. 302-0705-00000 LOW PRESSURE CORE SPRAY SYSTEM P&ID
 9. 814-0639-00000 SAFETY RELATED AREA TEMPERATURE MONITORING INSTALLATION DETAIL FOR LEAK DETECTION SYSTEM E31
 10. 200-0013-00000 NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM ELEMENTARY
 11. 200-0055-00000 RWR SYSTEM ELEMENTARY
 12. 200-0060-00000 LPCS SYSTEM ELEMENTARY
 13. 200-0065-00000 HPCS SYSTEM ELEMENTARY
 14. 200-0075-00000 RCIC SYSTEM ELEMENTARY
 15. C91-4030-00000 PROCESS COMPUTER I/O LISTING
 16. 911-0601-00000 REACTOR BUILDING DRAINS
 17. 912-0604-00000 CONTAINMENT VESSEL AND DRYWELL PURGE

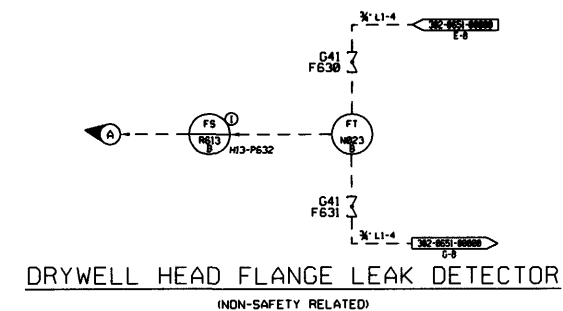
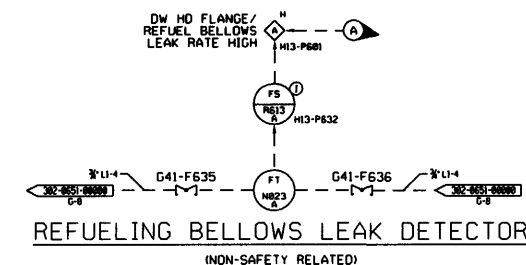
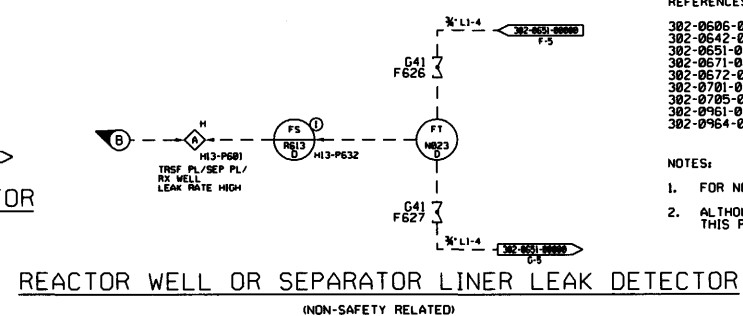
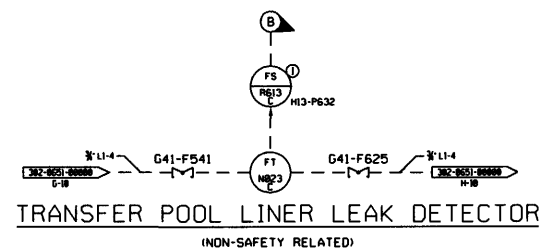
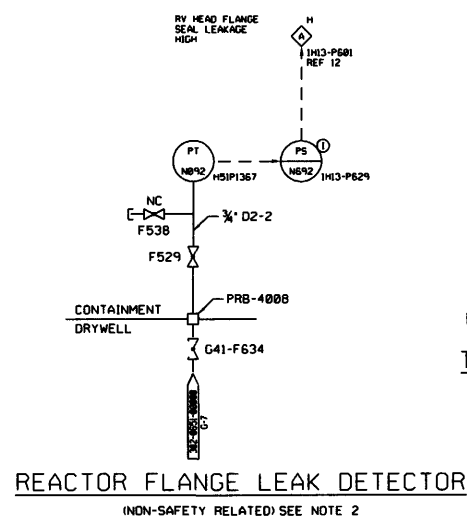
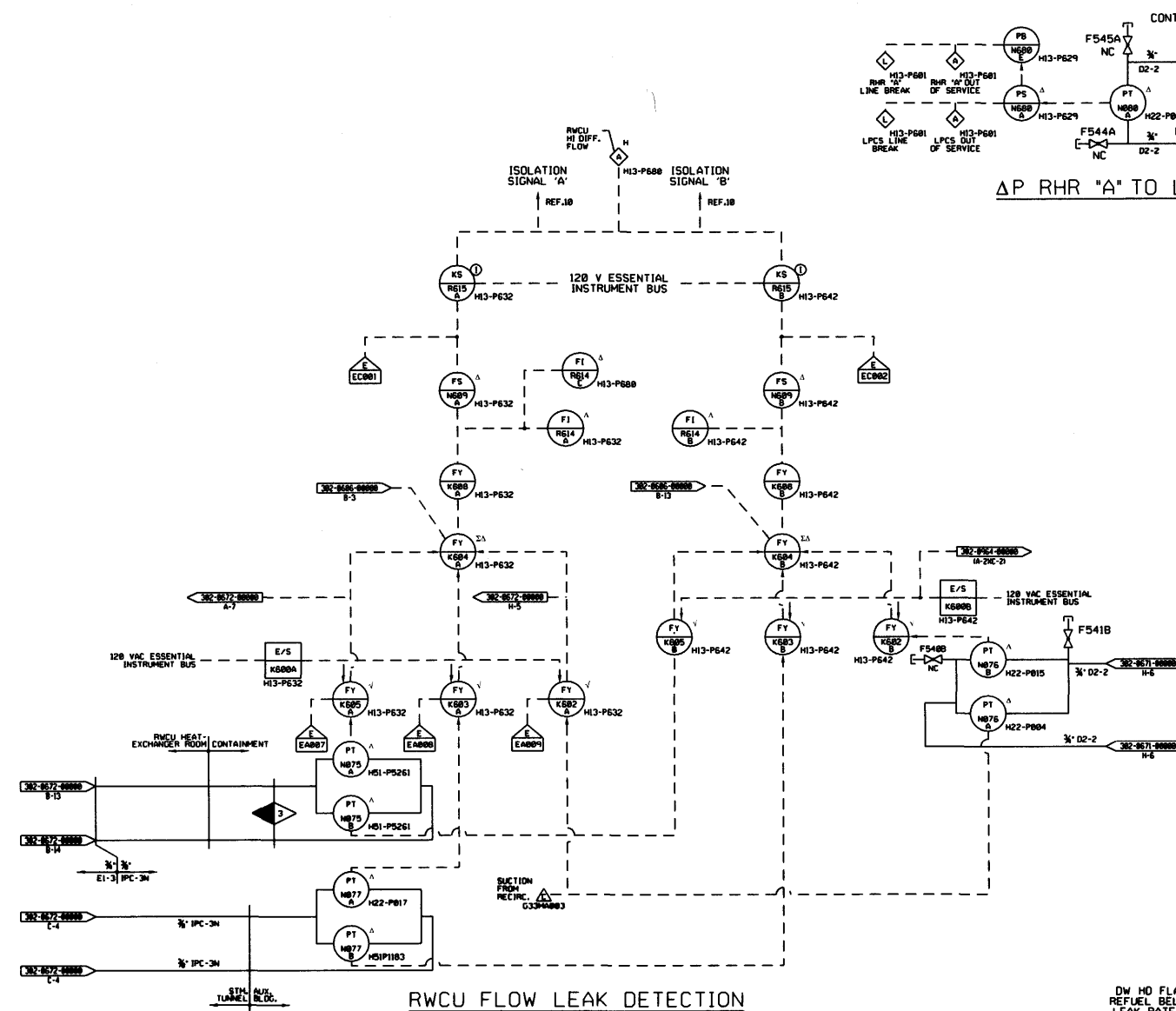
- SUPPORTING DOCUMENTS:
- | MPL NUMBER | DESCRIPTION |
|------------|--|
| A42-1010 | PIPING AND INSTRUMENT SYMBOLS |
| A62-4030 | PRESSURE INTEGRITY OF NUCLEAR COMPONENTS SPECIFICATION |
| A62-4070 | PROCESS INSTRUMENT SPECIFICATION |
| A62-4200 | DRYWELL COOLING SYSTEM DESIGN SPECIFICATION |
| A62-4050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

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

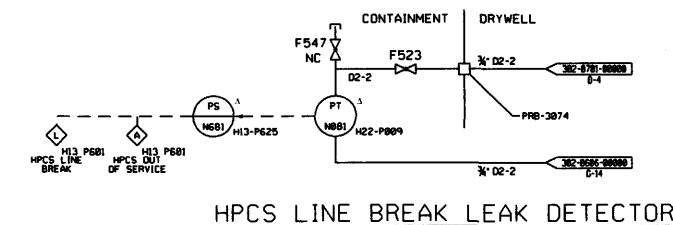
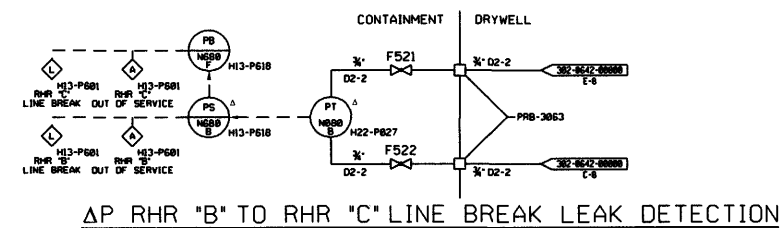
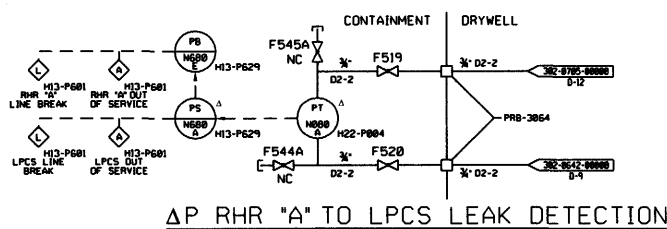
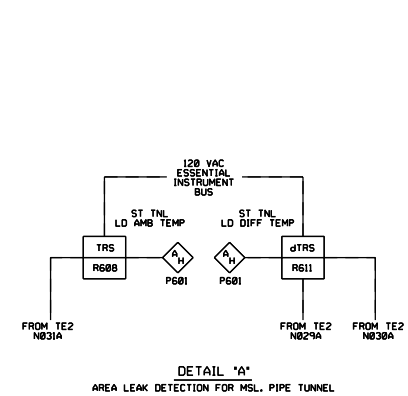
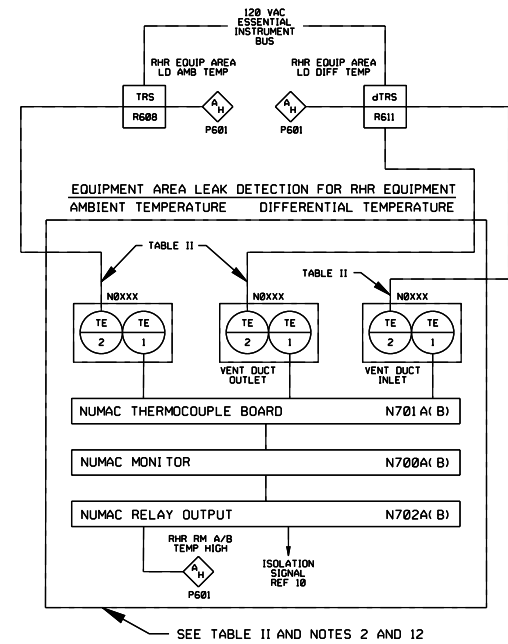
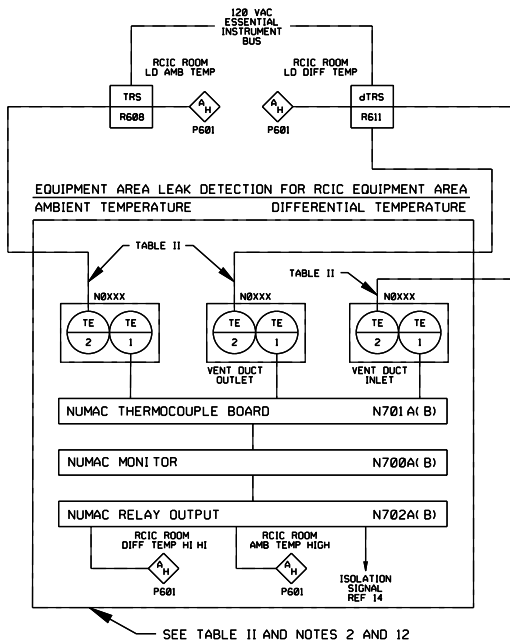
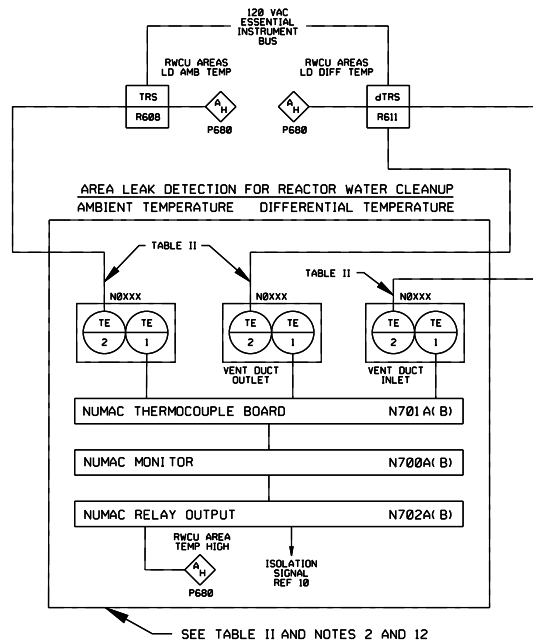
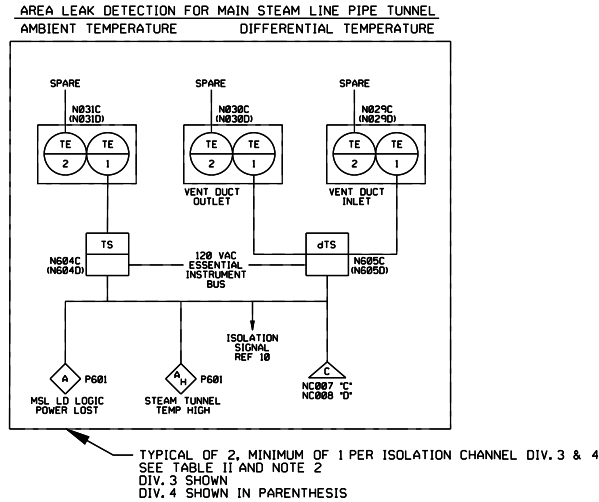
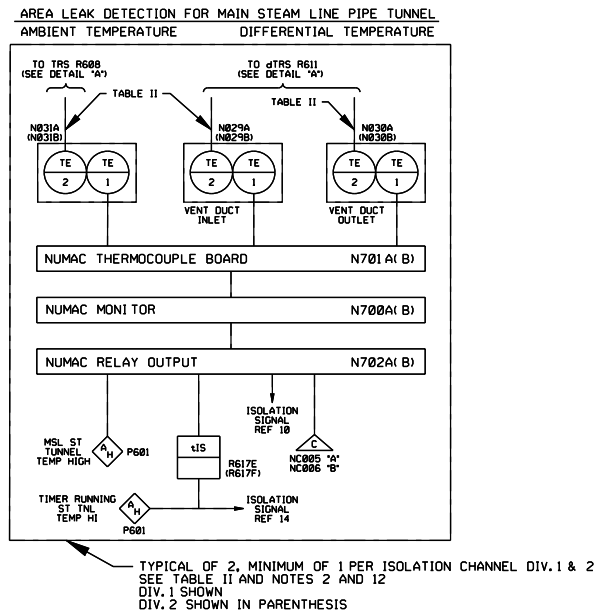


TABLE II
RECORDED EQUIPMENT AREA TEMPERATURE MONITORING AND VALVES CLOSED



NOTES:

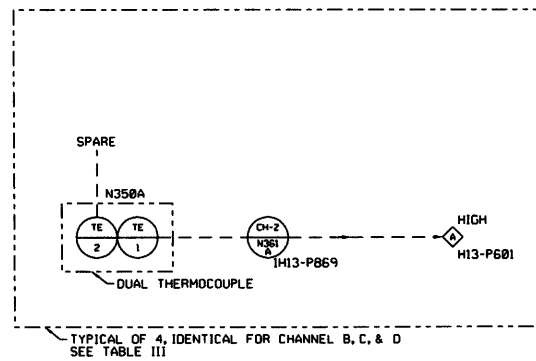
1. FOR NOTES AND REFERENCES, SEE DRAWING D-382-961.

(Rev. 18 10/13)

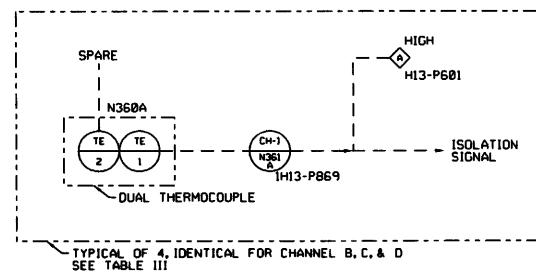
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

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

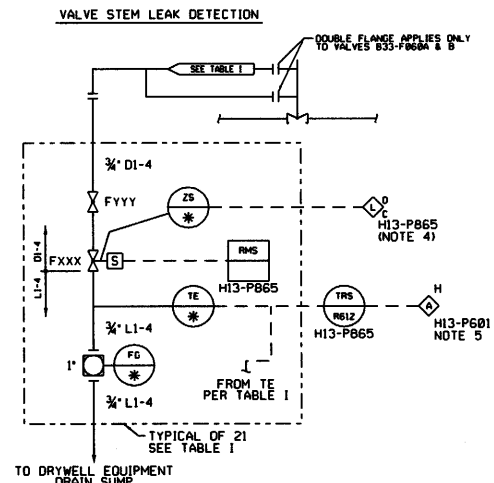
AREA LEAK DETECTION FOR MAIN STEAM LINE IN STEAM TURBINE POWER COMPLEX



AREA LEAK DETECTION FOR MAIN STEAM LINE IN TURBINE BUILDING



DETAIL "A"



DETAIL "B"

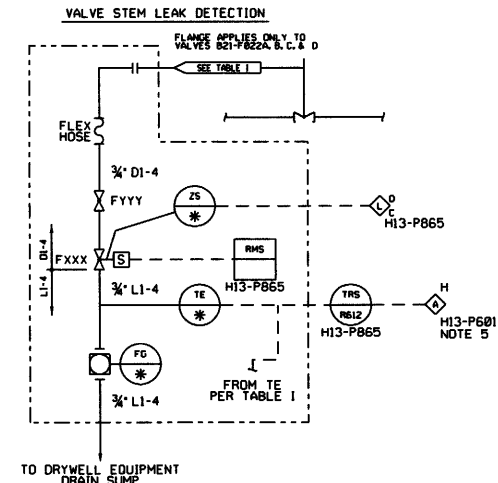


TABLE I

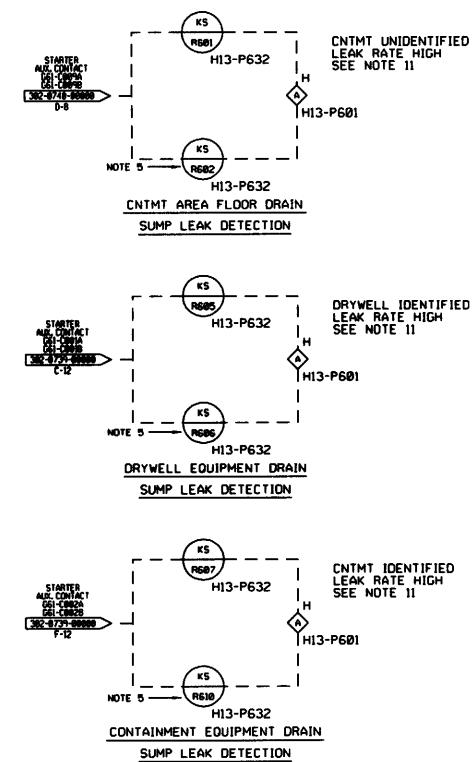
THE FOLLOWING VALVES, INSIDE THE DRYWELL, ARE EQUIPPED WITH VALVE STEM LEAK-OFF, TYPICAL ARRANGEMENT SHOWN DETAIL "A" OR "B" AS NOTED

VALVES WITH LEAK-OFF	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	R612-10	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

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



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 LS/INDICATION IS DISABLED UNDER TEMP. MOD. ECP 12-0160.
- OUTPUT FROM THE LIQUID RADWASTE DISTRIBUTED CONTROL SYSTEM.

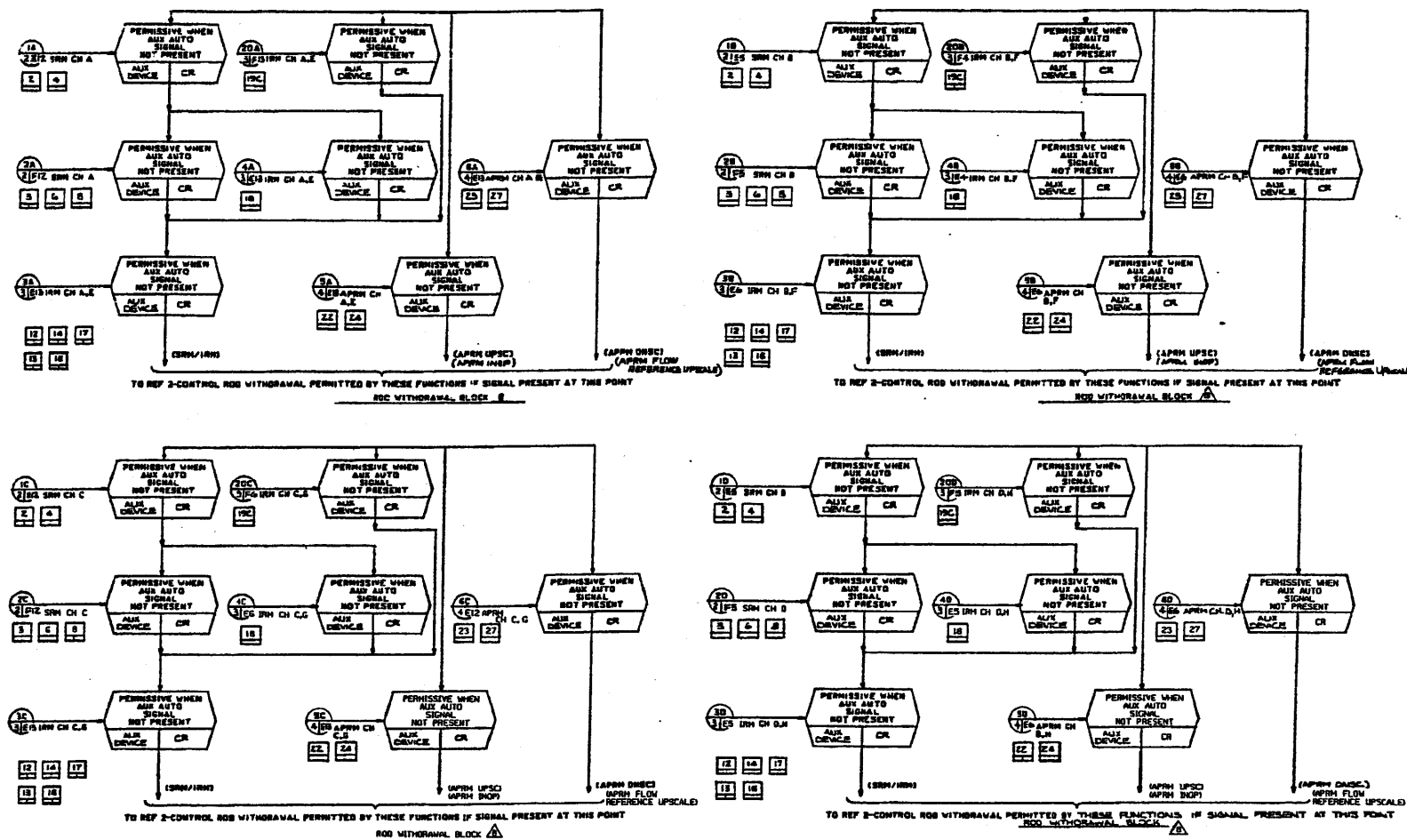
REFERENCES:

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

(REV. 19 10/2015)

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 "GOOD" VIA AUTOMATIC MODE PATH. DETECTOR MUST THEN BE RETURNED TO STORAGE POSITION TO REPROGRAM DETECTOR.
 - B. IN MANUAL MODE, MUST RESTART VIA MANUAL SWITCH IN REVERSE AND RETURN TO STORAGE POSITION TO REPROGRAM DETECTOR.
 3. THE TIME DURATION OF THE PERMISSIVES 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 CRI 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 SUBSYSTEM LEVEL - SEE SUBSYSTEM 2.3.4 & 5.

- LEGEND:
- -- INITIATOR BLOCK (SEE DETAILS CORRESPONDING WITH NUMBERS)
 - IRH -- INTERMEDIATE RANGE MONITOR
 - APRH -- AVERAGE POWER RANGE MONITOR
 - SRH -- SOURCE RANGE MONITOR
 - LPFH -- LOCAL POWER RANGE MONITOR
 - TRP -- TRIP/REARMING IN-COME PROBE
 - MOCC -- MULTIPLE OUTPUT CONTROLLER
 - RPV -- REACTOR PRESSURE VESSEL
 - △ -- EMERGENCY RESPONSE INFORMATION SYSTEM
 - OPRH -- OSCILLATION POWER RANGE MONITOR

- REFERENCE DOCUMENTS:
- | | |
|--|---------------------|
| 1. PERFORMANCE MONITORING SYSTEM DESIGN SPEC | CR-1018 |
| 2. CONTROL ROD DRIVE SYS FCD | CR-1020 / D-808-305 |
| 3. REACTOR PROTECTION SYS IED | CR-1000 / D-808-302 |
| 4. REDUNDANT REACTIVITY CONTROL SYS FCD | CR-1030 / D-808-300 |
| 5. SRS ELEMENTARY DIAGRAM | CR-1025 / D-808-304 |
| 6. PERFORMANCE MONITORING - 4-96 I/O LIST | CR-1038 |

SUPPORTING DOCUMENTS:

1. LOGIC SYMBOLS -- A-12-1038

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

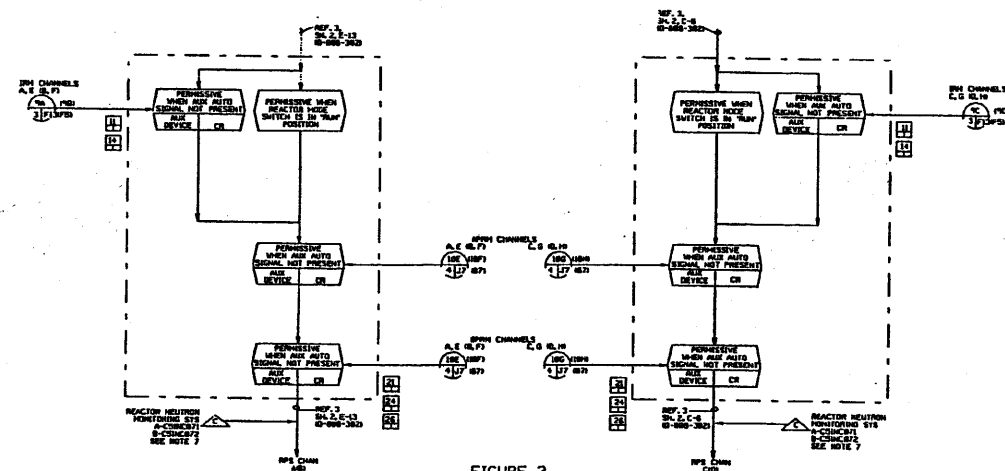
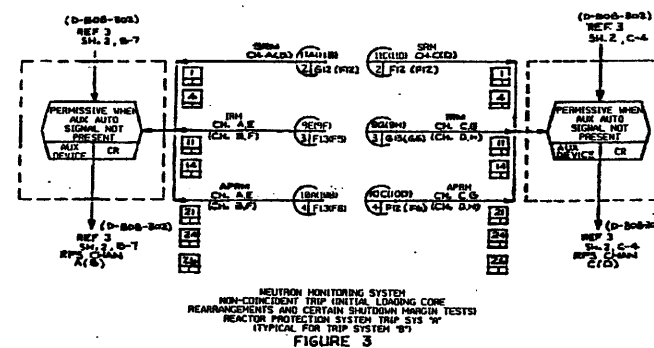


FIGURE 2
NEUTRON MONITORING SYSTEM TRIP
REACTOR PROTECTION SYSTEM TRIP
SYSTEM A
(TYP. FOR SYSTEM B)



NEUTRON MONITORING SYSTEM
REARRANGEMENTS AND CERTAIN SHUTDOWN MARGIN TESTS
REACTOR PROTECTION SYSTEM TRIP SYS W
(TYPICAL FOR TRIP SYSTEM B)
FIGURE 3

(Rev. 12 1/03)

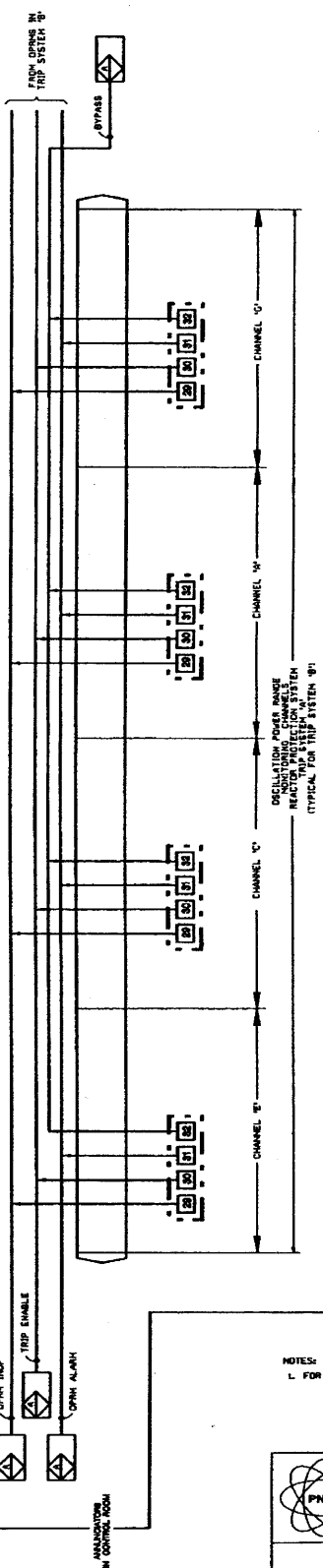
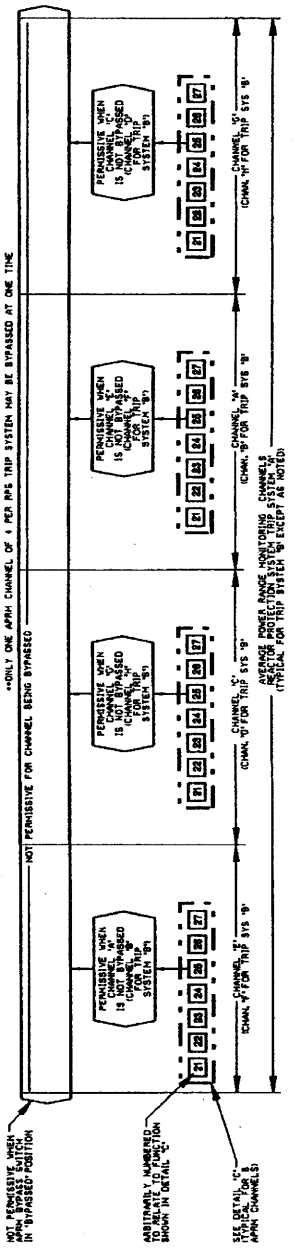
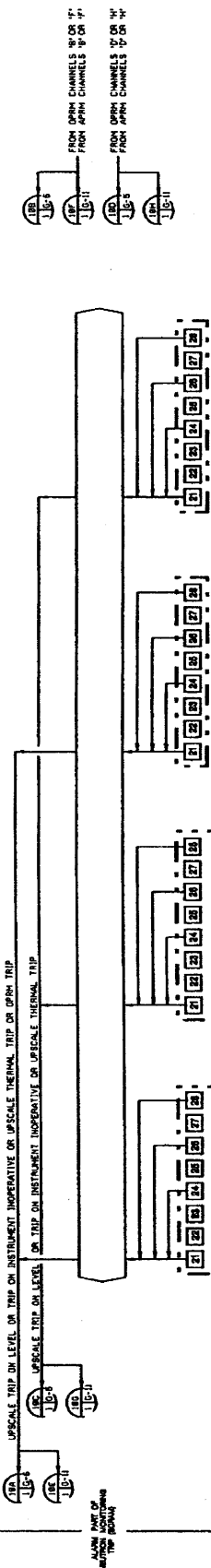
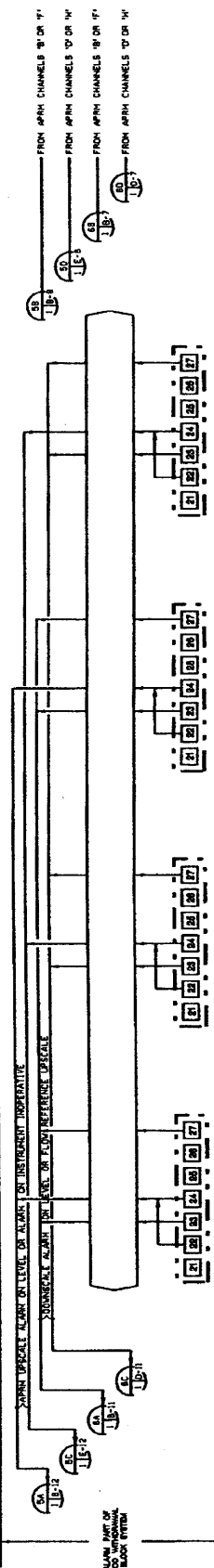
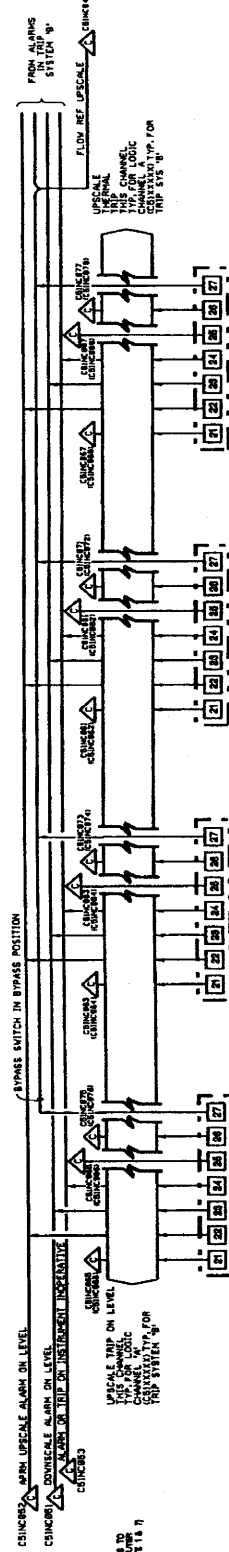
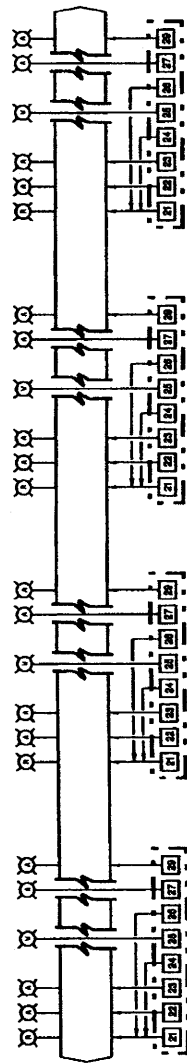


PERRY NUCLEAR POWER PLANT

Neutron Monitoring System

Figure 7.6-2 (Sheet 1 of 7)

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



NOTES:

L. FOR GENERAL NOTES AND REFERENCES, SEE THIS DMG, SH. 1.

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

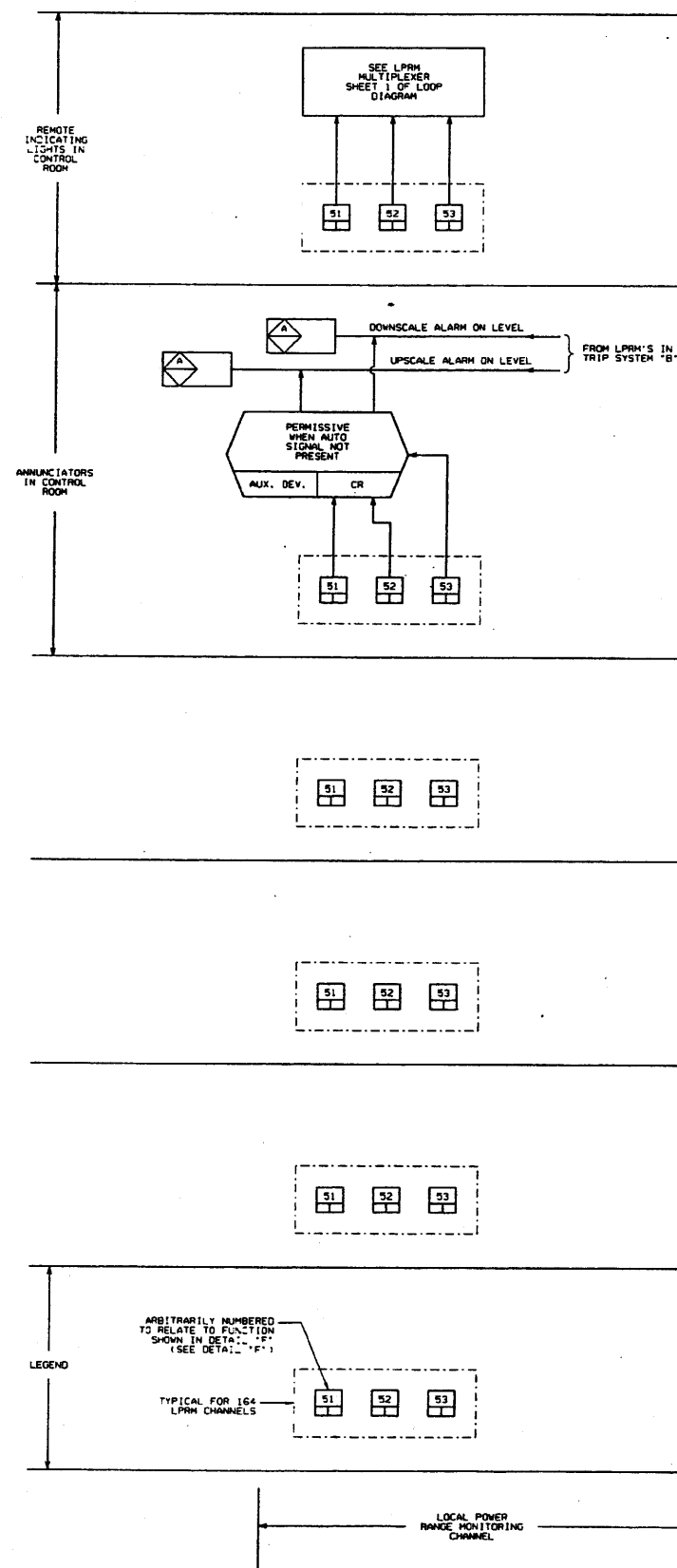
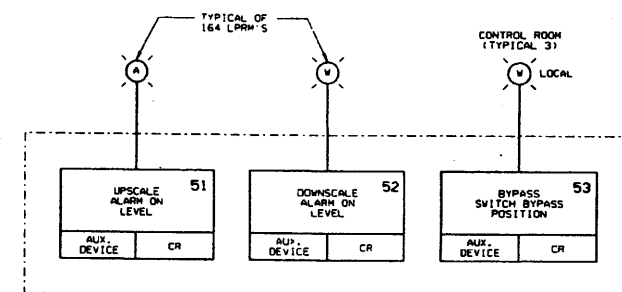
Neutron Monitoring System

Figure 7.6-2 (Sheet 4 of 7)

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

PERFORMANCE MONITORING SYSTEM
COMPUTER INPUT / OUTPUT NUMBERS

CSINC001	CSINC076	CSINC142
CSINC002	CSINC077	CSINC143
CSINC003	CSINC078	CSINC144
CSINC004	CSINC080	CSINC151
CSINC021	CSINC082	CSINC152
CSINC022	CSINC083	CSINC153
CSINC023	CSINC084	CSINC154
CSINC024	CSINC085	
CSINC025	CSINC086	CSINC181
CSINC031	CSINC087	CSINC182
CSINC032	CSINC088	CSINC183
CSINC033	CSINC091	CSINC184
CSINC034	CSINC092	CSINC185
CSINC035	CSINC093	CSINC111
CSINC036	CSINC094	CSINC112
CSINC037	CSINC101	CSINC113
CSINC038	CSINC102	CSINC114
CSINC041	CSINC103	CSINC115
CSINC051	CSINC104	CSINC121
CSINC052	CSINC105	CSINC122
CSINC053	CSINC106	CSINC123
CSINC061	CSINC111	CSINC124
CSINC062	CSINC112	CSINC125
CSINC063	CSINC113	
CSINC064	CSINC114	CSINC081
CSINC065	CSINC121	CSINC082
CSINC066	CSINC122	
CSINC067	CSINC123	SPARES
CSINC068	CSINC124	CSINC186
CSINC071	CSINC125	CSINC116
CSINC072	CSINC131	CSINC126
CSINC073	CSINC132	CSINC135
CSINC074	CSINC133	CSINC136
CSINC075	CSINC134	CSINC137
	CSINC141	CSINC138



NUCLEAR SAFETY RELATED

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

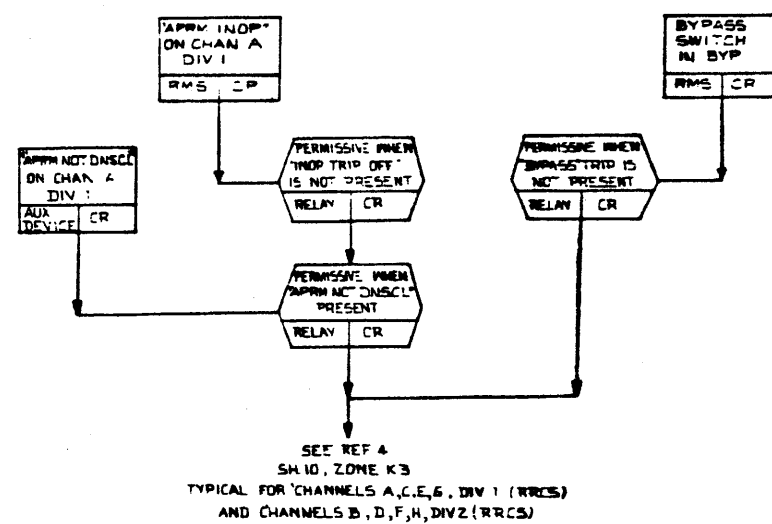
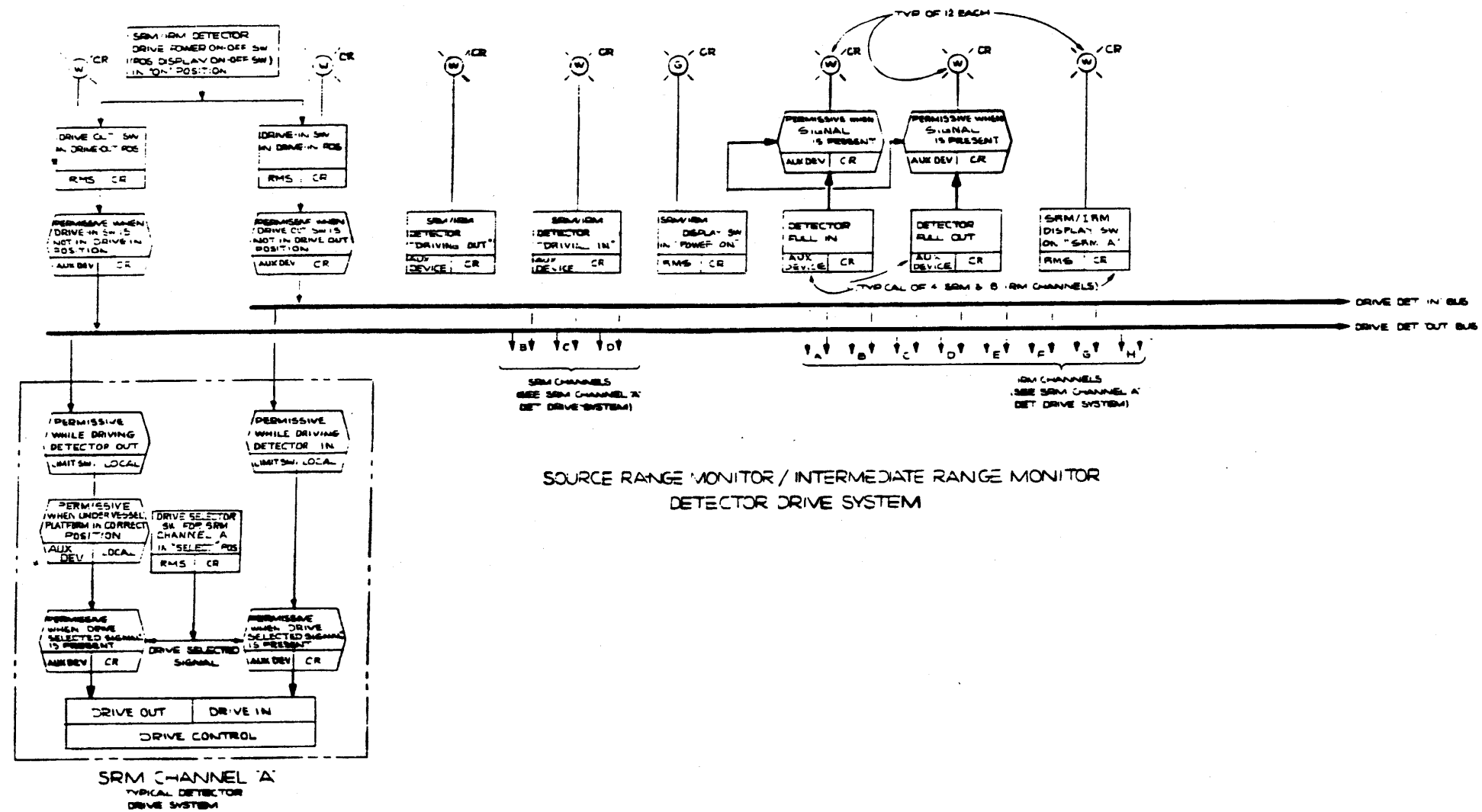
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Neutron Monitoring System

Figure 7.6-2 (Sheet 5 of 7)

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



APRM NOT DOWNSCALE INPUTS TO RRCS

NOTES:

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

(Rev. 12 1/03)

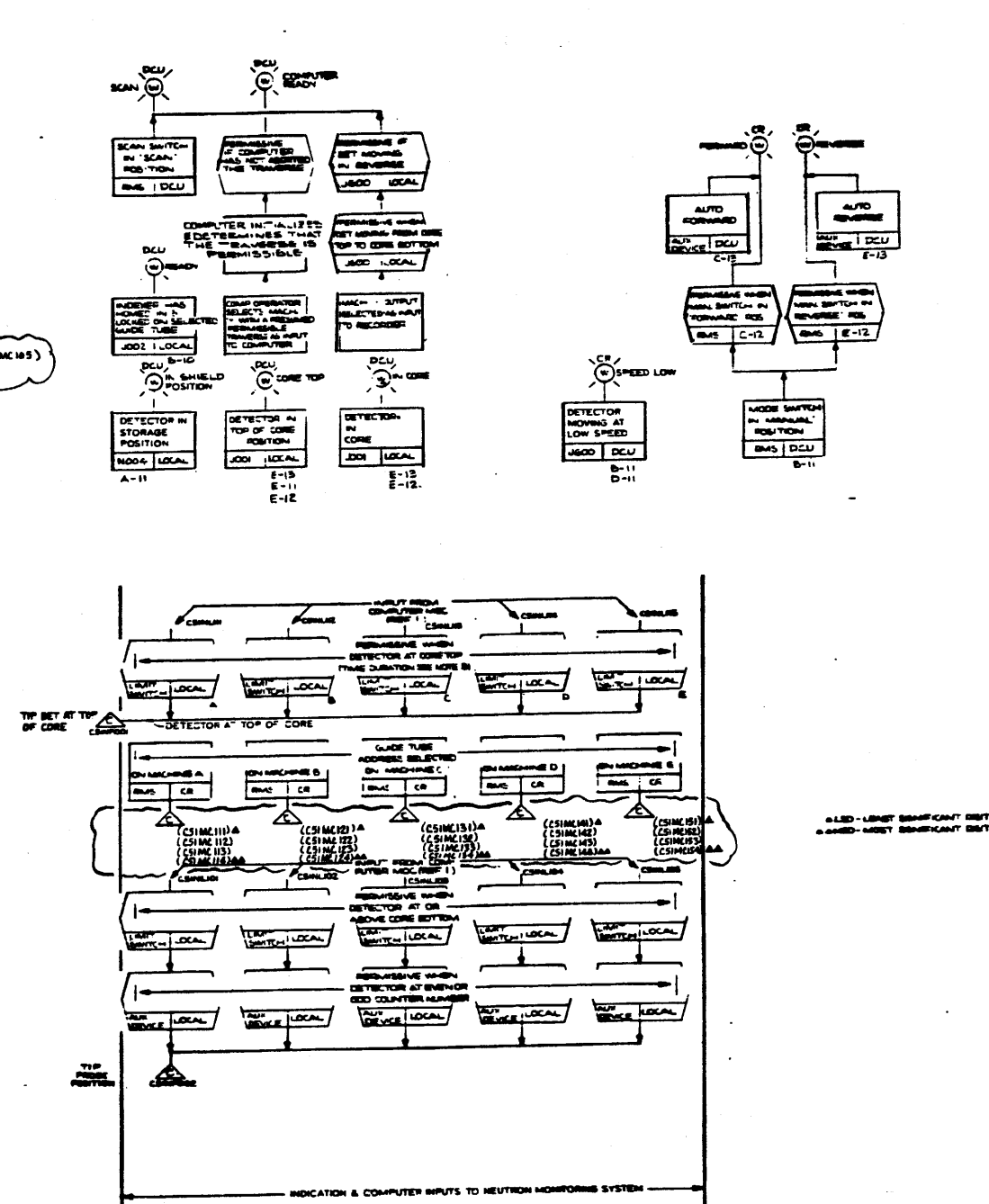
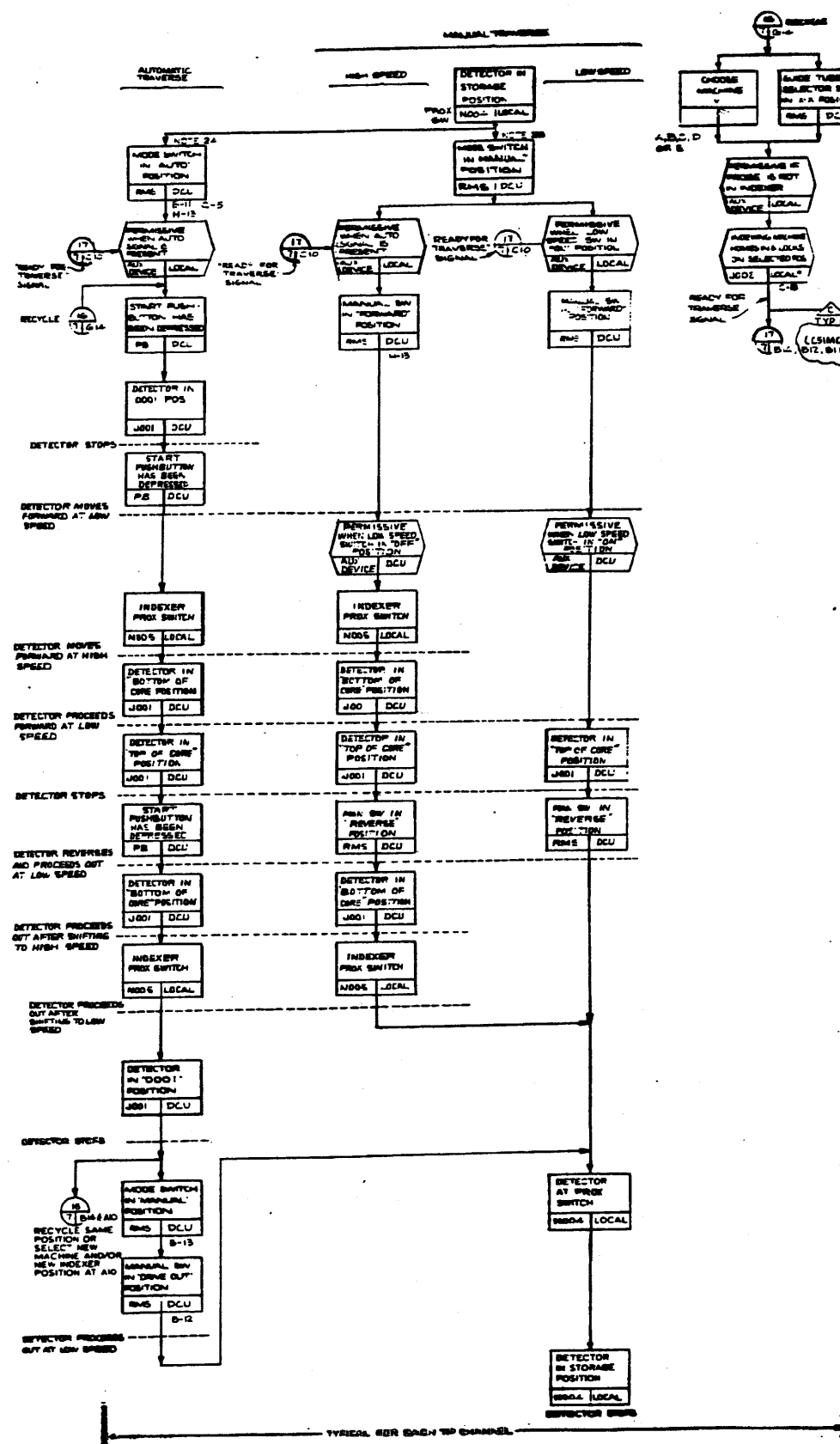


PERRY NUCLEAR POWER PLANT

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.
SH. 1.

(Rev. 12 1/03)

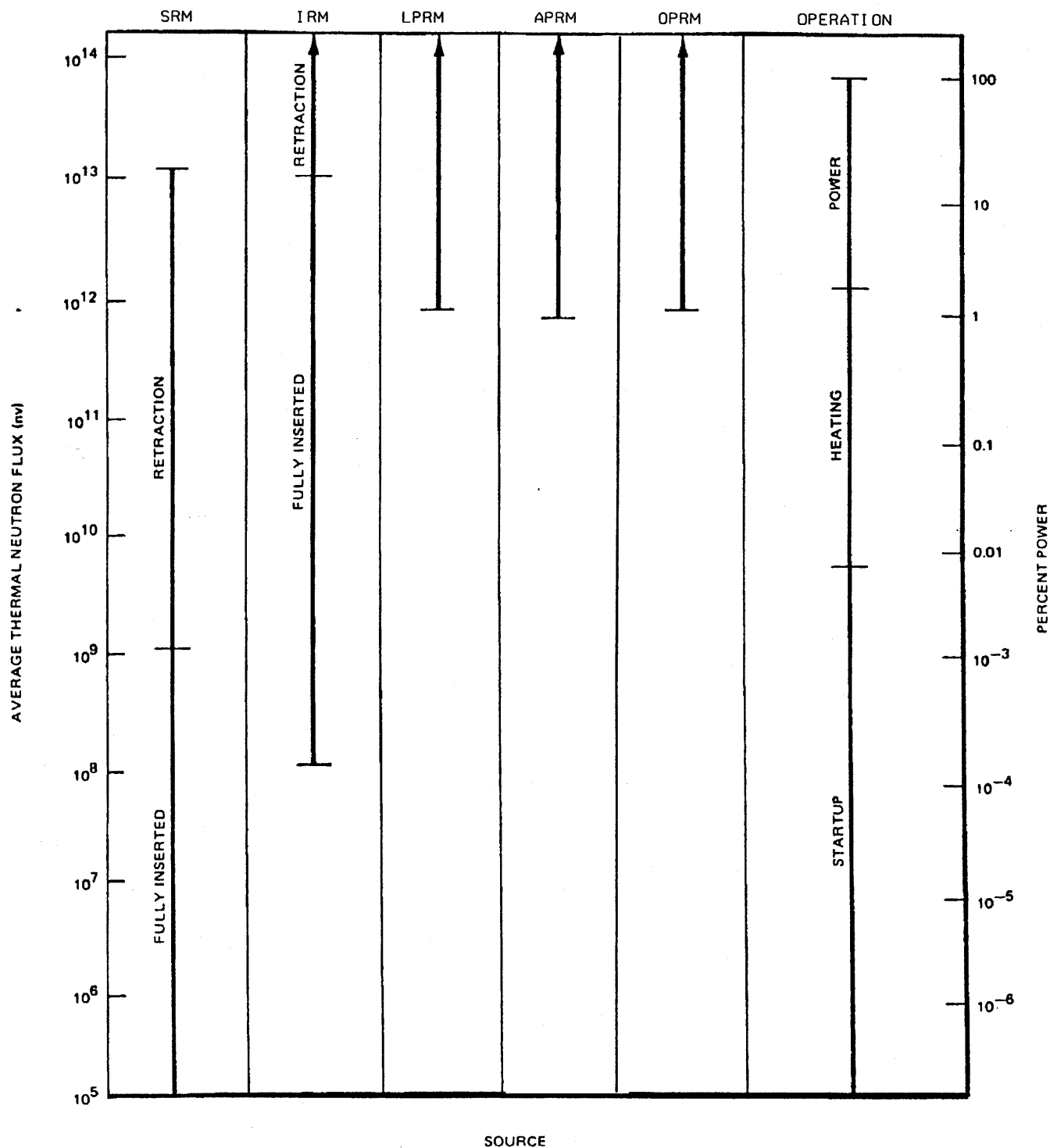


PERRY NUCLEAR POWER PLANT

Neutron Monitoring System

Figure 7.6-2 (Sheet 7 of 7)

[Dwg. D-808-307(7)]



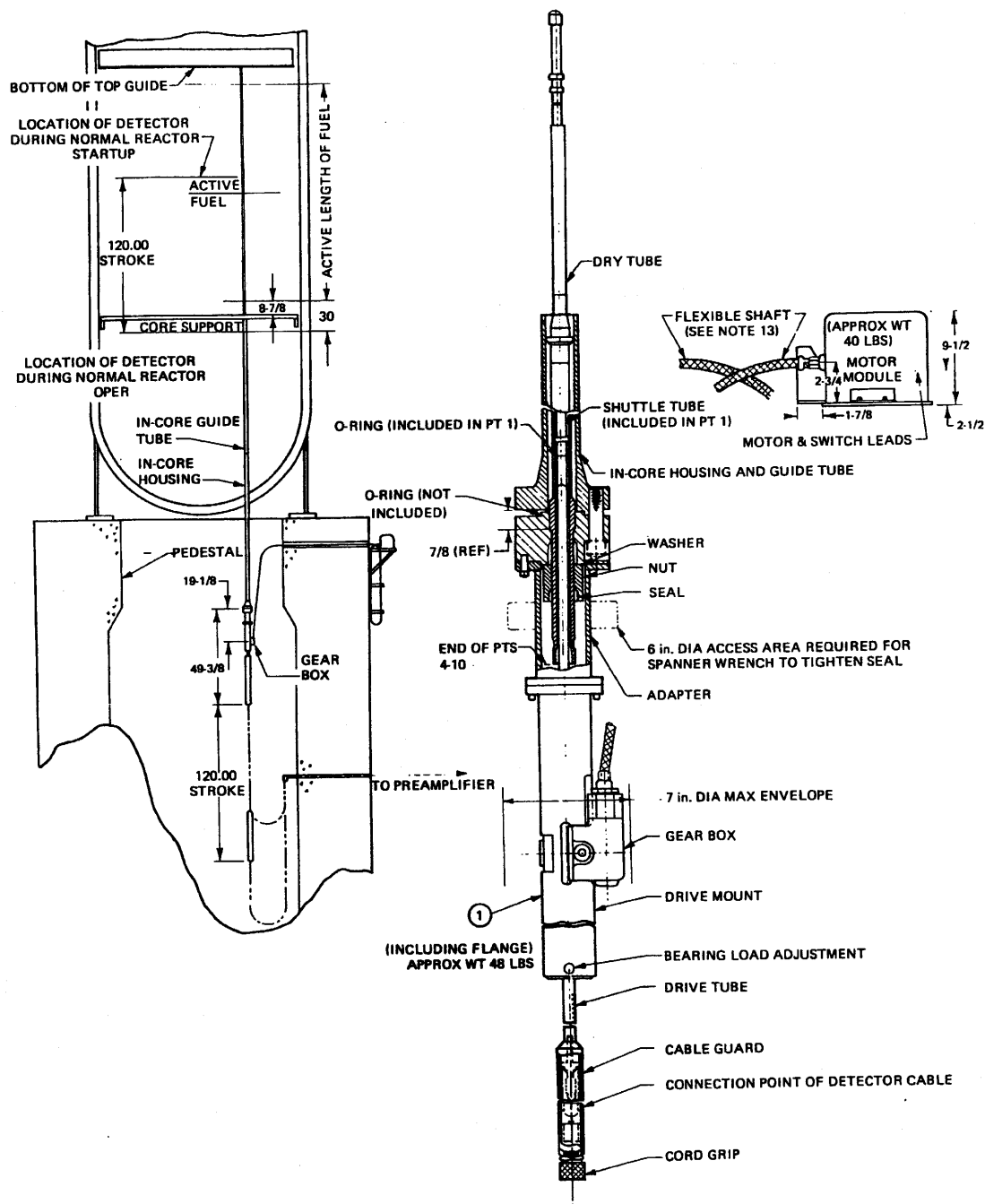
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ranges of Neutron
Monitoring System

Figure 7.6-3



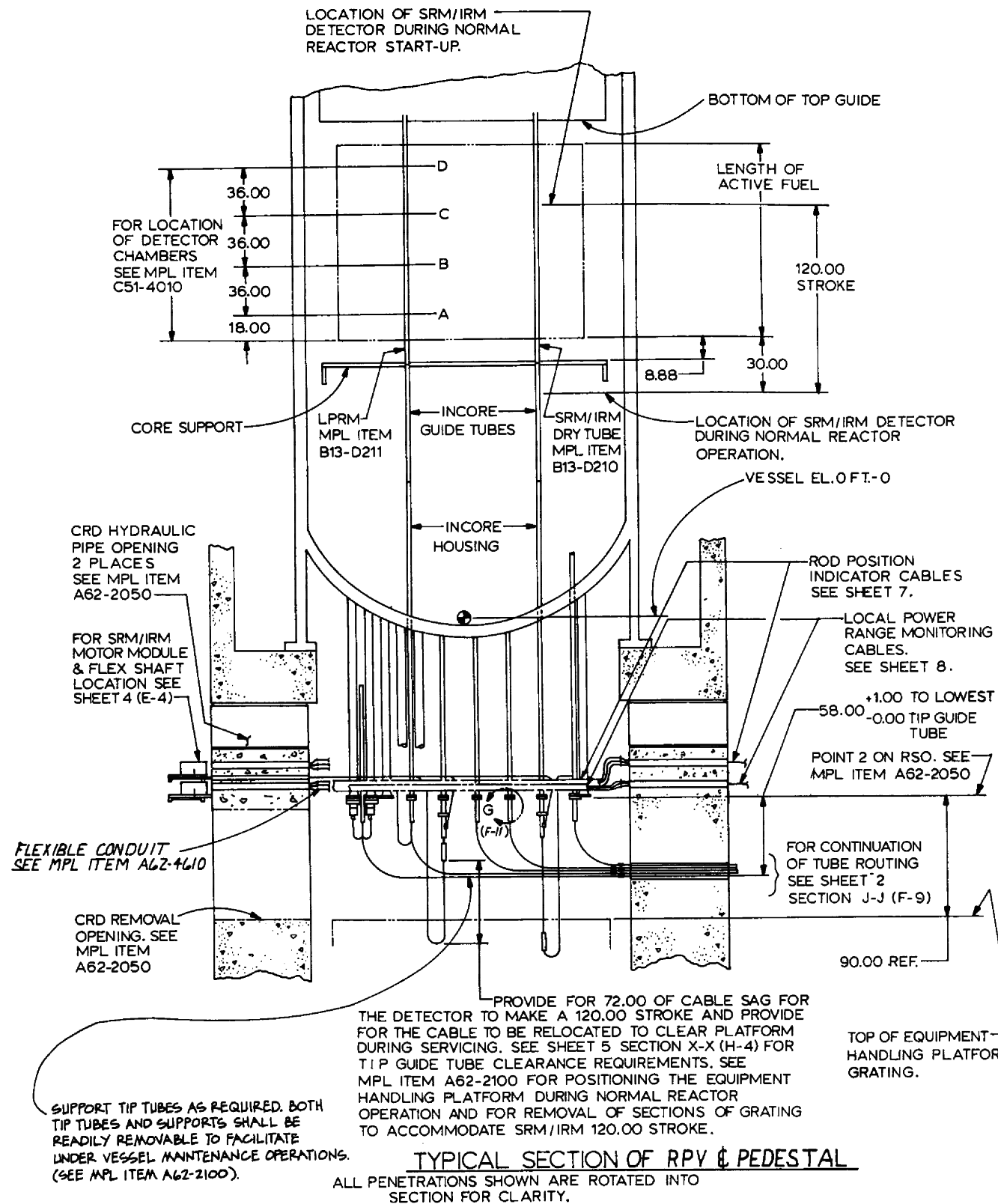
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

SRM/IRM Neutron
Monitoring Unit

Figure 7.6-4



NOTES:

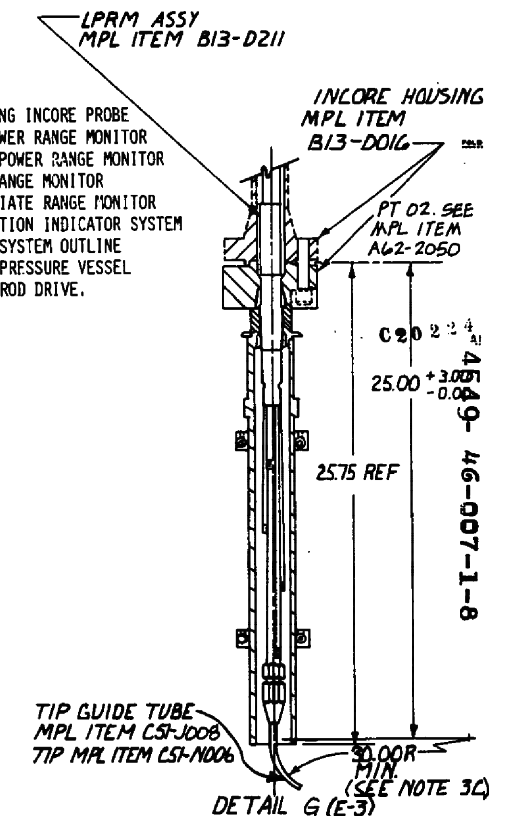
- TIP TUBE RUN FROM IN-CORE HOUSING FLANGE TO DRIVE MECHANISM. SEE MPL ITEM C51-N006.
- TUBE UNIONS MAY BE LOCATED AS REQUIRED BETWEEN REACTOR PEDESTAL WALL AND DRYWELL PENETRATION. THE NUMBER OF UNIONS SHALL BE HELD TO A MINIMUM.
- THE NUMBER AND DEGREE OF BENDS FOR TIP GUIDE TUBES SHALL BE HELD TO A MINIMUM.
 - 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.
 - MAX. DEGREE OF BENDS IN THIS AREA SH2(B-2) IN ALL PLANES SHALL BE 180° AND MINIMUM RADIUS SHALL BE 60.00.
 - MAX. DEGREE OF BENDS IN THIS AREA SH2 (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 540° 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

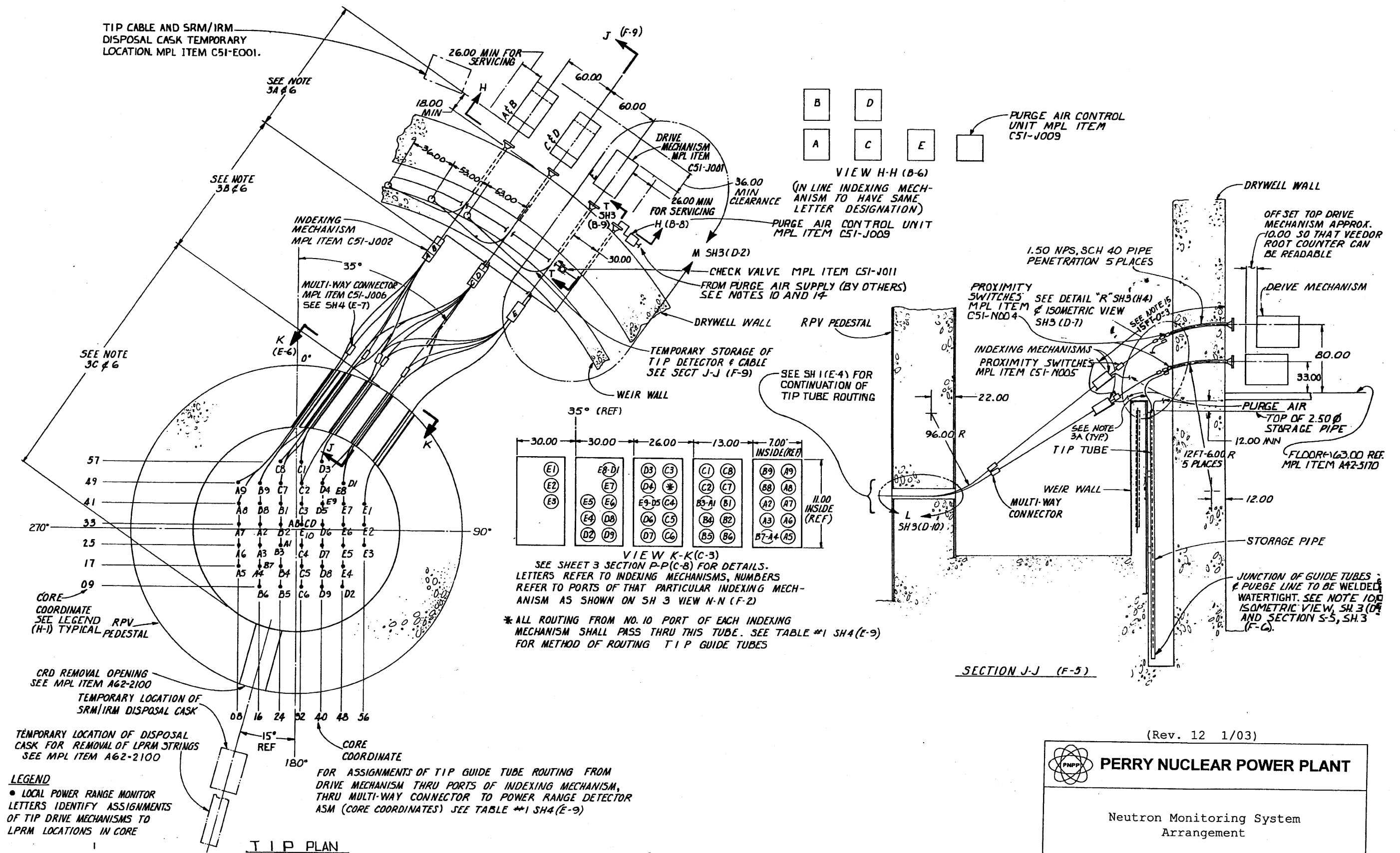
TIP ---- TRAVERSING INCORE PROBE
 LPRM --- LOCAL POWER RANGE MONITOR
 APRM --- AVERAGE POWER RANGE MONITOR
 SRM --- SOURCE RANGE MONITOR
 IRM --- INTERMEDIATE RANGE MONITOR
 RPI S --- ROD POSITION INDICATOR SYSTEM
 RSO --- REACTOR SYSTEM OUTLINE
 RPV --- REACTOR PRESSURE VESSEL
 CRD --- CONTROL ROD DRIVE.



(Rev. 18 10/13)

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

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

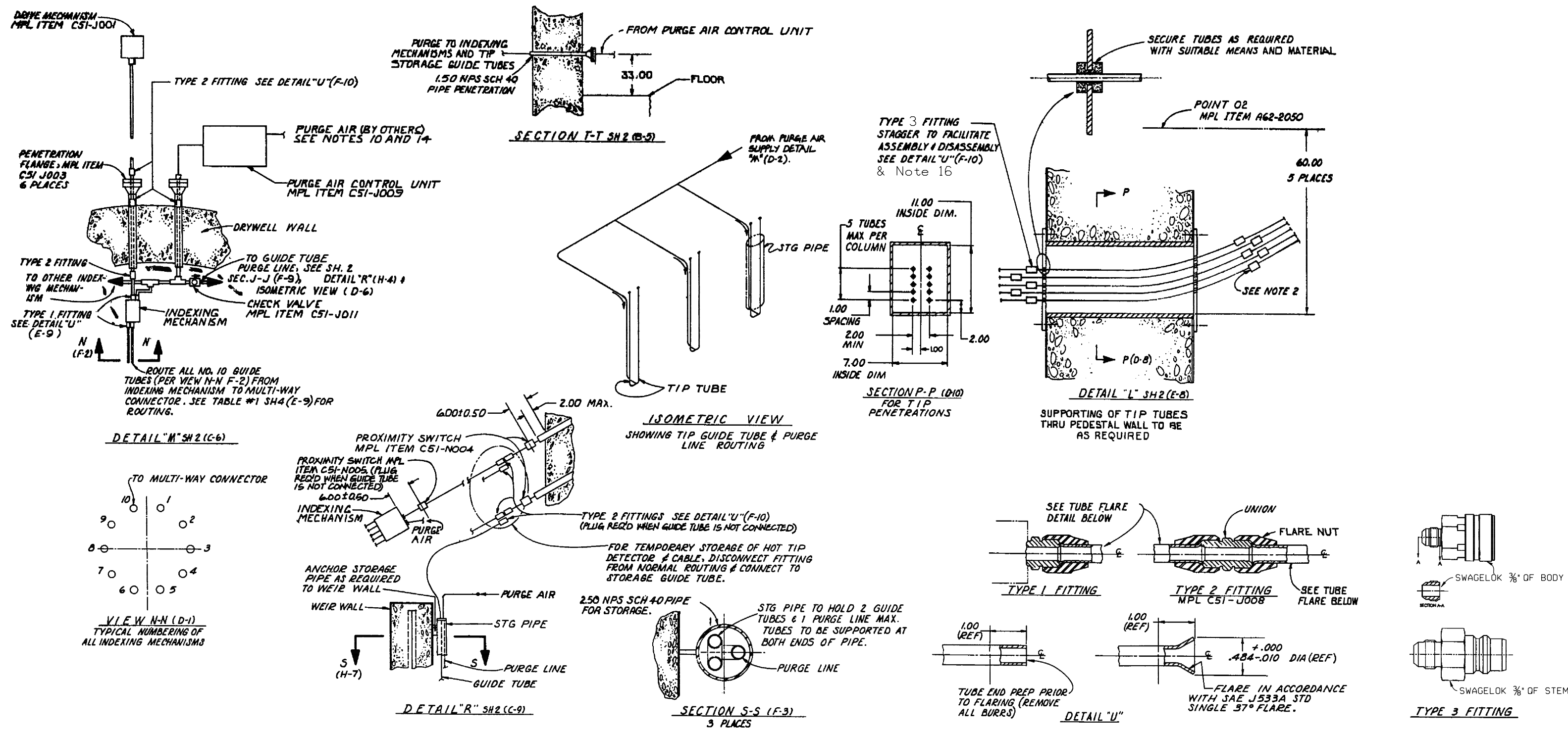


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

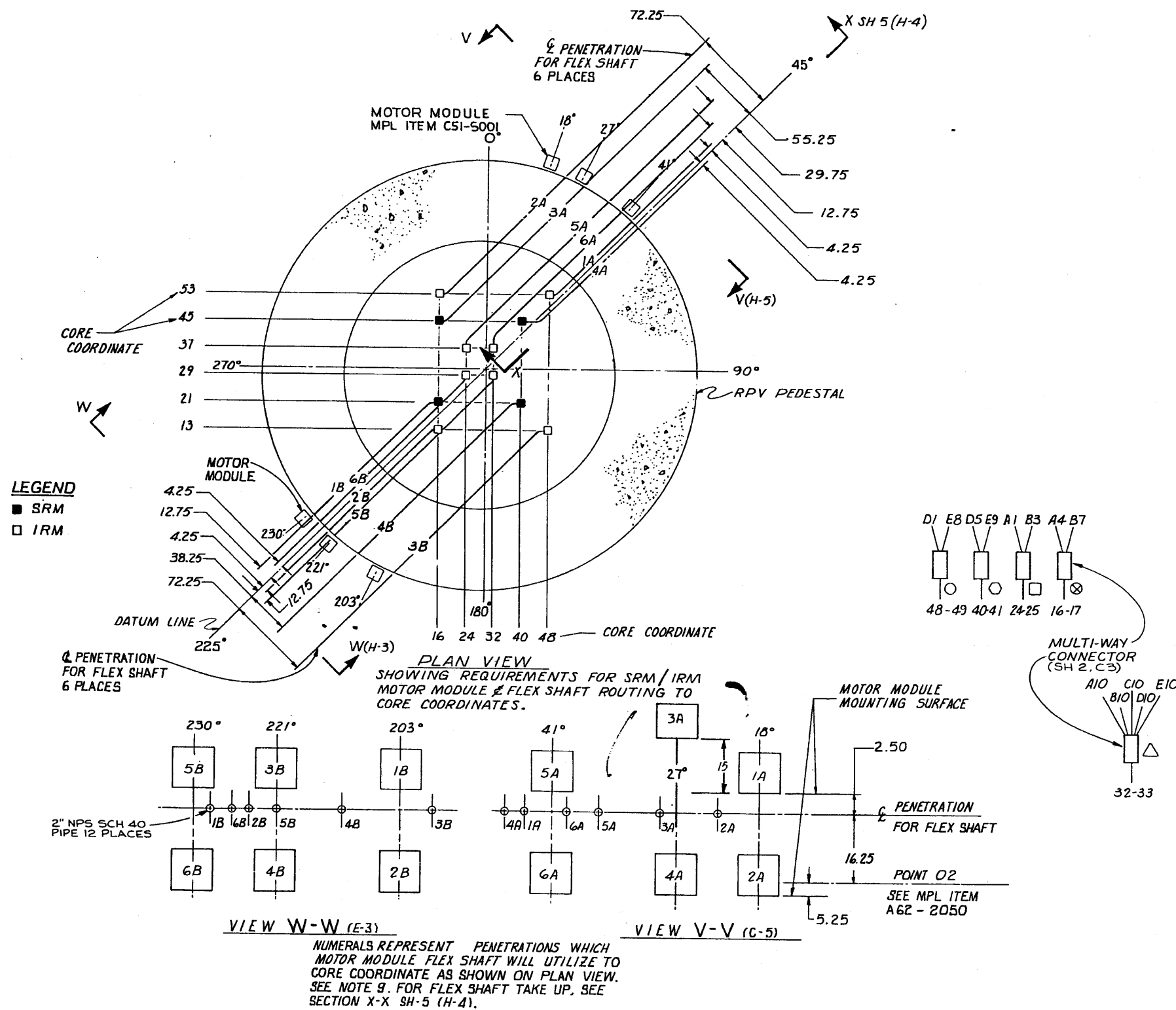
Figure 7.6-5 (Sheet 2 of 8)



(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)



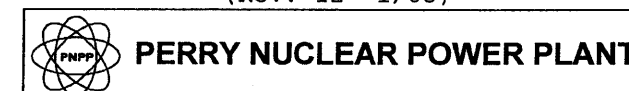
CORE COORDINATES FOR POWER RANGE DETECTOR ASSEMBLIES					
DRIVE # INDEXING MECHANISM	PORTS OF INDEXING MECHANISM	COORDINATES	DRIVE # INDEXING MECHANISM	PORTS OF INDEXING MECHANISM	COORDINATES
A	1	24-25 □	D	1	48-49 ○
	2	16-33		2	48-09
	3	16-25		3	40-57
	4	16-17 ⊗		4	40-49
	5	08-17		5	40-41 ○
	6	08-25		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

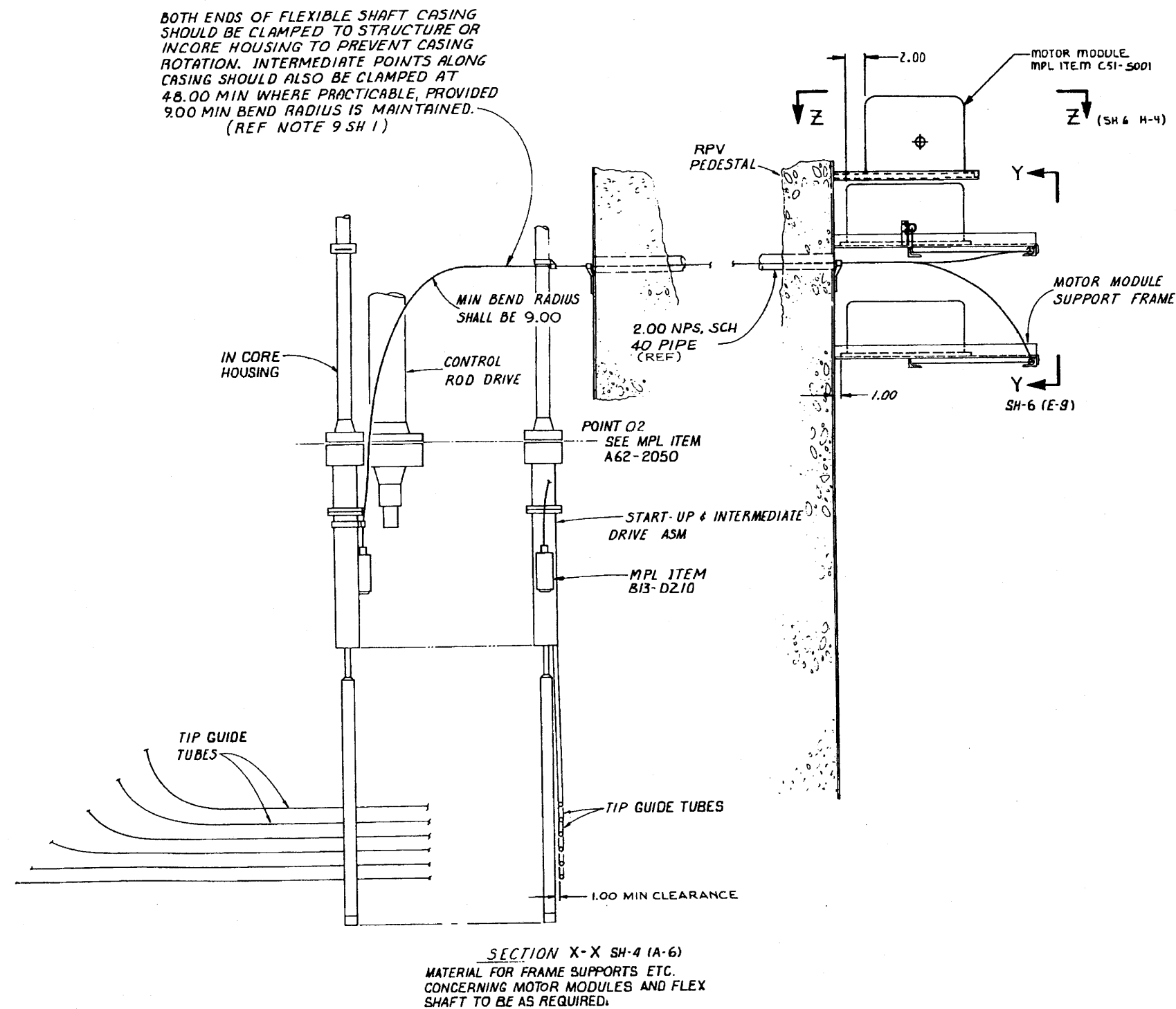
- ROUTE THRU MULTI-WAY CONNECTOR (UTILIZE 2 OUT OF 5 PORTS) FROM PORTS OF INDEXER WHICH HAVE IDENTICAL SYMBOLS (SEE TABULATION ABOVE), THEN ROUTE TO SPECIFIED CORE COORDINATE
- △ ROUTE THRU MULTI-WAY CONNECTOR (UTILIZE ALL 5 PORTS) FROM PORTS OF INDEXER WHICH HAVE IDENTICAL SYMBOLS (SEE TABULATION ABOVE),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

(Rev. 12 1/03)



Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 4 of 8)



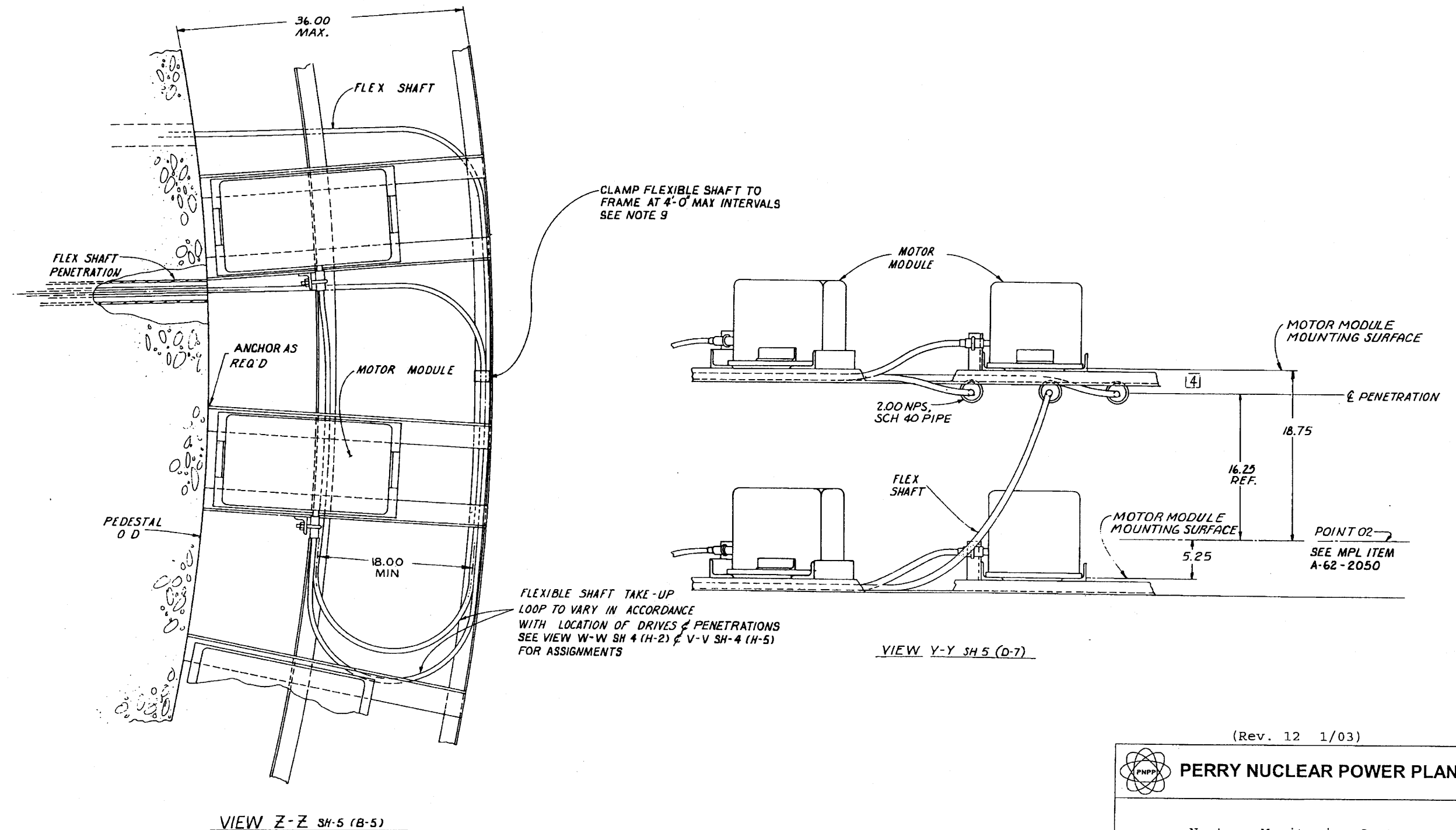
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 5 of 8)



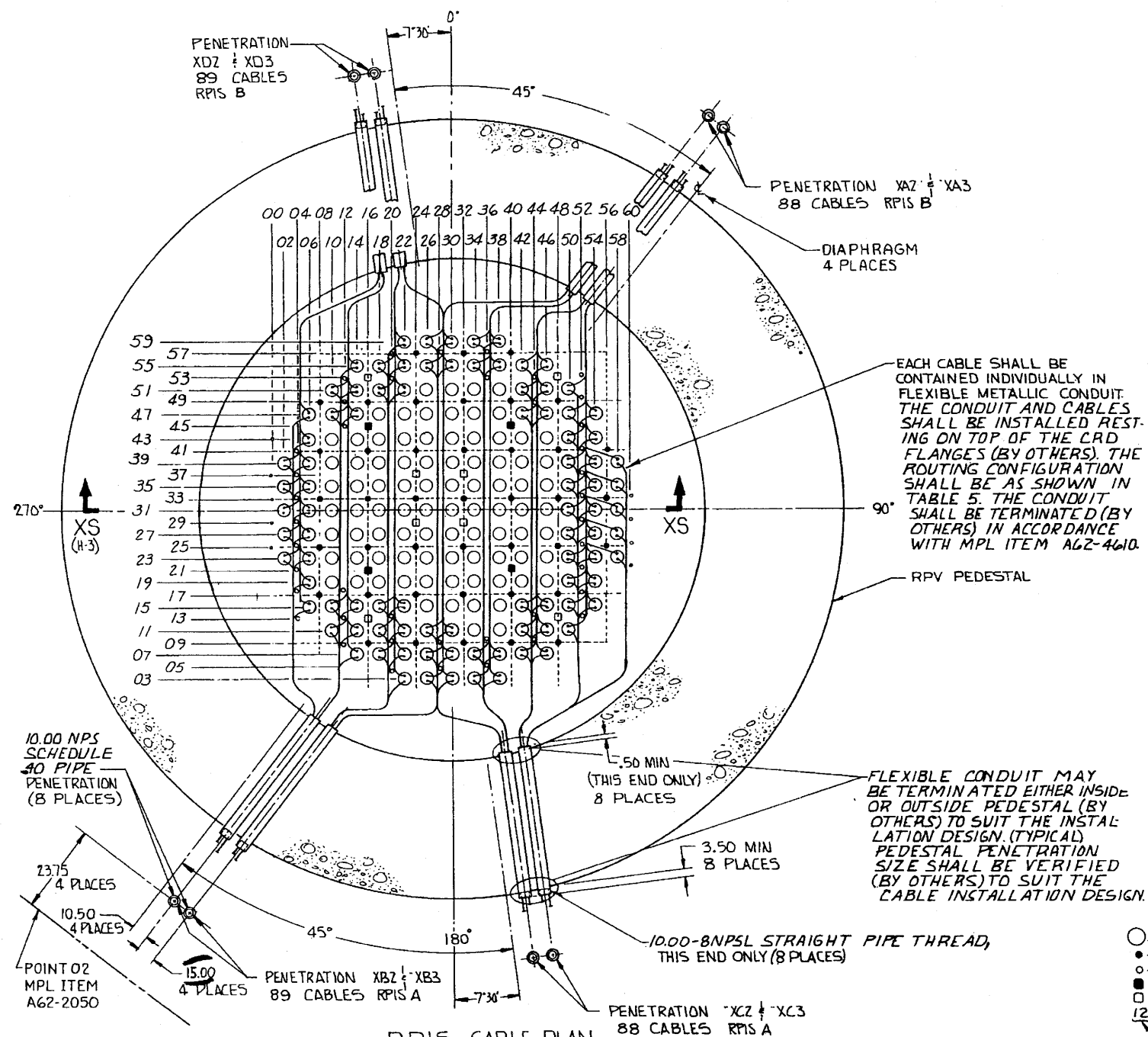
(Rev. 12 1/03)



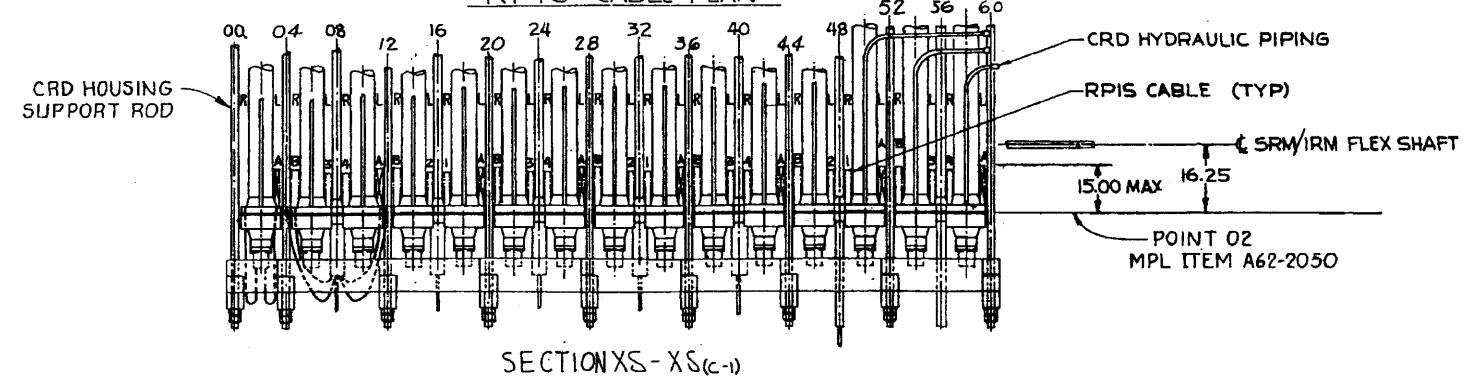
PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 6 of 8)



RPIS CABLE PLAN



SECTION XS-XS(-1)

TABLE 5
ROUTING OF CABLES FROM CRD TO RPIS

CABLE	RPIS 'B'	RPIS 'A'	CABLE	RPIS 'B'	RPIS 'A'	CABLE	RPIS 'B'	RPIS 'A'	CABLE	RPIS 'B'	RPIS 'A'
PENETRATION	XD2, XD3	XB2, XB3	PENETRATION	XD2, XD3	XB2, XB3	PENETRATION	XA2, XA3	XC2, XC3	PENETRATION	XA2, XA3	XC2, XC3
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
06-47	04R	04L	43			34-59			15		
10-11	12R	12L	47			38-03			19		
15			51			07			23		
19			55			11			27		
23			22-59	20R	20L	15			31		
27			26-03	28R	28L	19			35		
31			07			23			39		
35			11			27			43		
39			15			31			47		
43			19			35			50-51		
47			23			39			54-15		
10-51			27			43			19		
14-07			31			47			23		
15			35			51			27		
19			39			55			31		
23			43			38-59	36R	36L	35		
27			47			42-07	44R	44L	39		
31			51			11			43		
35			55			15			47		
39			26-59			19			54-47		
43			30-03			23			58-23		
47			07			27			27		
51			11			31			31		
14-55	12R	12L	15			35			35		
18-07	20R	20L	19			39			58-39	52R	52L
11			23			43			30-35	28R	28L
15			27			47			39		
19			31			51			43		
23			35			55			47		
27			39			42-55	44R	44L	51		
31			18-43	20R	20L				55		
35									30-59	28R	28L
39											

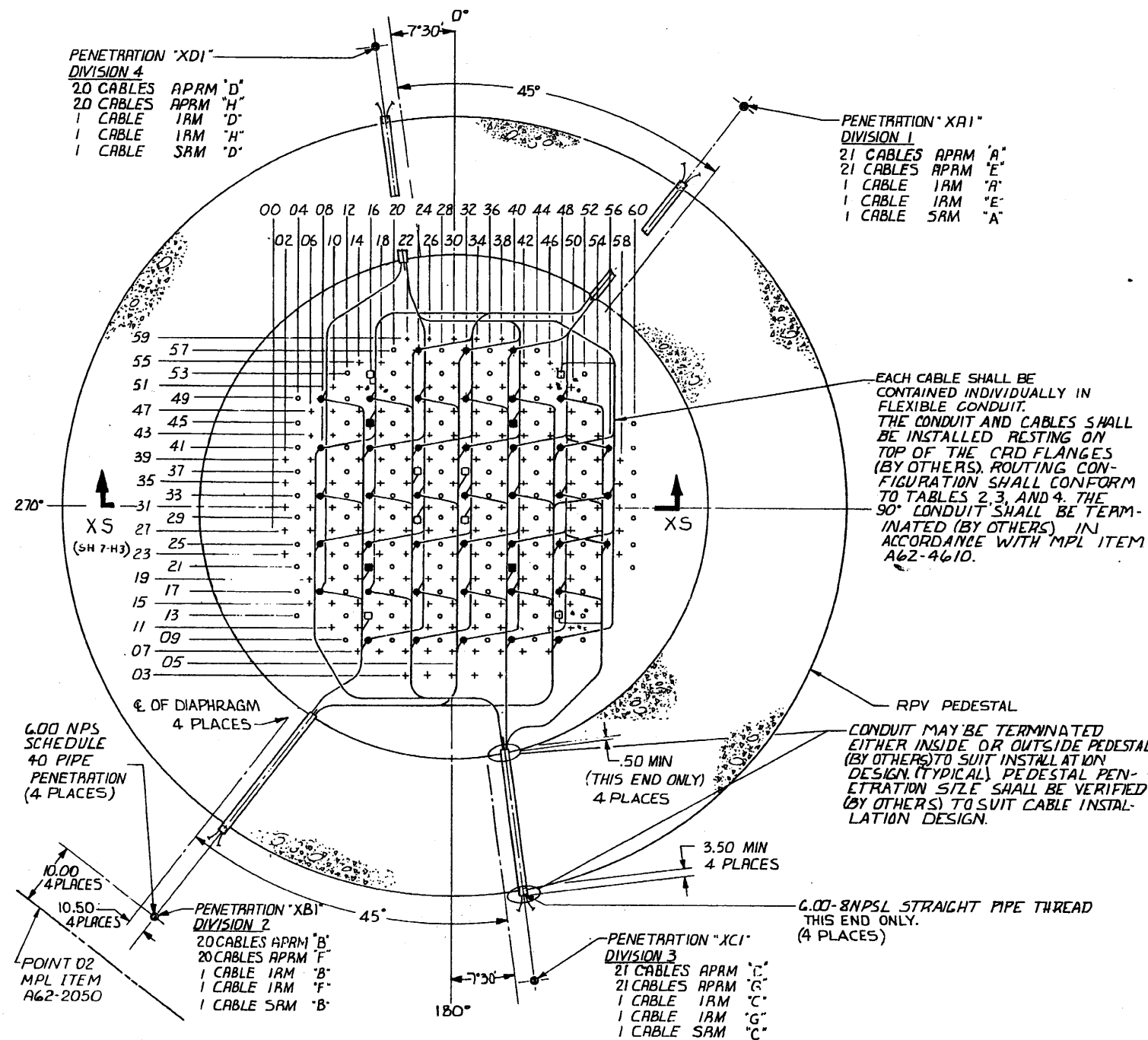
LEGEND
 ○ - CONTROL ROD DRIVE.
 ● - LOCAL POWER RANGE MONITOR.
 ○ - CRD HOUSING SUPPORT ROD.
 ● - SOURCE RANGE MONITOR.
 ○ - INTERMEDIATE RANGE MONITOR.
 12L - INDICATES AREA TO LEFT OF COORDINATE LOOKING TOWARD 0° AZIMUTH.
 NUMERIC COORDINATE LOCATOR.

(Rev. 12 1/03)

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)

CHANNEL- DIV. PEN-	APRM "A" 1 XAI	APRM "C" 3 XCI	APRM "E" 1 XAI	APRM "G" 3 XCI
LPRM DET LOCATION	LPRM DET HGT	LPRM DET HGT	LPRM DET HGT	LPRM DET HGT
08-25	C 16R	D 08L	A 16R	B 08L
41	A	B	C	D 08L
16-17	D	A 24L	B	C 24L
33	B	C	D	A
49	D 16R	A	B 16R	C
24-09	C 32R	D	A 32R	B
25	A	B	C	D
41	C	D	A	B
57	A	B 24L	C	D 24L
32-17	B	C 40L	D	A 40L
33	D	A	B	C
49	B 32R	C	D 32R	A
40-09	A 48R	B	C 48R	D
25	C	D	A	B
41	A	B	C	D
57	C	D 40L	A	B 40L
48-17	D	A 56L	B	C 56L
33	B	C	D	A
49	D	A	B	C
56-25	A	B	C	D
41	C 48R	D 56L	A 48R	B 56L

(APRM TRIP SYSTEM B)

CHANNEL- DIV. PEN-	APRM "B" 2 XBI	APRM "D" 4 XDI	APRM "F" 2 XBI	APRM "H" 4 XDI
LPRM DET LOCATION	LPRM DET HGT	LPRM DET HGT	LPRM DET HGT	LPRM DET HGT
08-17	B 16L	C 08R	D 16L	A 08R
33	D	A 08R	B	C 08R
49	B	C 08R	D	A 08R
16-09	A	B 24R	C	D 24R
25	C	D	A	B
41	A 16L	B	C 16L	D
24-17	D 32L	A	B 32L	C
33	B	C	D	A
49	D	A 24R	B	C 24R
32-09	C	D 40R	A	B 40R
25	A	B	C	D
41	C	D	A	B
57	A 32L	B	C 32L	D
40-17	B 48L	C	D 48L	A
33	D	A	B	C
49	B	C 40R	D	A 40R
48-09	A	B 56R	C	D 56R
25	C	D	A	B
41	A	B	C	D
56-33	B 48L	C 56R	D 48L	A 56R

TABLE 3
ROUTING OF CABLES
FROM IRM DETECTOR TO IRM CHANNELS

CHANNEL- DIV. PEN-	IRM "A" 1 XAI	IRM "B" 2 XBI	IRM "C" 3 XCI	IRM "D" 4 XDI	IRM "E" 1 XAI	IRM "F" 2 XBI	IRM "G" 3 XCI	IRM "H" 4 XDI
IRM DET. LOCATION	RACE WAY NO.	RACE WAY NO.	RACE WAY NO.	RACE WAY NO.	RACE WAY NO.	RACE WAY NO.	RACE WAY NO.	RACE 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
FROM SRM DETECTORS TO SRM CHANNELS

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

LEGEND

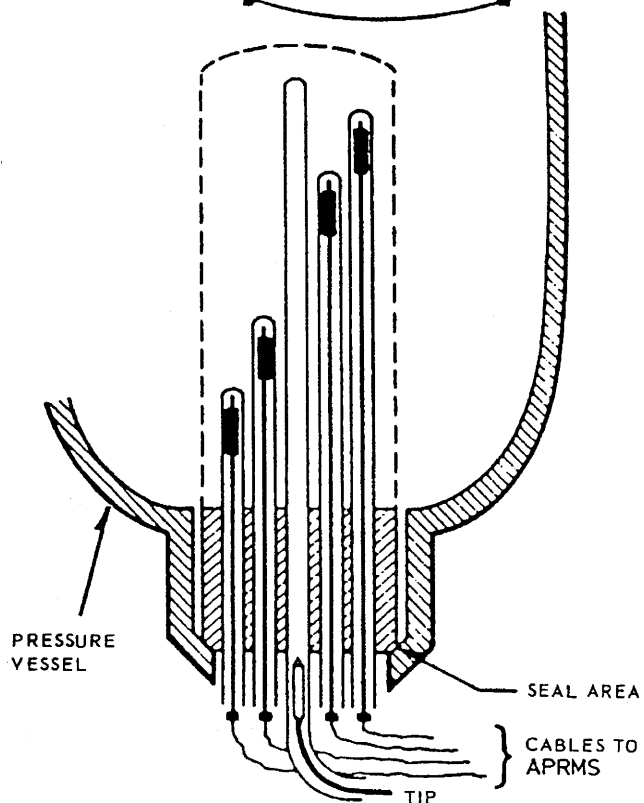
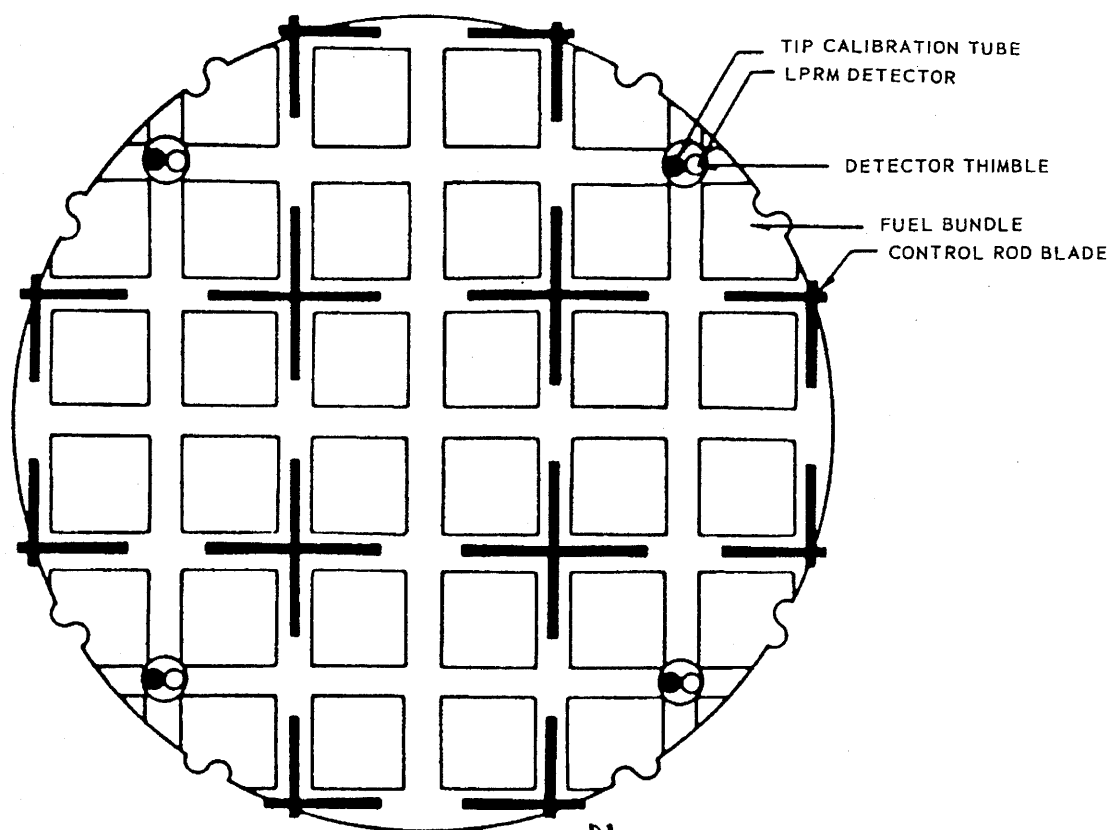
- +--CONTROL ROD DRIVE.
- LOCAL POWER RANGE MONITOR. (LPRM)
- CRD HOUSING SUPPORT ROD
- SOURCE RANGE MONITOR. (SRM)
- INTERMEDIATE RANGE MONITOR. (IRM)

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PERRY NUCLEAR POWER PLANT

Neutron Monitoring System
Arrangement

Figure 7.6-5 (Sheet 8 of 8)



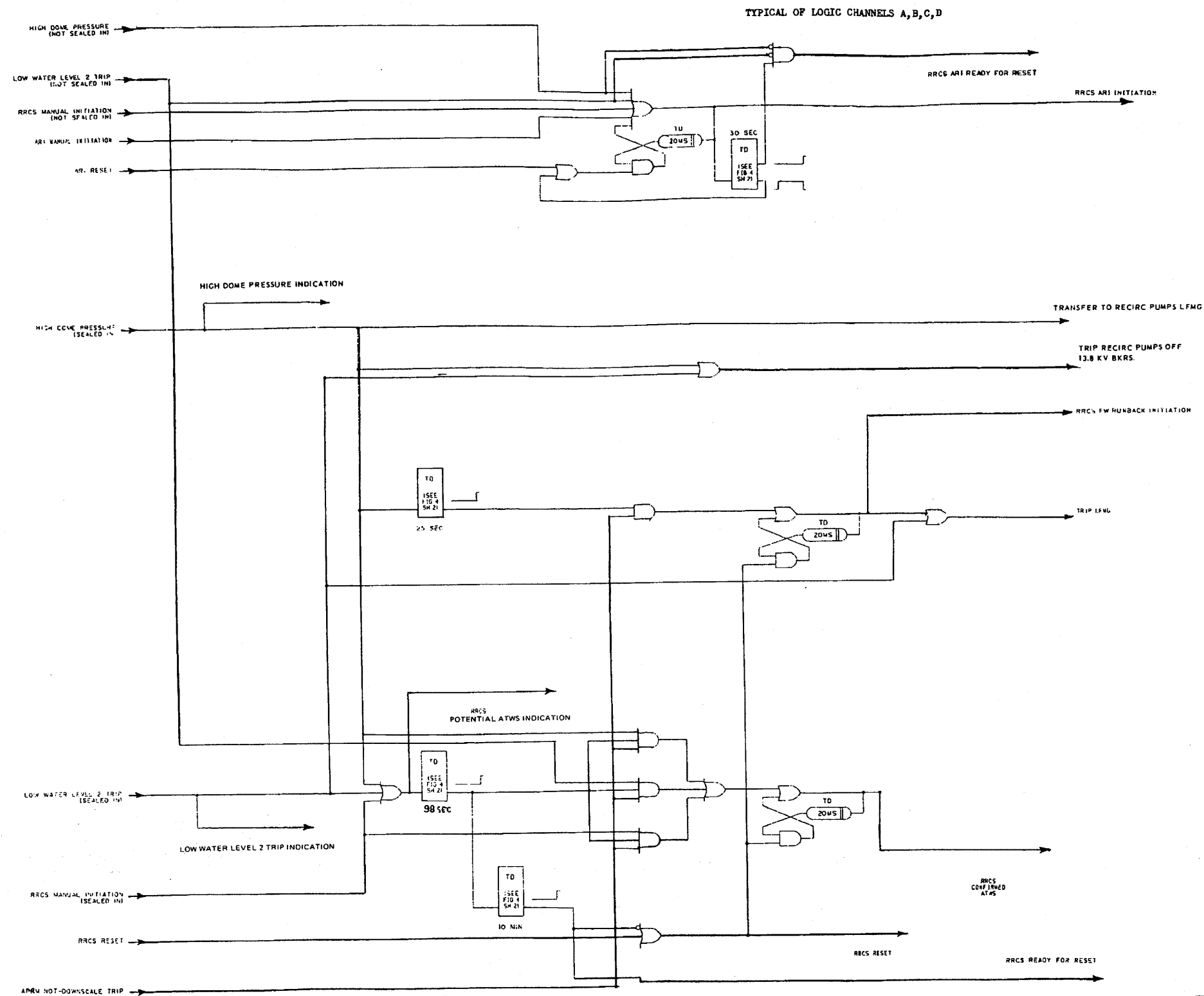
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PERRY NUCLEAR POWER PLANT

Power Range Monitor
Director Assembly Location

Figure 7.6-6



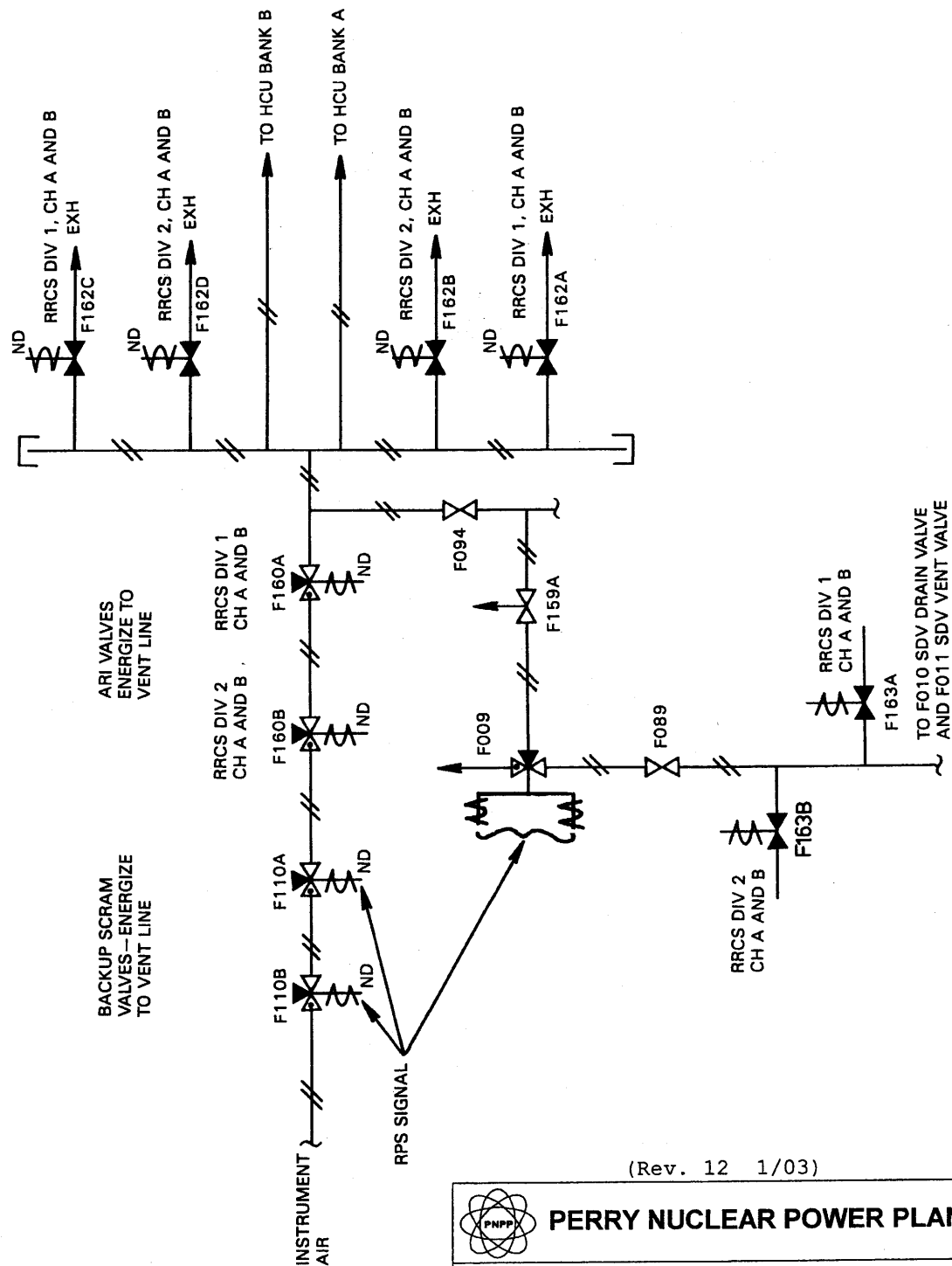
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PERRY NUCLEAR POWER PLANT

RRCS Initiation Logic

Figure 7.6-8



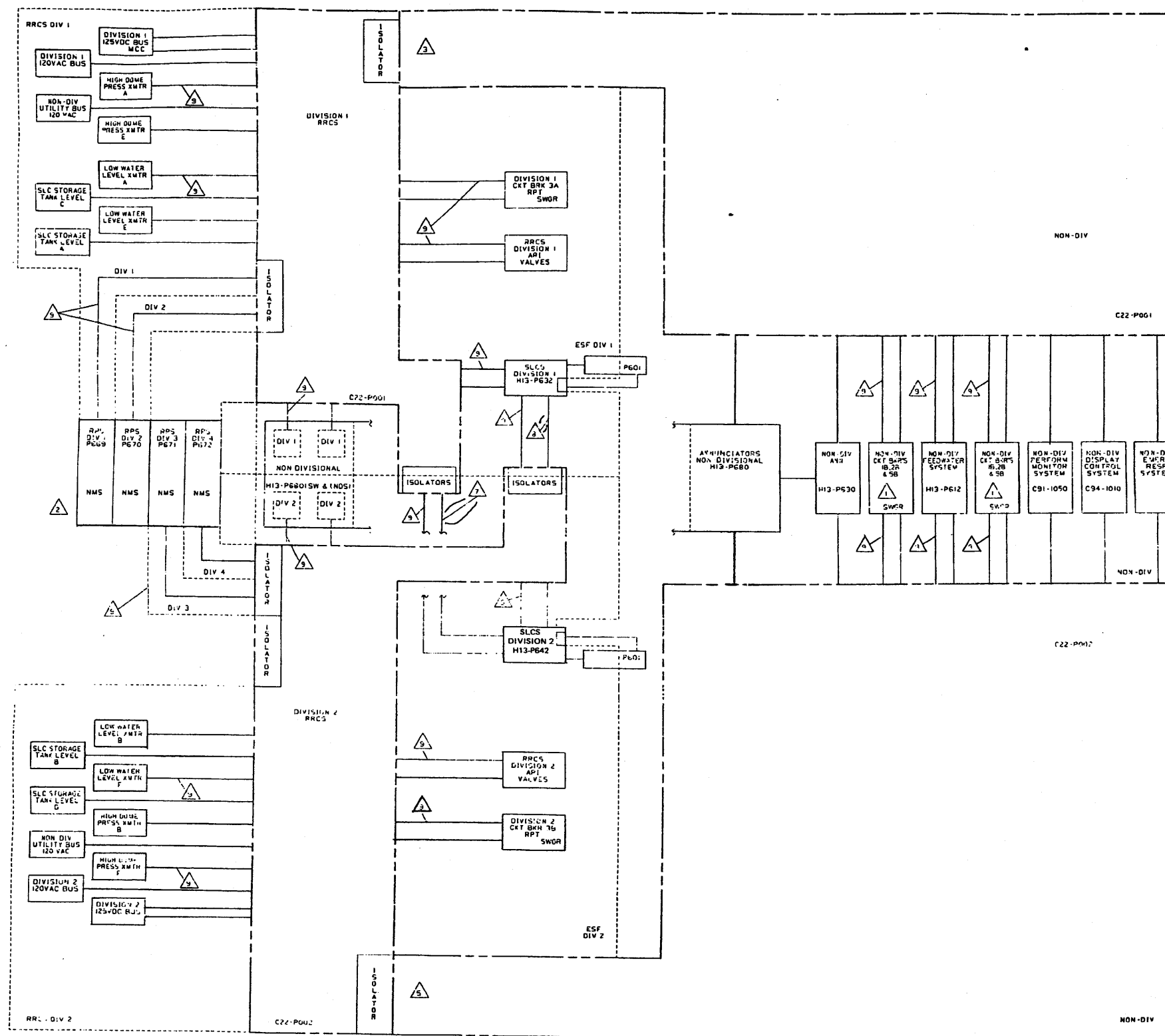
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PERRY NUCLEAR POWER PLANT

Perry RRCS ARI Valves

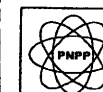
Figure 7.6-9



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 SLCS DIVISION 2 H13-P642 ARE THROUGH OPTICAL ISOLATORS LOCATED IN DIV 1 RRCS PANEL
- △ RRCS SIGNALS FROM DIVISION 2 TO SLCS 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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PERRY NUCLEAR POWER PLANT

RRCS Separation Block Diagram

Figure 7.6-10

TABLE 1

TIME DEPENDENT INTERMEDIATE VARIABLES		
SYM.	DESCRIPTION	DEFINITION
T	INTERNALLY GENERATED TIME REFERENCE FUNCTION	
TIC	INSERT CYCLE ACTIVE	<p>ABSCISSA INDICATES TIME ELAPSED WHILE ADVANCING THE INSERT CYCLE IS CONTROLLED BY TIC AND TIT AS FOLLOWS:</p> <ol style="list-style-type: none"> 1. WHEN TIC TIT = 1 THE CYCLE IS ADVANCING WITH TIME. 2. WHEN TIC = 0, THE CYCLE IS RESET TO 10 3. WHEN TIC TIT = 1, THE CYCLE STOPS, BUT DOES NOT RESET.
T11	INSERT PERIOD OF INSERT CYCLE	
T12	SETTLE PERIOD OF INSERT CYCLE	
T13	ROD INSERT CONTROL	
T14	SETTLE CONTROL	
TOC	WITHDRAW CYCLE ACTIVE	<p>ABSCISSA INDICATES TIME ELAPSED WHILE ADVANCING THE WITHDRAW CYCLE IS CONTROLLED BY IOC AND IOT AS FOLLOWS:</p> <ol style="list-style-type: none"> 1. WHEN IOC IOT = 1, THE CYCLE IS ADVANCING WITH TIME. 2. WHEN IOC = 0, THE CYCLE IS RESET TO 10. 3. WHEN IOC IOT = 1, THE CYCLE STOPS, BUT DOES NOT RESET.
TO1	INSERT PERIOD OF WITHDRAW CYCLE	
TO2	WITHDRAW PERIOD OF WITHDRAW CYCLE	
TO3	SETTLE PERIOD OF WITHDRAW CYCLE	
T50	UNLATCH CONTROL	
T51	ROD WITHDRAW CONTROL	
T52	SETTLE CONTROL	

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	I21	0.42	—	SEC
	ROD INSERT CONTROL	I22-I21	2.98	2.5-3.1	SEC
	SWITCHING OVERLAP	I22-I31	0.10	0.0-1.5	SEC
	SETTLE CONTROL	I32-I22	5.30	4.2-6.3	SEC
WITHDRAW CYCLE	TIME DELAY TO UNLATCH CONTROL	I51	0.42	—	SEC
	UNLATCH CONTROL	I52-I51	0.40	0.3-0.9	SEC
	INTERVAL BETWEEN UNLATCH AND SETTLE CONTROL	I51-I55	0.10	0.0-0.15	SEC
	ROD WITHDRAWAL CONTROL	I52-I51	1.99	1.3-1.7	SEC
	SWITCH OVERLAP FROM WITHDRAWAL TO SETTLE CONTROL	I52-I71	0.10	0.0-1.5	SEC
	SETTLE CONTROL	I72-I62	6.00	4.2-6.3	SEC

TABLE 2

SYSTEM PARAMETER VALUES				
	PARAMETER	VALUE	TOLERANCE	UNITS
INSERT CYCLE	I11	0.36	± 0.02	SEC.
	I12	9.6		
	I21	0.42		
	I22	3.32		
	I31	3.22		
WITHDRAW CYCLE	I32	8.62	± 0.02	SEC.
	I41	0.36	± 0.02	SEC.
	I42	9.16		
	I51	0.42		
	I52	1.02		
	I61	1.12		
	I62	2.62		
	I71	2.52		
	I72	8.62	± 0.02	SEC.

INSERT CYCLE

I21-I11 = DELAY UNTIL ROD MOTION BEGINS

I22-I21 = DRIVE IN TIME

I32-I22 = SETTLE TIME

I10 < I22, 1 = TIME WHEN CONTINUOUS INSERT CAN BE REQUESTED

I31 < I22, 1 = CYCLE STOP POINT FOR CONTINUOUS INSERT

WITHDRAW CYCLE

I51-I41 = DELAY UNTIL ROD MOTION BEGINS

I52-I51 = DRIVE IN TIME (UNLATCH)

I51-I52 = DELAY AFTER UNLATCH

I52-I51 = DRIVE OUT TIME

I72-I62 = SETTLE TIME

I10 < I52, 1 = TIME WHEN CONTINUOUS WITHDRAW CAN BE REQUESTED

I71 < I52, 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
I1	ROD WITHDRAWAL IS REQUESTED
I2	ROD INSERT REQUESTED
I3	IN-CLOCK IS ACTIVE
I4	A ROD IS IN MOTION
K0	REFUEL ROD SELECT IS UNINHIBITED
K1	REFUEL PLATFORM CONTROL PERMISSIVE
K2	REACTOR SYSTEM MODE SWITCH IN START-UP
K3	REACTOR SYSTEM MODE SWITCH IN "REFUEL"
K4	REACTOR SYSTEM MODE SWITCH IN "RUN"
K5	NMS DOWNSCALE PRM EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
K6	NMS UPSCALE PRM EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
K7	NMS STARTUP RANGE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE
K8	ROD MOTION PERMISSIVE
K9	RPM IS OPERABLE
P0	REFUEL PLATFORM OVER CORE AREA
P1	REFUEL PLATFORM GRAPPLE LOADED
R0	REQUESTED ROD IDENT
S0	ROD IS BEING DRIVEN
T1	INSERT CYCLE ACTIVE
T2	INSERT PERIOD OF INSERT CYCLE
T3	SETTLE PERIOD OF INSERT CYCLE
T4	WITHDRAW CYCLE ACTIVE
T5	INSERT PERIOD OF WITHDRAW CYCLE
T6	WITHDRAW PERIOD OF WITHDRAW CYCLE
T7	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

1. 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 "FULL-OUT" RESPECTIVELY. TWO POSITIONS ARE CALLED "FULL-OUT" AND "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 (e.g., 00, 02, ..., 40) AND ANY ODD SWITCH WILL INDICATE "ODD".

2. WIRING FROM HCU (SCRAM VALVES AND ACCUMULATOR) TO CONTROL ROOM FOR ANNUNCIATION SHALL BE IN SERIES CONNECTION FOR ALL HCU'S.

3. WIRING FROM HCU (ROD SCRAM TEST SWITCH IN TEST POSITION) SHALL BE IN SERIES CONNECTION FOR ALL HCU'S.

4. 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 ANNUNCIATOR TROUBLE WILL CLEAR THE INDIVIDUAL INDICATORS.

5. SEE TABLE 4 FOR DEFINITIONS OF VARIABLES APPEARING ON THIS FCD.

△ A LOGICAL "1" INDICATES A FAILED COMPARISON

7. GROUP 1 THRU 10 REFERS TO ROD ASSIGNMENTS WHICH ARE PRE-DETERMINED AND FIXED.

8. 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:

	MPL ITEM NUMBERS	DWG. NR.
1. CONTROL ROD DRIVE HYDRAULIC SYS. PMS	—	—
2. NEUTRON MONITORING SYS. IED	—	—
3. REMOVED	—	—
4. REMOVED	—	—
5. CONTROL ROD DRIVE HYDRAULIC SYS. DESIGN SPEC.	—	—
6. PERFORMANCE MONITORING SYS. INPUT/OUTPUT REQUIREMENTS	—	—
7. POSITION INDICATOR PROBE CONNECTION DIAG.	—	—
8. ROD CONTROL AND INFORMATION SYS. ELEM. DIAG.	—	—
9. NEUTRON MONITORING SYS. FCD	—	—
10. REACTOR PROTECTION SYS. IED	—	—
11. DISPLAY CONTROL SYSTEM I/O LISTING	—	—
12. MOV. AND MCC STANDARDS	—	—
13. CRD ELEMENTARY	—	—
14. RPS ELEMENTARY	—	—
15. REACTIVITY CONTROL	—	—
16. ERIS ELEMENTARY DIAGRAM	—	—

SYMBOL DEFINITIONS:

INVERTER = $\overline{a} \rightarrow \overline{b}$; $\overline{a} = \overline{a}$; $\overline{b} = \overline{b}$; $\overline{a} \rightarrow \overline{b} = \overline{a} \rightarrow \overline{b}$

AND GATE = $a \rightarrow b$; $a \rightarrow b = a \rightarrow b$; $a \rightarrow b = a \rightarrow b$

OR GATE = $a \rightarrow b$; $a \rightarrow b = a \rightarrow b$; $a \rightarrow b = a \rightarrow b$

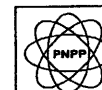
NAND GATE = $\overline{a \rightarrow b}$; $\overline{a \rightarrow b} = \overline{a \rightarrow b}$; $\overline{a \rightarrow b} = \overline{a \rightarrow b}$

NOR GATE = $\overline{a \rightarrow b}$; $\overline{a \rightarrow b} = \overline{a \rightarrow b}$; $\overline{a \rightarrow b} = \overline{a \rightarrow b}$

EXCLUSIVE OR GATE = $a \rightarrow b$; $a \rightarrow b = a \rightarrow b$; $a \rightarrow b = a \rightarrow b$

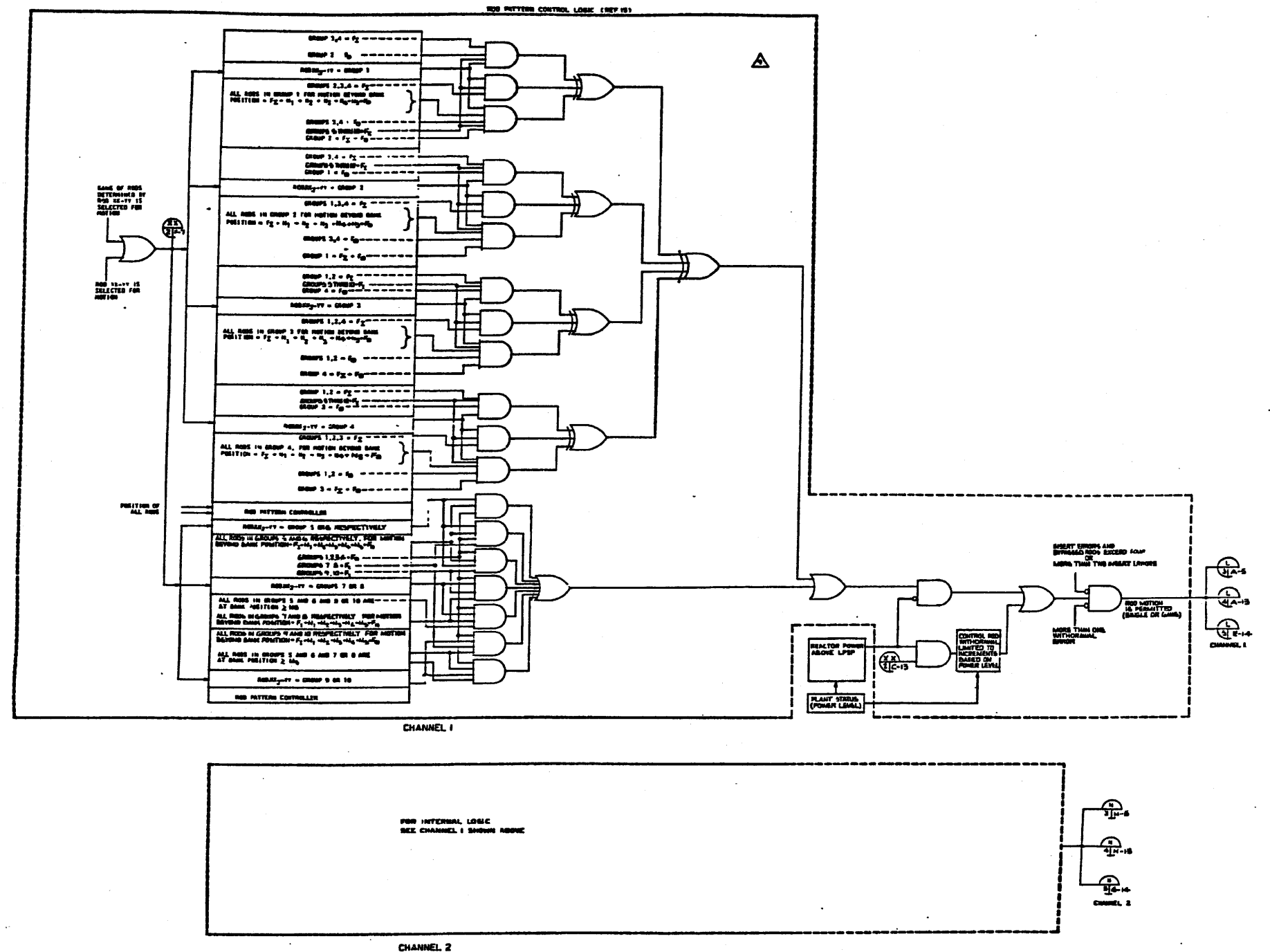
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NUCLEAR SAFETY RELATED



PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic SystemFigure 7.7-1 (Sheet 1 of 7)
[Dwg. D-808-305(1)]



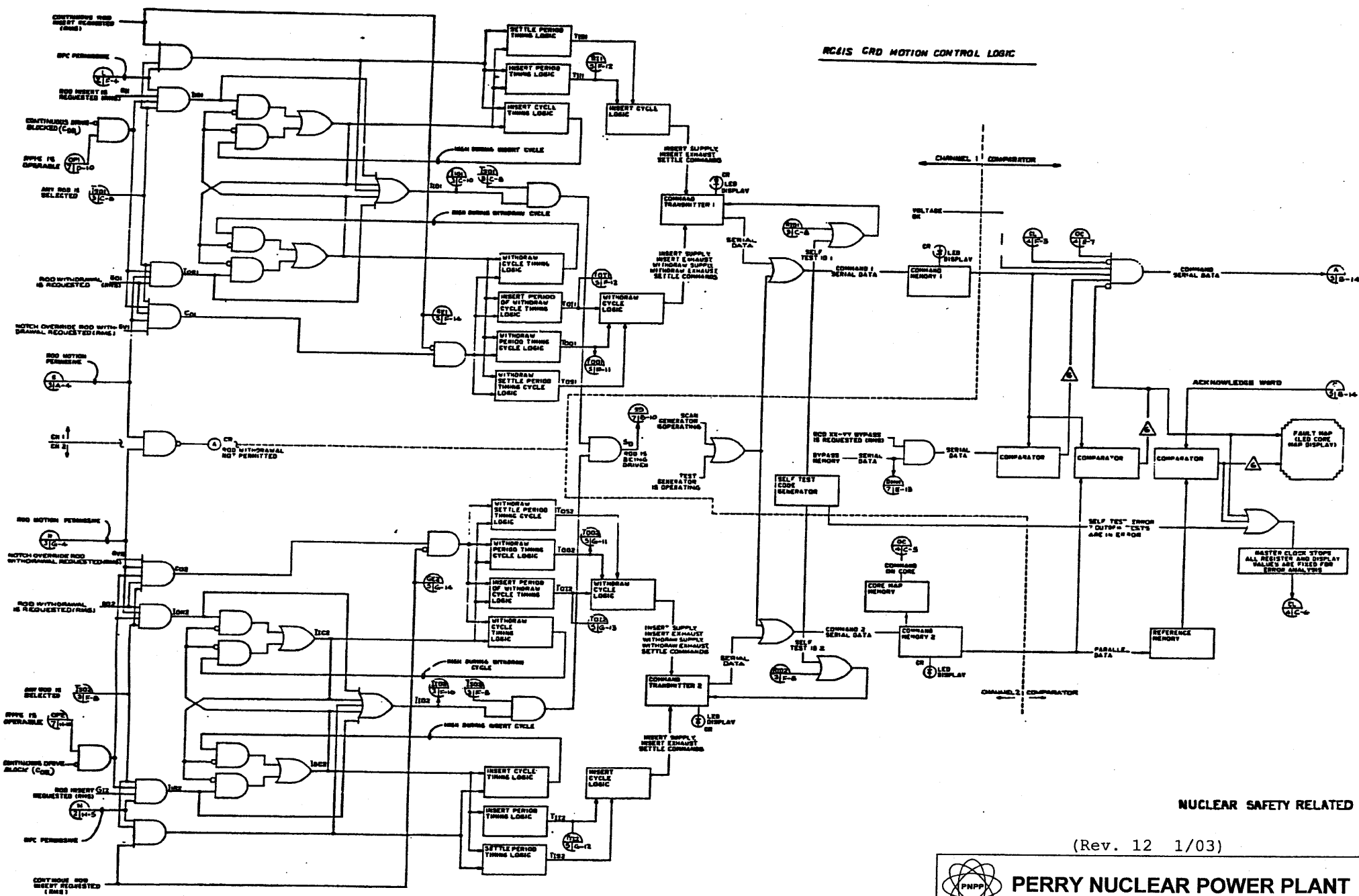
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

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



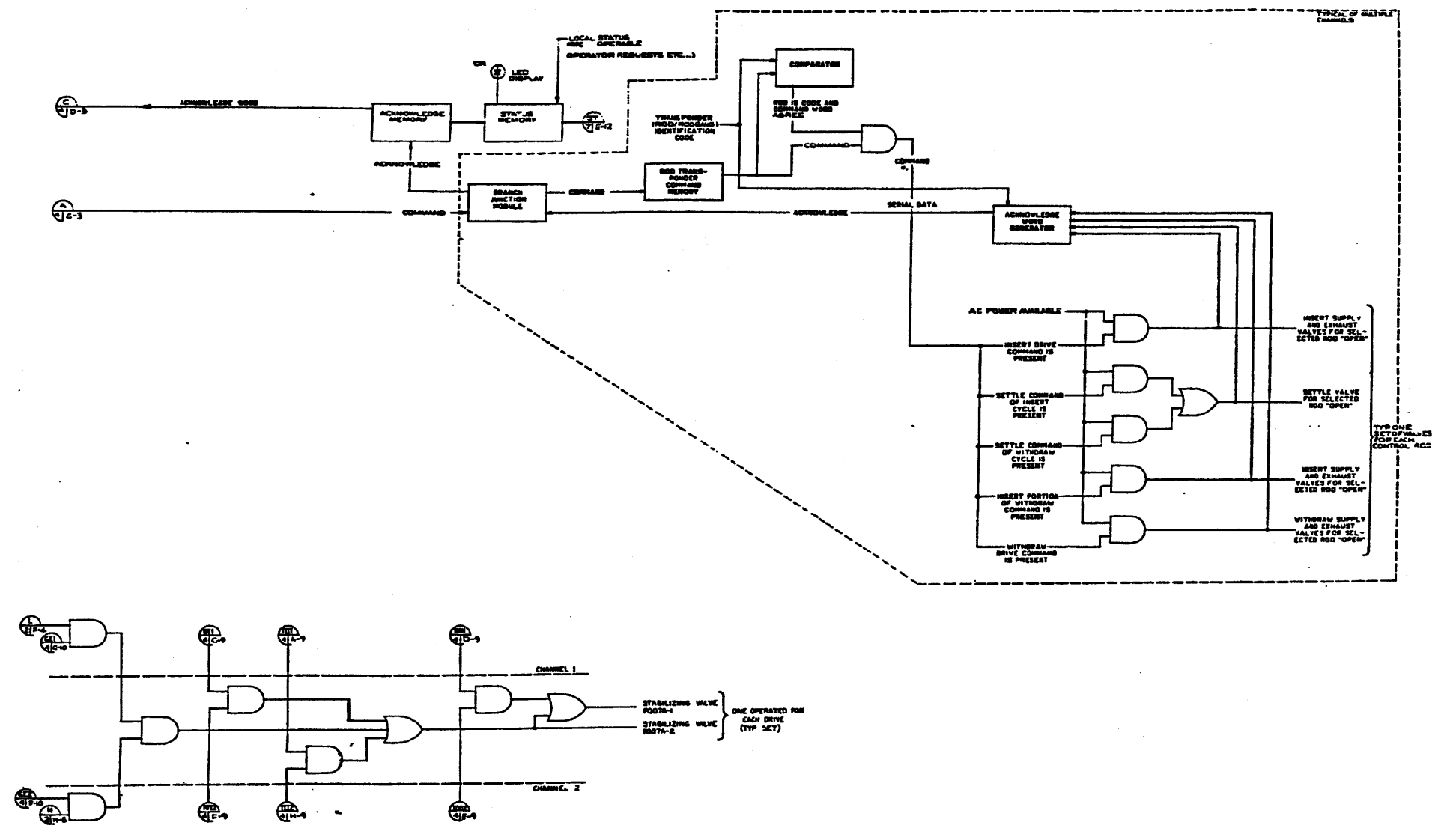
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

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



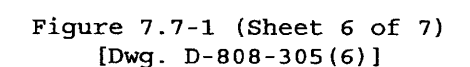
NUCLEAR SAFETY RELATED

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Control Rod Drive
Hydraulic System

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




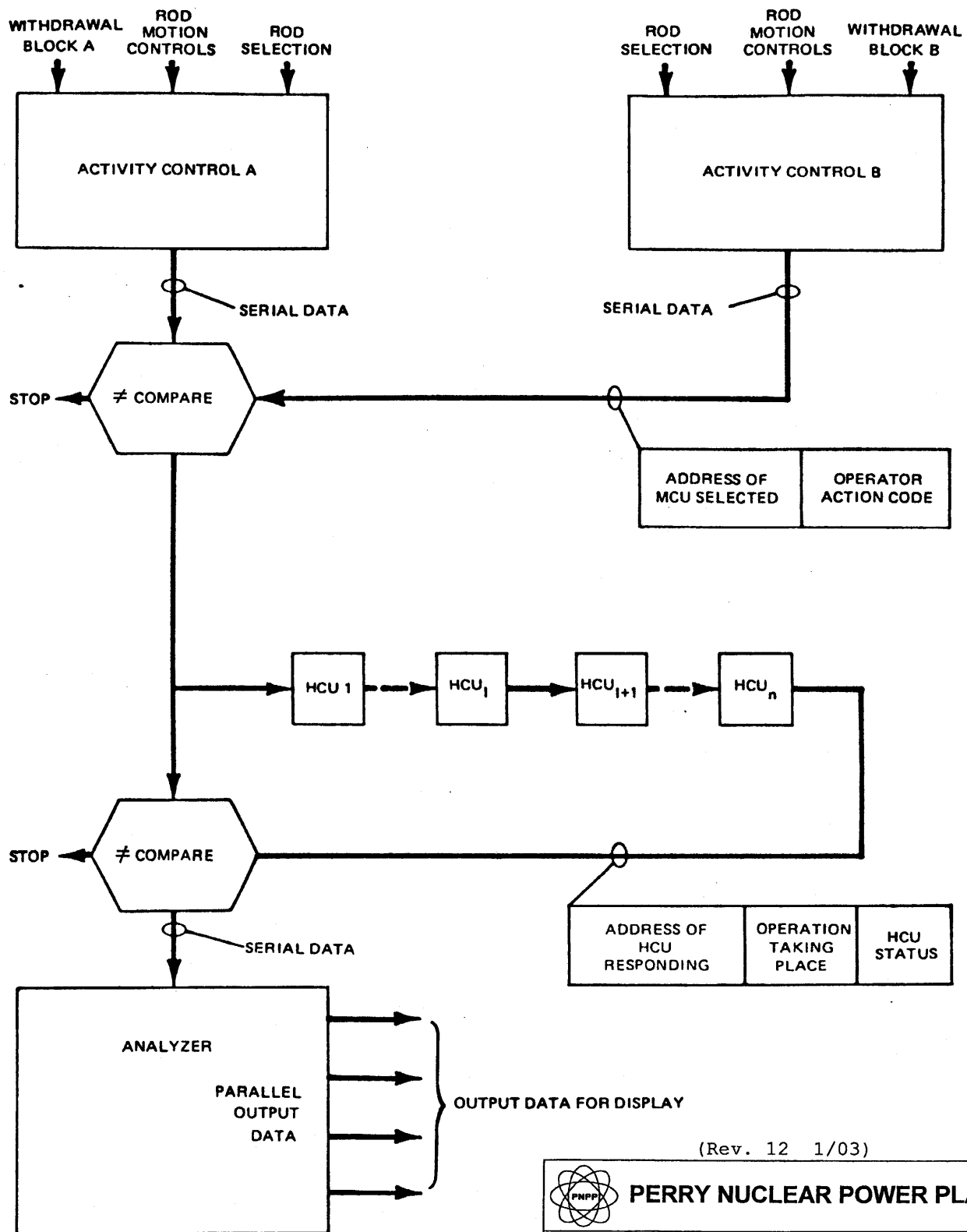


Figure 7.7-1 (Sheet 7 of 7)
[Dwg. D-808-305(7)]



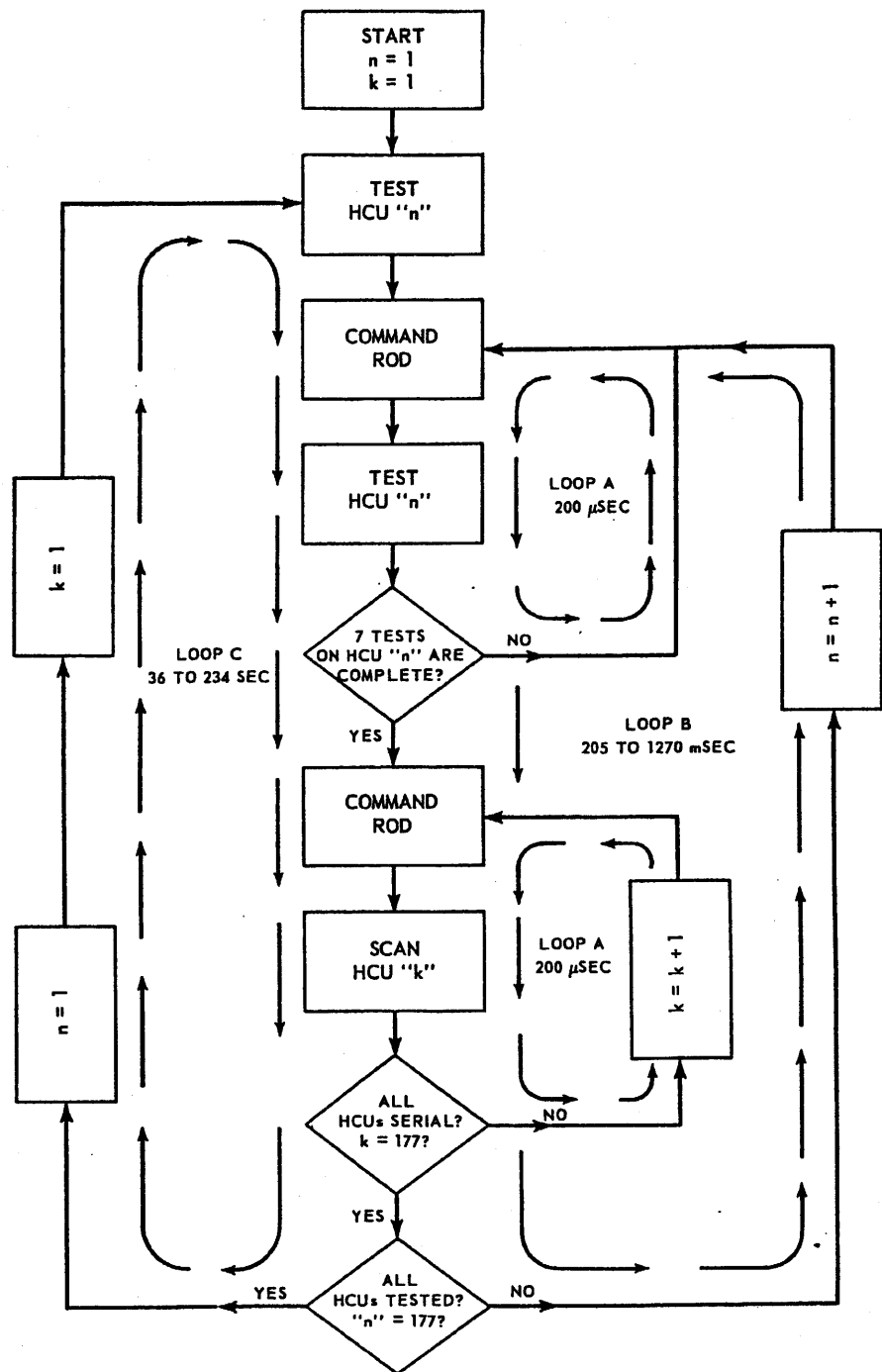
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PERRY NUCLEAR POWER PLANT

Rod Control and Information
System Logic Diagram

Figure 7.7-2



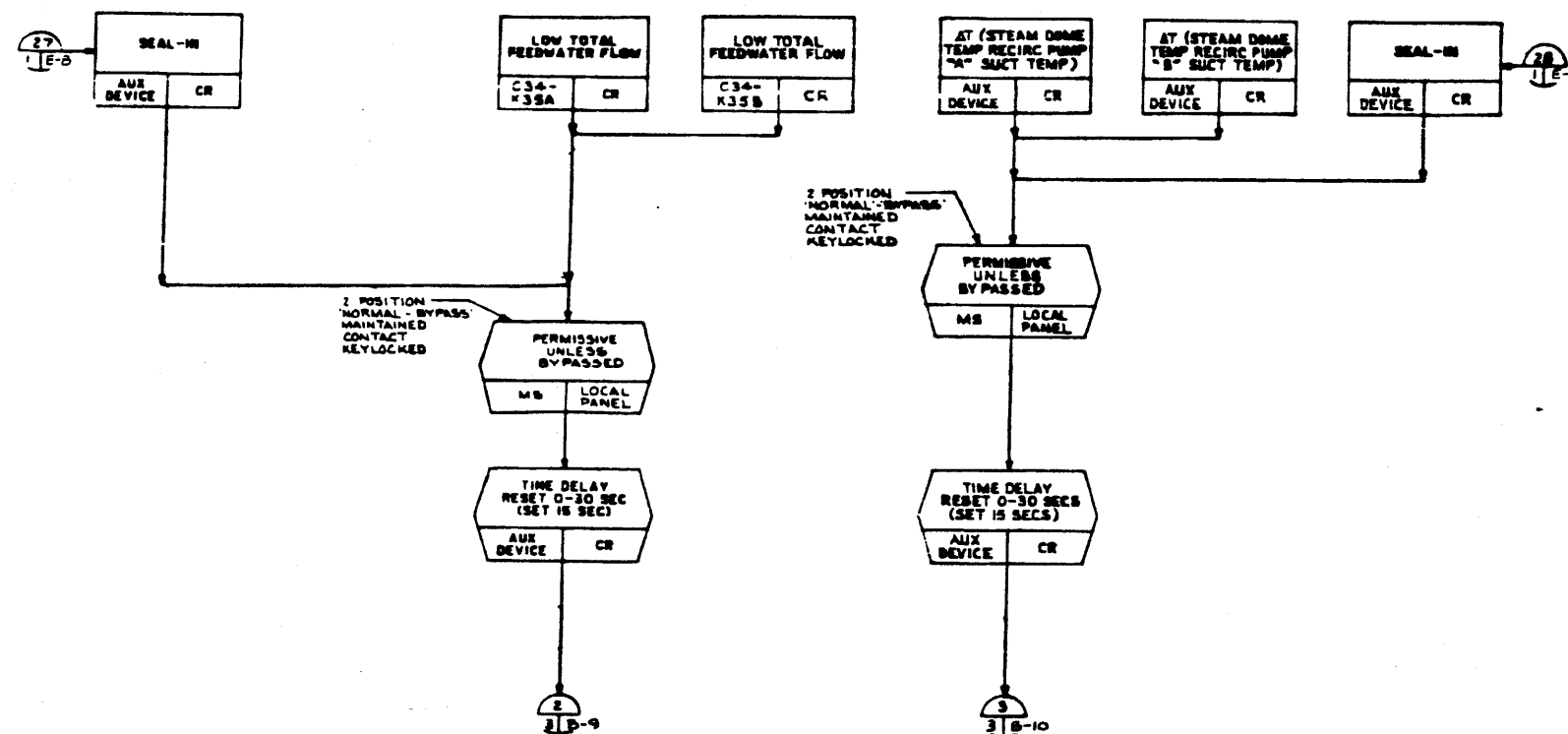
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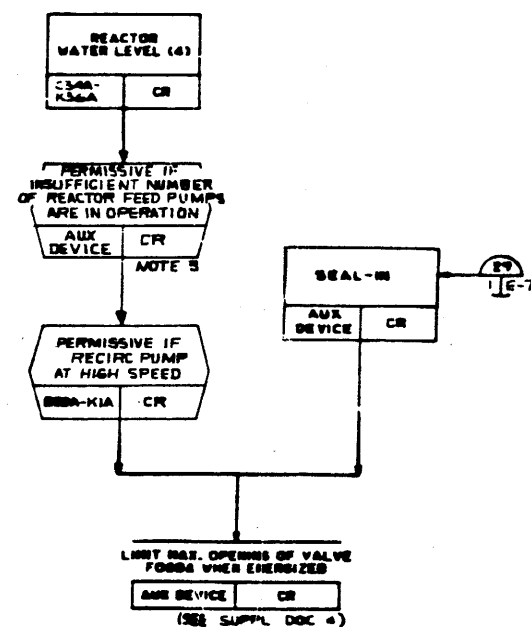
PERRY NUCLEAR POWER PLANT

Rod Control and Information
System Self-Test Provisions

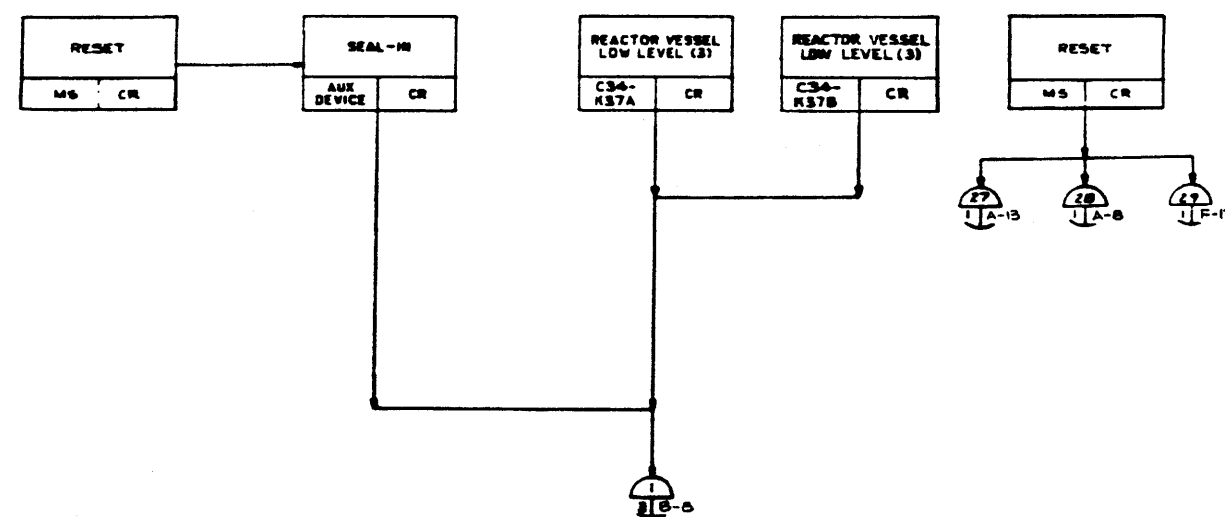
Figure 7.7-3



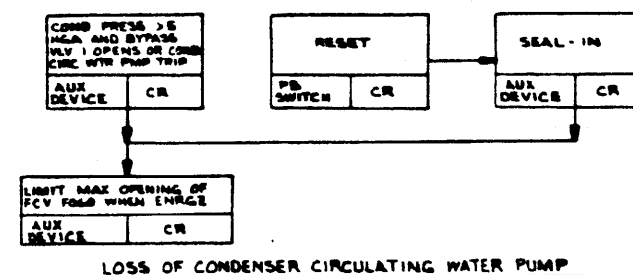
PUMP SPEED INTERLOCKS, PUMP SUCTION TO STEAM DOME ΔT, LOW TOTAL FEEDWATER FLOW



INSUFFICIENT NUMBER OF REACTOR FEED PUMPS
REACTOR WATER LEVEL AUX DEVICE



REACTOR VESSEL LOW LEVEL
AUX DEVICE



LOSS OF CONDENSER CIRCULATING WATER PUMP

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 PSD | 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. Z1A3580AU PURCHASE SPECIFICATION DATA SHEET
3. Z1A3580 PURCHASE SPECIFICATION

CODES AND STANDARDS

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

LEGEND:

- 27 1E-8 MATCH NUMBER
- 1 1E-6 ZONE
- SEAL-IN SHEET NO.
- 27 1E-8 MATCH CIRCLE LAST USED 3'
- 1 1E-6 SWITCHGEAR DEVICE FUNCTION (SEE CODES AND STDS 1)
- CR - CONTROL ROOM
- LP - LOCAL PANEL
- SWGR - PUMP DRIVE MOTOR SWITCH GEAR
- MS - MANUAL SWITCH
- PS - PUSHBUTTON
- SOL - SOLENOID
- POS - POSITION
- ASD - AUTOMATIC SWITCHING DEVICE
- SUCT-SUCTION
- 1 1E-6 - EMERGENCY RESPONSE INFORMATION SYSTEM (SEE NOTE 5) TYP

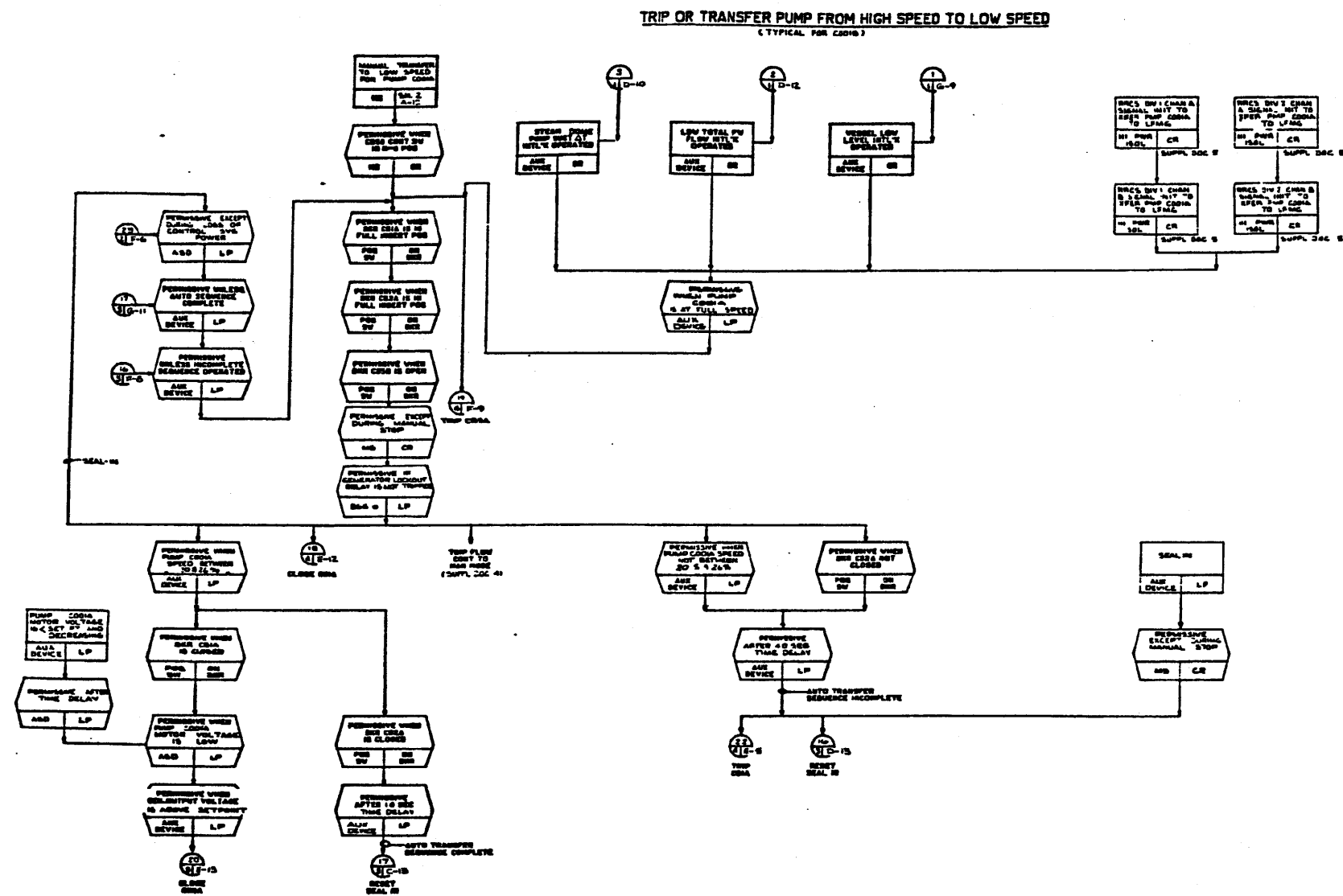
(Rev. 12 1/03)

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 3 of 7)

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

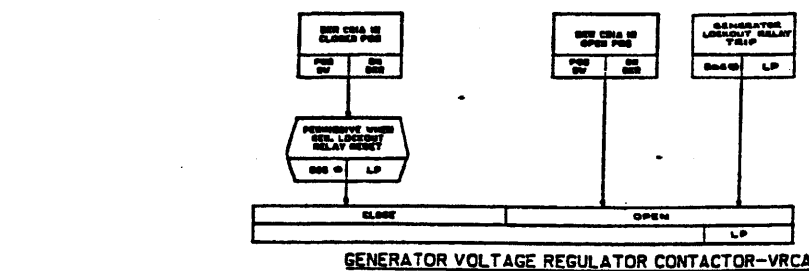
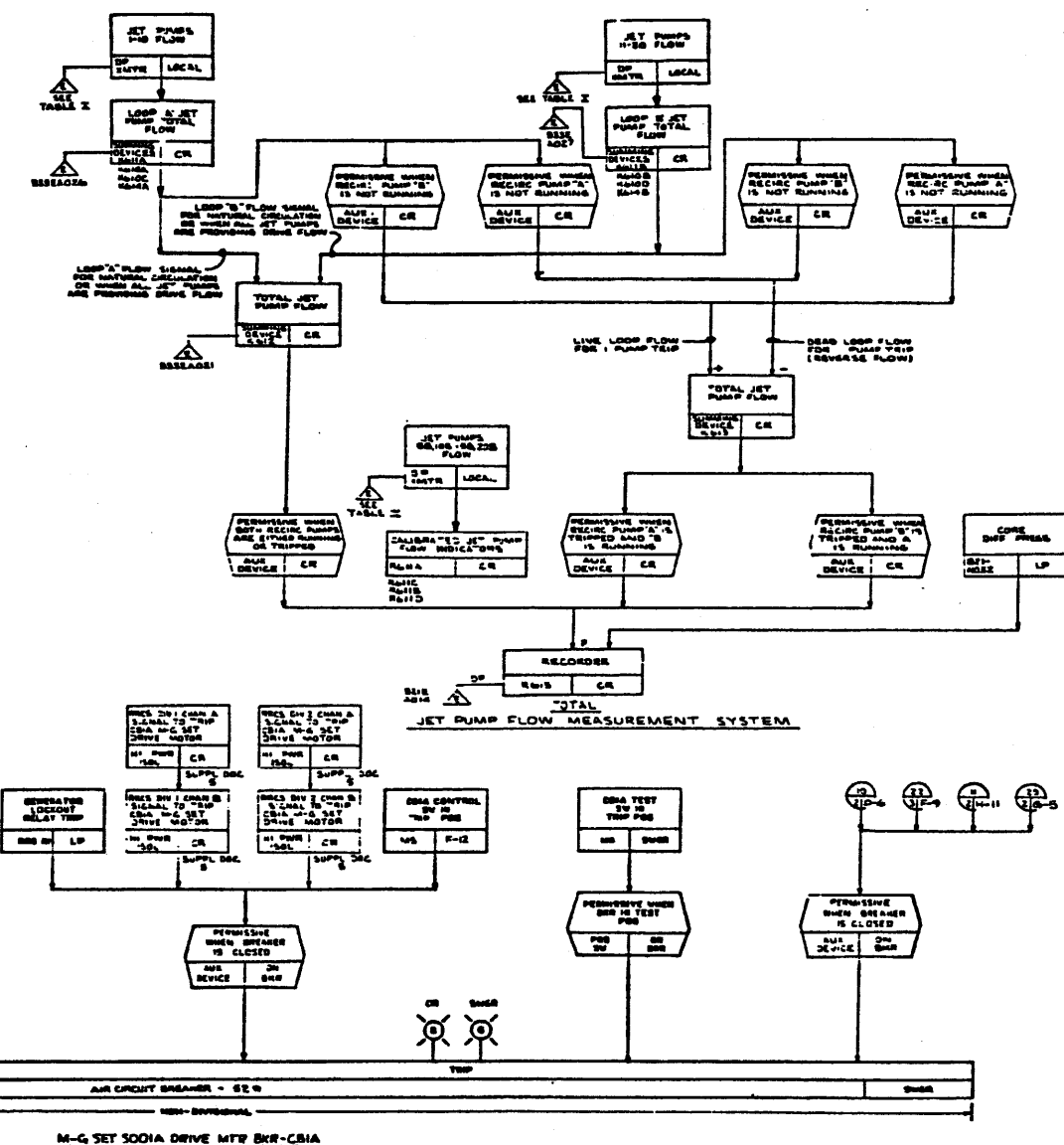
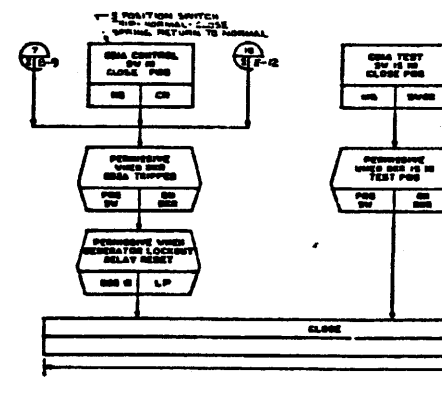


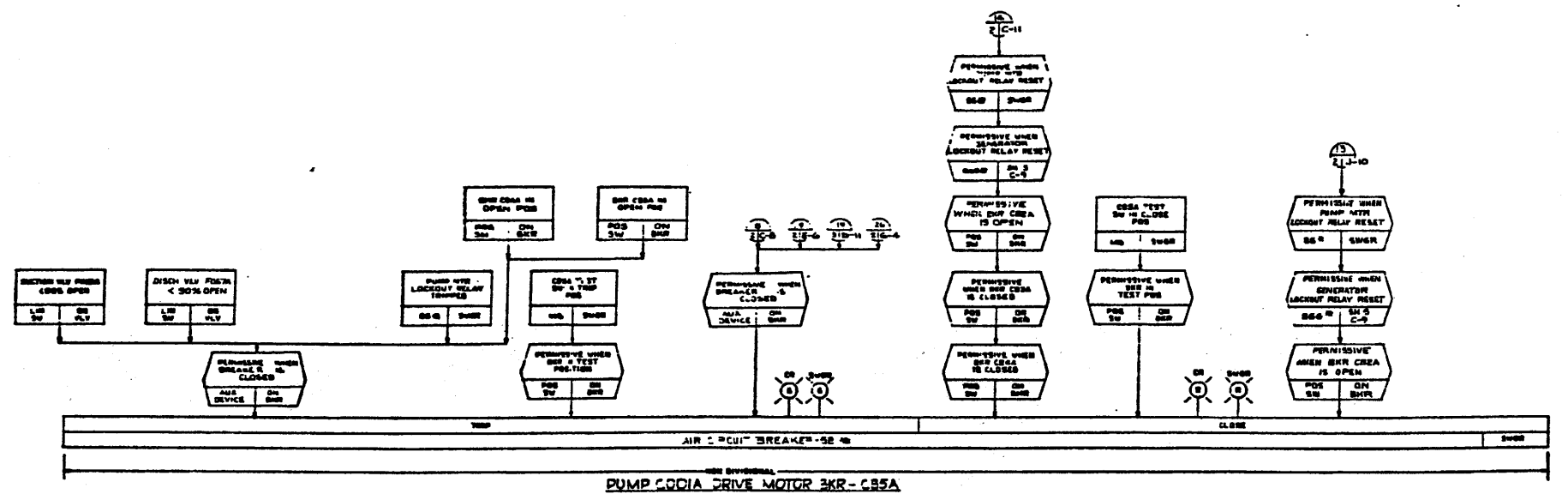
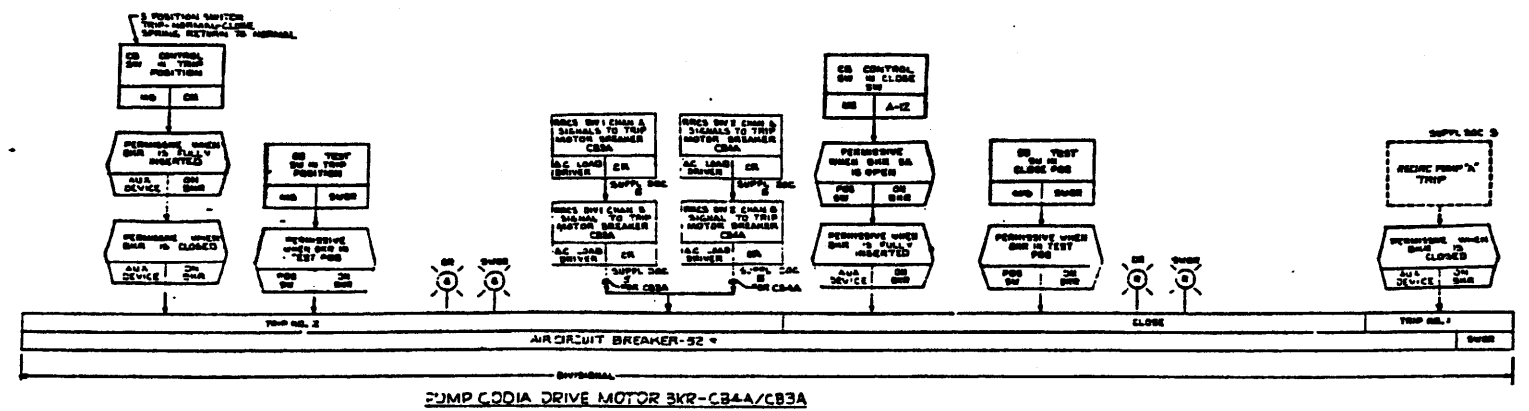
TABLE I

GEN SIGNALS - JET PUMP DIFFERENTIAL PRESSURE			
LOOP A		LOOP B	
JET PUMP	SVTR	SVTR	SVTR
JP1	NO37A	NO37A	NO37A
JP2	NO37B	NO37B	NO37B
JP3	NO37C	NO37C	NO37C
JP4	NO37D	NO37D	NO37D
JP5	NO37E	NO37E	NO37E
JP6	NO37F	NO37F	NO37F
JP7	NO37G	NO37G	NO37G
JP8	NO37H	NO37H	NO37H
JP9	NO37I	NO37I	NO37I
JP10	NO37J	NO37J	NO37J

TABLE II

JET PUMP DIFFERENTIAL PRESSURE			
JET PUMP		JET PUMP	
JP1	NO37A	JP1	NO37A
JP2	NO37B	JP2	NO37B
JP3	NO37C	JP3	NO37C
JP4	NO37D	JP4	NO37D
JP5	NO37E	JP5	NO37E
JP6	NO37F	JP6	NO37F
JP7	NO37G	JP7	NO37G
JP8	NO37H	JP8	NO37H
JP9	NO37I	JP9	NO37I
JP10	NO37J	JP10	NO37J





(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

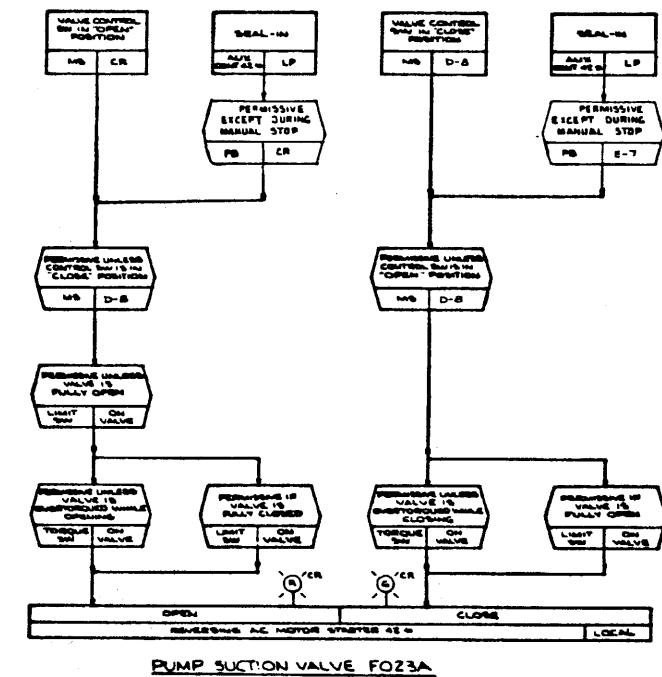
Reactor Recirculation System


Figure 7.7-4 (Sheet 6 of 7)

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

Figure 1 displays 12 typical P&ID symbols for valves FOZ3A, FOZ3B, and FOZ3C. Each symbol consists of a diamond-shaped actuator symbol (with a circle inside for solenoid, a triangle for pneumatic, or a circle with a dot for electric) connected to a rectangular valve body. The valve body contains text describing the valve's function and the auxiliary device (AUX DEVICE) and control (CR) it is connected to.

- Symbol 1:** Electric Pump A Trip. AUX DEVICE: SHUT, CR: SHUT.
- Symbol 2:** Electric Motor A Lockout Undervoltage. AUX DEVICE: SHUT, CR: SHUT.
- Symbol 3:** Electric Pump A Trip Initia Actuated. AUX DEVICE: LP, CR: LP.
- Symbol 4:** Main Flow Control Valve. AUX DEVICE: CR, CR: CR.
- Symbol 5:** Low Total Flow. AUX DEVICE: LP, CR: LP.
- Symbol 6:** Pressure Loop Tripping. AUX DEVICE: CR, CR: CR.
- Symbol 7:** Electric Pump A Low Speed After Circuit Not Available. AUX DEVICE: LP, CR: LP.
- Symbol 8:** Flow Control Valve Hydraulic Equipment Inoperative. AUX DEVICE: CR, CR: CR.
- Symbol 9:** Vessel Low Level Operated. AUX DEVICE: LP, CR: LP.
- Symbol 10:** Feed Puffin Line. AUX DEVICE: CR, CR: CR.
- Symbol 11:** Light Off. AUX DEVICE: CR, CR: CR.
- Symbol 12:** Reactor Vessel. AUX DEVICE: CR, CR: CR.





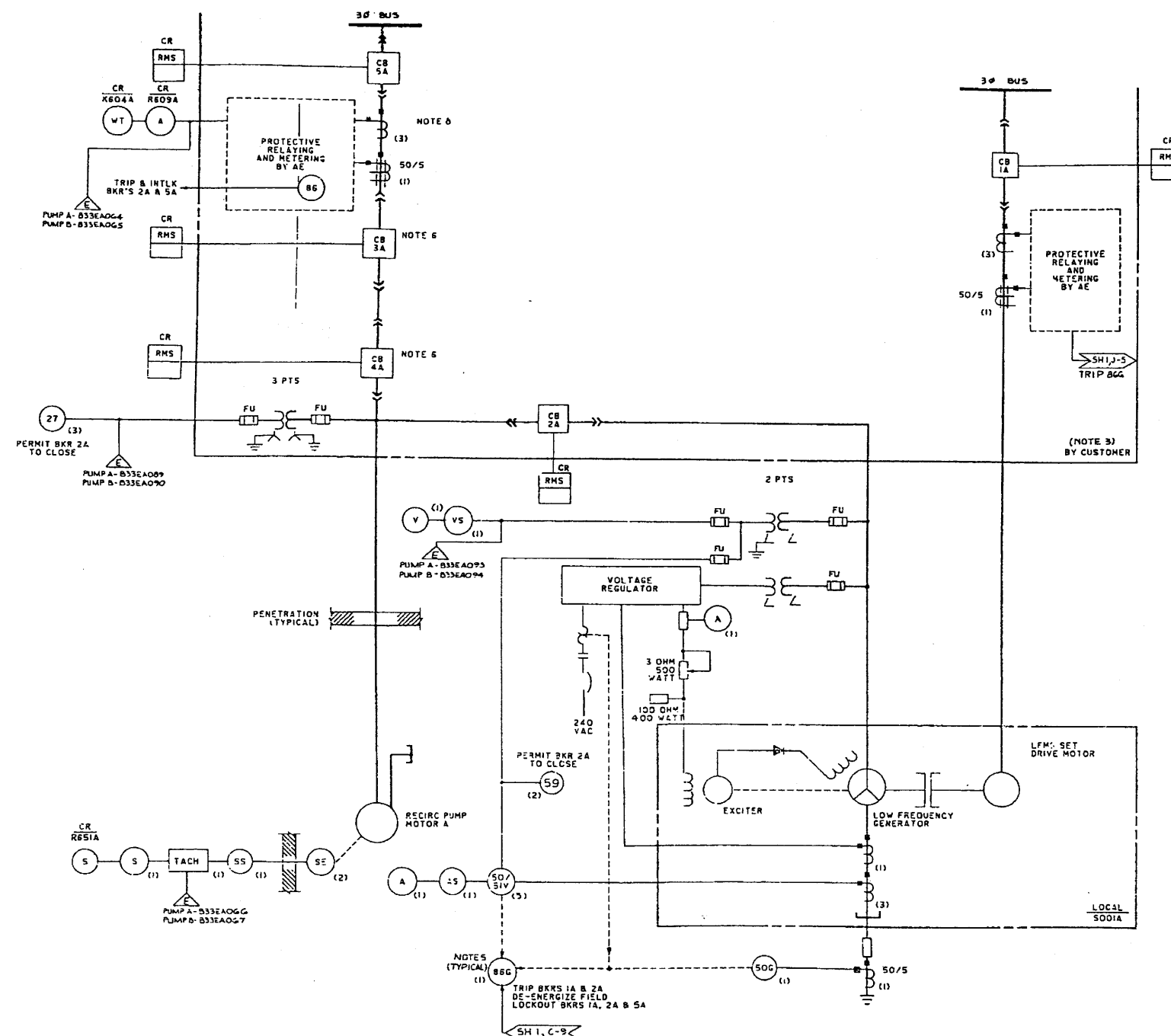
PERRY NUCLEAR POWER PLANT

Reactor Recirculation System

Figure 7.7-4 (Sheet 7 of 7)

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

CNE LINE DIAGRAM



MPL NO: (833-1010)

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 POOL A.
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 RED LINE AS DEFINED IN REF. DOC. II.
10. THE LOGIC UNIT SELECTS THE FLUX APRM SIGNAL WHEN THE ABSOLUTE MAGNITUDE OF THE DIFFERENCE BETWEEN THE FLUX ESTIMATED / FLUX APRM 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 APRM SIGNAL IF THE FLUX APRM SIGNAL IS GREATER THAN THE VALUE DEFINED IN REF. DOC. II. / SELECTS THE FLUX ESTIMATED SIGNAL IF THE FLUX APRM SIGNAL IS LESS THAN THE VALUE DEFINED IN REF. DOC. II.
11. EACH TIME THE LOGIC UNIT SELECTS FLUX APRM, THE TIMER MEASURES THE TOTAL DURATION OVER WHICH THE FLUX APRM SIGNAL IS PRESENT AT THE OUTPUT OF THE LOGIC UNIT. THE EXCITER COUNTS THE NUMBER OF TIMES (ON A GIVEN TIME PERIOD) THAT THE LOGIC UNIT SWITCHES BETWEEN THE FLUX APRM AND FLUX ESTIMATED SIGNALS.

LEGEND:

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

REFERENCE DOCUMENTS:

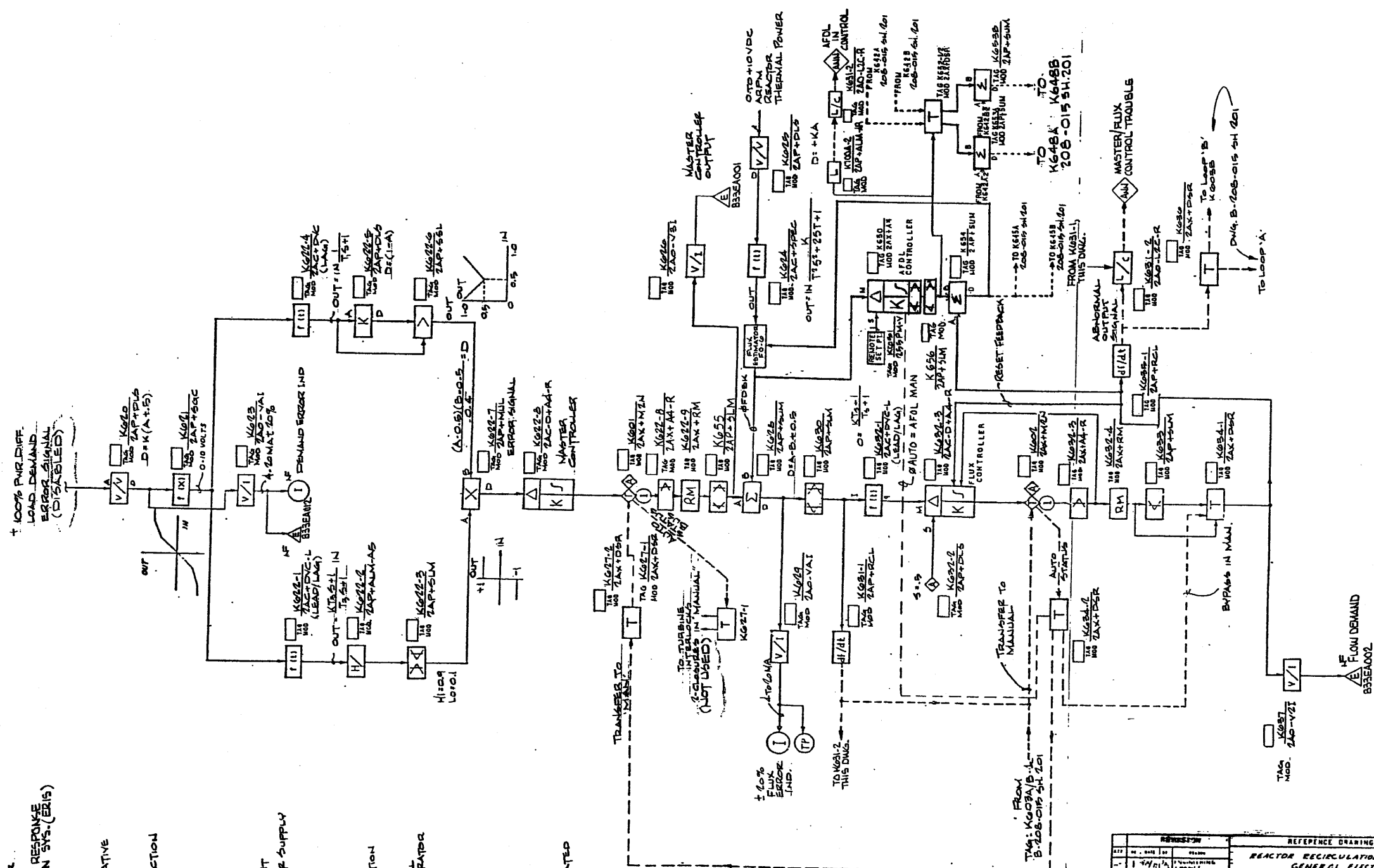
1. 833-1010 REACTOR RECIRCULATION SYS P&ID
2. 221-1010 NUCLEAR BOILER SYSTEM P&ID
3. C51-1010 NEUTRON MONITORING SYS IED
4. 833-1030 REACTOR RECIRCULATION SYS ELEM DIAG
5. 833-1020 REACTOR RECIRCULATION SYSTEM TCO
6. C95-1050 EAS ELEMENTARY DIAG.
7. C33/C34-1010 FEEDWATER SYSTEM IED
8. 442-1050 INSTRUMENT SYMBOLS
9. 833-1060 RPI INTERCONNECTION DIAGRAM
10. 402-412C TURBINE GENERATOR CONTROL REQUIREMENTS
11. 833-1010 REACTOR RECIRCULATION SYS VALVE FLOW CONT. DESIGN SPEC.

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PERRY NUCLEAR POWER PLANT


Recirculation Flow Control Illustrations

Figure 7.7-5 (Sheet 1 of 6)



REF ID: A66023			REFERENCE DRAWINGS	
ATTN	NO.	DATE	BY	REASON
1	1	1/14/43	W. J. H. H.	REACTOR RECIRCULATION SYSTEM
2	2	2/10/43	W. J. H. H.	GENERAL ELECTRIC
3	3	3/14/43	W. J. H. H.	SAN. JOSE CALIF.
4	4	4/14/43	W. J. H. H.	
5	5	5/14/43	W. J. H. H.	
6	6	6/14/43	W. J. H. H.	
7	7	7/14/43	W. J. H. H.	
8	8	8/14/43	W. J. H. H.	
9	9	9/14/43	W. J. H. H.	
10	10	10/14/43	W. J. H. H.	
11	11	11/14/43	W. J. H. H.	
12	12	12/14/43	W. J. H. H.	
13	13	1/14/44	W. J. H. H.	
14	14	2/14/44	W. J. H. H.	
15	15	3/14/44	W. J. H. H.	
16	16	4/14/44	W. J. H. H.	
17	17	5/14/44	W. J. H. H.	
18	18	6/14/44	W. J. H. H.	
19	19	7/14/44	W. J. H. H.	
20	20	8/14/44	W. J. H. H.	
21	21	9/14/44	W. J. H. H.	
22	22	10/14/44	W. J. H. H.	
23	23	11/14/44	W. J. H. H.	
24	24	12/14/44	W. J. H. H.	
25	25	1/14/45	W. J. H. H.	
26	26	2/14/45	W. J. H. H.	
27	27	3/14/45	W. J. H. H.	
28	28	4/14/45	W. J. H. H.	
29	29	5/14/45	W. J. H. H.	
30	30	6/14/45	W. J. H. H.	
31	31	7/14/45	W. J. H. H.	
32	32	8/14/45	W. J. H. H.	
33	33	9/14/45	W. J. H. H.	
34	34	10/14/45	W. J. H. H.	
35	35	11/14/45	W. J. H. H.	
36	36	12/14/45	W. J. H. H.	
37	37	1/14/46	W. J. H. H.	
38	38	2/14/46	W. J. H. H.	
39	39	3/14/46	W. J. H. H.	
40	40	4/14/46	W. J. H. H.	
41	41	5/14/46	W. J. H. H.	
42	42	6/14/46	W. J. H. H.	
43	43	7/14/46	W. J. H. H.	
44	44	8/14/46	W. J. H. H.	
45	45	9/14/46	W. J. H. H.	
46	46	10/14/46	W. J. H. H.	
47	47	11/14/46	W. J. H. H.	
48	48	12/14/46	W. J. H. H.	
49	49	1/14/47	W. J. H. H.	
50	50	2/14/47	W. J. H. H.	
51	51	3/14/47	W. J. H. H.	
52	52	4/14/47	W. J. H. H.	
53	53	5/14/47	W. J. H. H.	
54	54	6/14/47	W. J. H. H.	
55	55	7/14/47	W. J. H. H.	
56	56	8/14/47	W. J. H. H.	
57	57	9/14/47	W. J. H. H.	
58	58	10/14/47	W. J. H. H.	
59	59	11/14/47	W. J. H. H.	
60	60	12/14/47	W. J. H. H.	
61	61	1/14/48	W. J. H. H.	
62	62	2/14/48	W. J. H. H.	
63	63	3/14/48	W. J. H. H.	
64	64	4/14/48	W. J. H. H.	
65	65	5/14/48	W. J. H. H.	
66	66	6/14/48	W. J. H. H.	
67	67	7/14/48	W. J. H. H.	
68	68	8/14/48	W. J. H. H.	
69	69	9/14/48	W. J. H. H.	
70	70	10/14/48	W. J. H. H.	
71	71	11/14/48	W. J. H. H.	
72	72	12/14/48	W. J. H. H.	
73	73	1/14/49	W. J. H. H.	
74	74	2/14/49	W. J. H. H.	

(REV. 12-1-78)



PERRY NUCLEAR POWER PLANT

Recirculation Flow
Control Illustrations

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

NOTES:
1. LIGHTS ARE LOCATED
IN K713-4

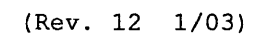
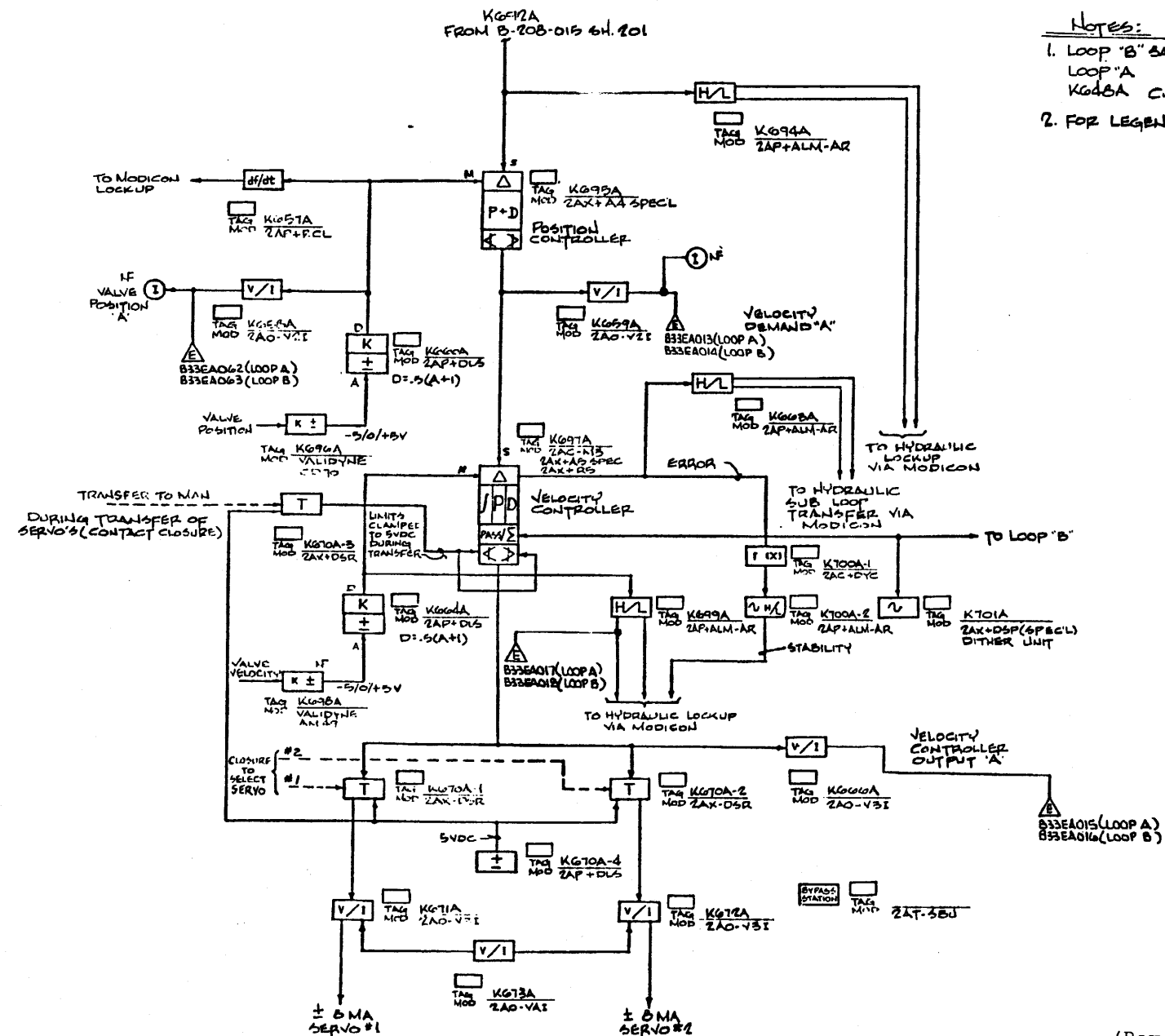


Figure 7.7-5 (Sheet 3 of 6)
[Dwg. B-208-015(205)]

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

- NOTES:
1. LOOP "B" SAME AS LOOP "A" EXCEPT FOR TAGS.
LOOP "A" LOOP "B"
K648A CHANGES TO K648B
 2. FOR LEGEND SEE DWG. B-208-015 SH. 200

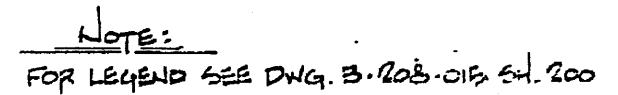


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Recirculation Flow
Control Illustrations

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



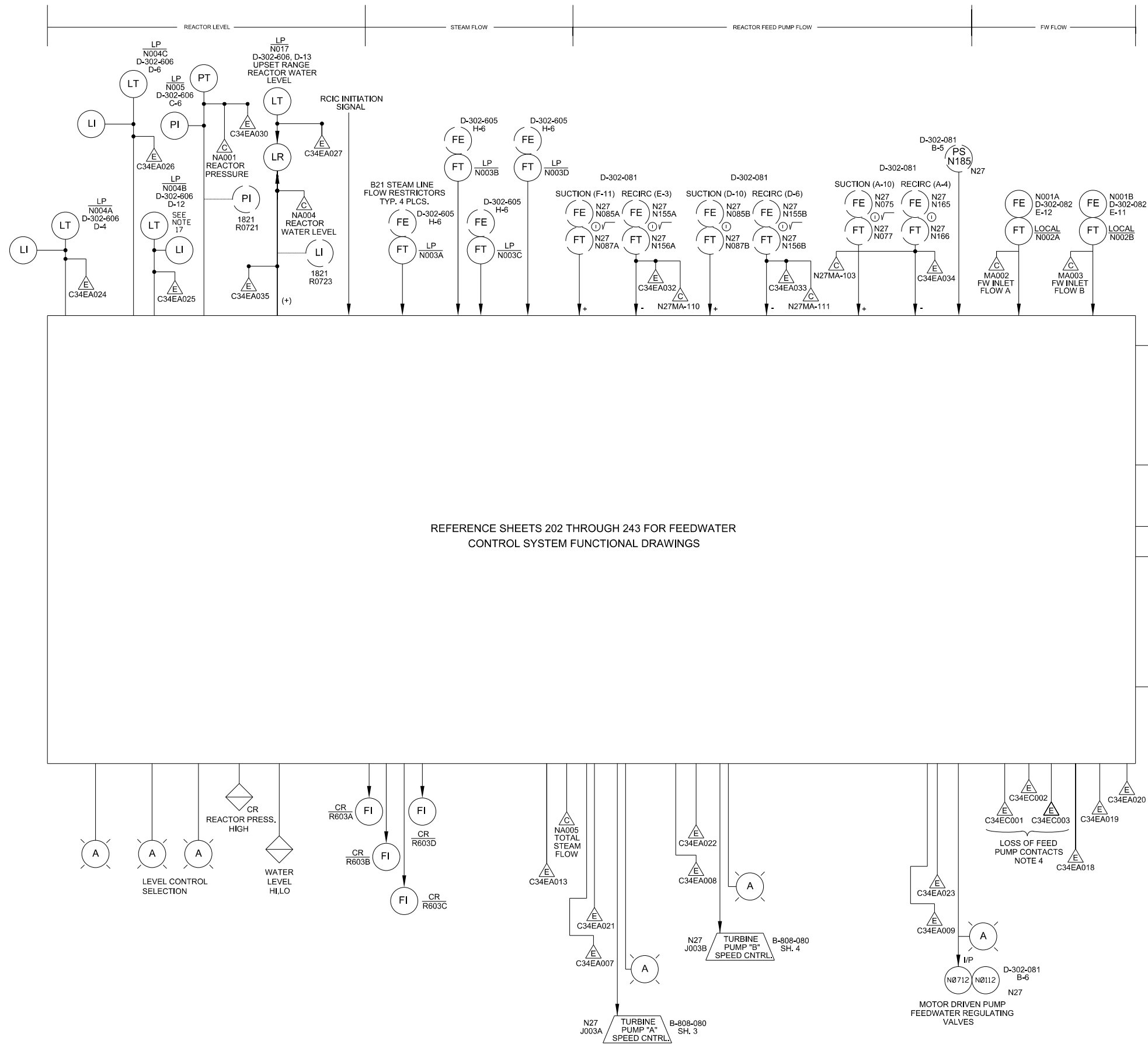
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT


Recirculation Flow Control Illustrations

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



- 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 TORFP AND DISCHARGE VALVE INDICATE WHEN PUMP IS OPERATING AND CAPABLE OF DELIVERING WATER. THE LOGIC TO INDICATE THE TORFP 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 RF PUMP UNIT MA SIGNAL VS FW FLOW LB/MH 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 1H13-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:-

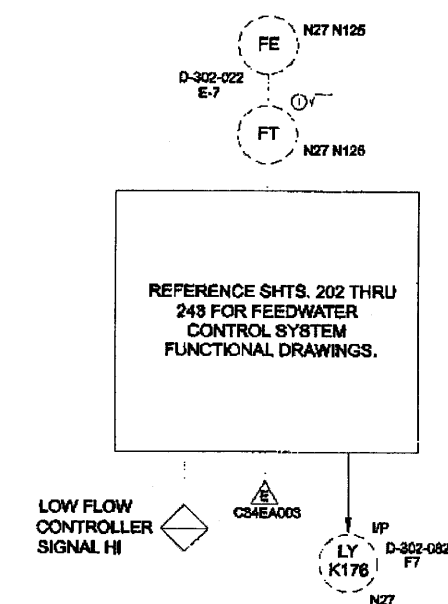
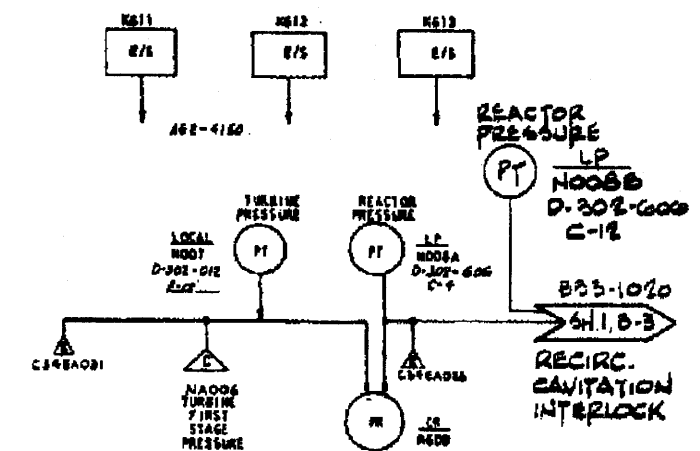
C34-4010	FEEDWATER CONTROL SYSTEM DESIGN SPECIFICATION
D-302-605	NUCLEAR BOILER SYSTEM B21
D-302-606	NUCLEAR BOILER SYSTEM B21
D-302-607	NUCLEAR BOILER SYSTEM B21
B33-1020	REACTOR RECIRCULATION SYSTEM FCO
A62-4150	AUXILIARY AND STANDBY AC POWER
D-302-081	FEEDWATER SYSTEM N27
D-302-082	FEEDWATER SYSTEM 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-302-001 SH.2

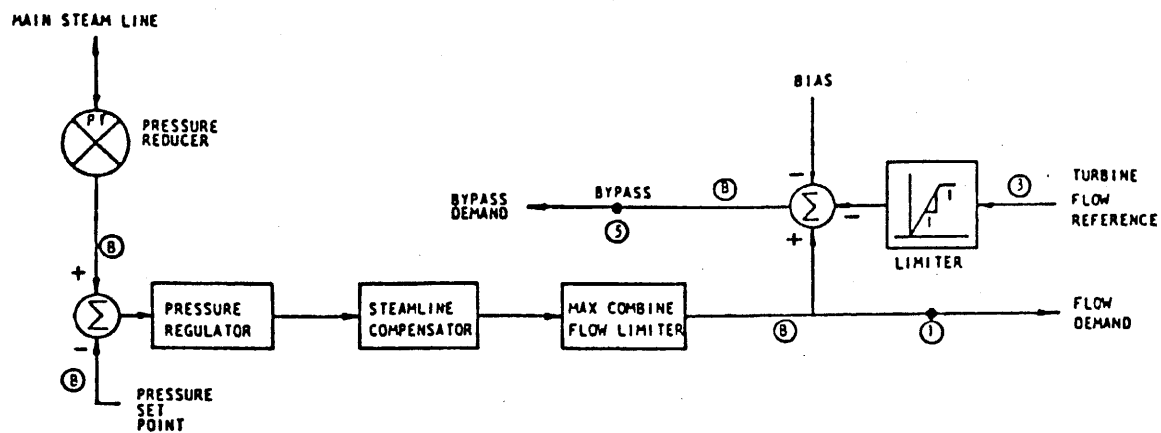
(Rev. 14 10/05)



PERRY NUCLEAR POWER PLANT

Feedwater Control System
Instrumentation and
Electrical Diagram

Figure 7.7-6 (Sheet 2 of 2)
[Dwg. B-208-025(A201)]



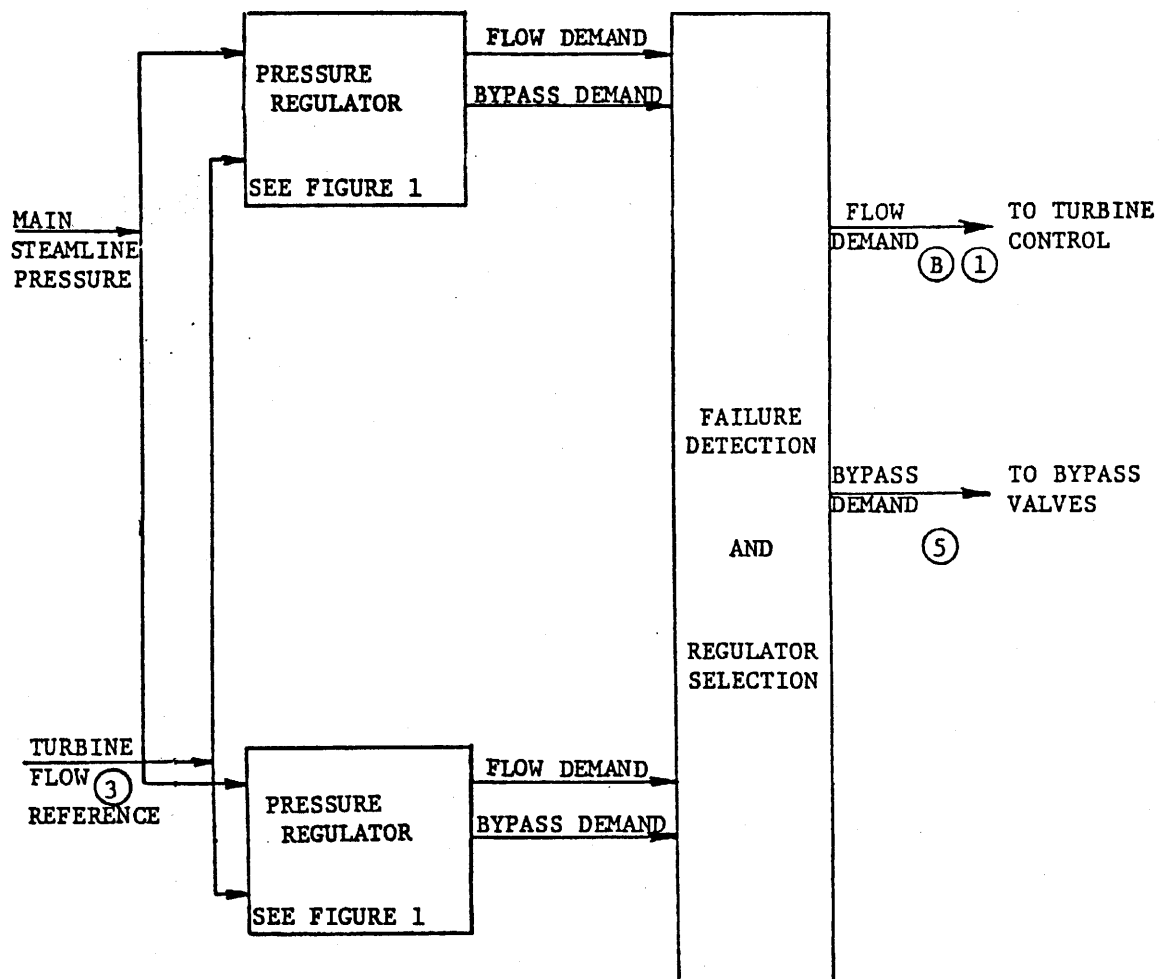
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Pressure Regulator/Turbine Control
System Diagram

Figure 7.7-7 (Sheet 1 of 2)



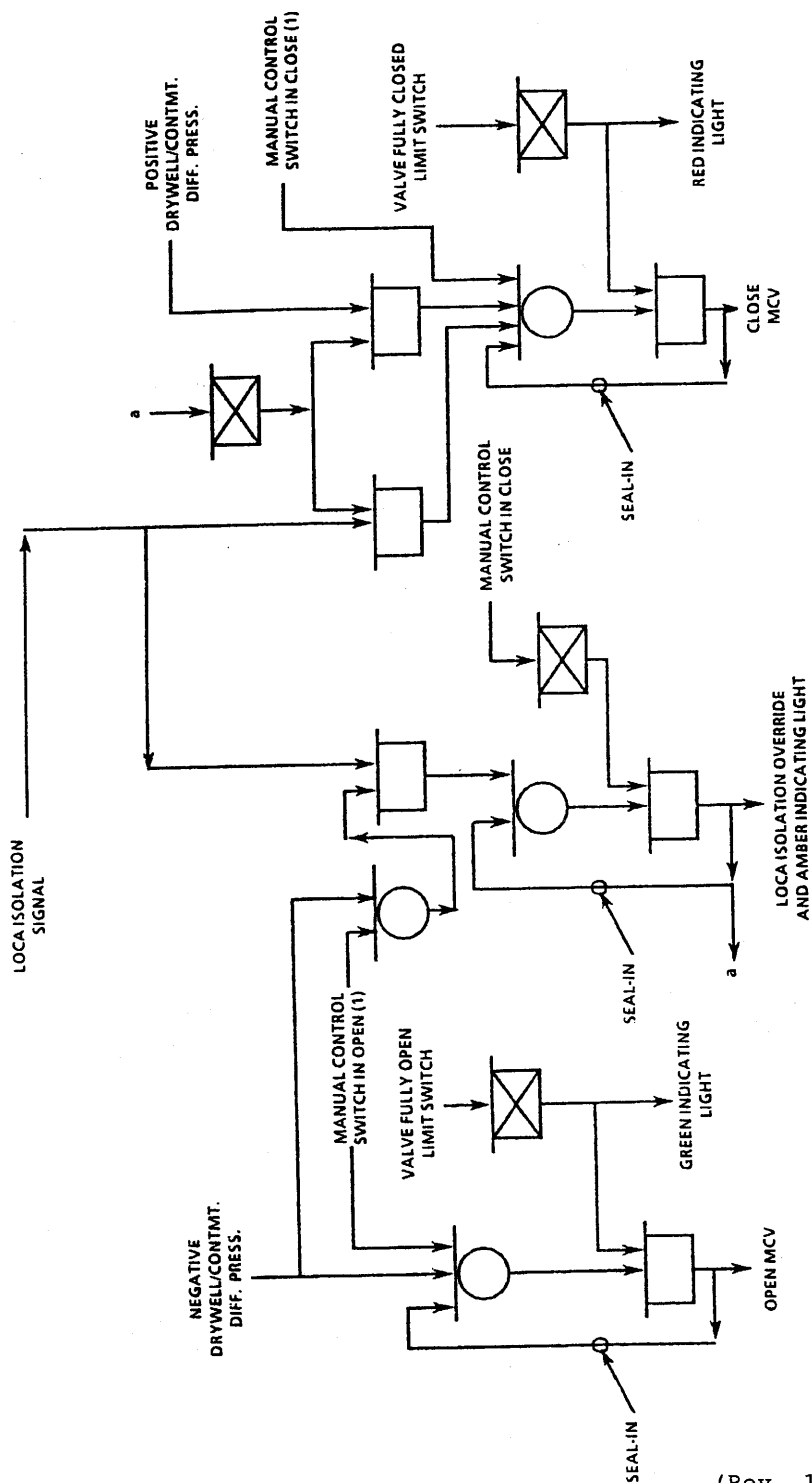
(Rev. 12 1/03)



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