



GE Nuclear Energy

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ABWR Design Control Document

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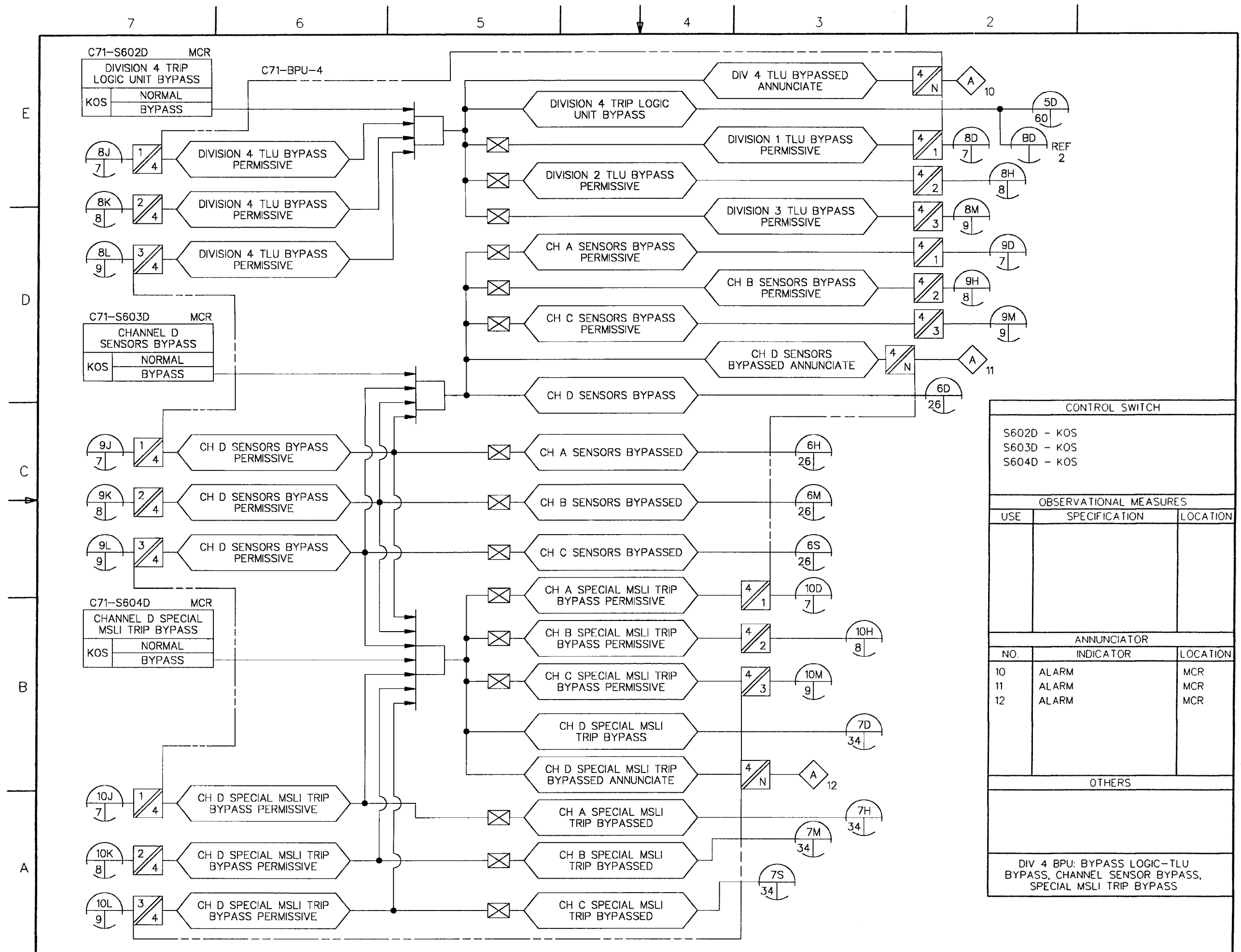


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 10 of 72)

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21-143.10

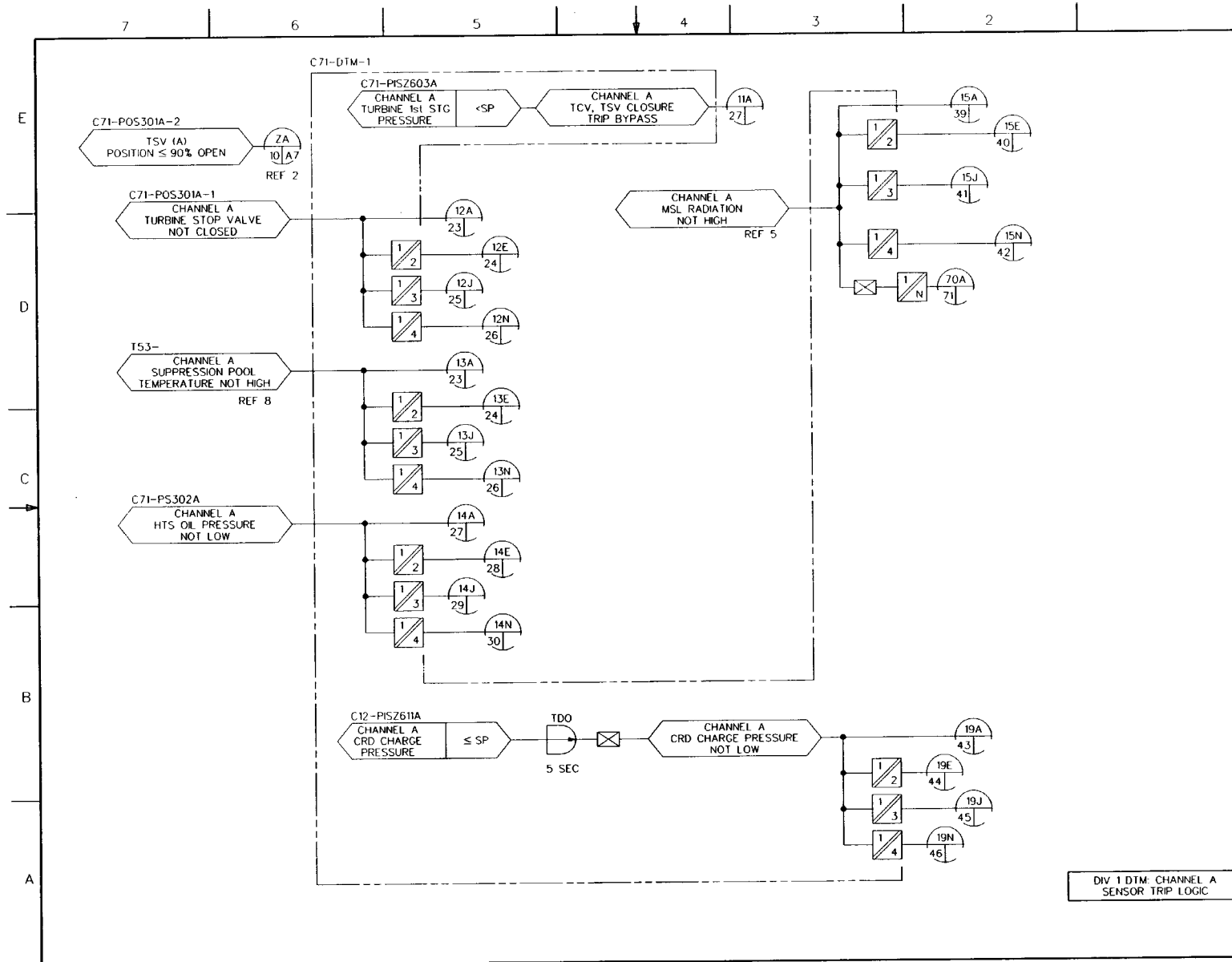


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 11 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.11

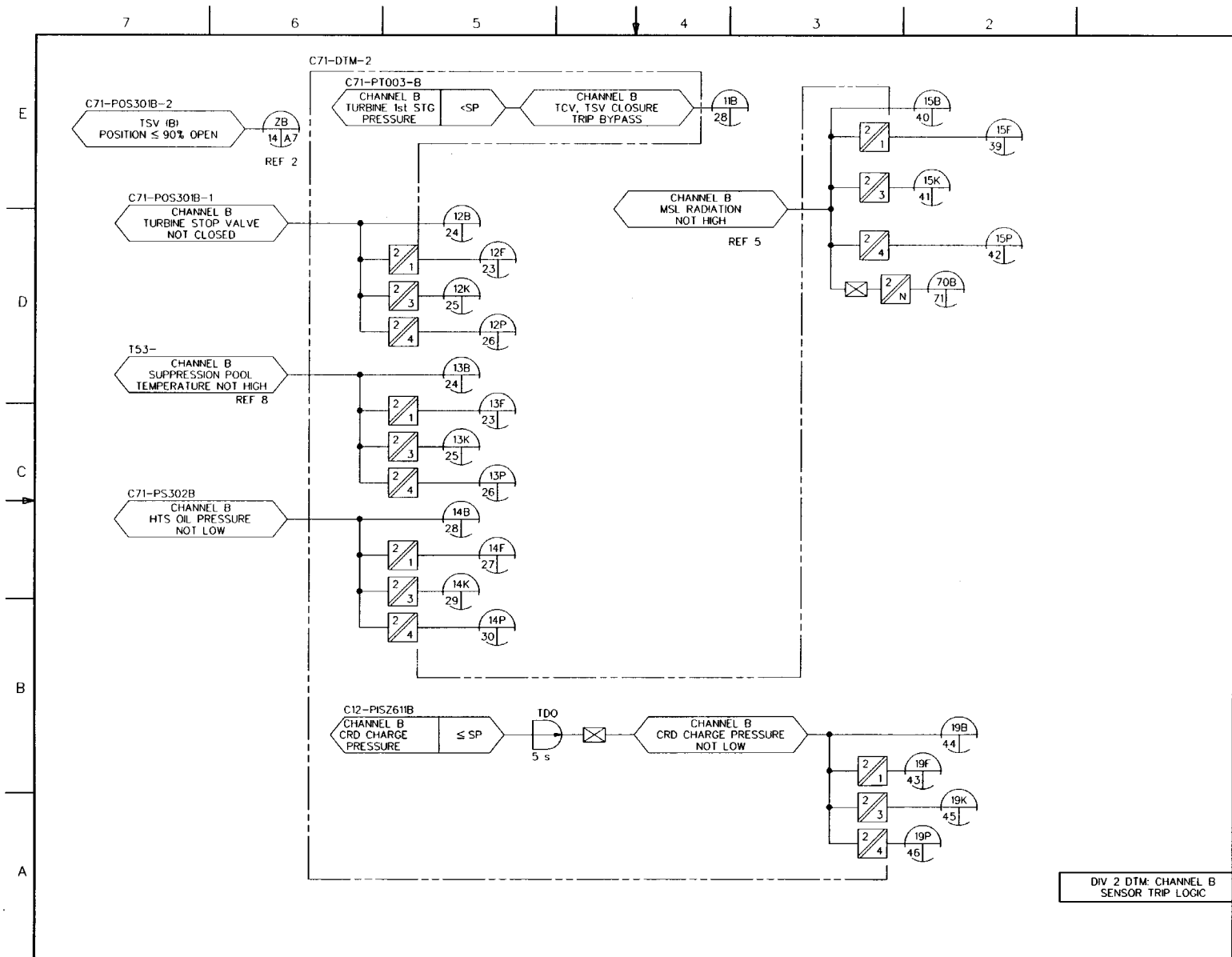


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 12 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.12

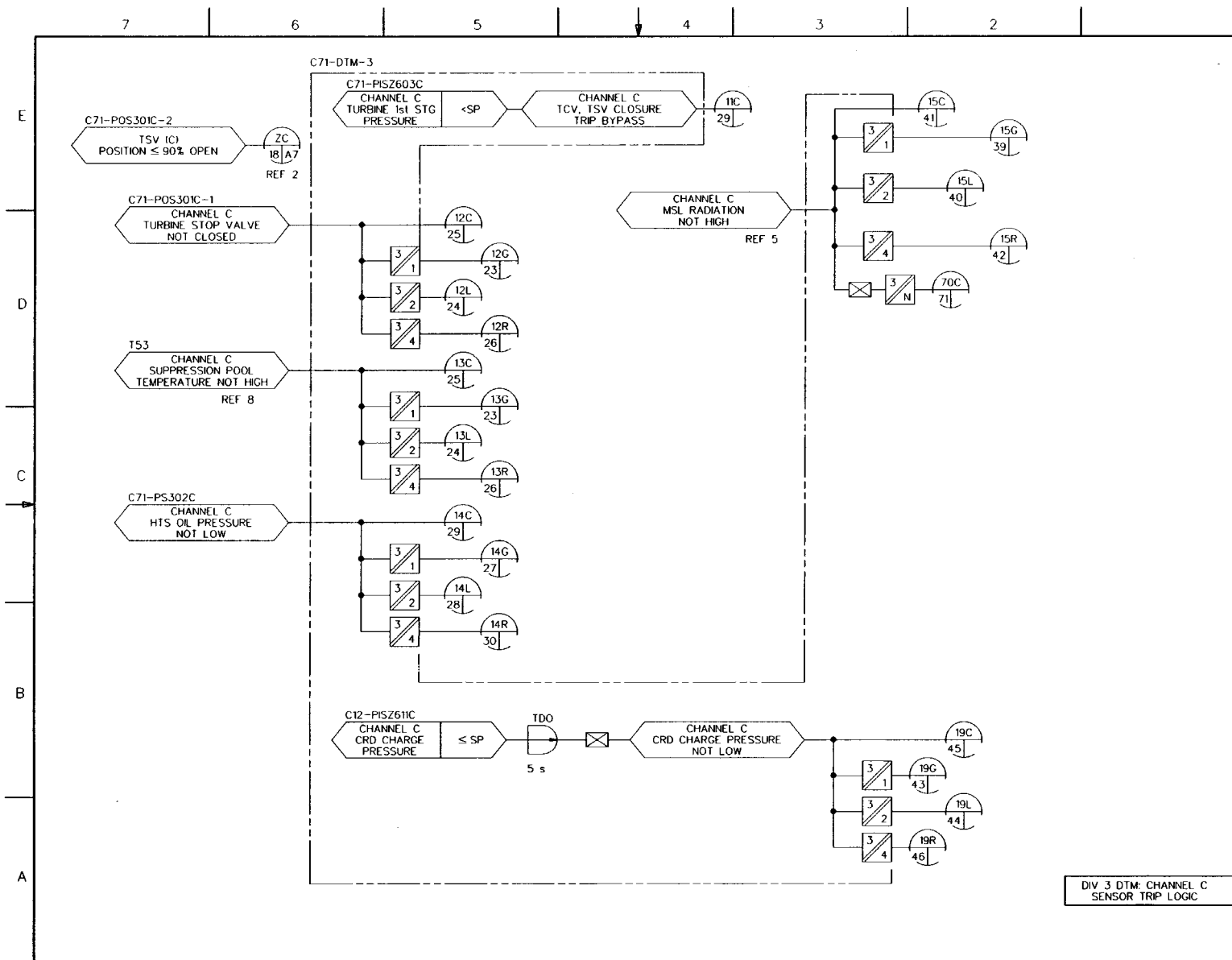


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 13 of 72)

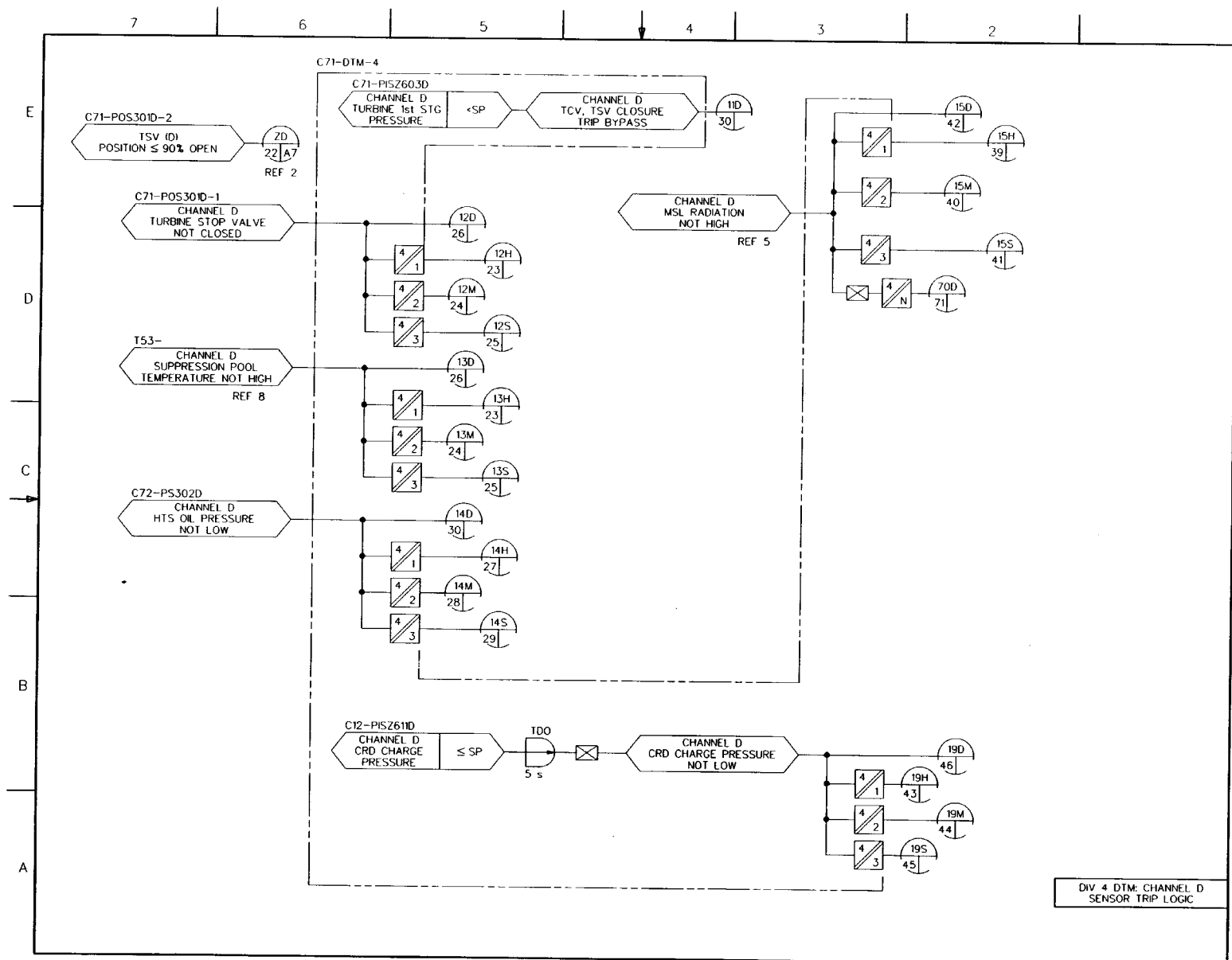


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ABWR DCD/Tier 2 Rev. 0 21-14.3.14

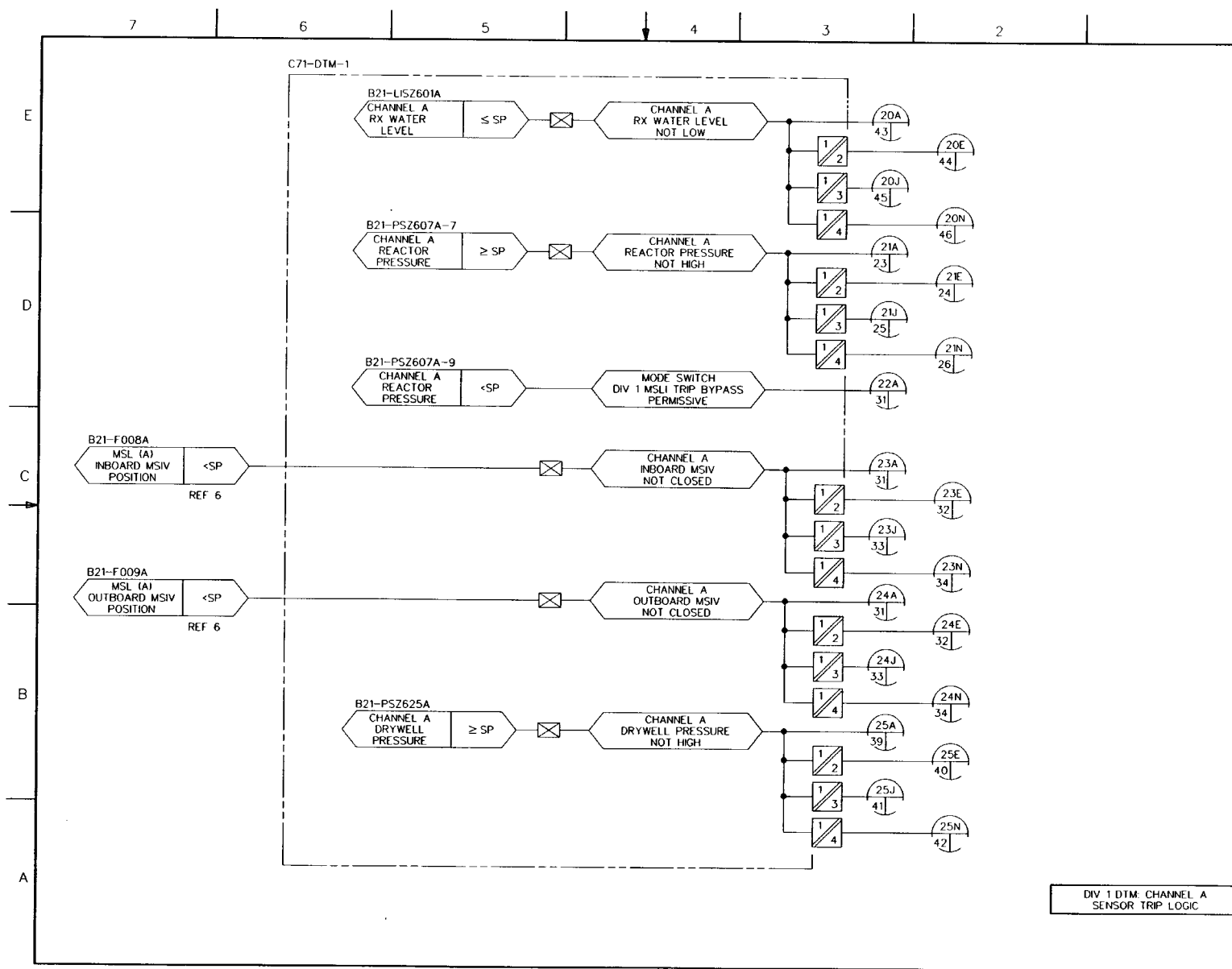


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ABWR DCD/Tier 2 Rev. 0 21-14.3.15

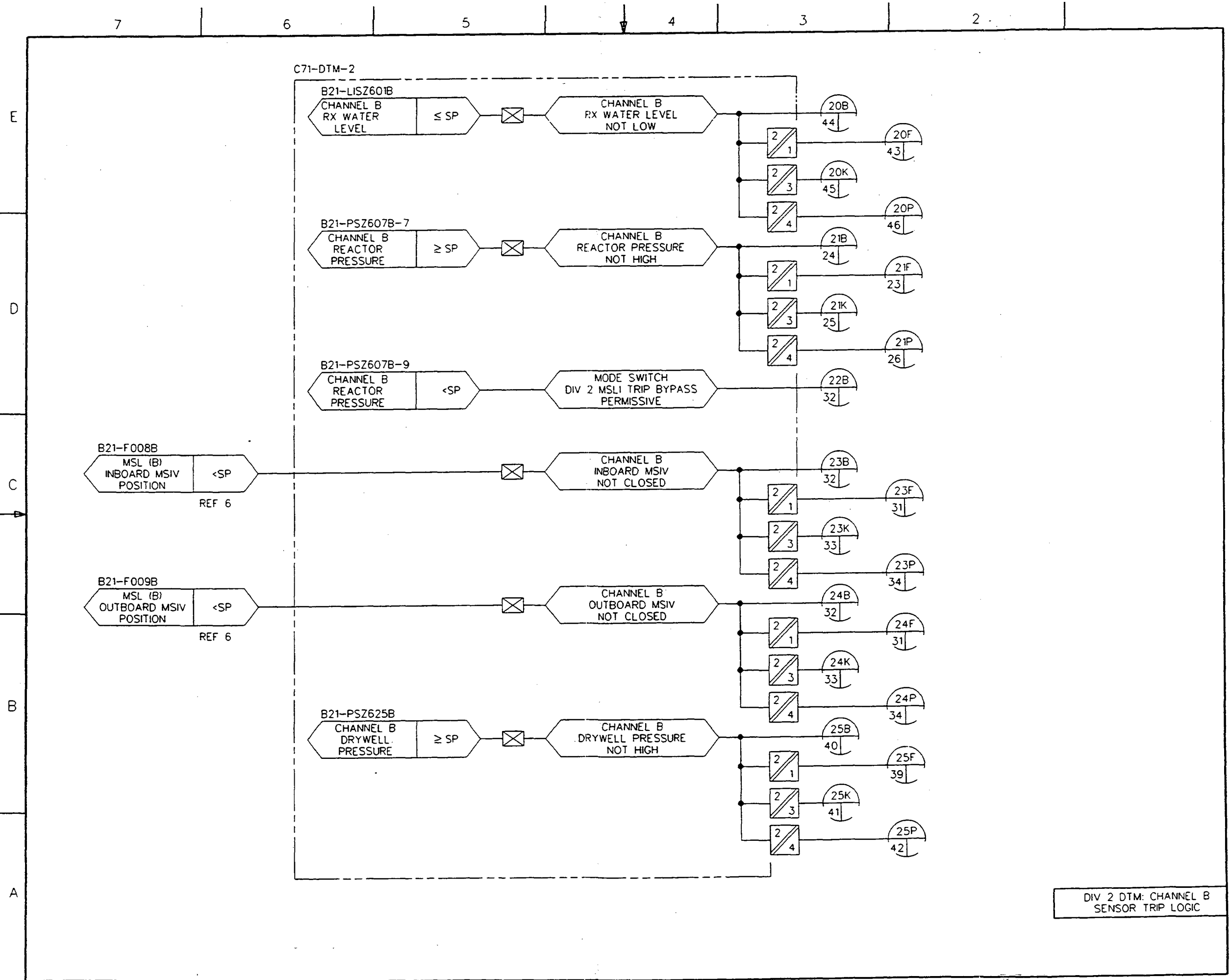


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 16 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.16

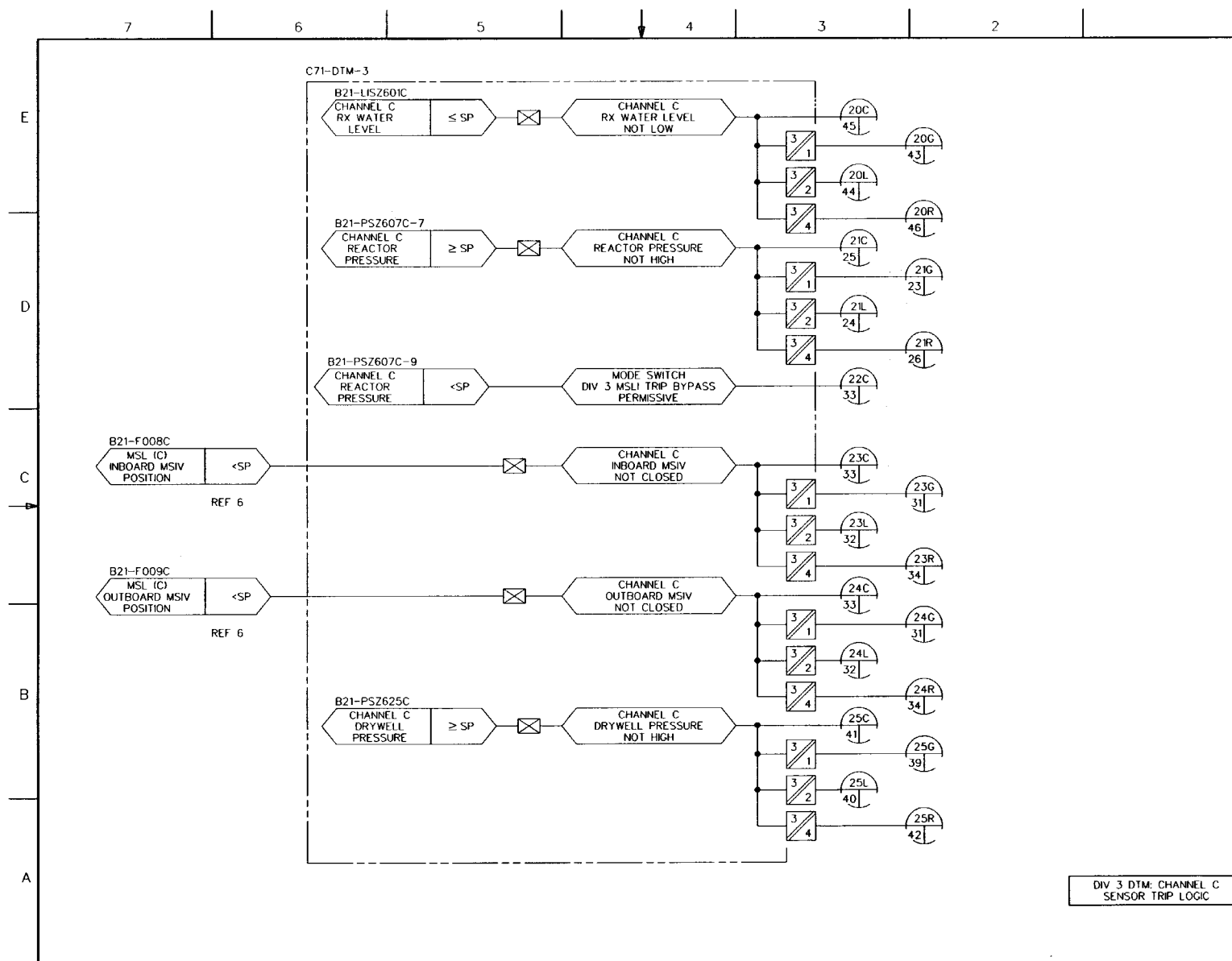


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 17 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.17

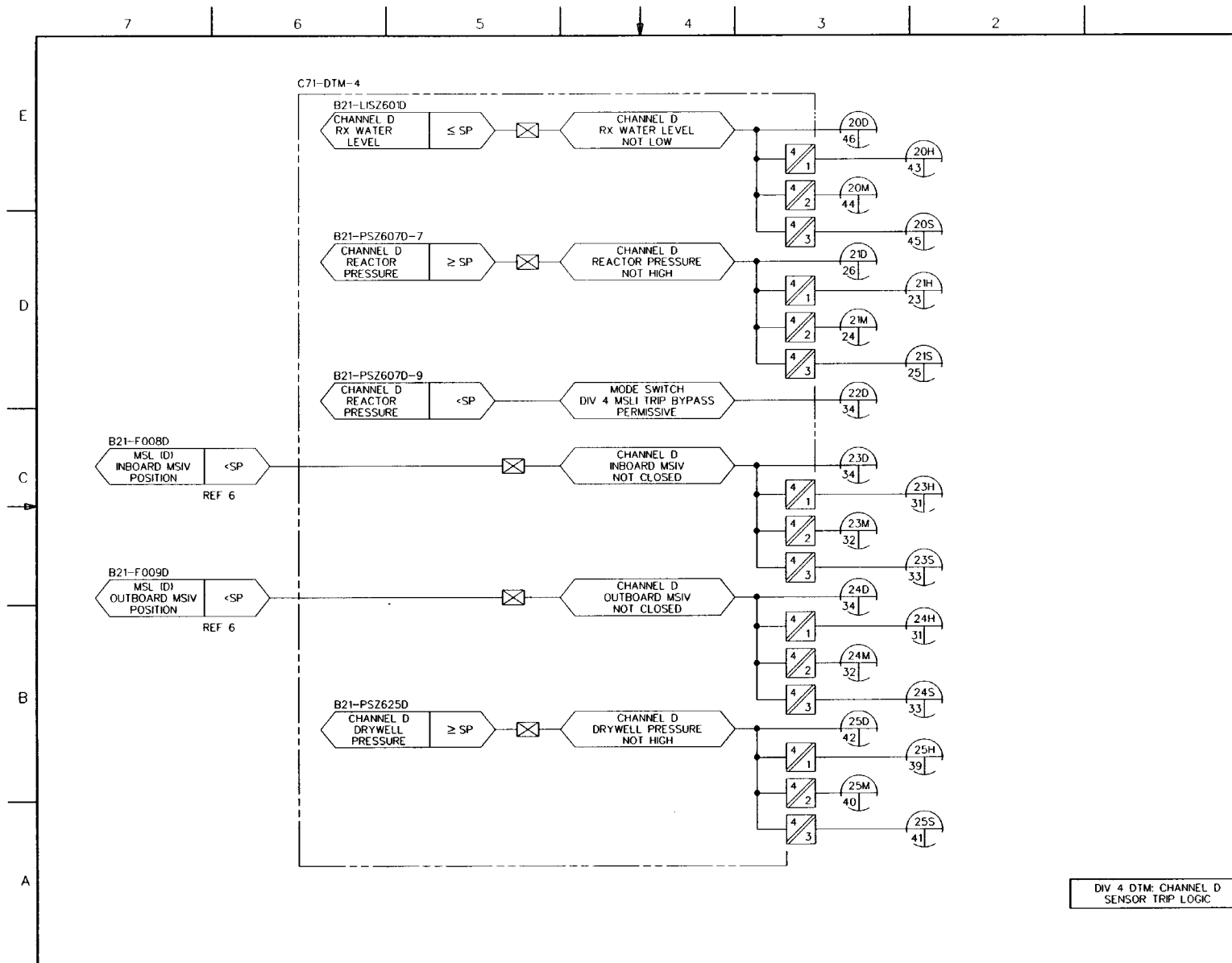


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 18 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.18

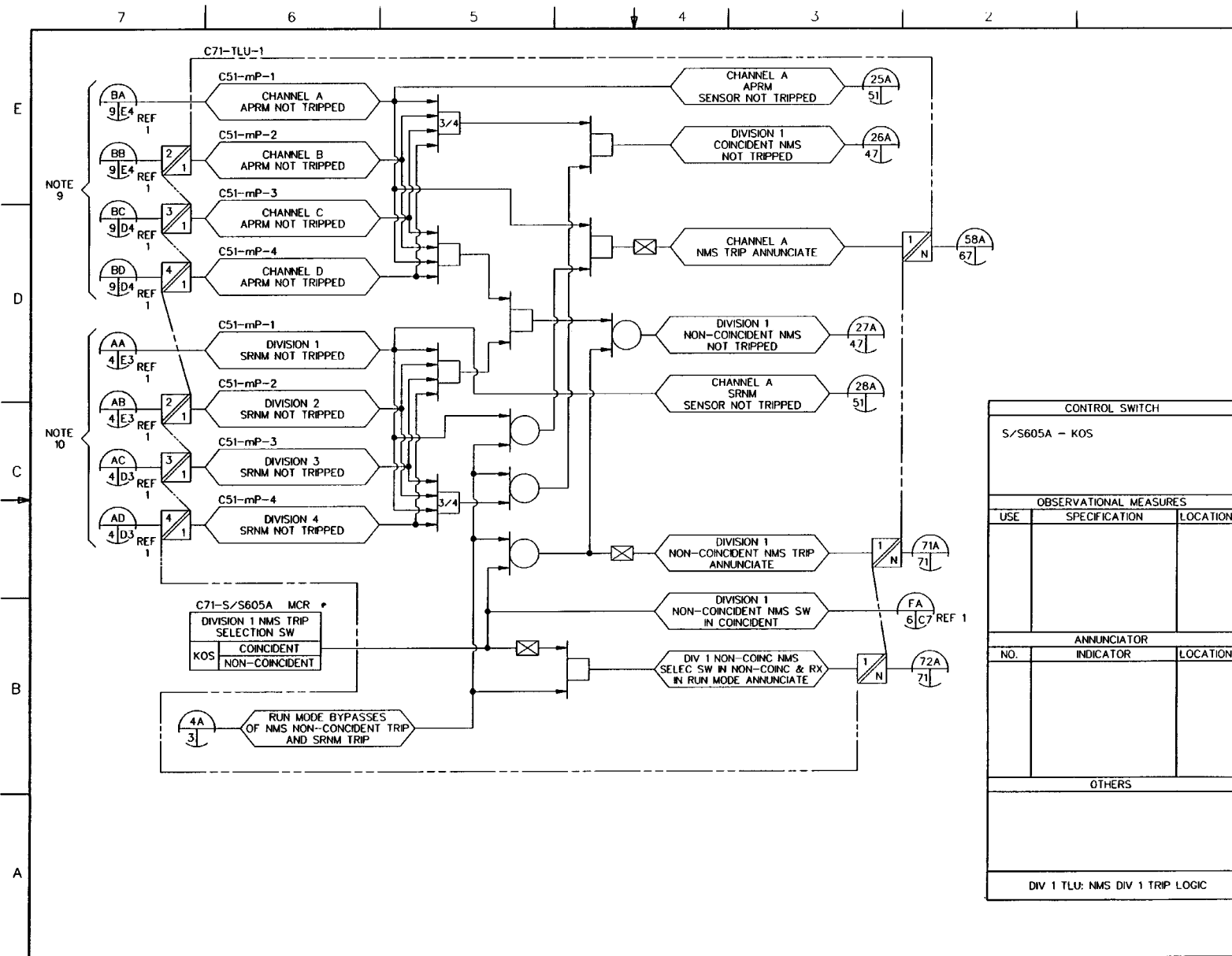


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 19 of 72)

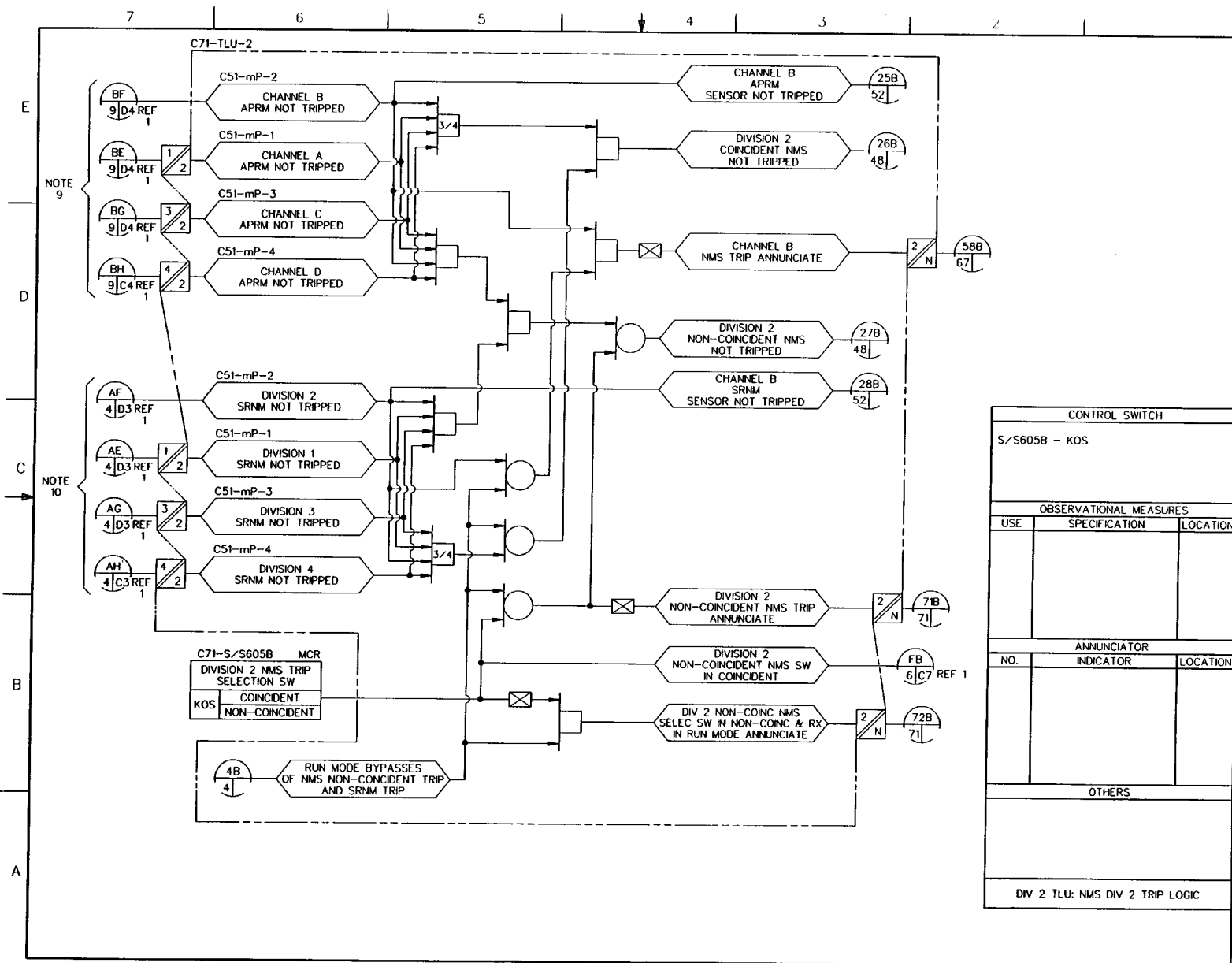


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 20 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.20

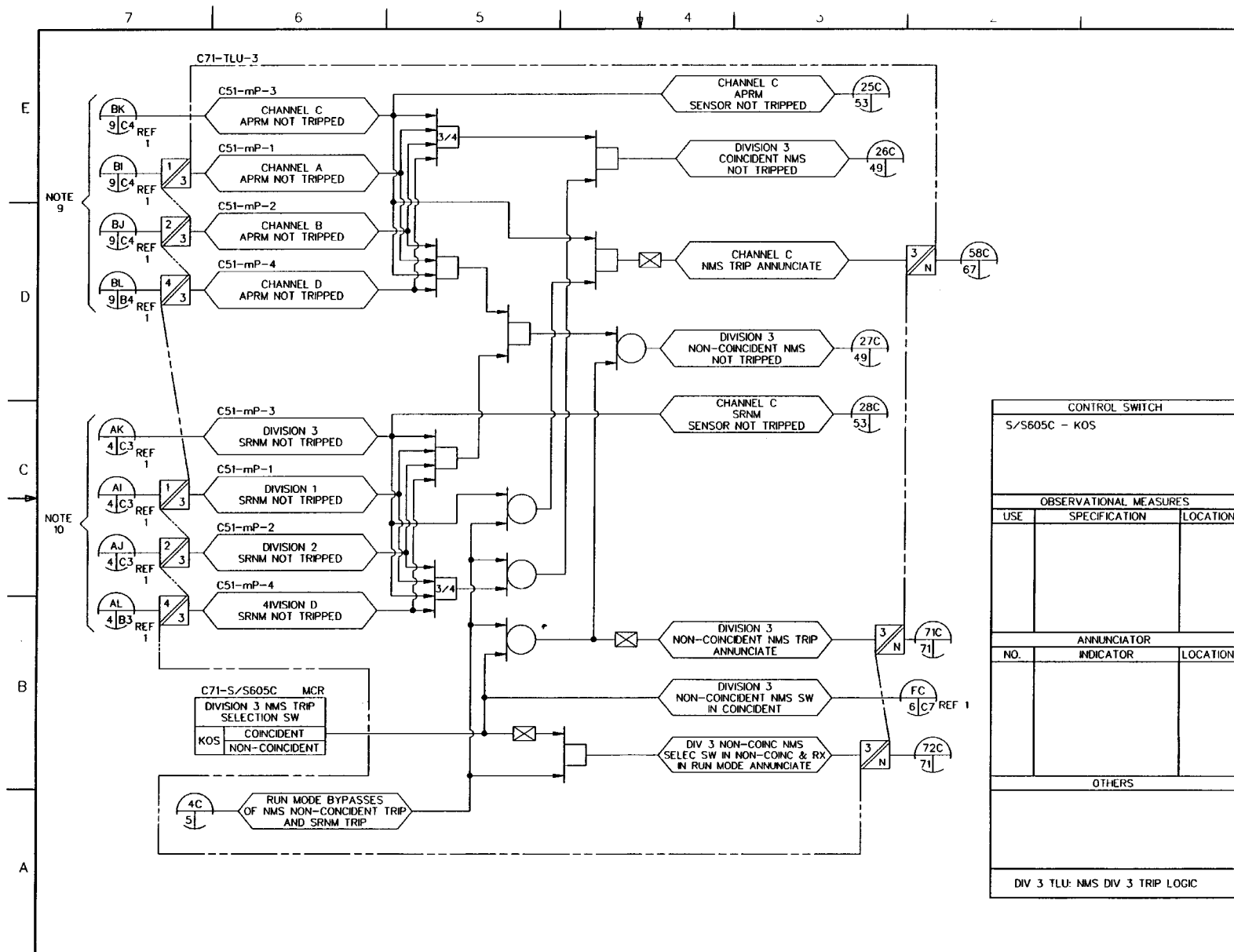


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 21 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.21

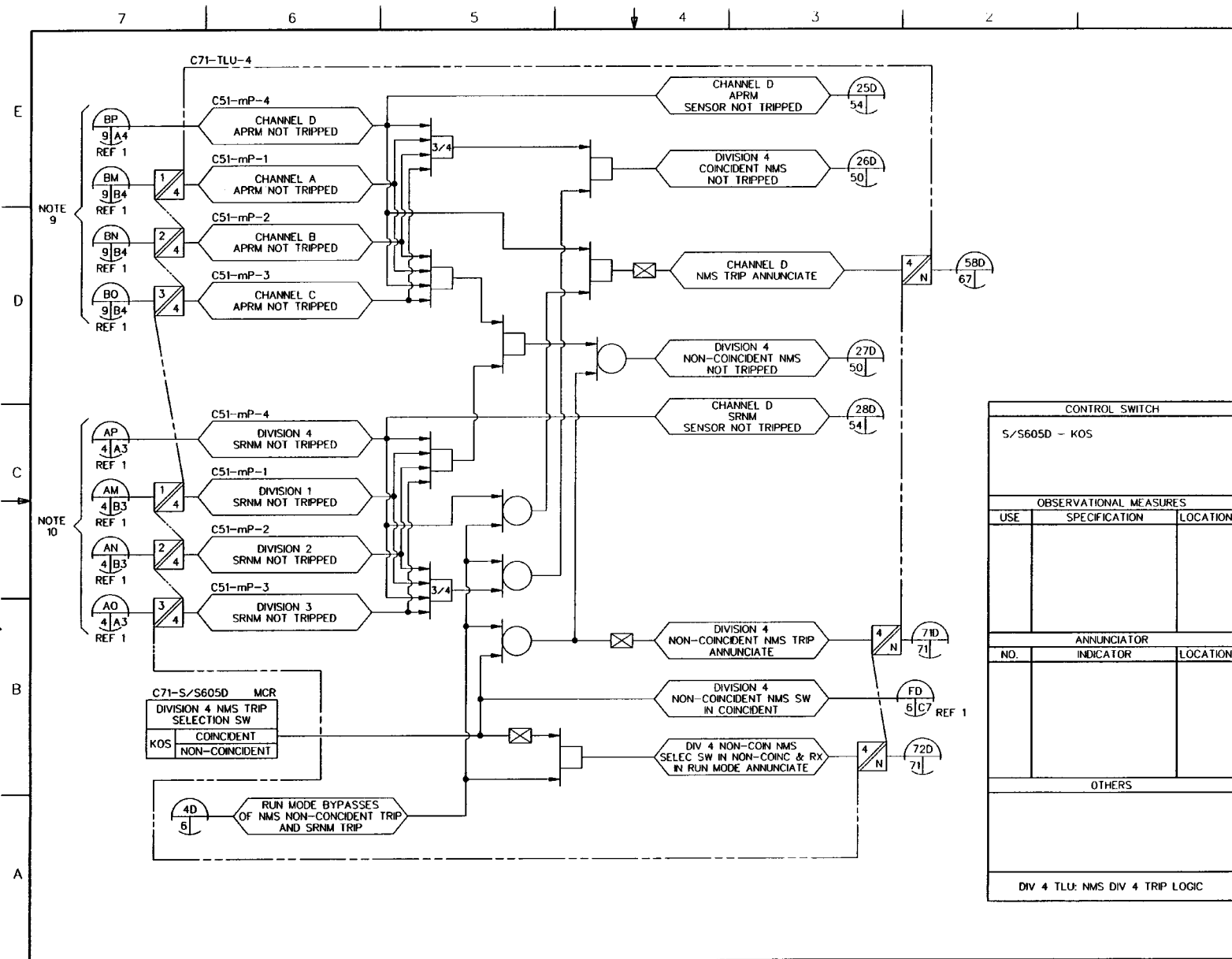


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 22 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.22

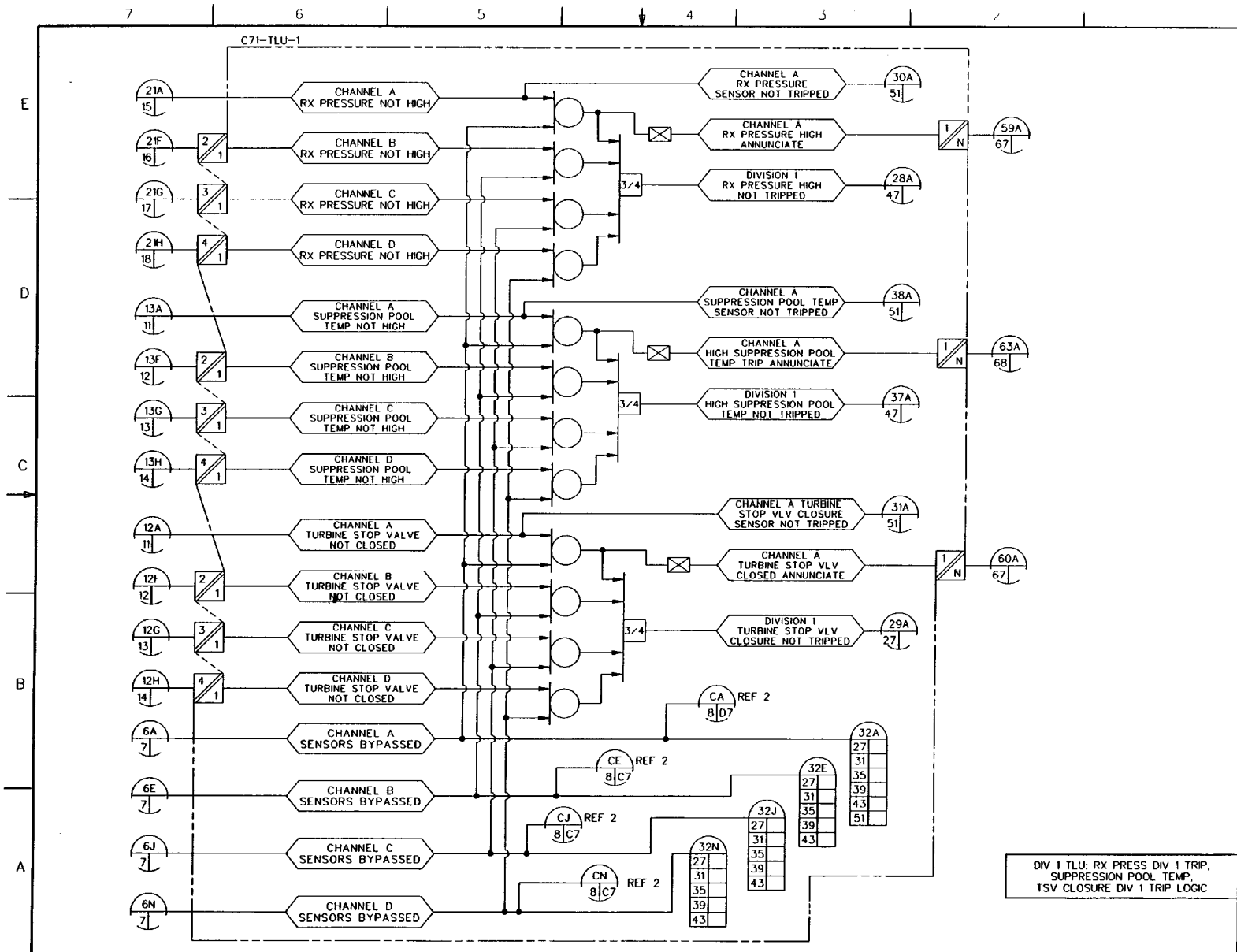


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 23 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.23

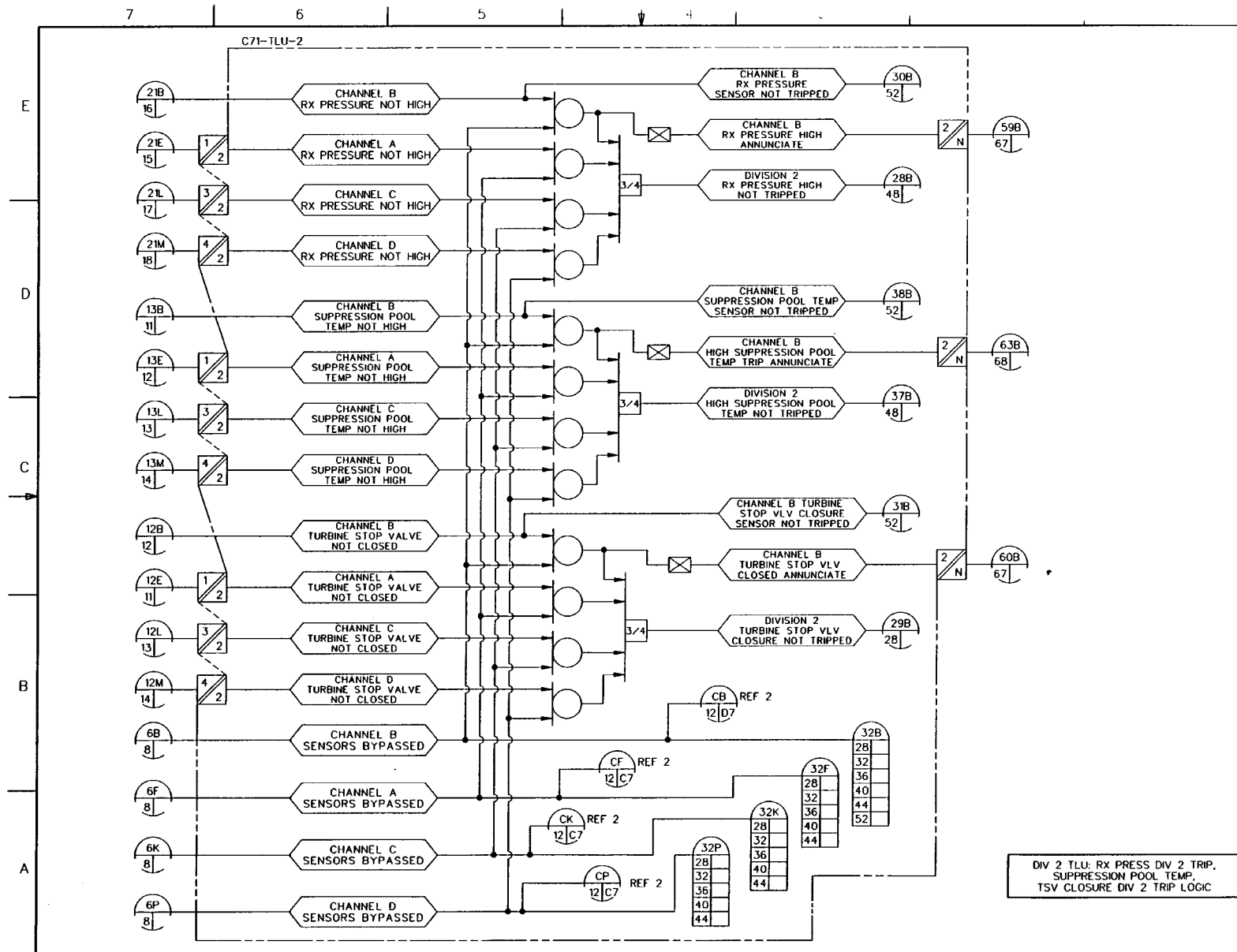


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 24 of 72)

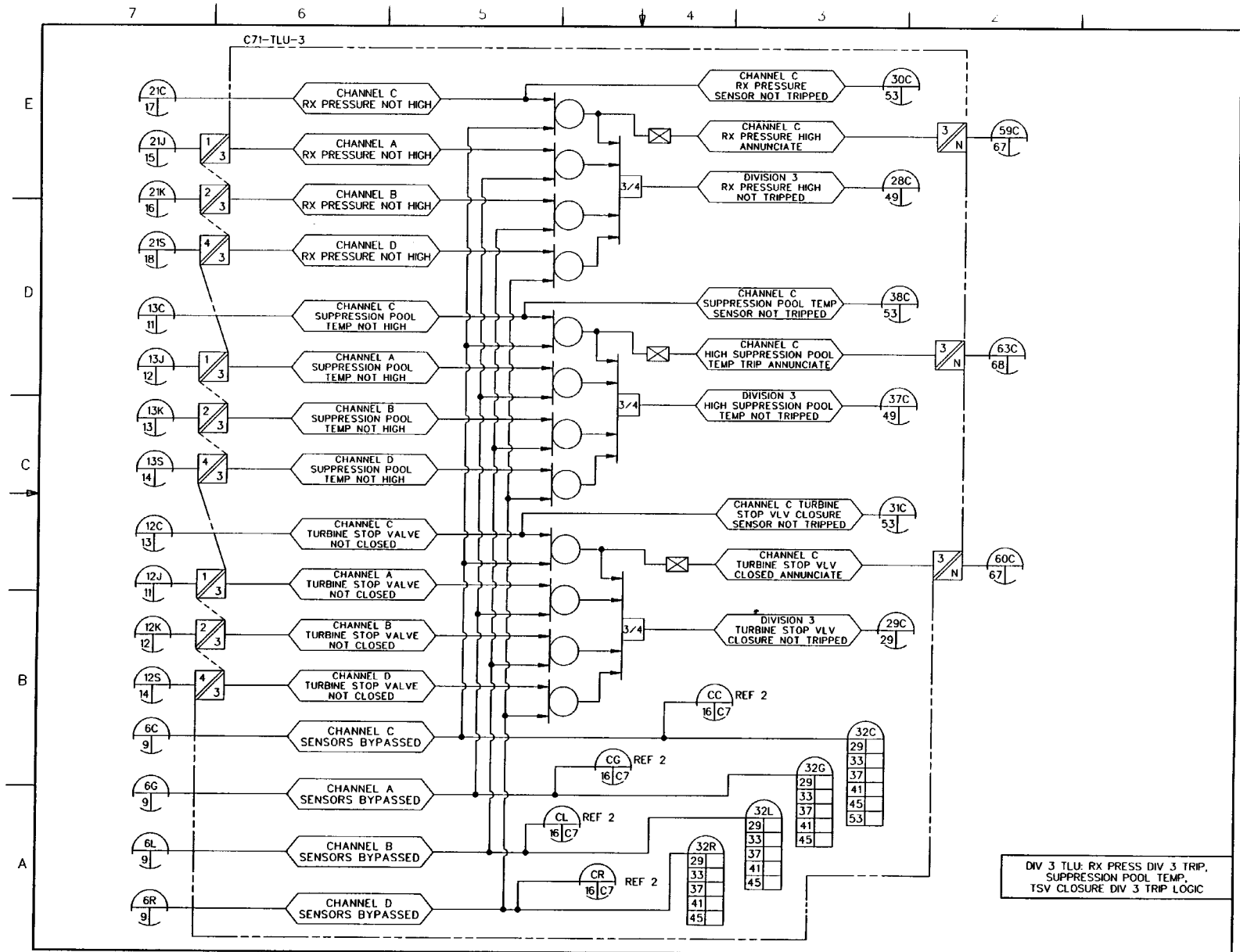


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 25 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.25



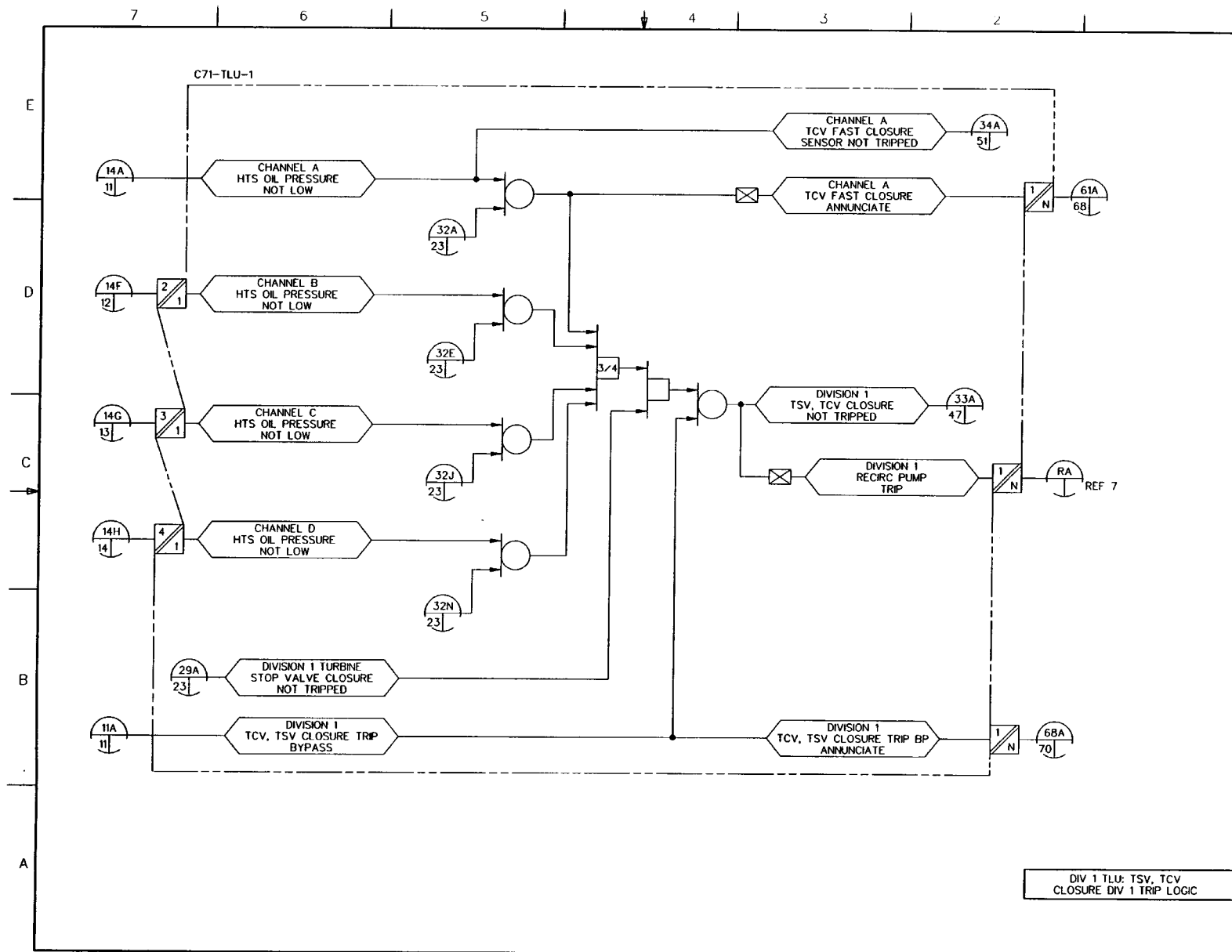
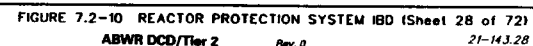


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 27 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.27



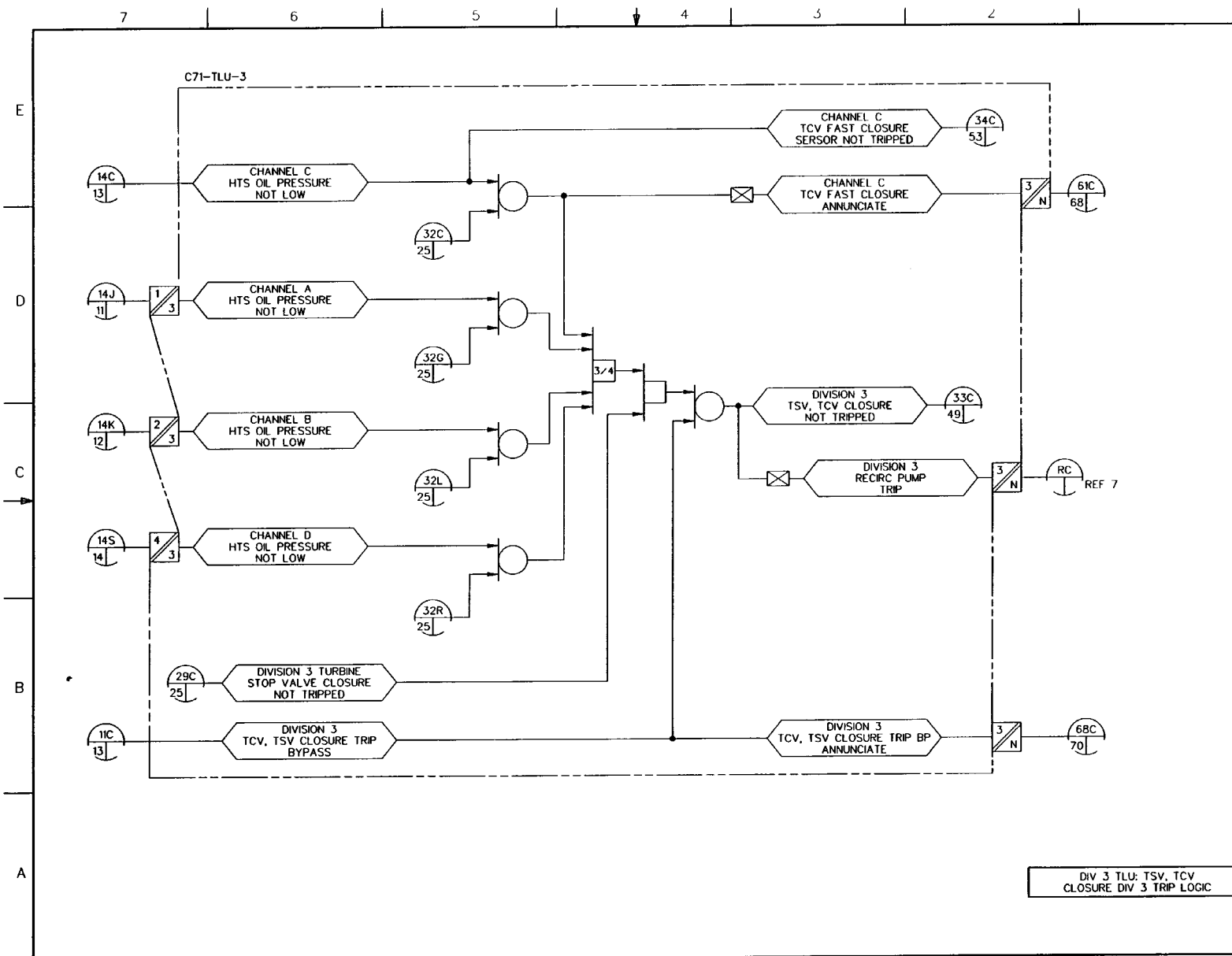


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 29 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.29

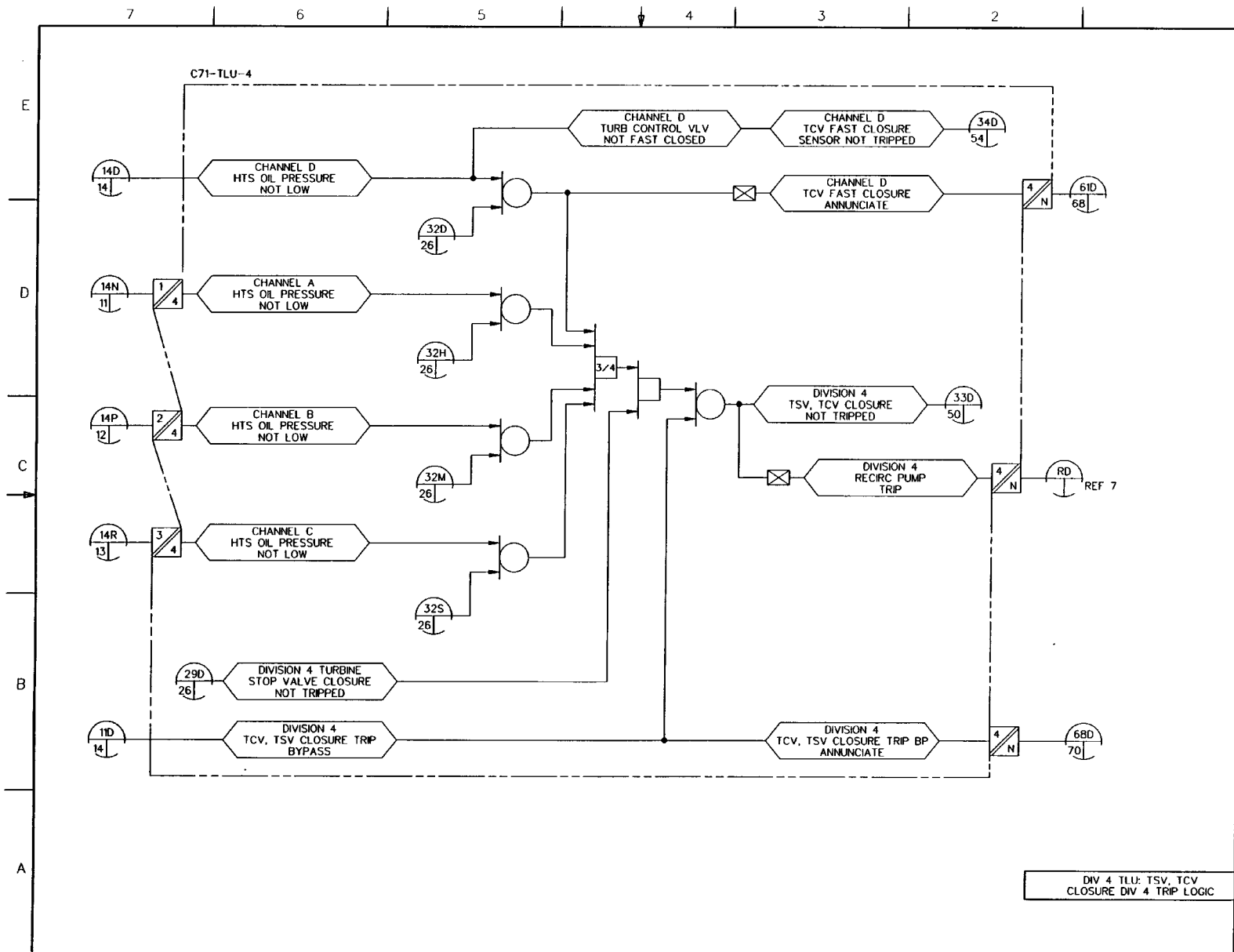


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 30 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.30

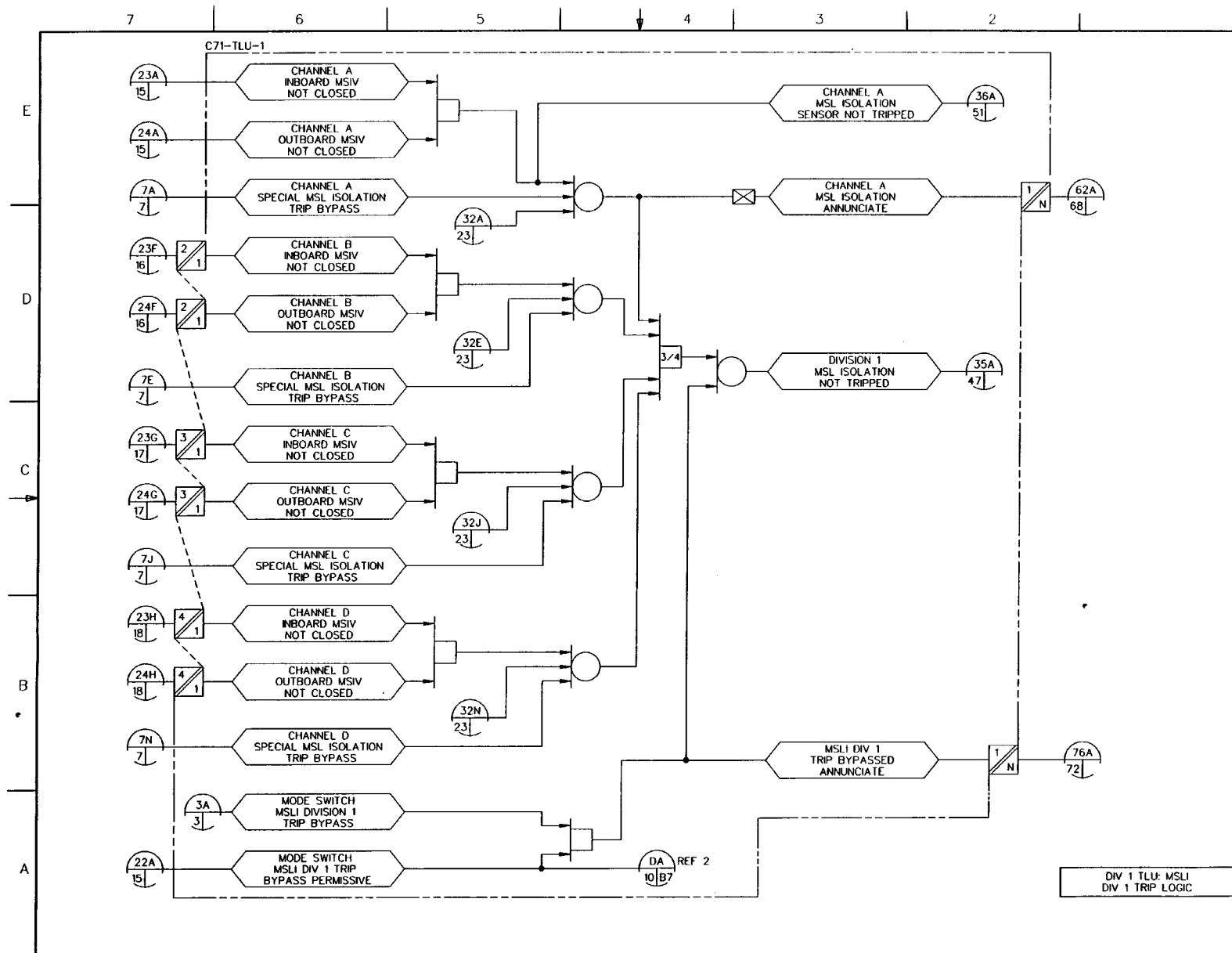


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 31 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.31

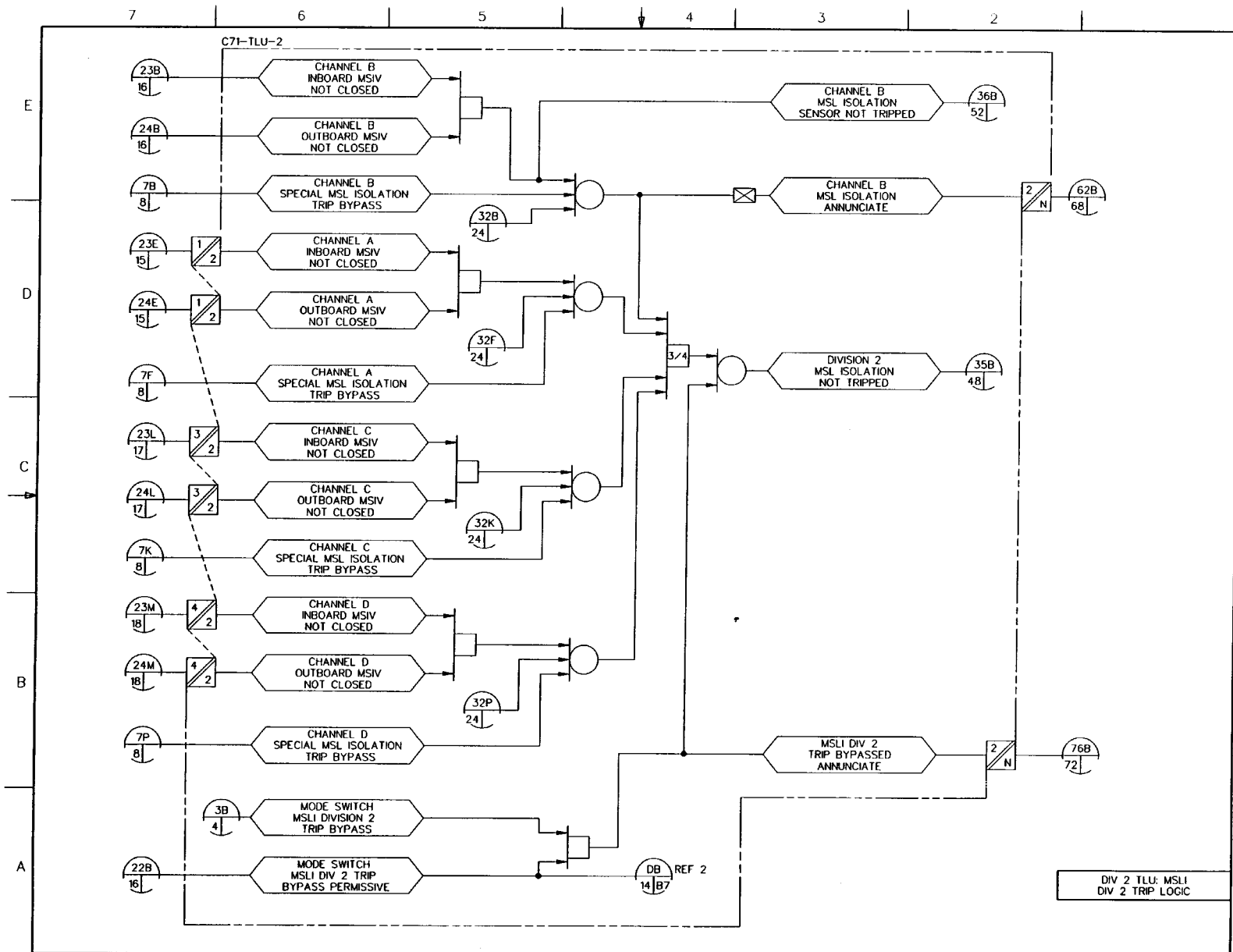


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 32 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.32

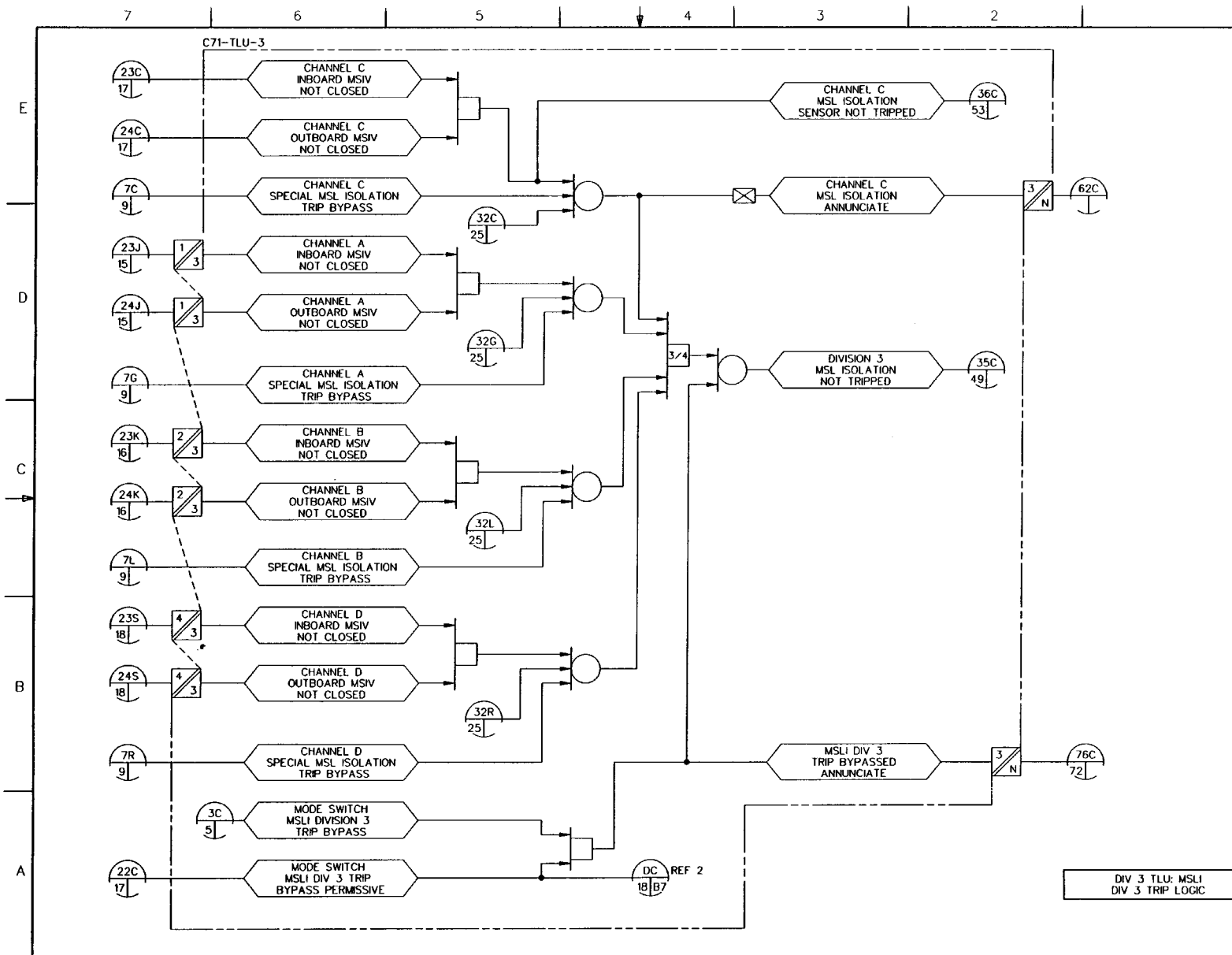


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 33 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.33

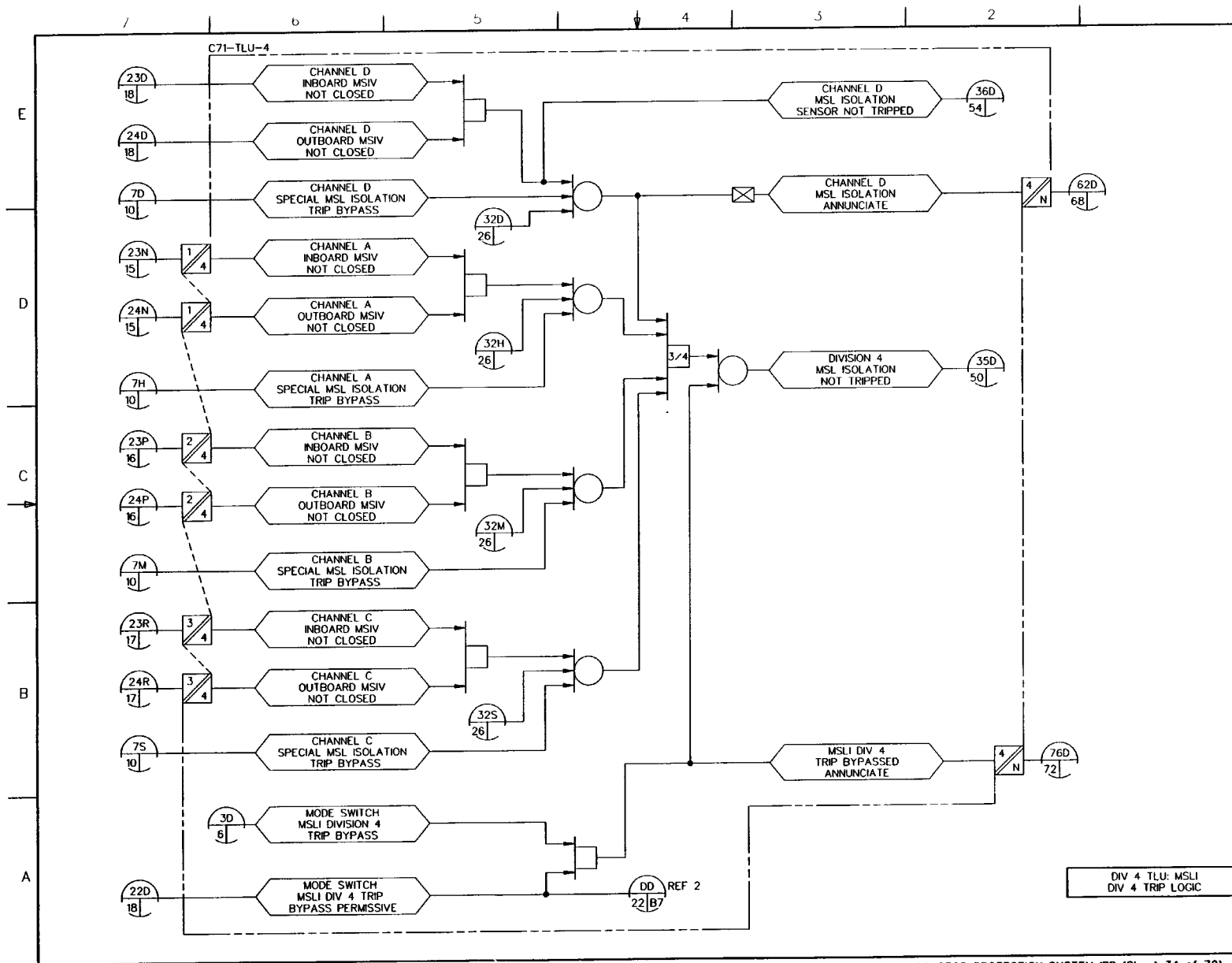
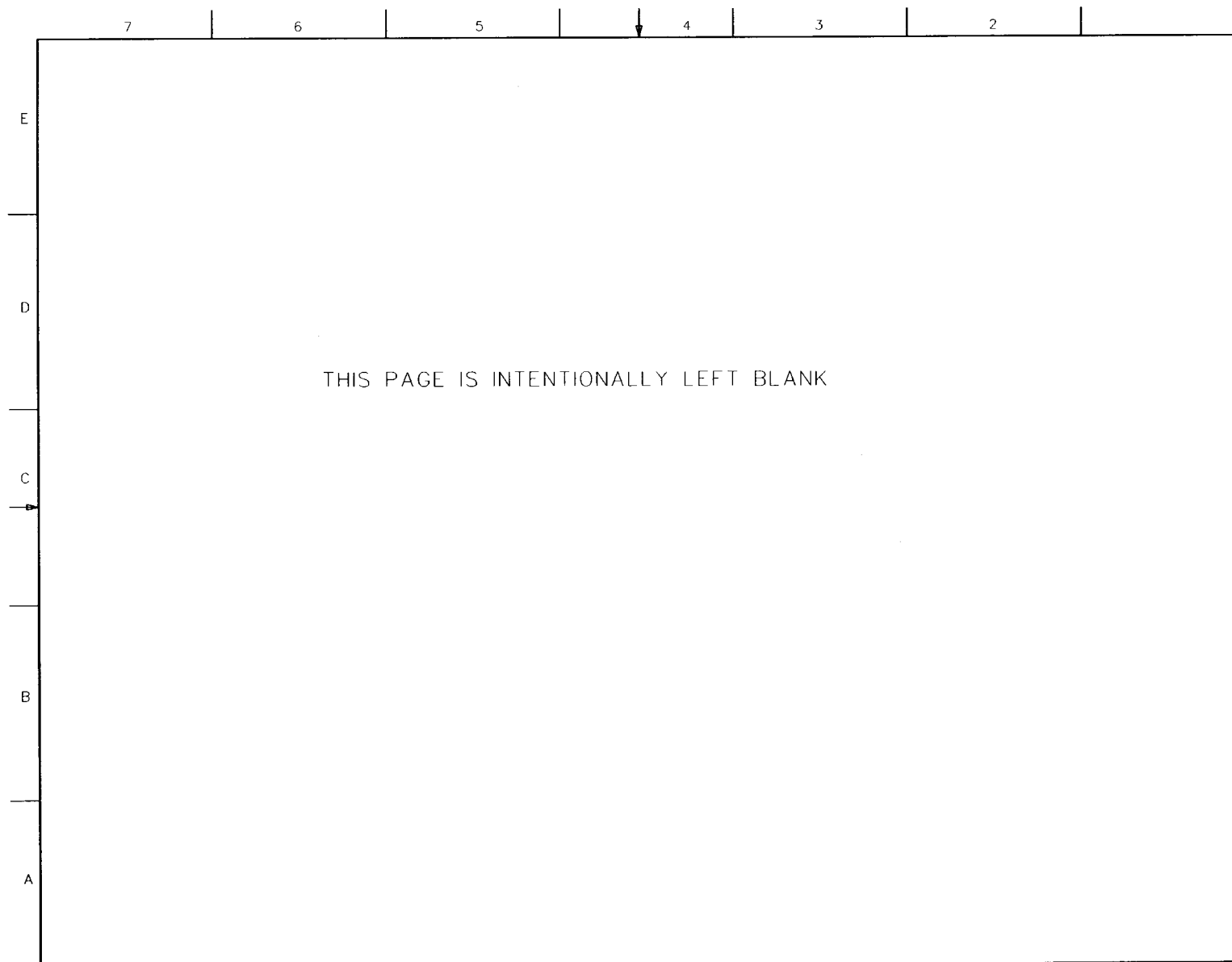
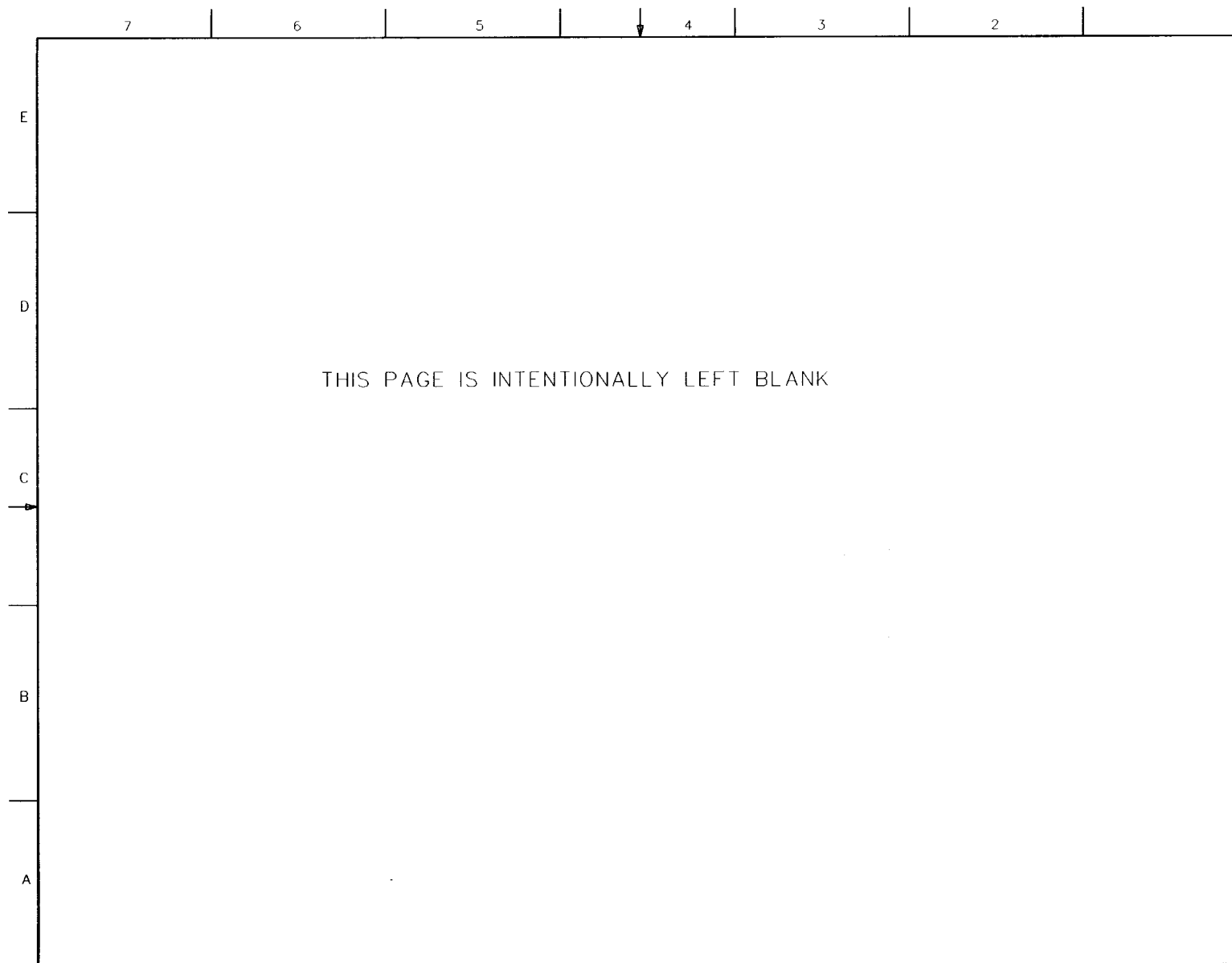
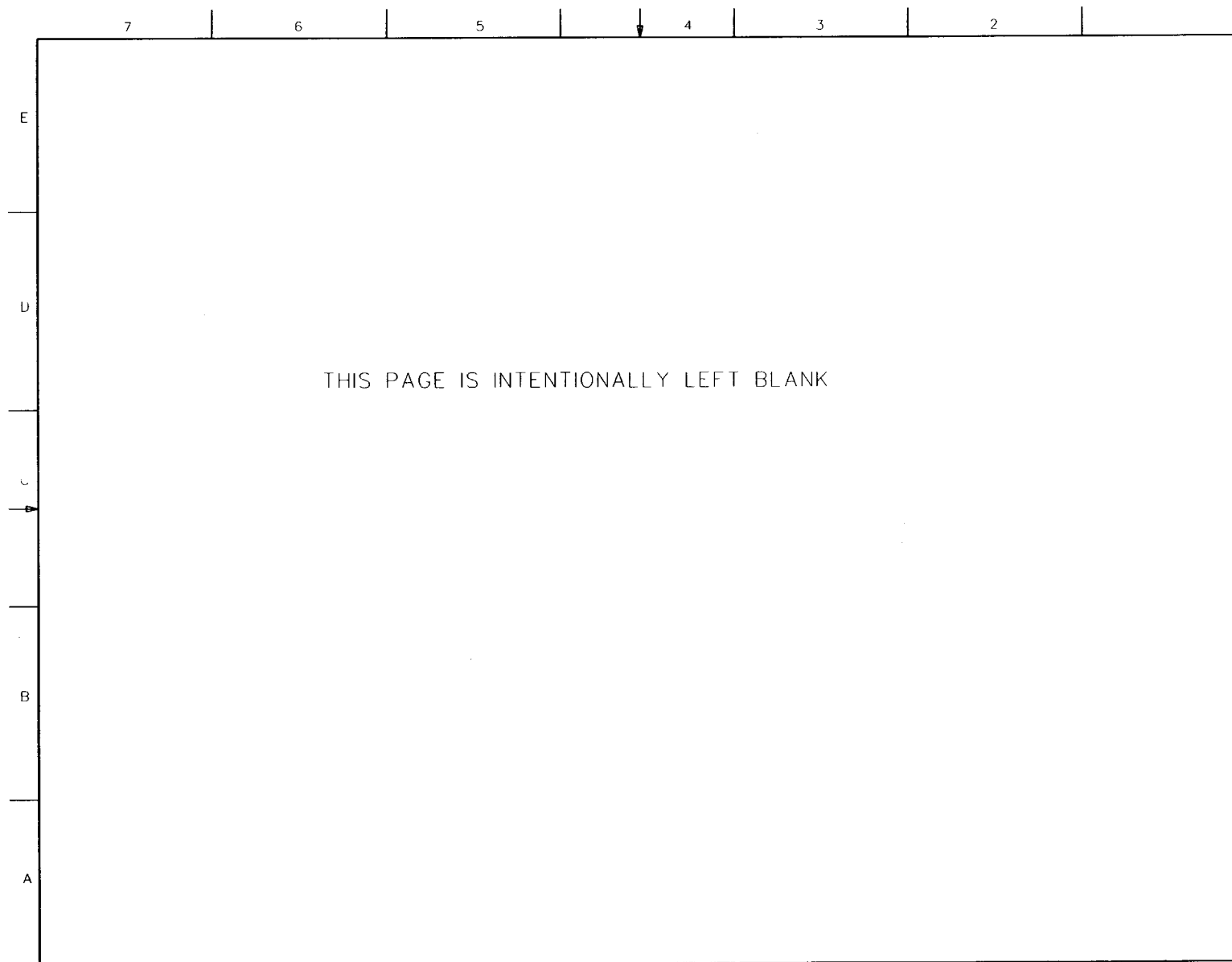
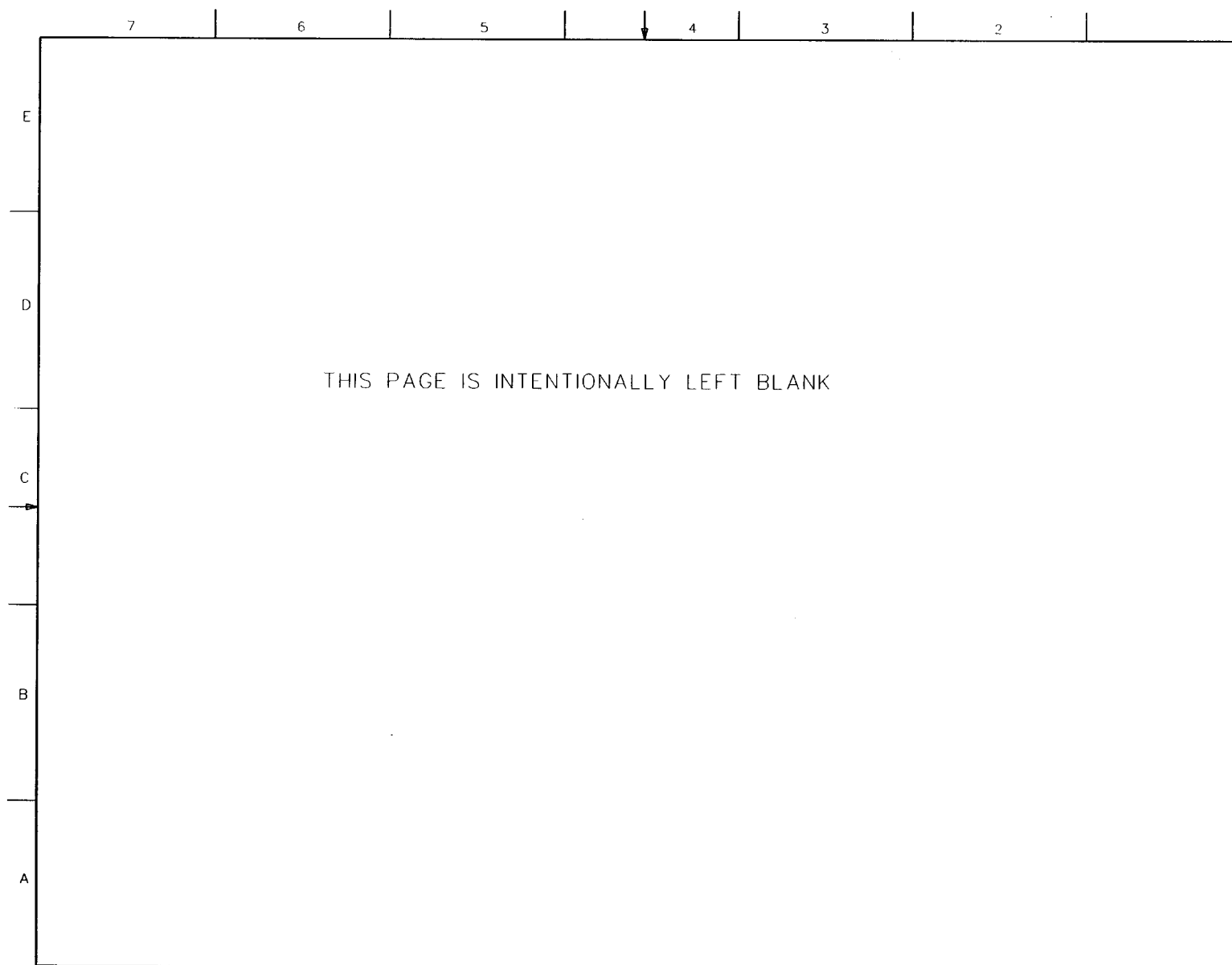


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 34 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.34









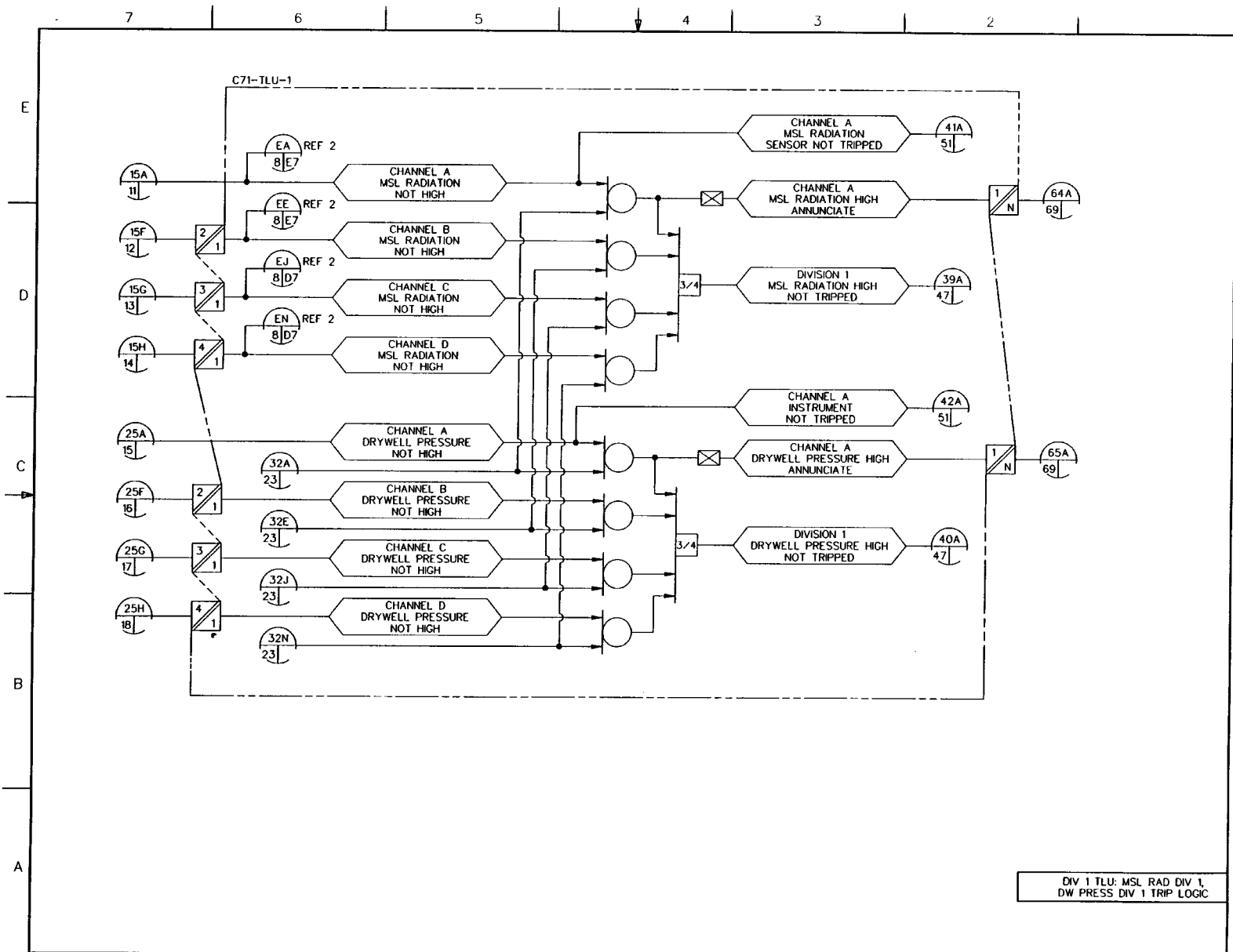


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 39 of 72)
 ASWR DCD/Tier 2 Rev. 0 21-143.39

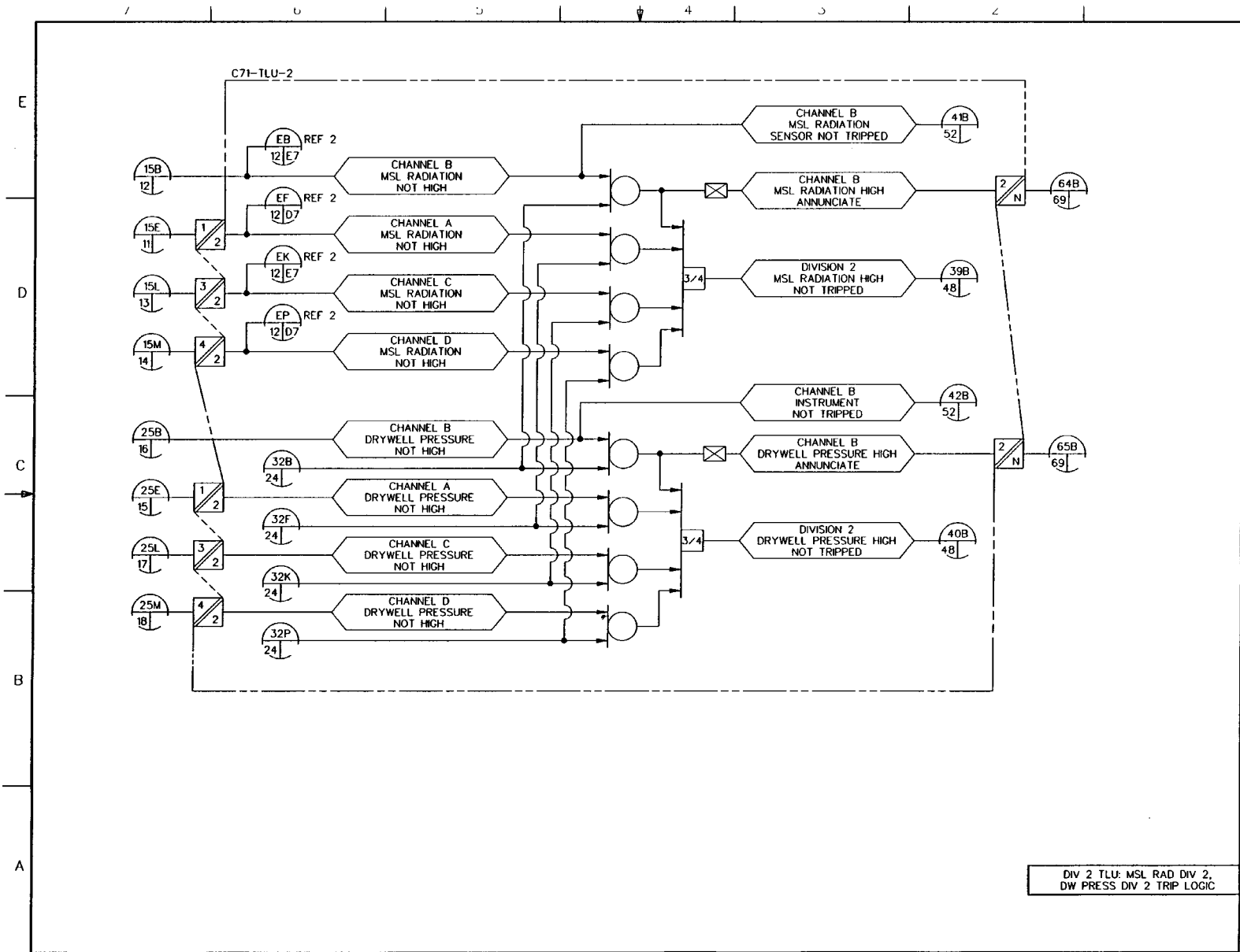


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 40 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.40

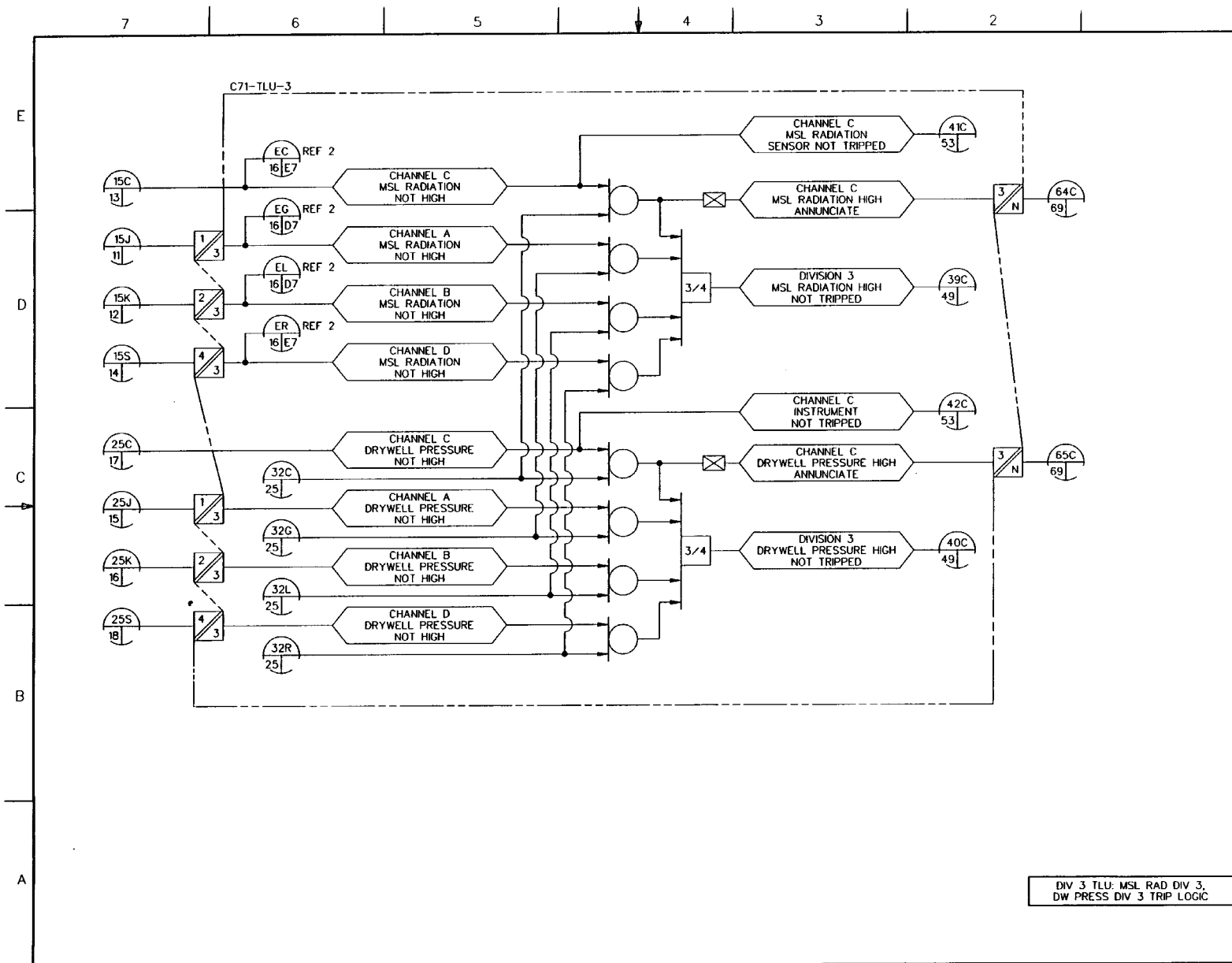


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 41 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.41

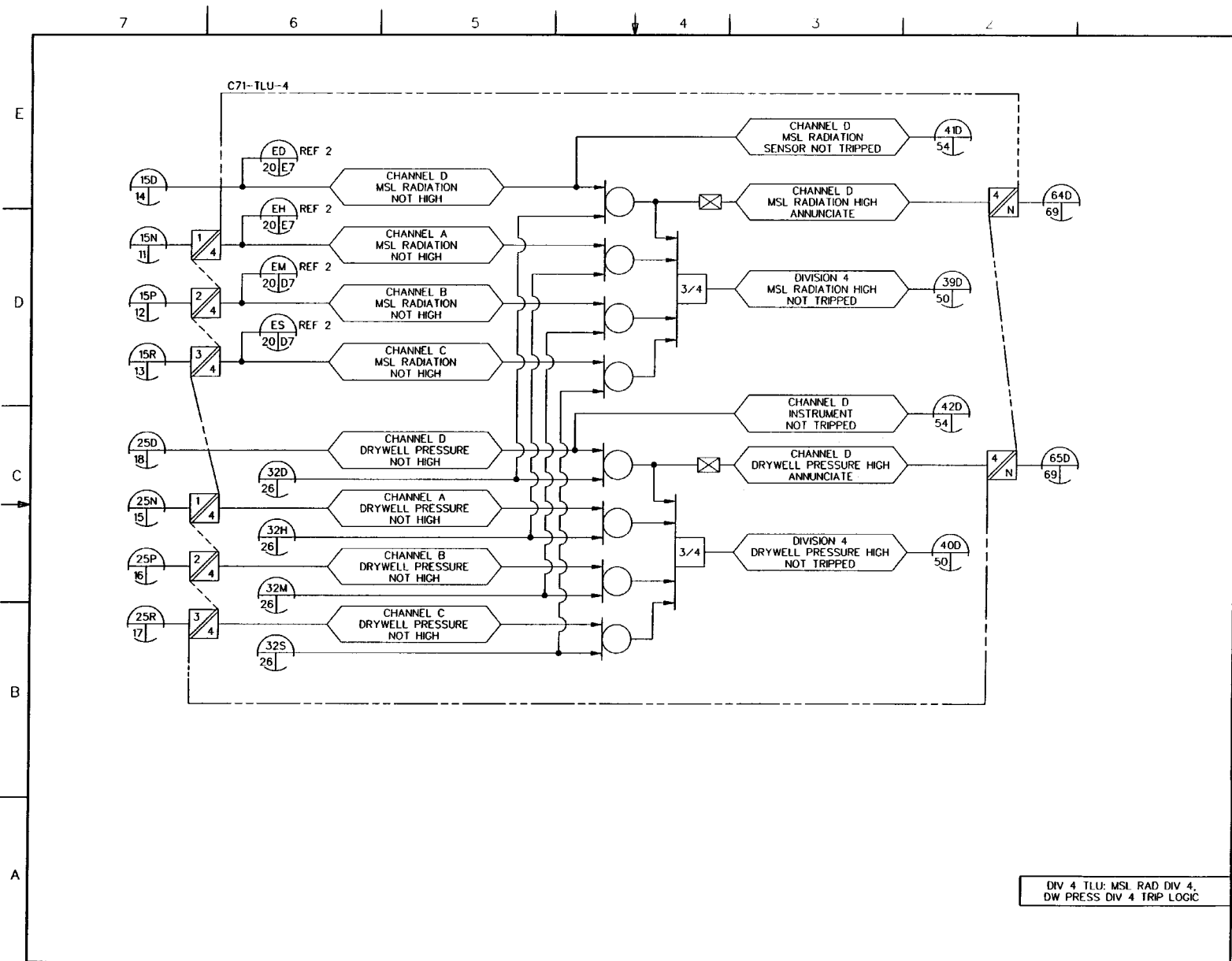


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 42 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.42

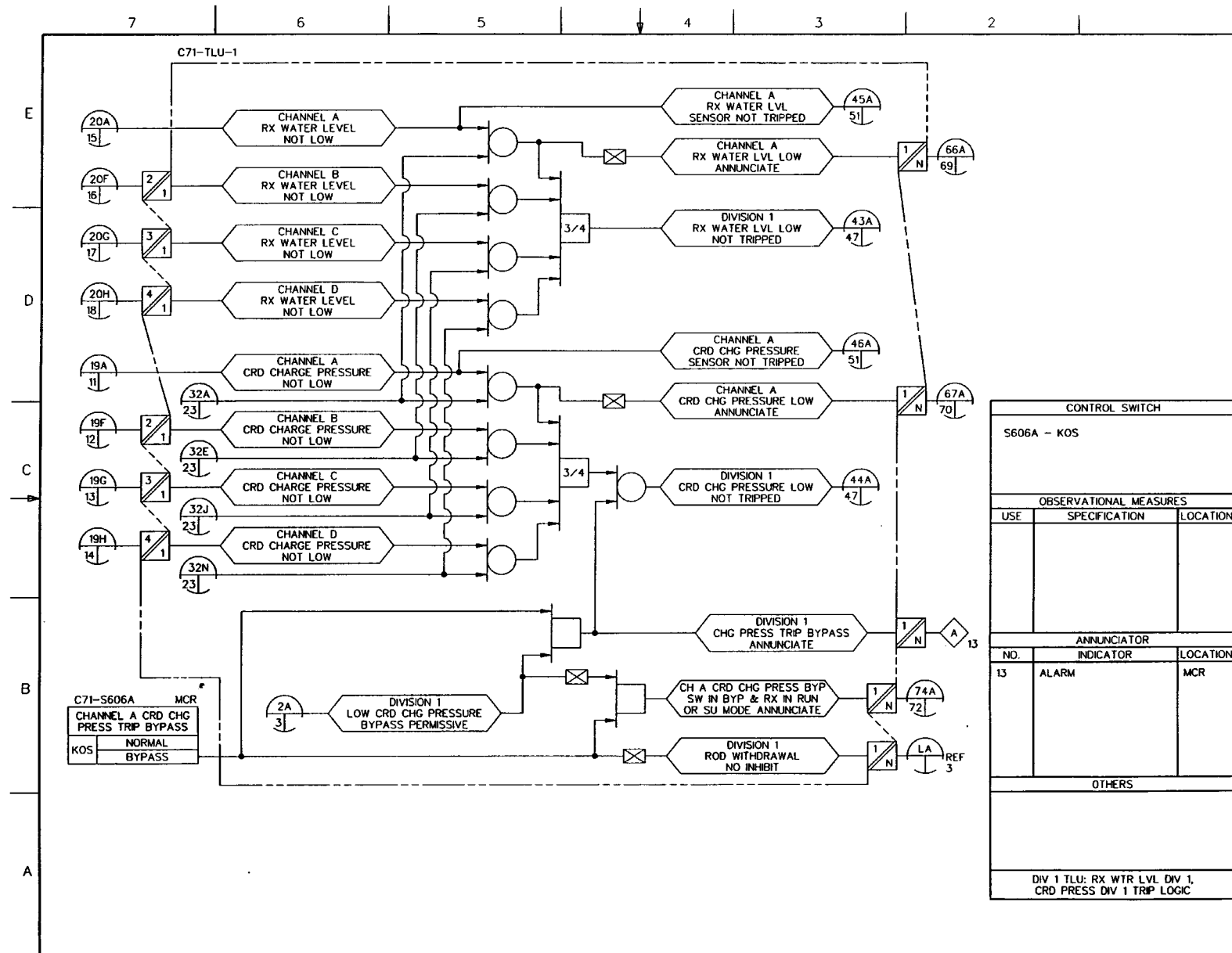


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 43 of 72)

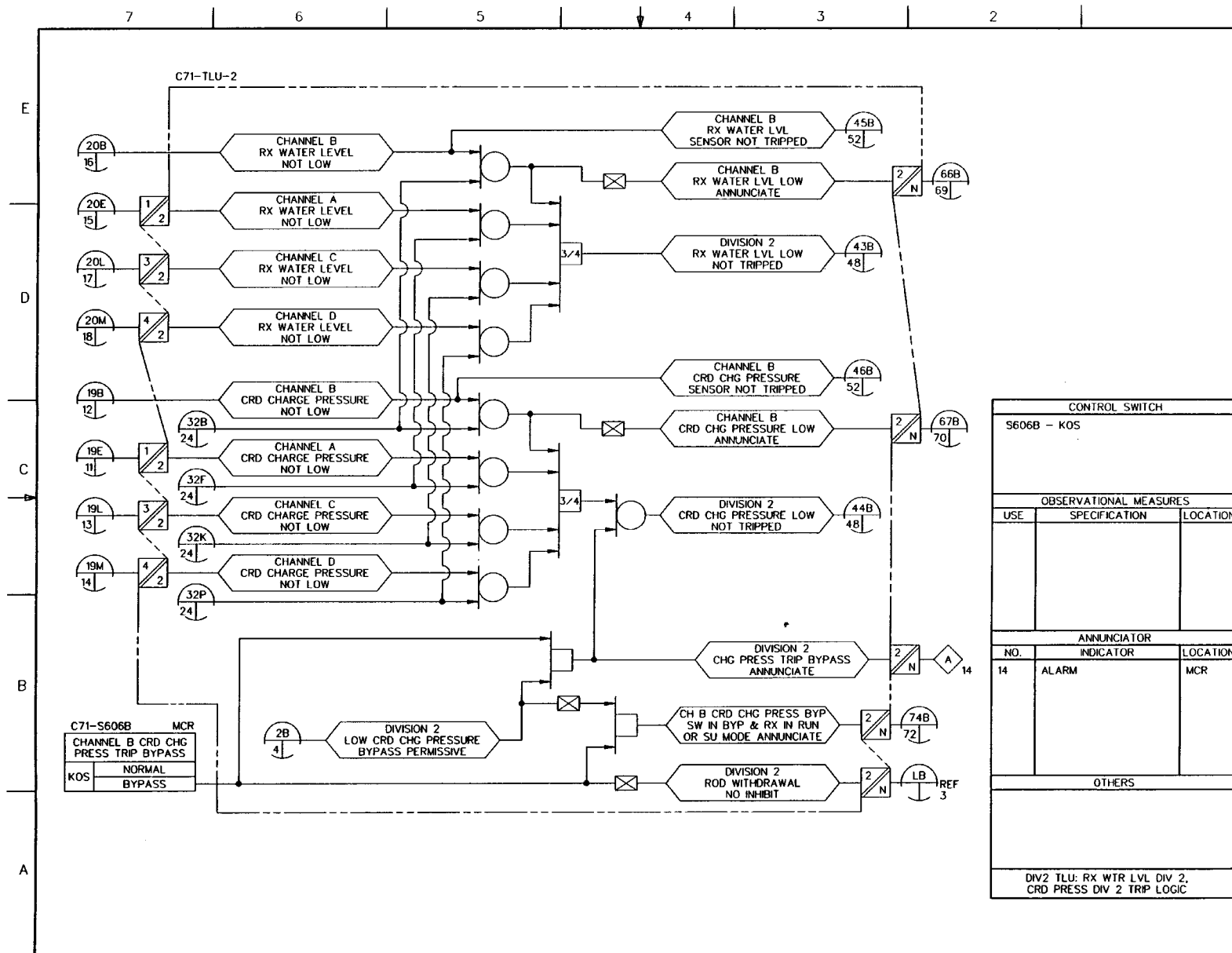


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 44 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.44

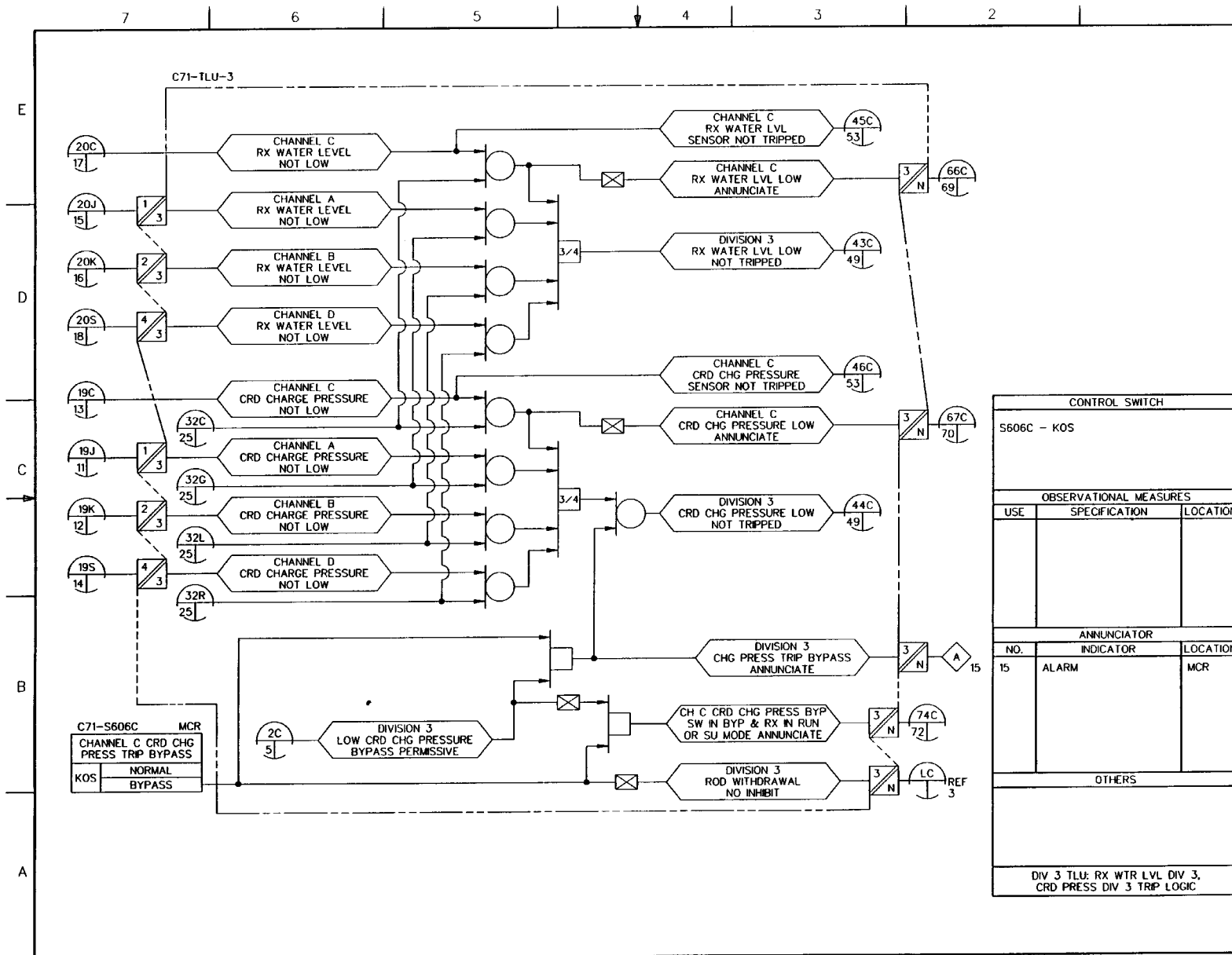


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 45 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.45

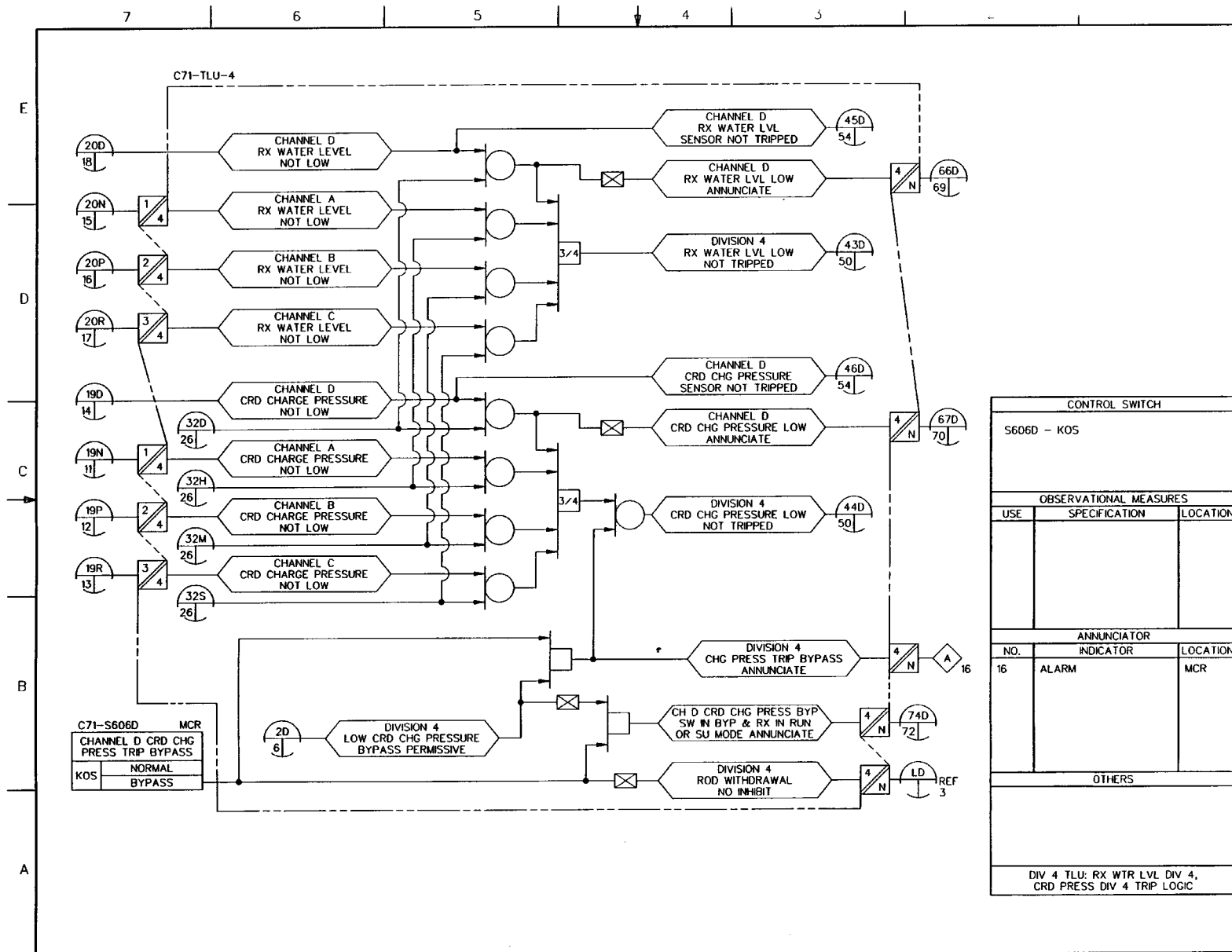


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 46 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.46

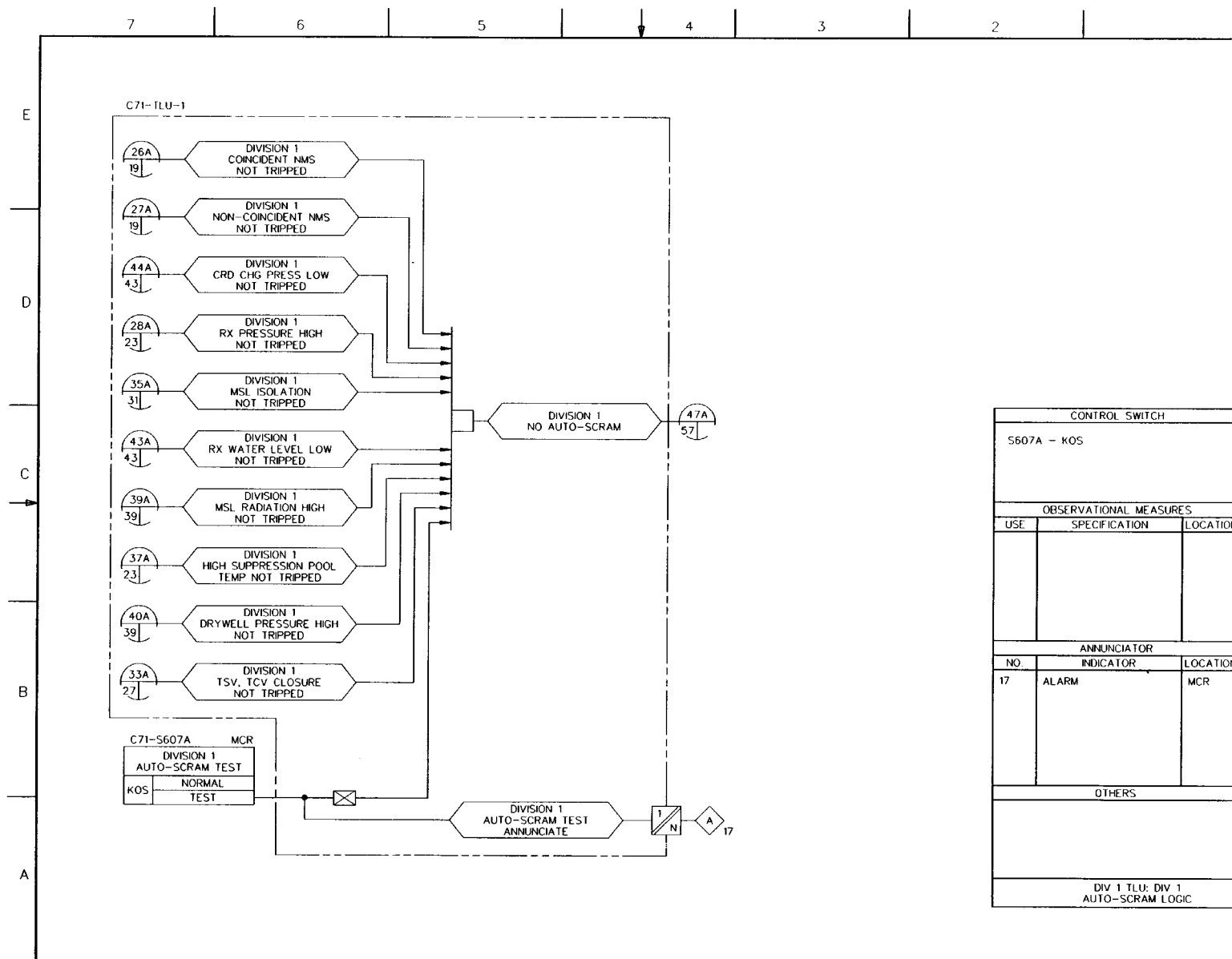


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 47 of 72)
 ASWR DCD/Tier 2 Rev. 0 21-143,47

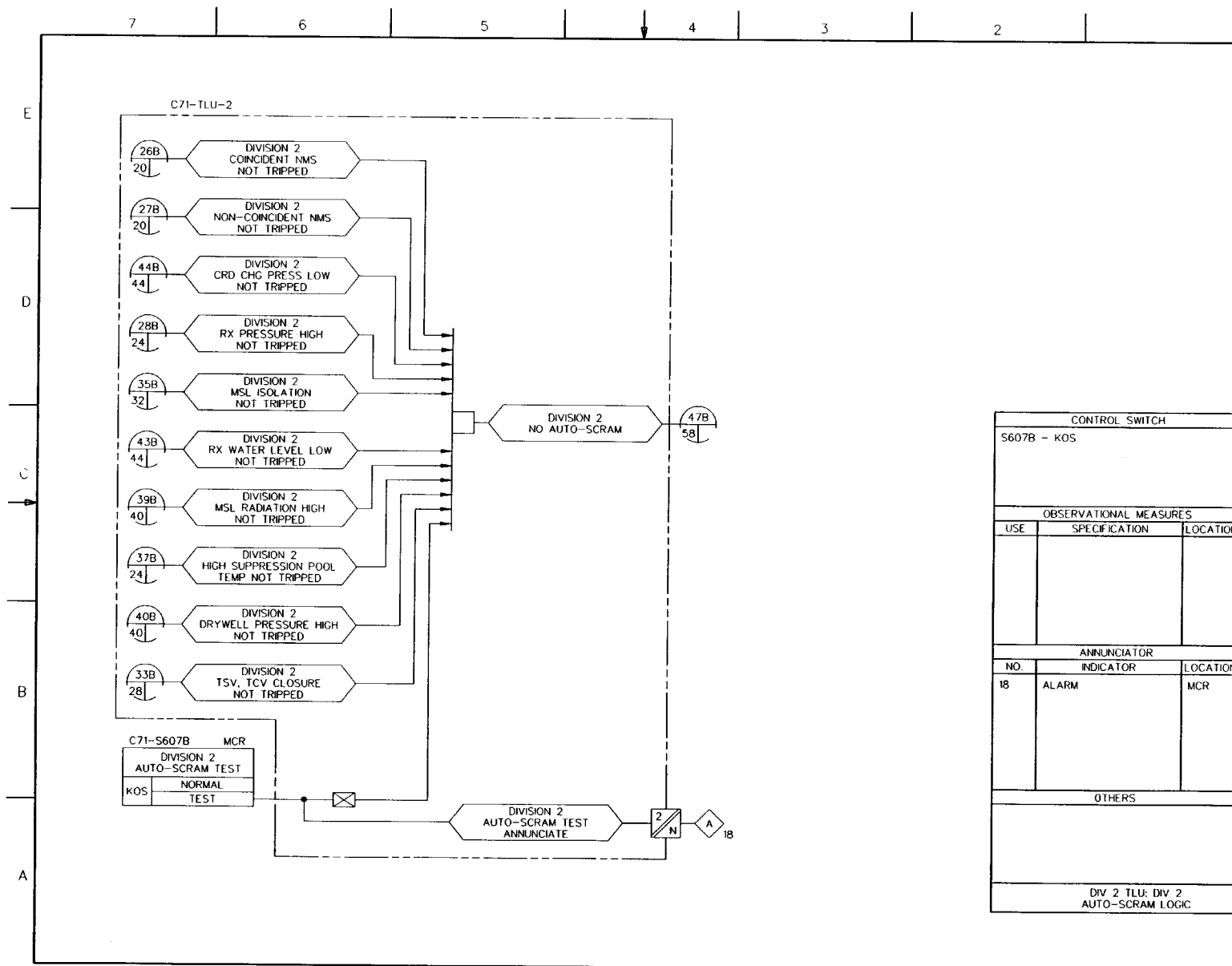


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 48 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.48

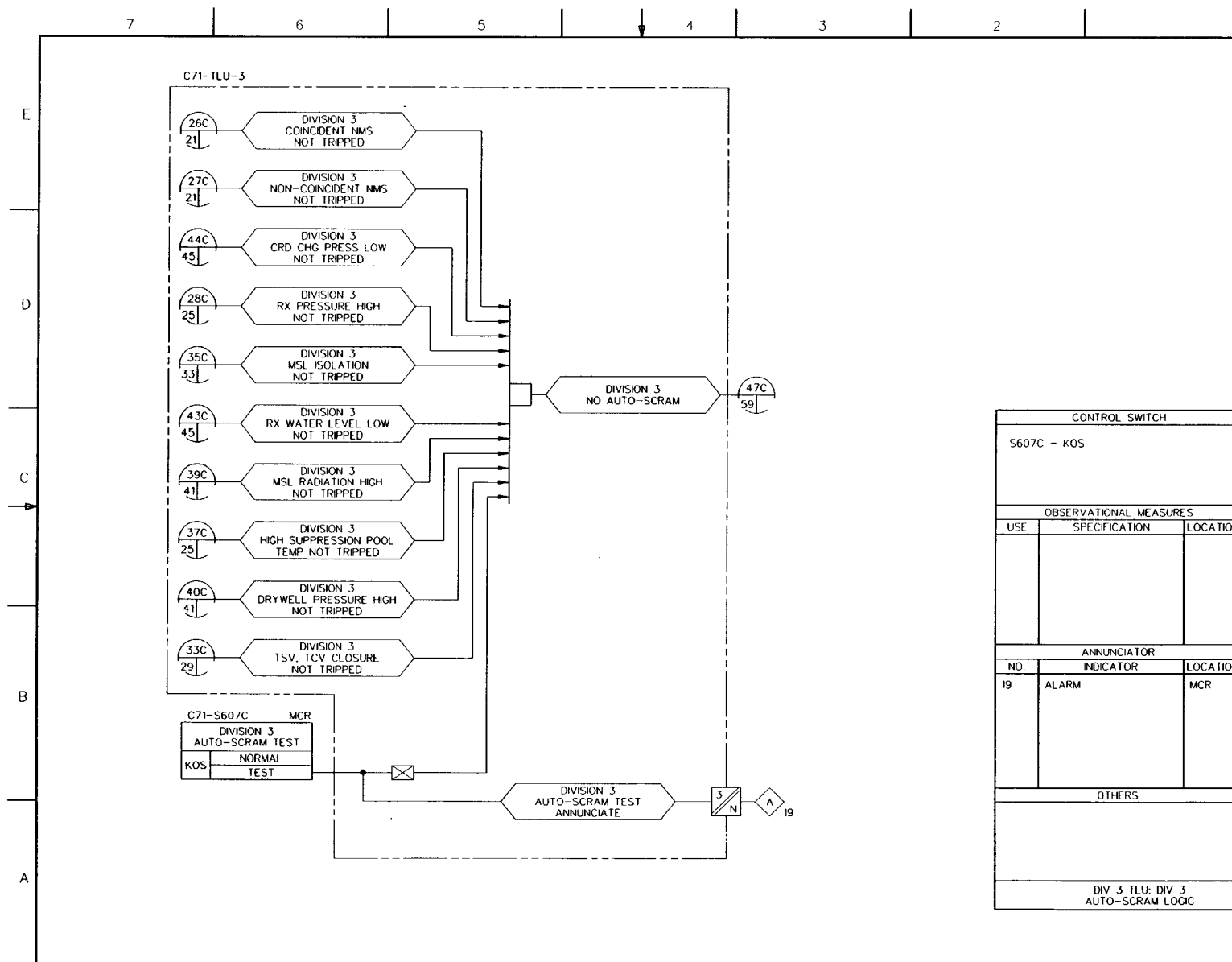


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 49 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.49

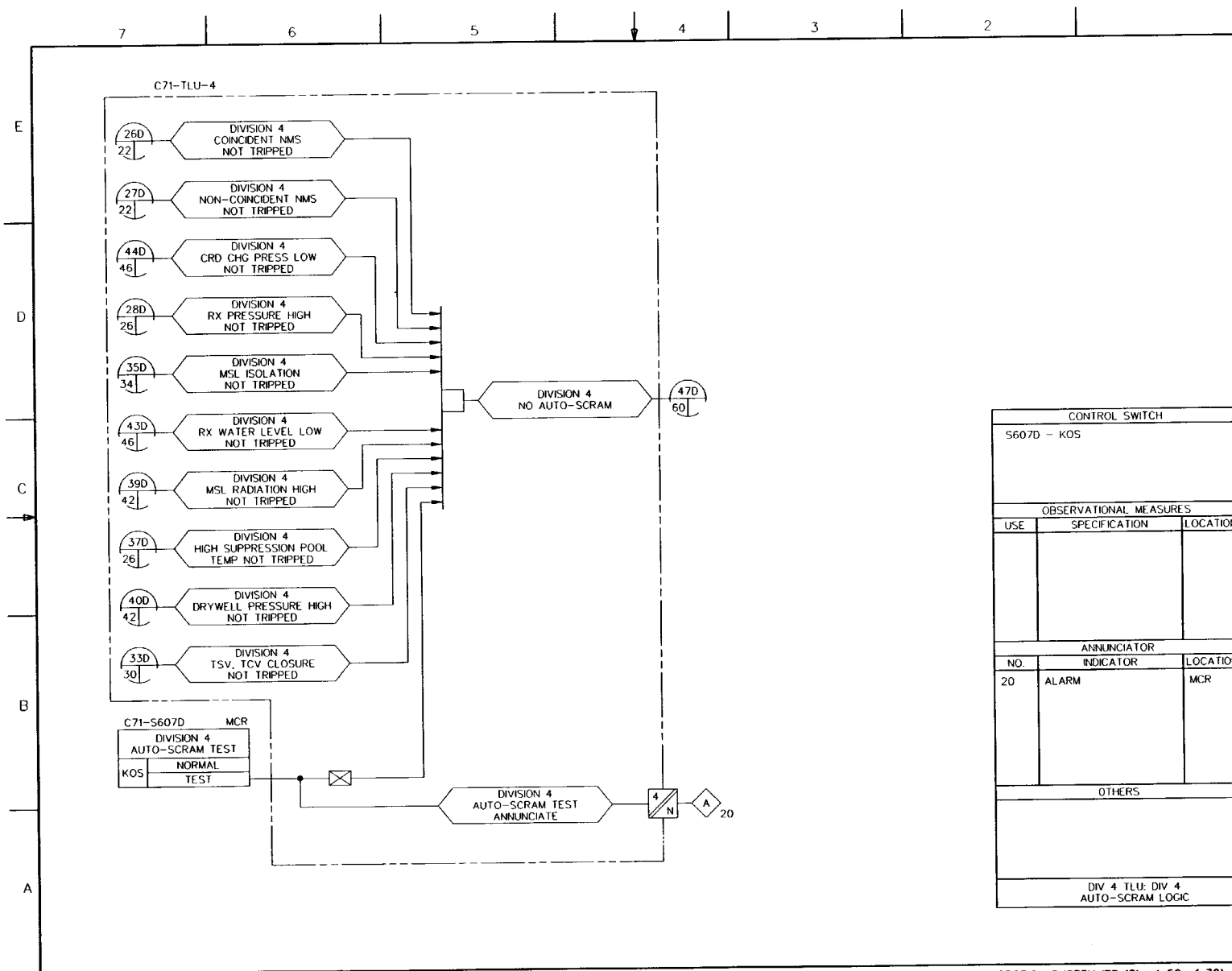
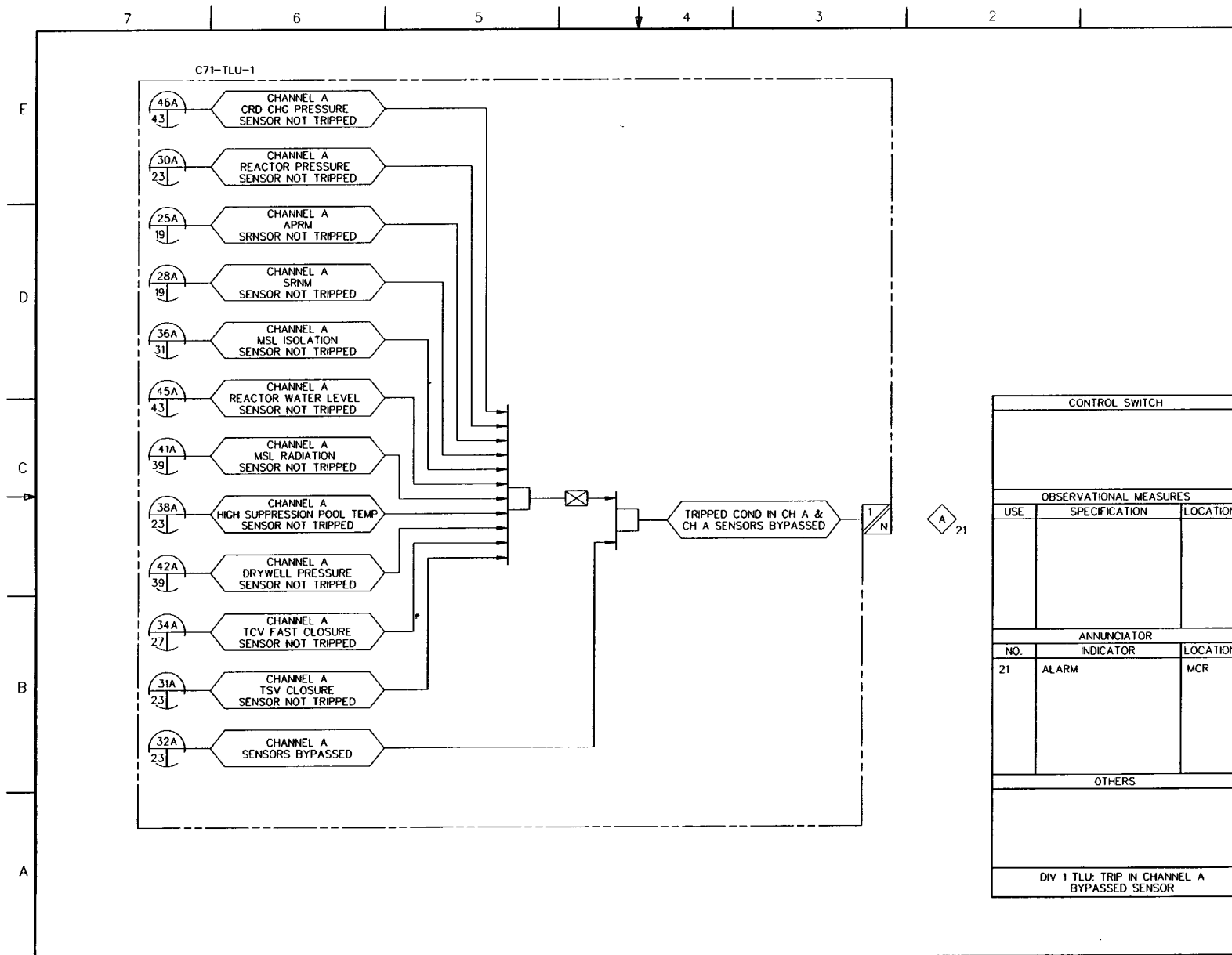


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 50 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.50



CONTROL SWITCH		
OBSERVATIONAL MEASURES		
USE	SPECIFICATION	LOCATION
ANNUNCIATOR		
NO.	INDICATOR	LOCATION
21	ALARM	MCR
OTHERS		
DIV 1 TLU: TRIP IN CHANNEL A BYPASSED SENSOR		

FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 51 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.51

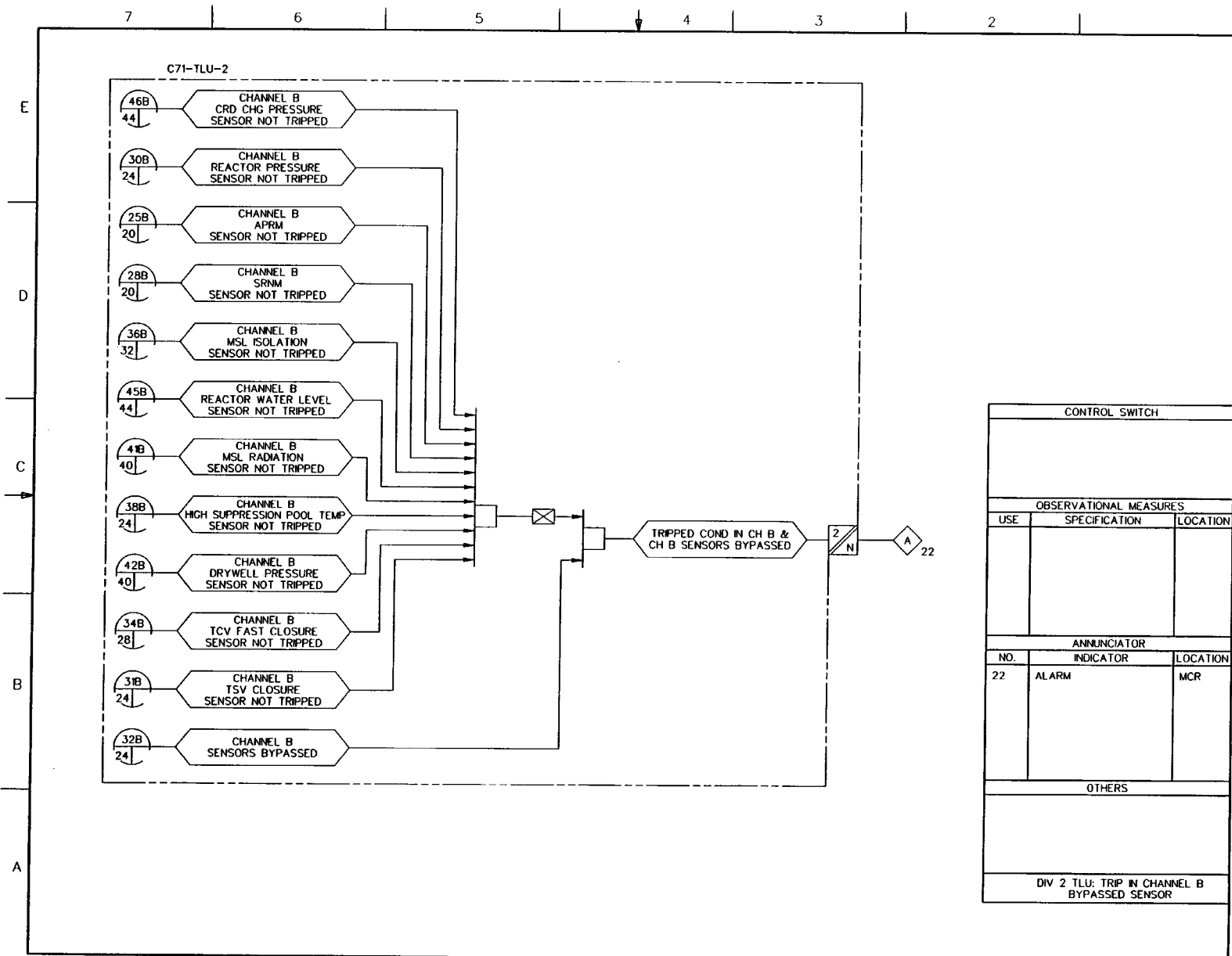


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 52 of 72)

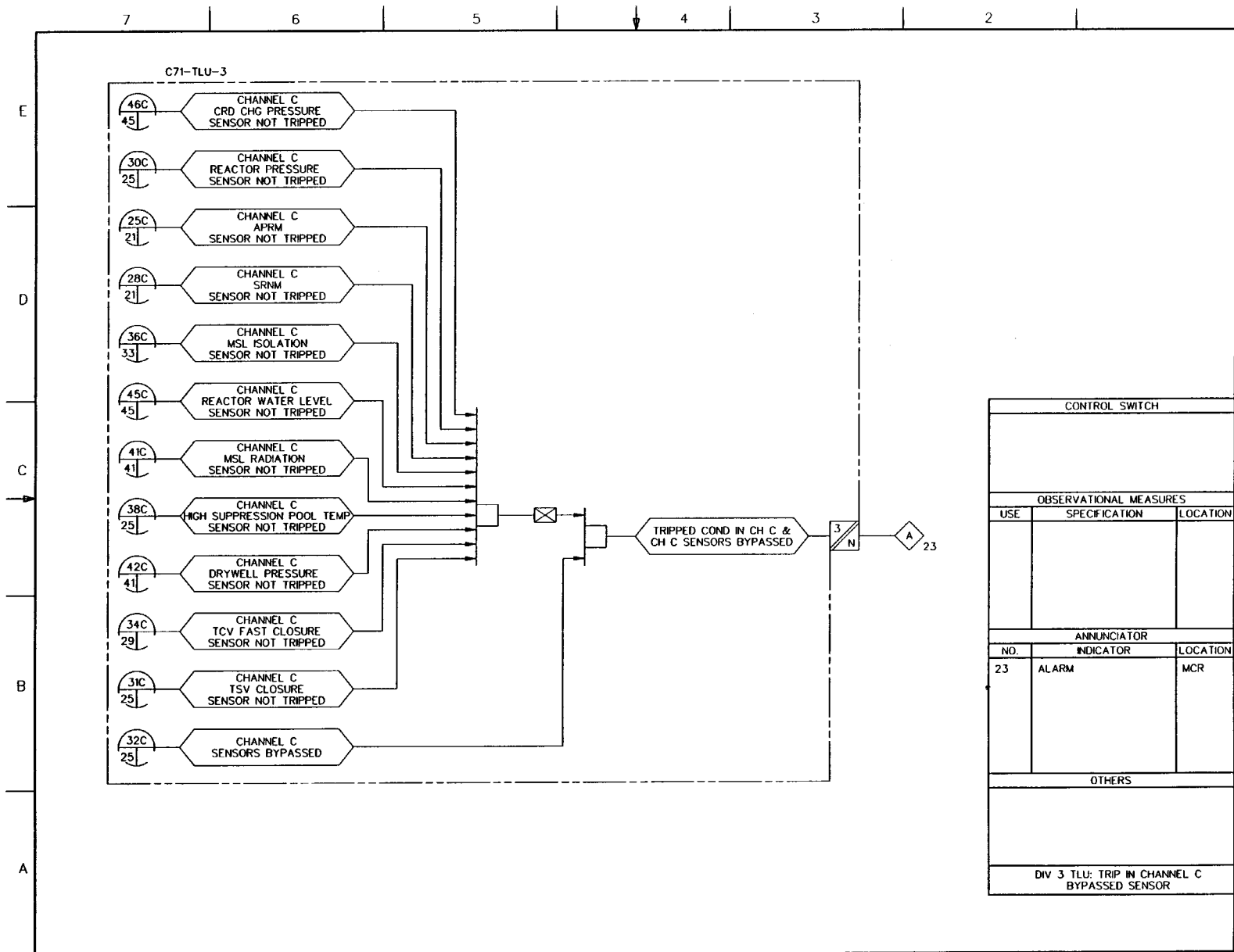


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 53 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.53

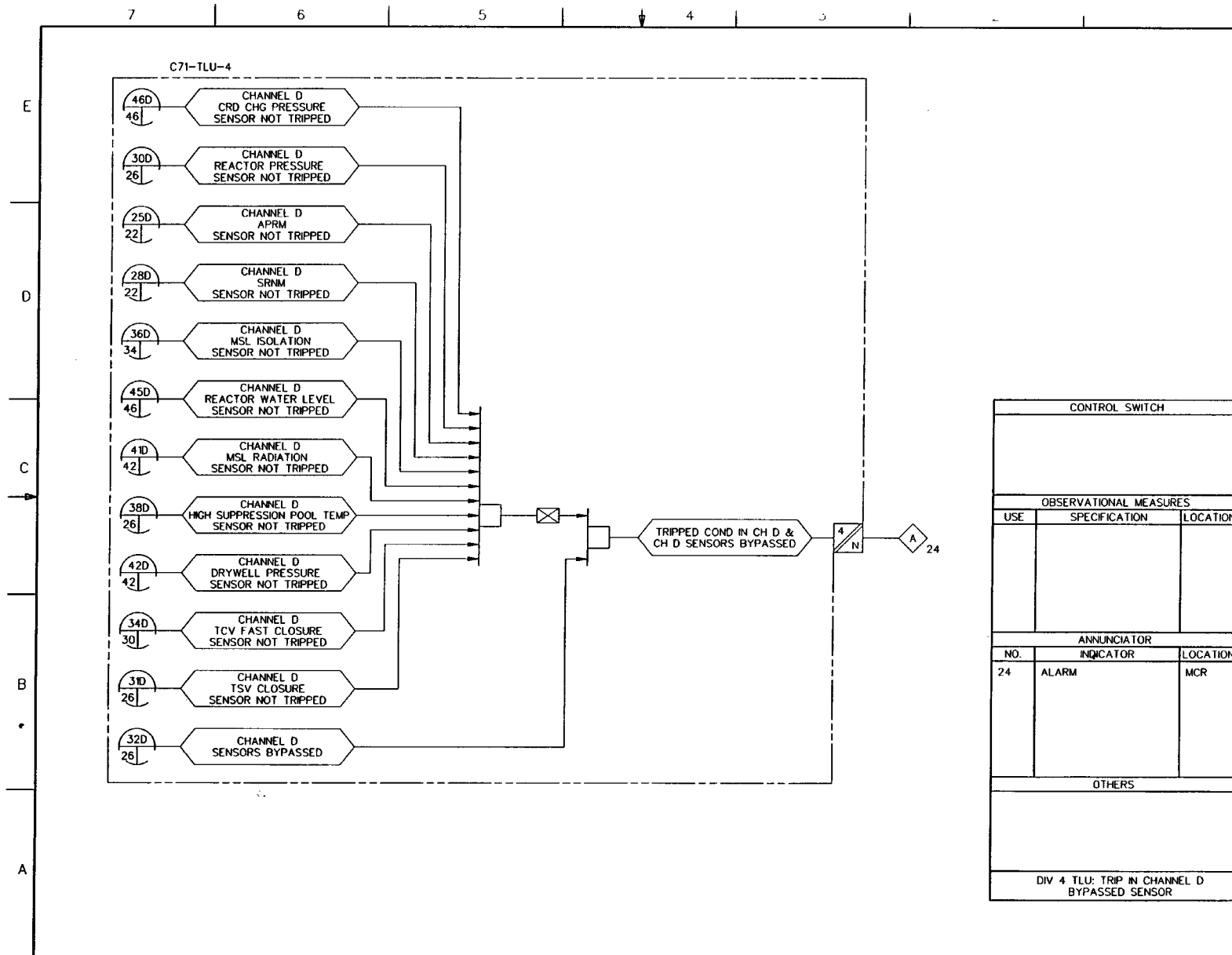


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 54 of 72)

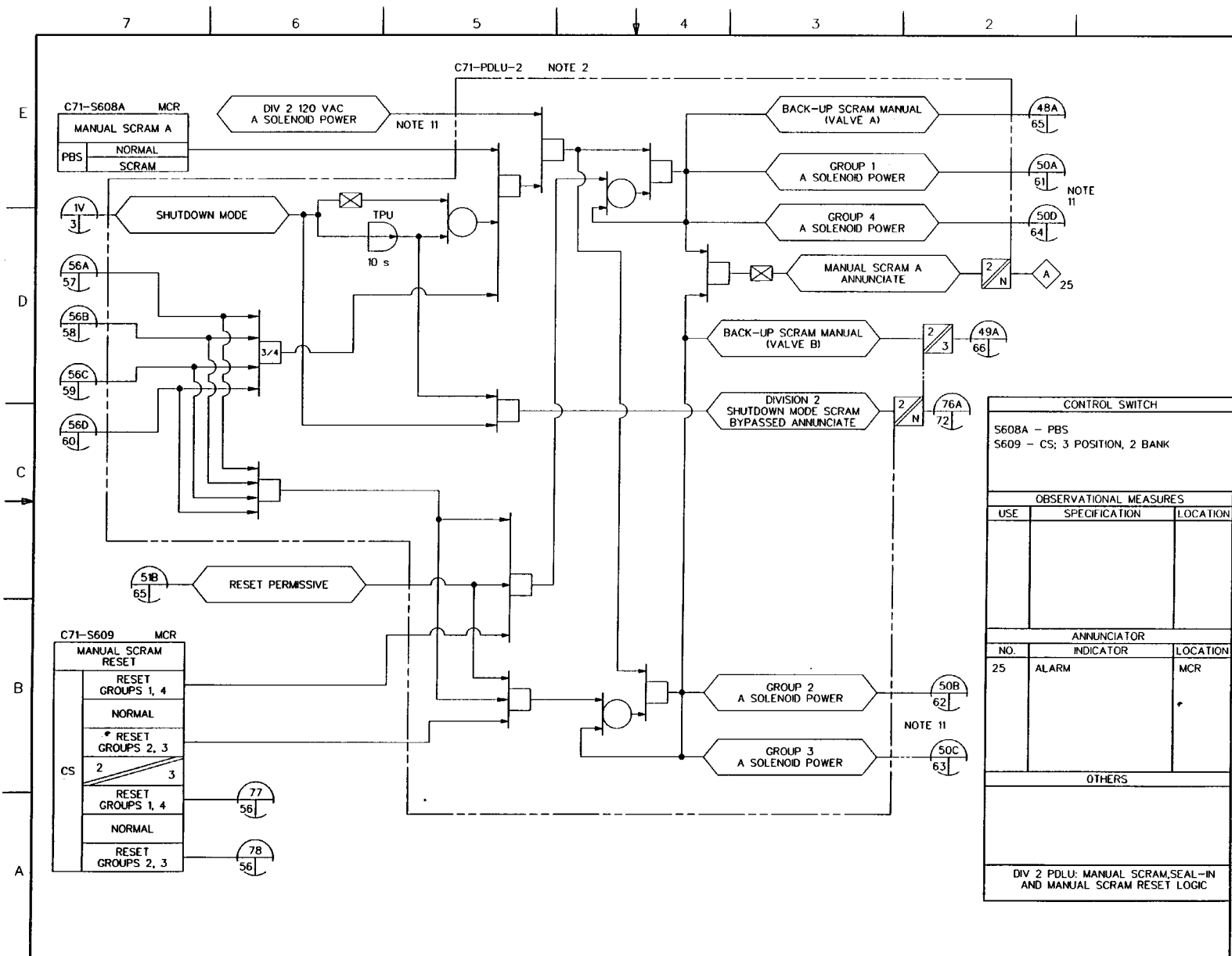


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 55 of 72)

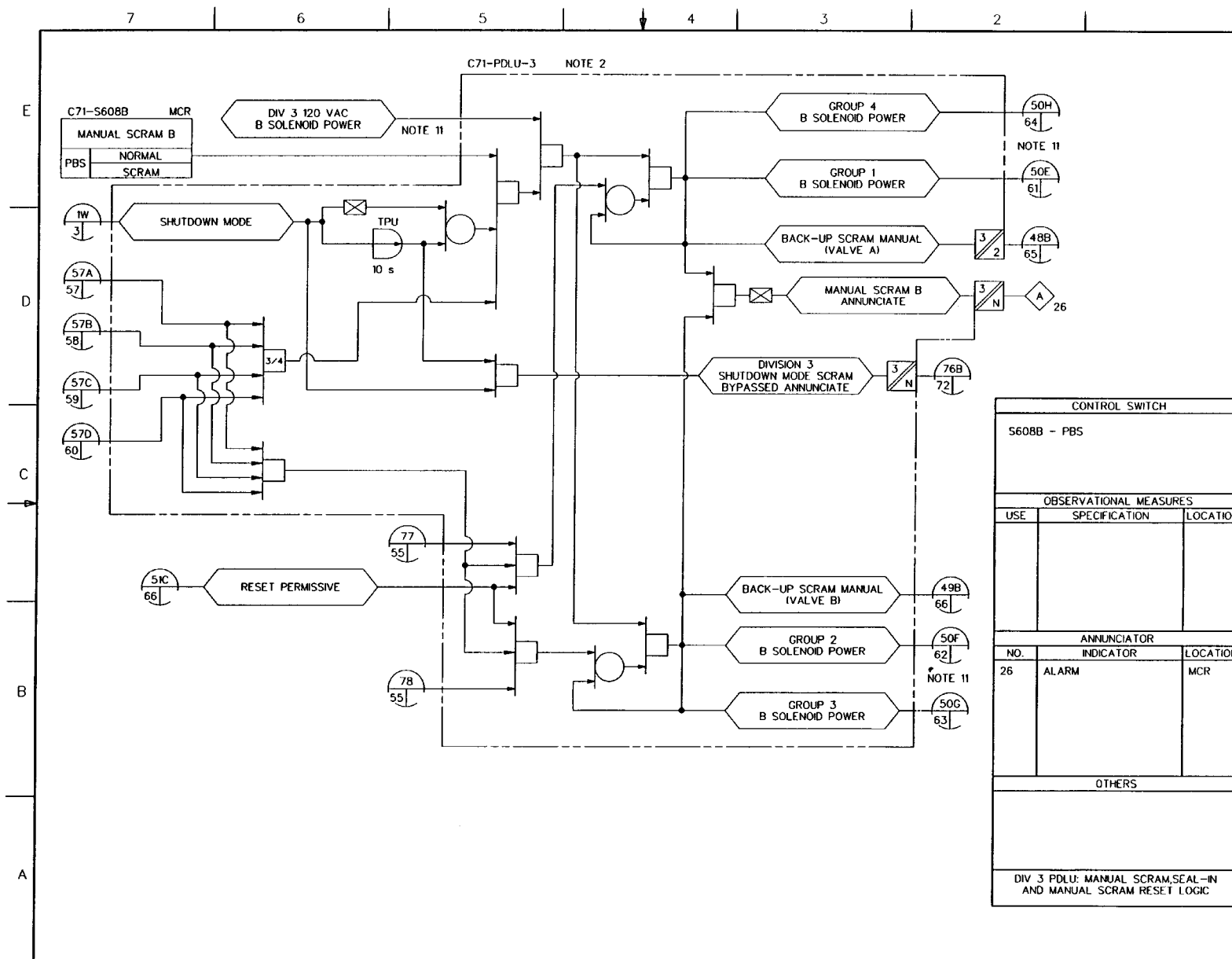


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 56 of 72)

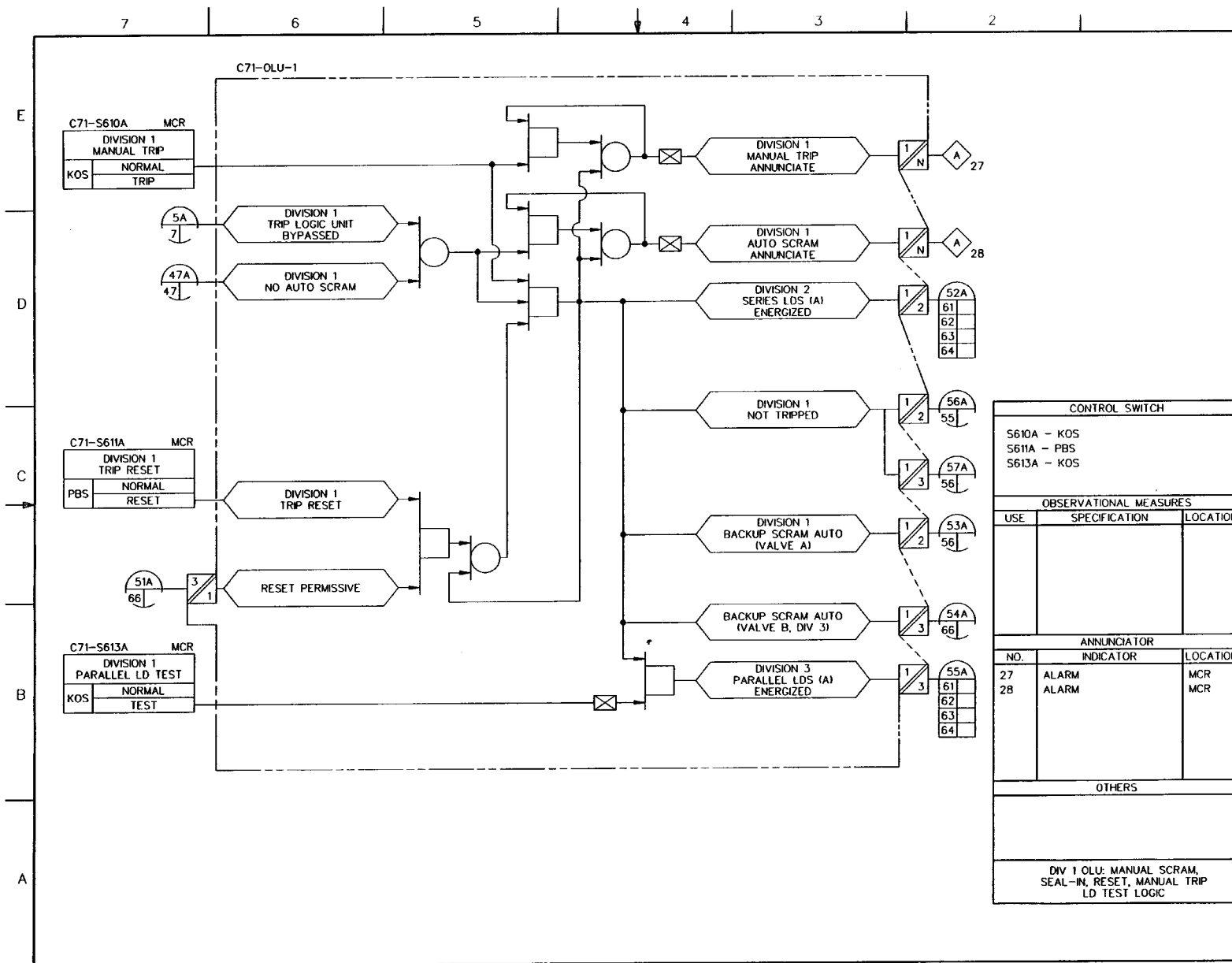


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 57 of 72)

ABWR DCD/Tier 2

Rev. 0

21-14.3.57

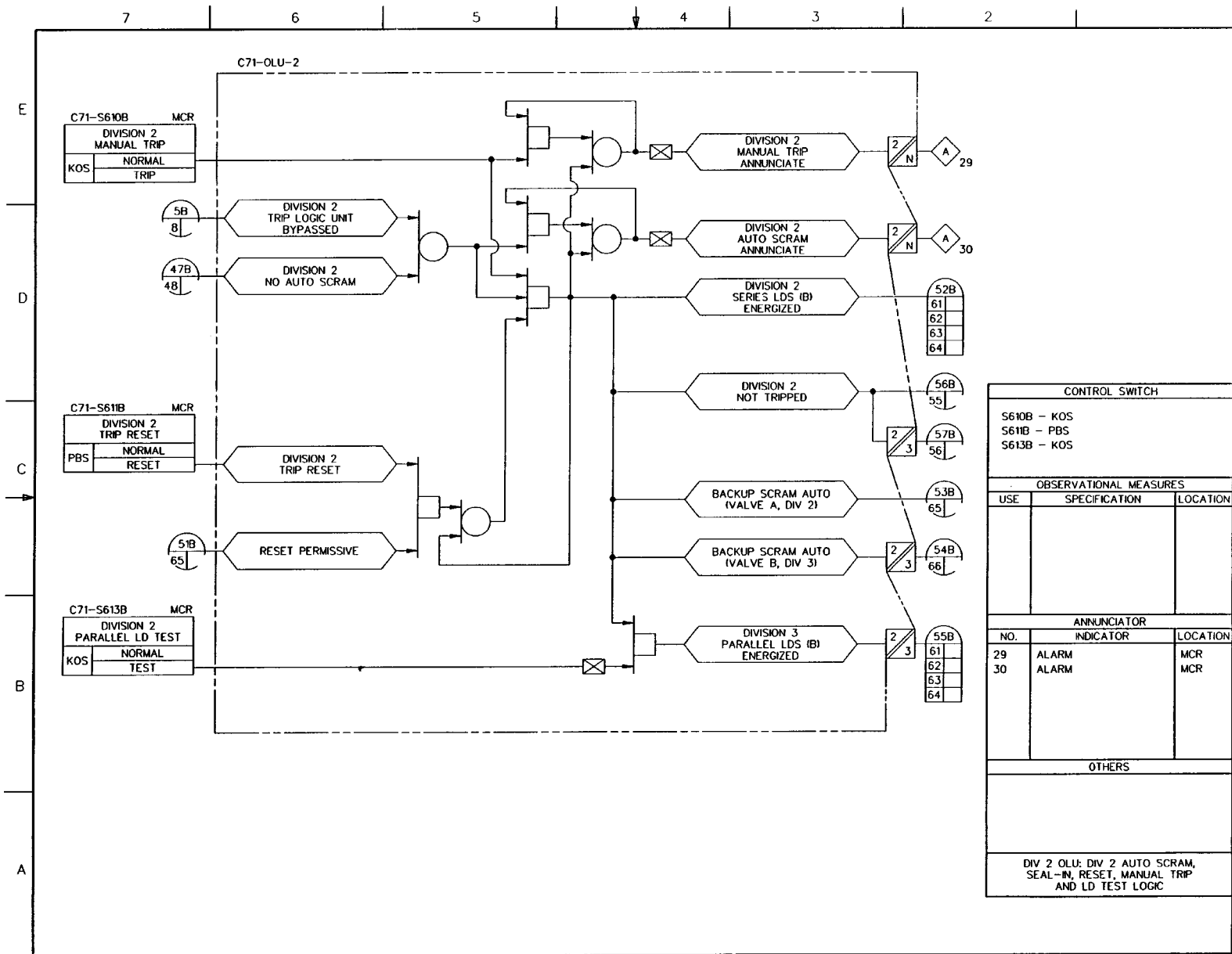


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 58 of 72)

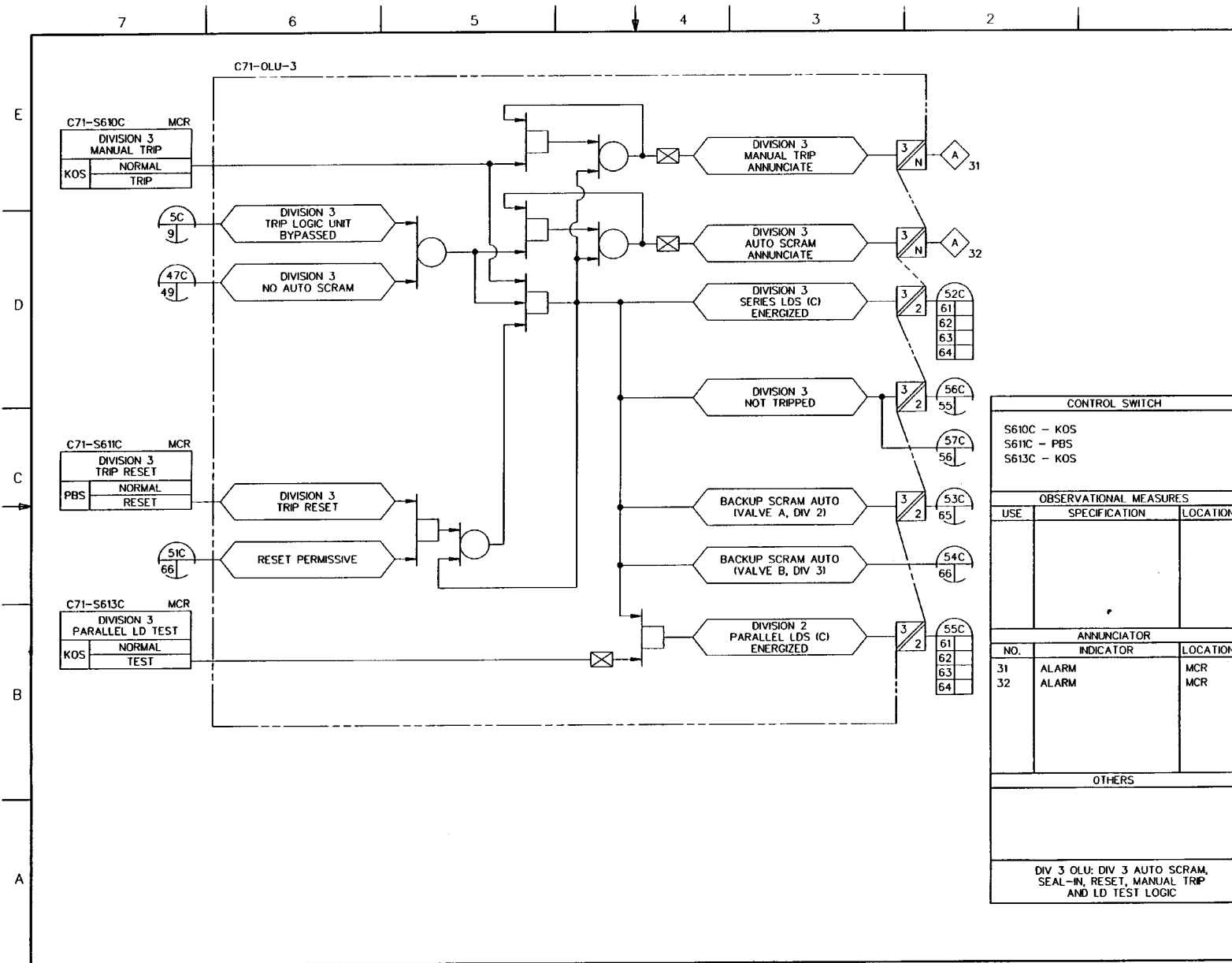


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 59 of 72)
ABWR DCD/Rev 2 Rev. 0 21-14.3.59

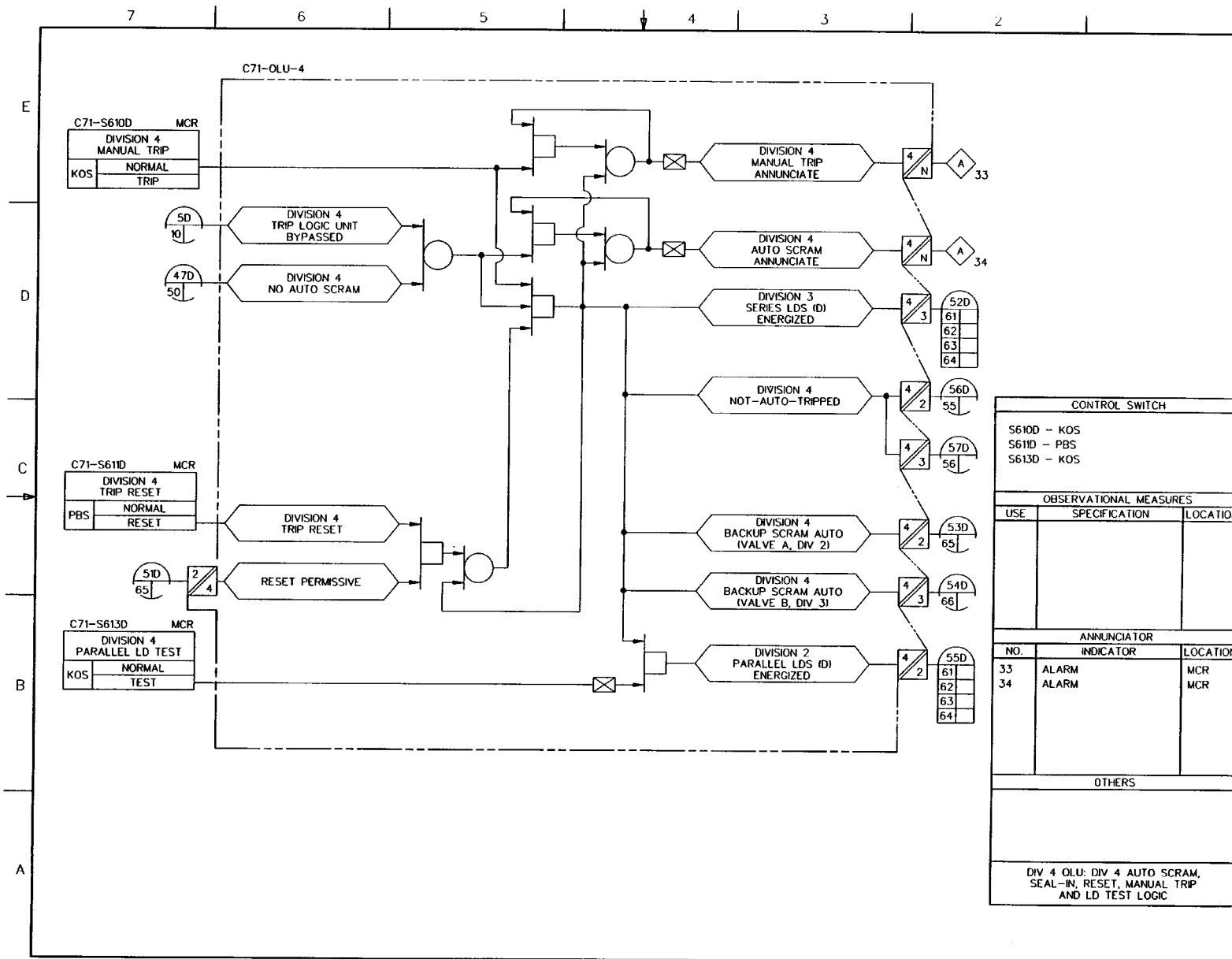


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 60 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.60

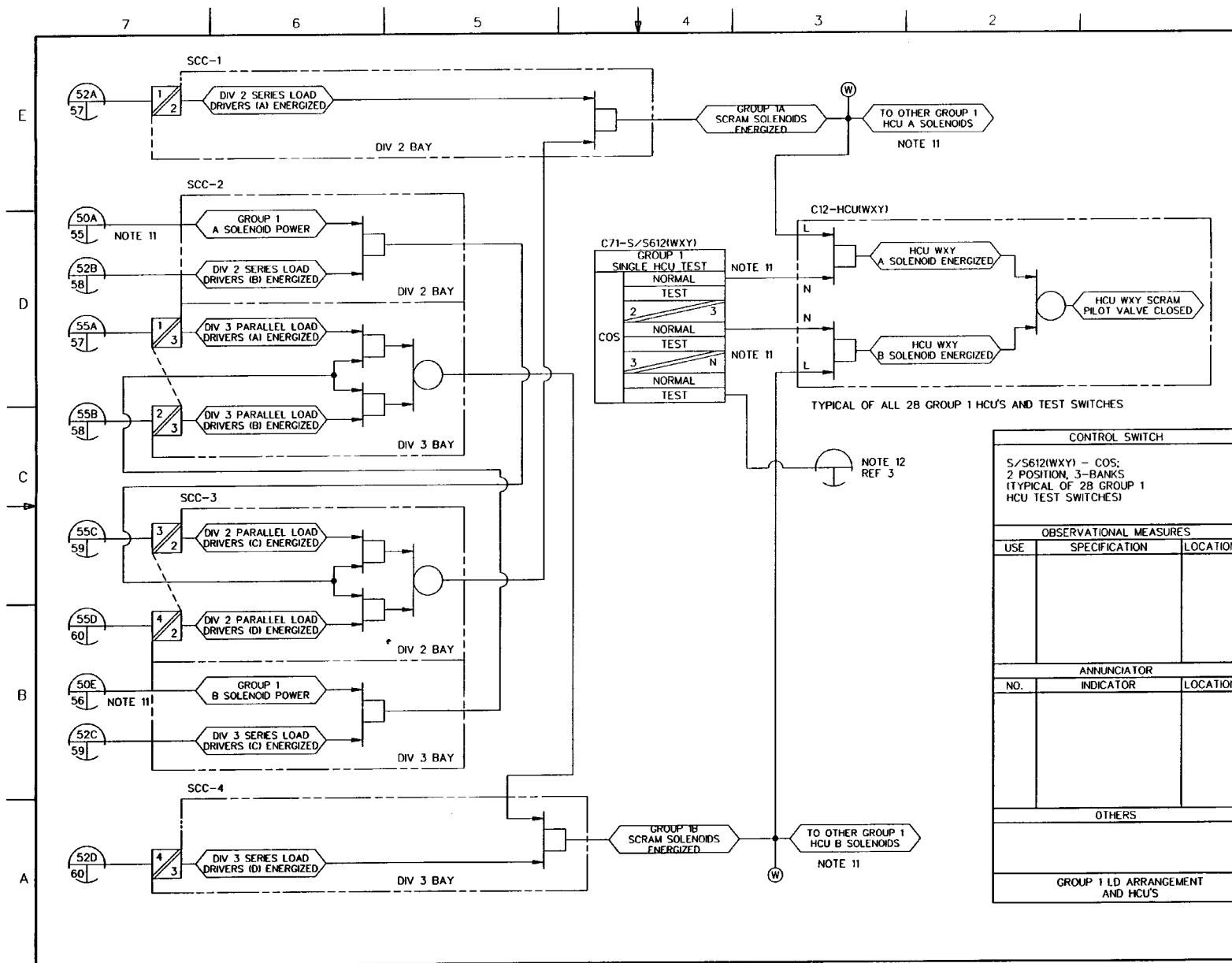


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 61 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.61

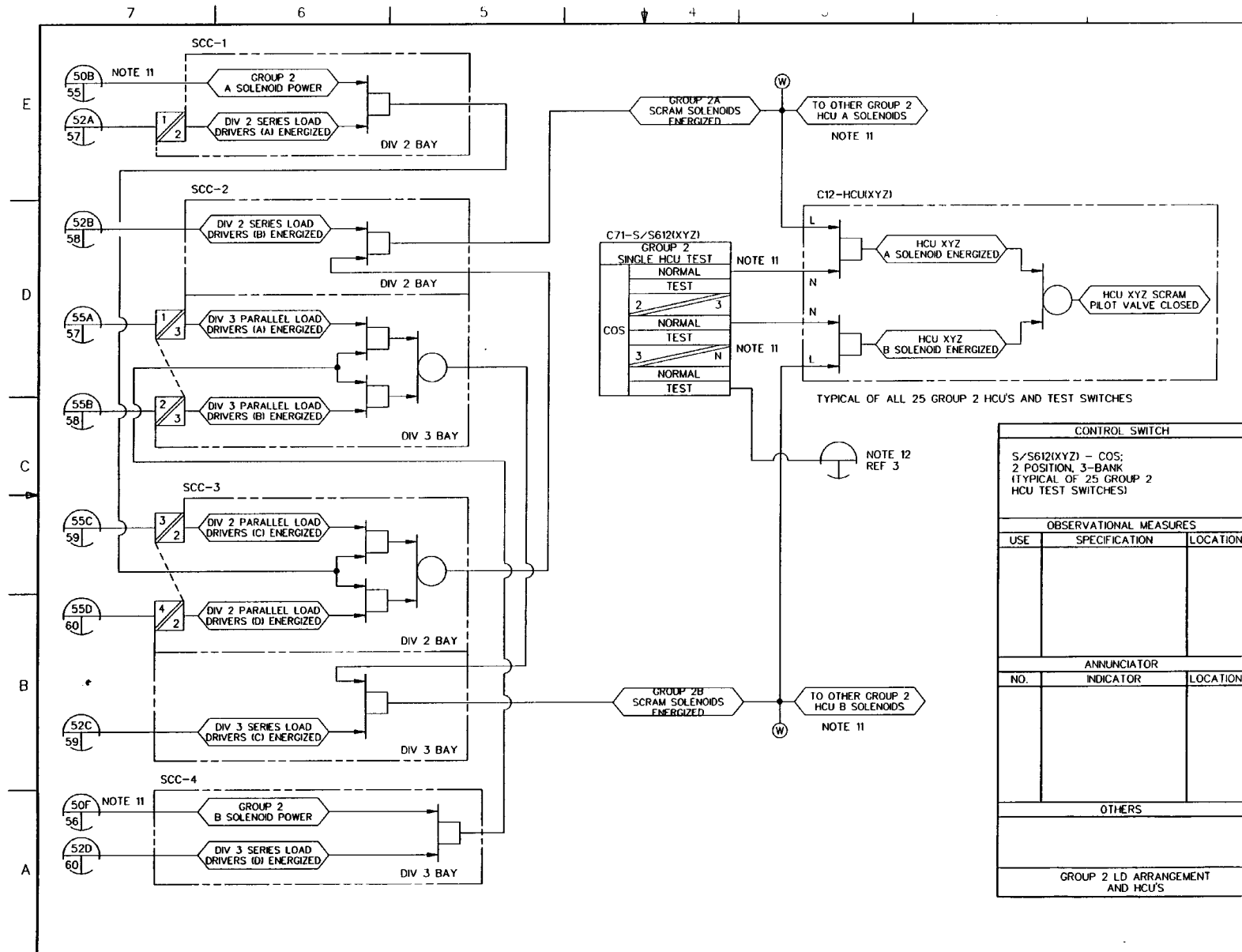


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 62 of 72)

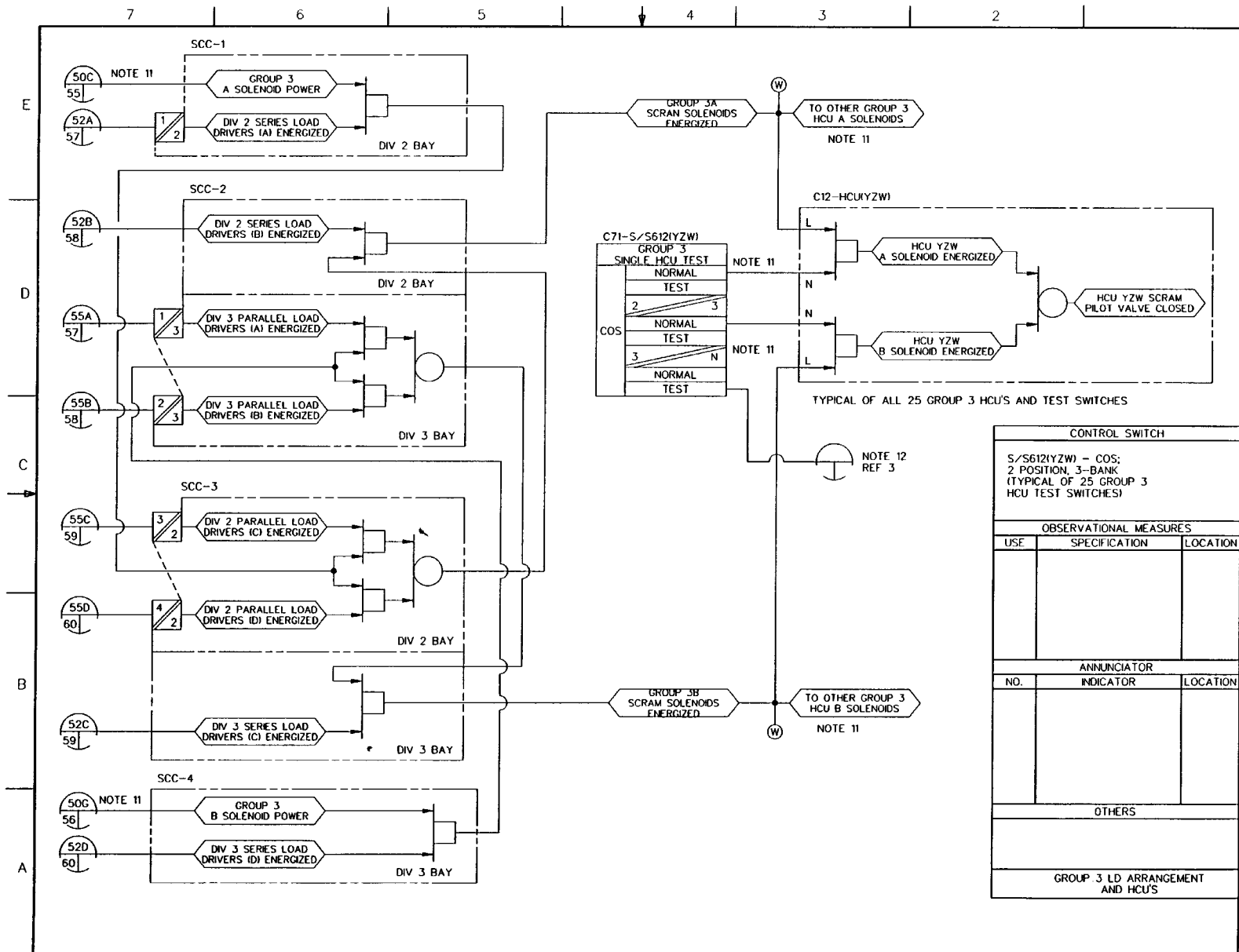


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 63 of 72)
ABWR DCD/Tier 2 Rev. 0 21-14.3.63

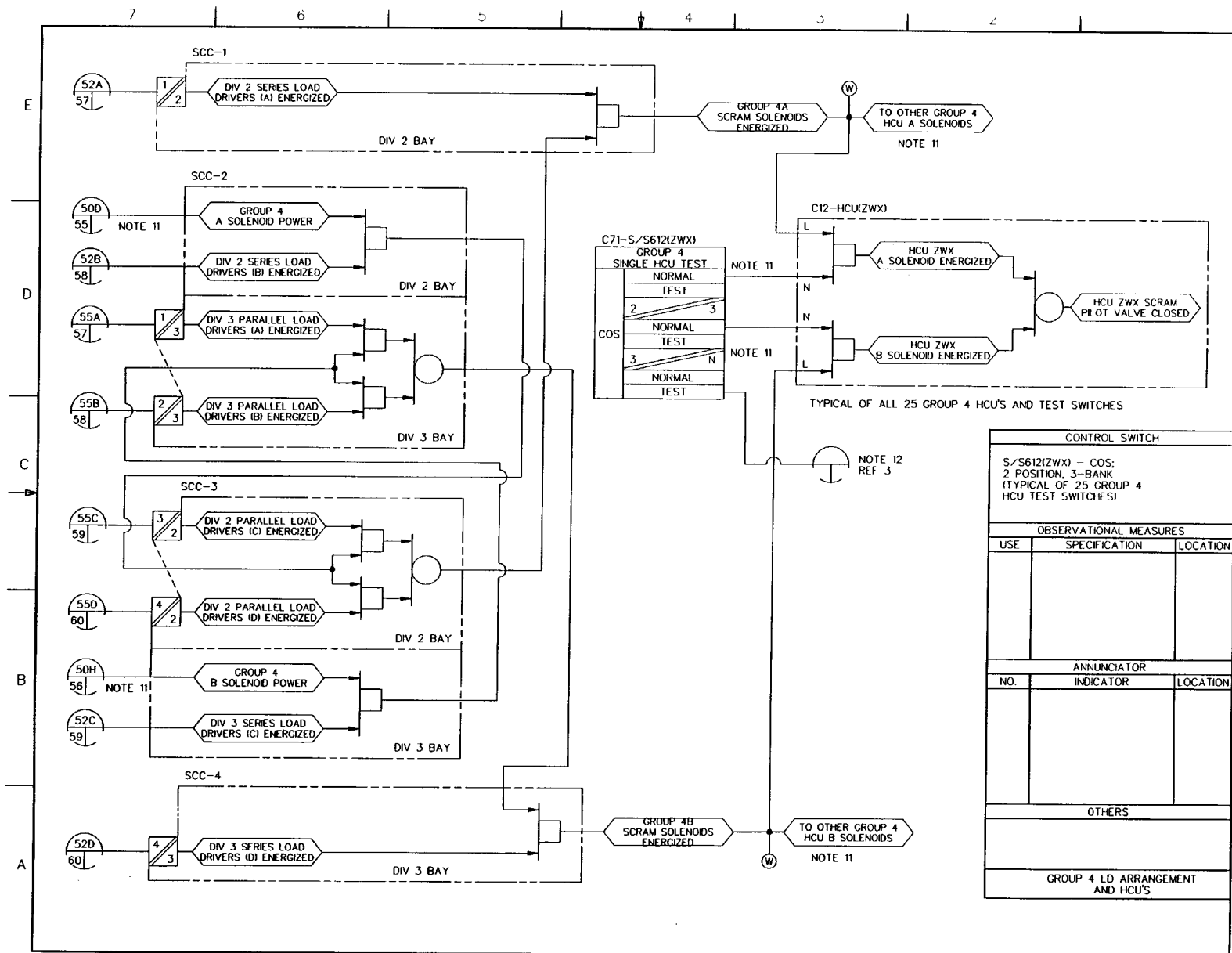


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 64 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.64

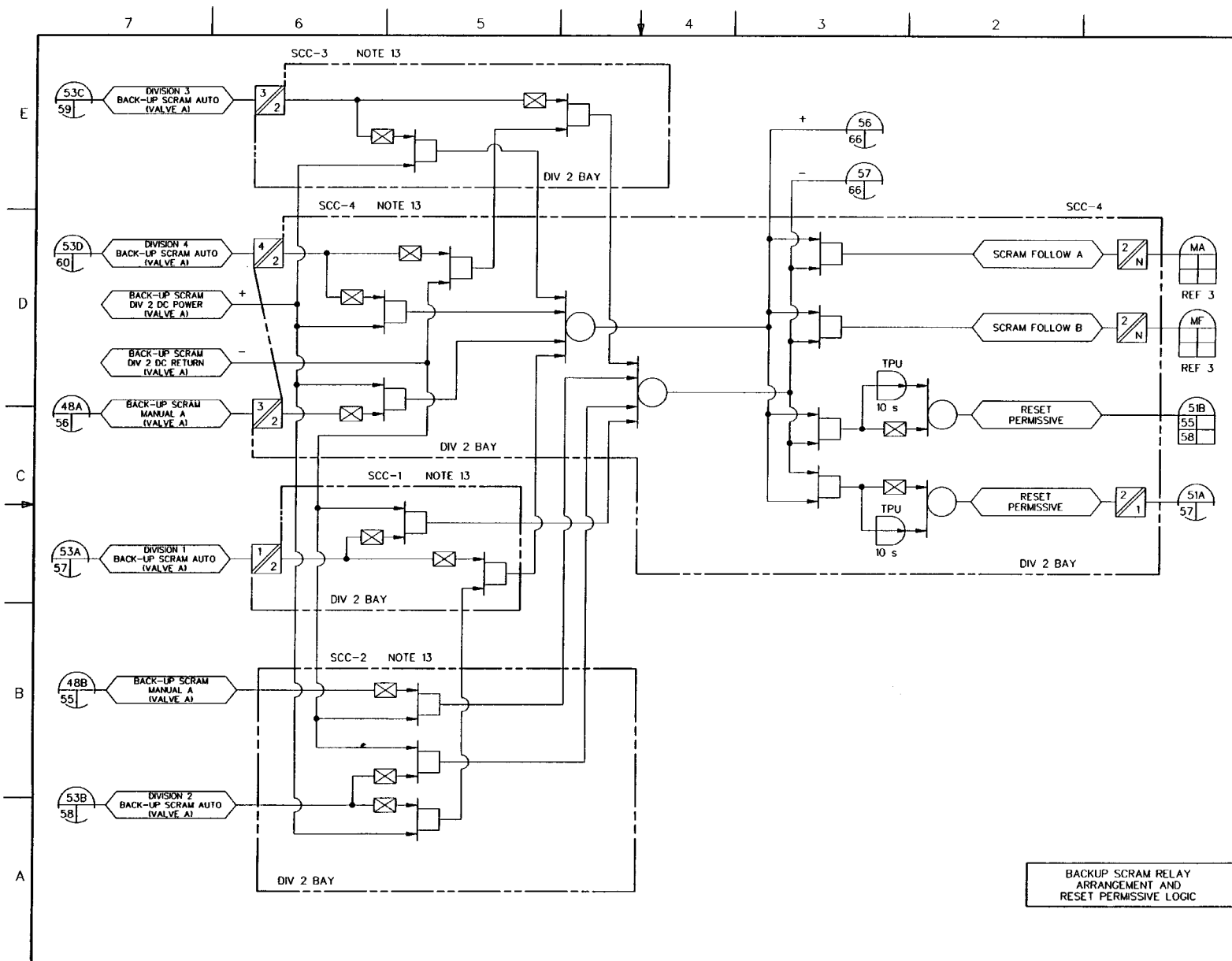


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 65 of 72)
ABWR DCD/Tier 2 Rev. 0 21-143.65

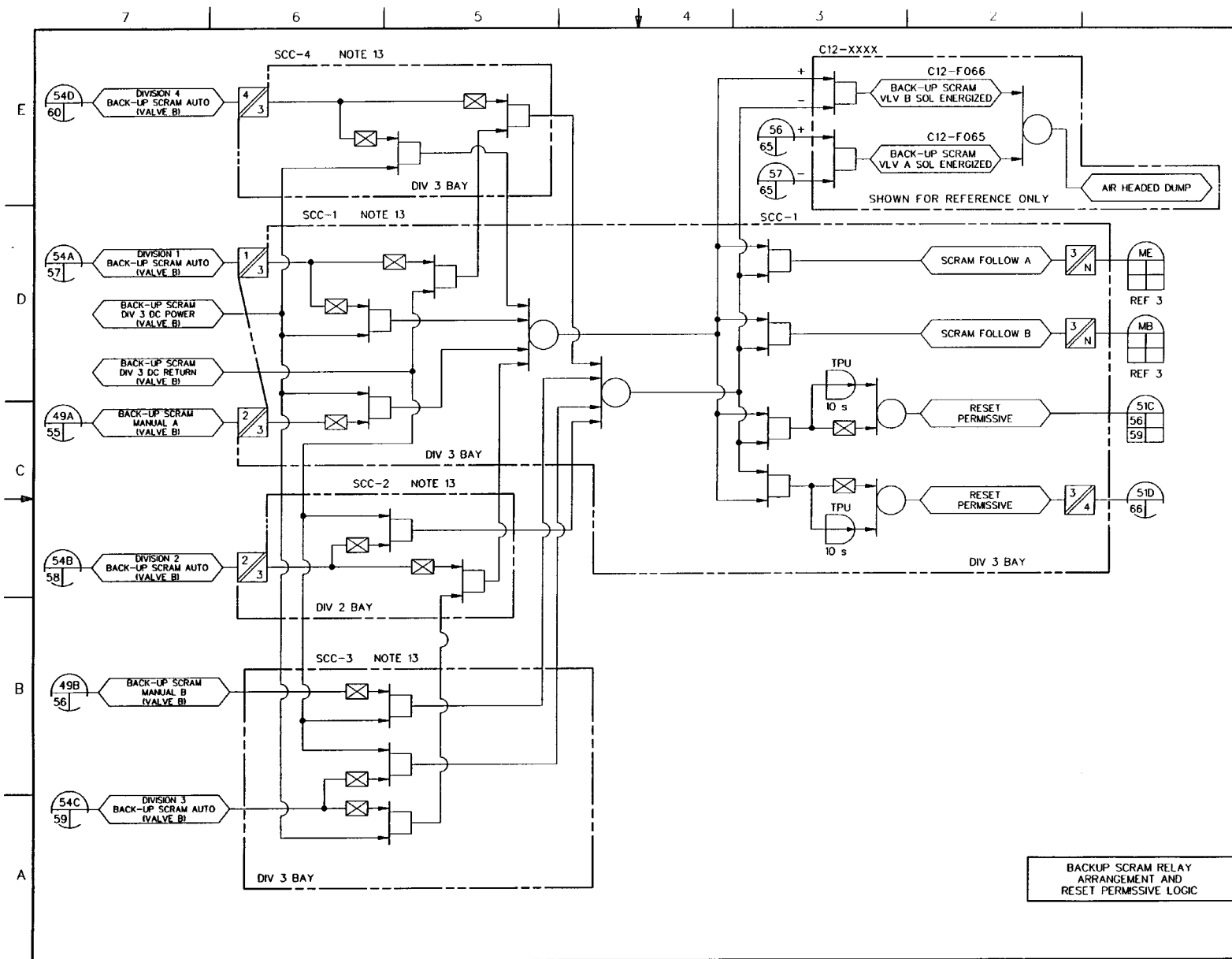


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 66 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-143.66

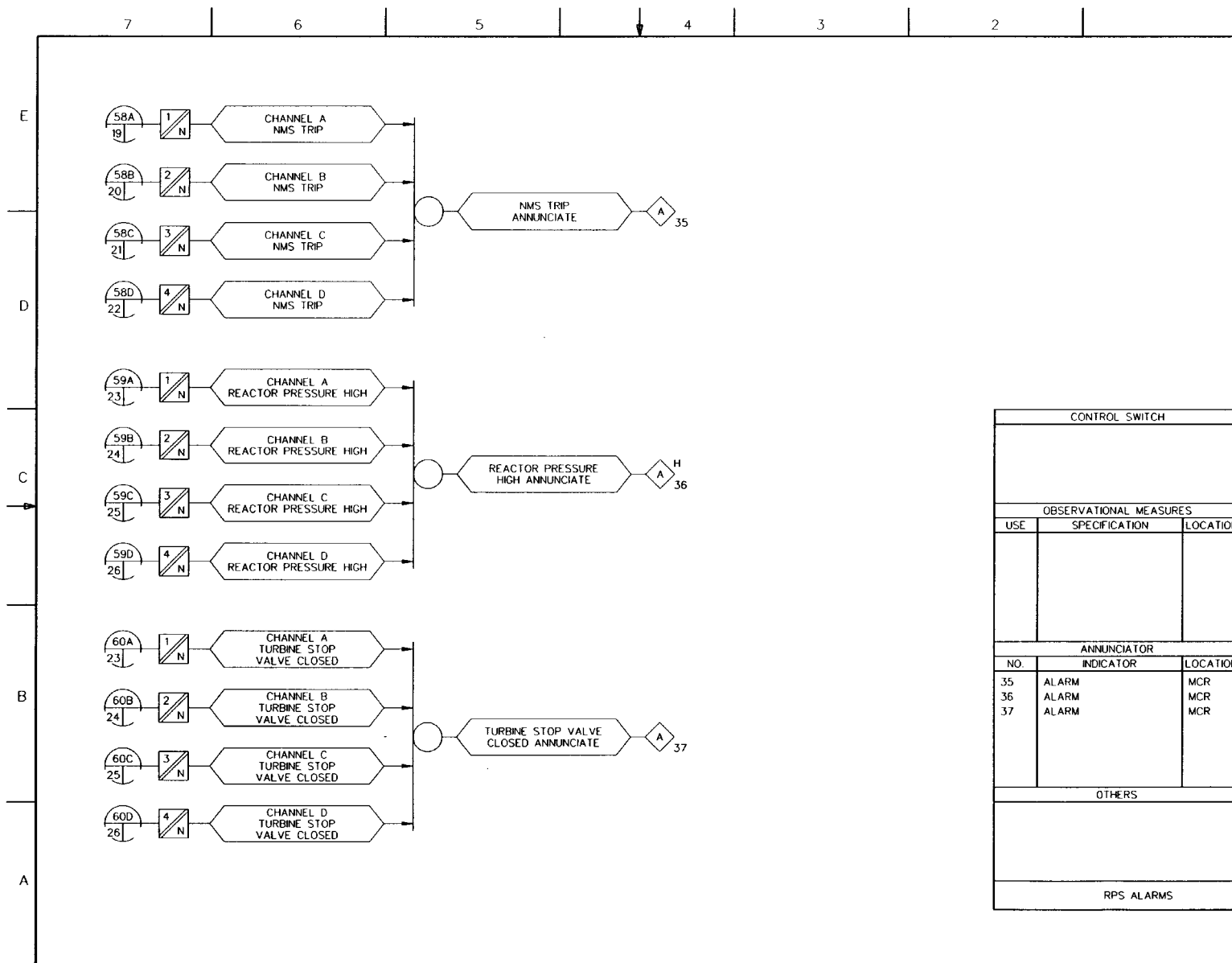


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 67 of 72)

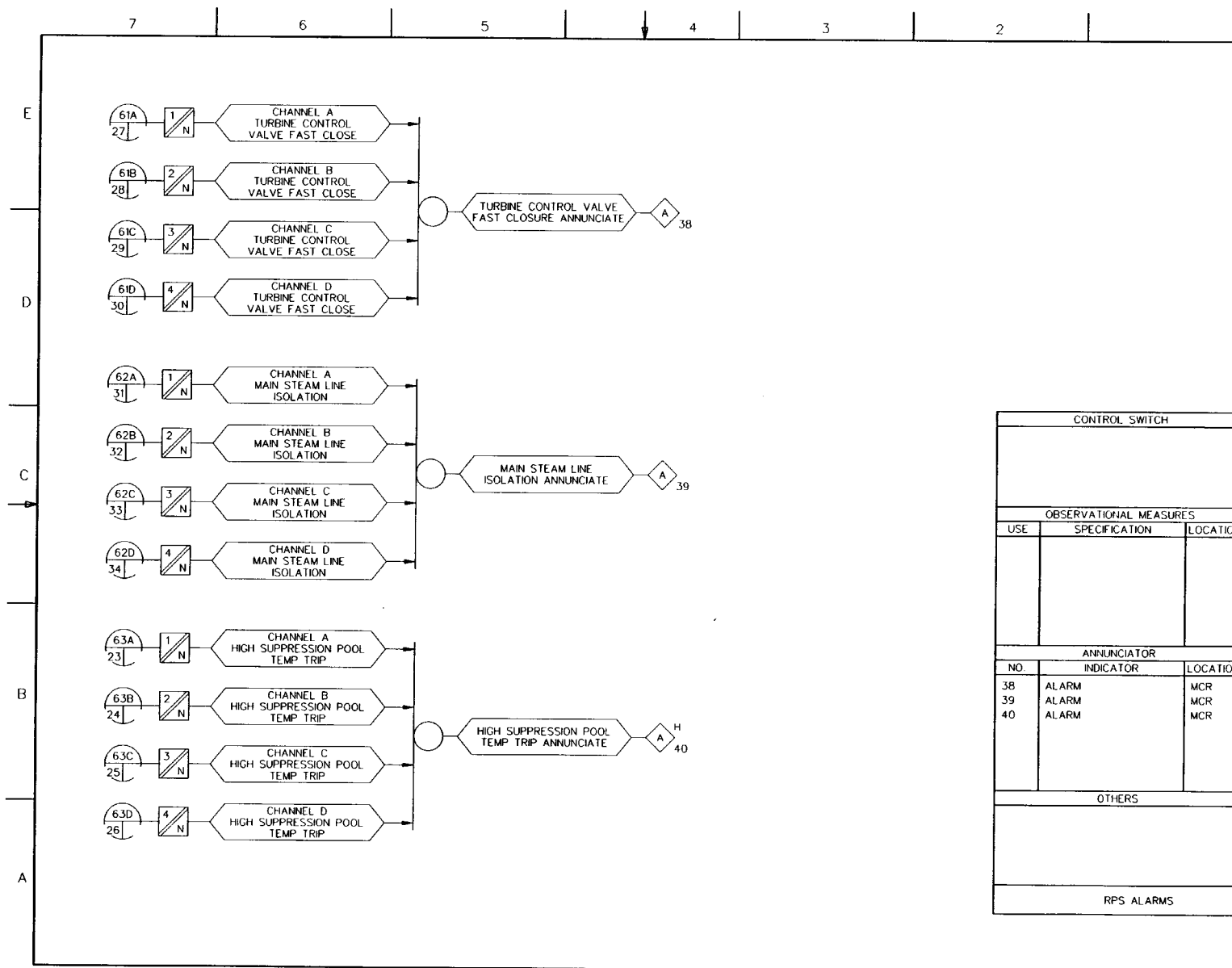


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 68 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.68

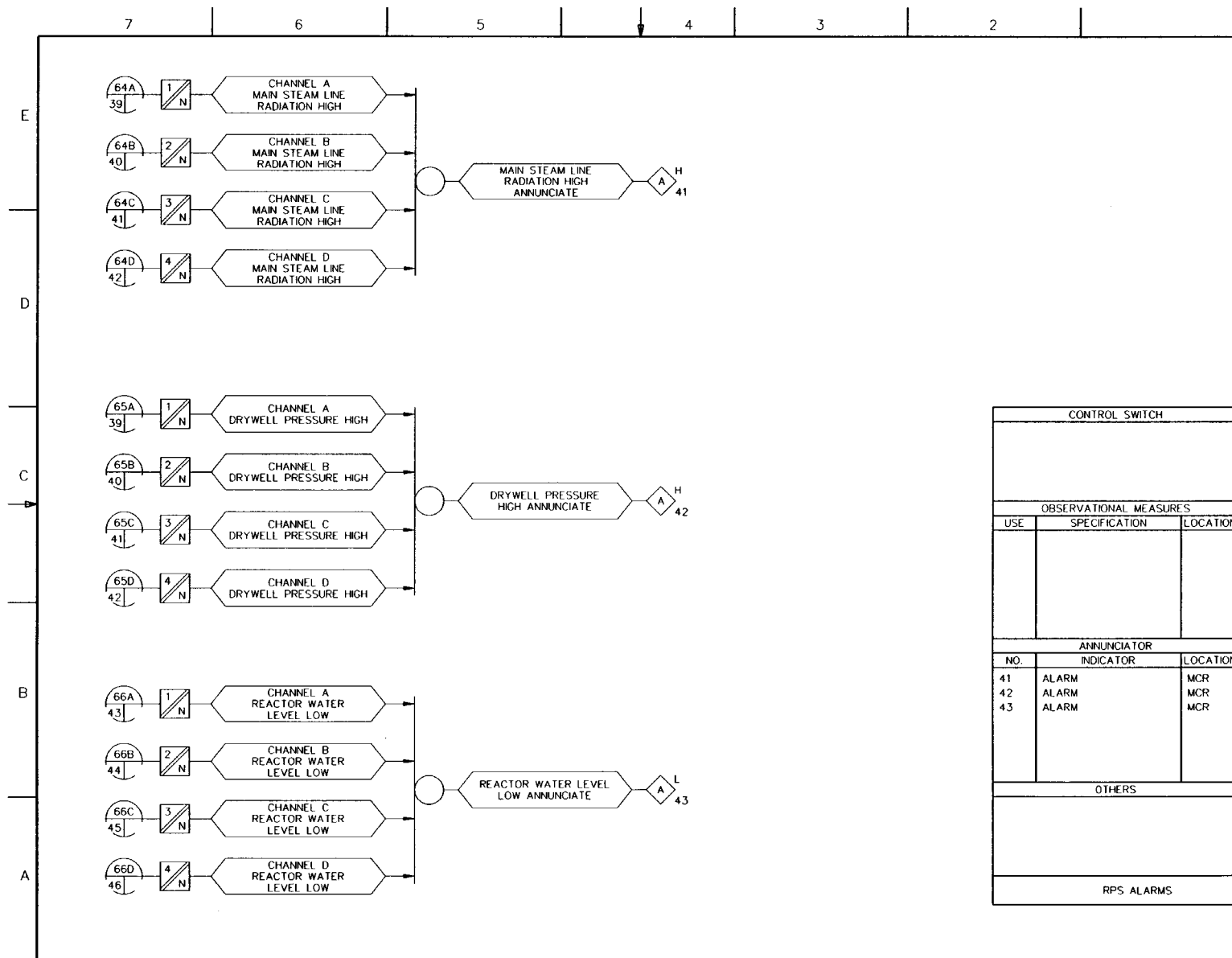


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 69 of 72)

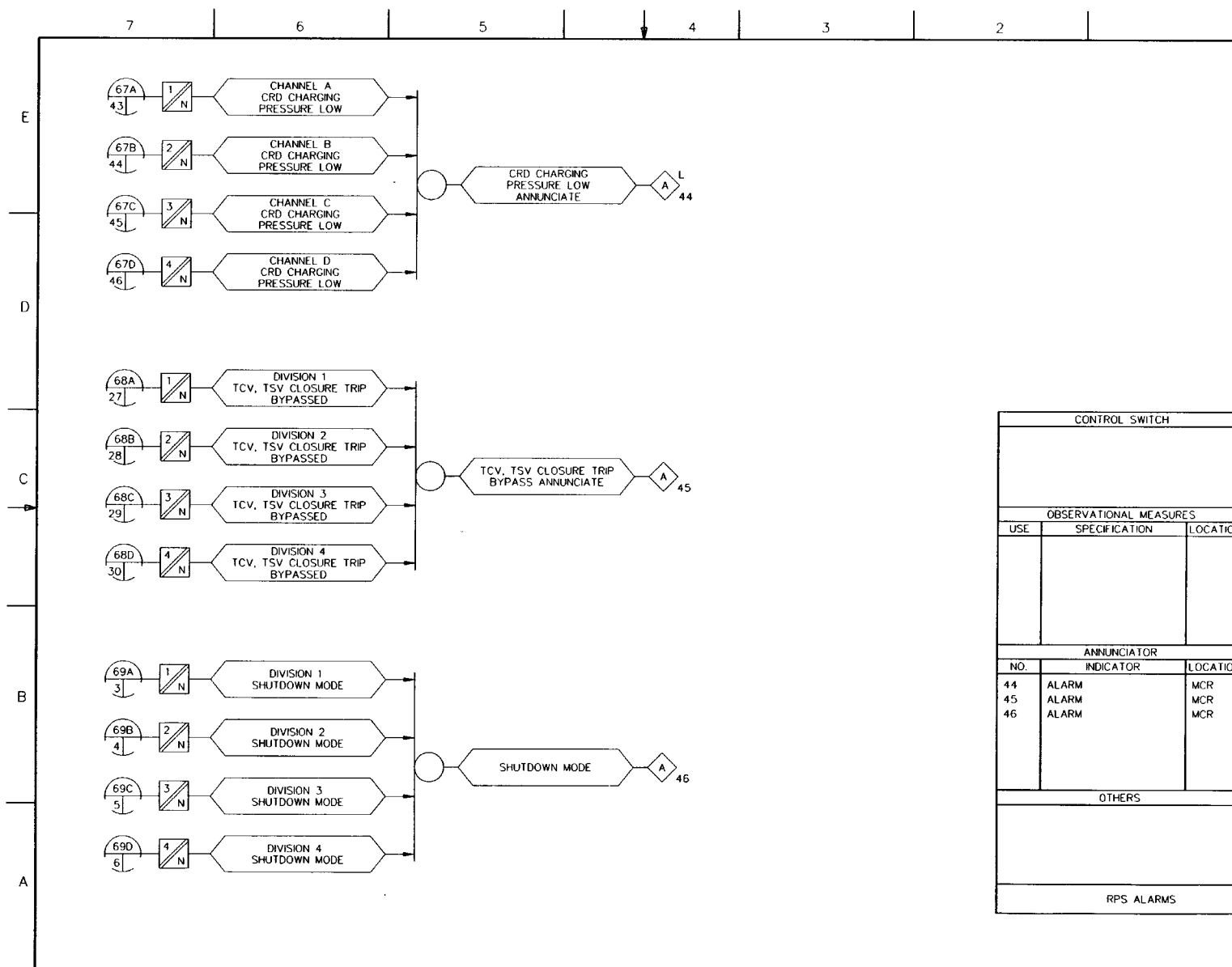


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 70 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.70

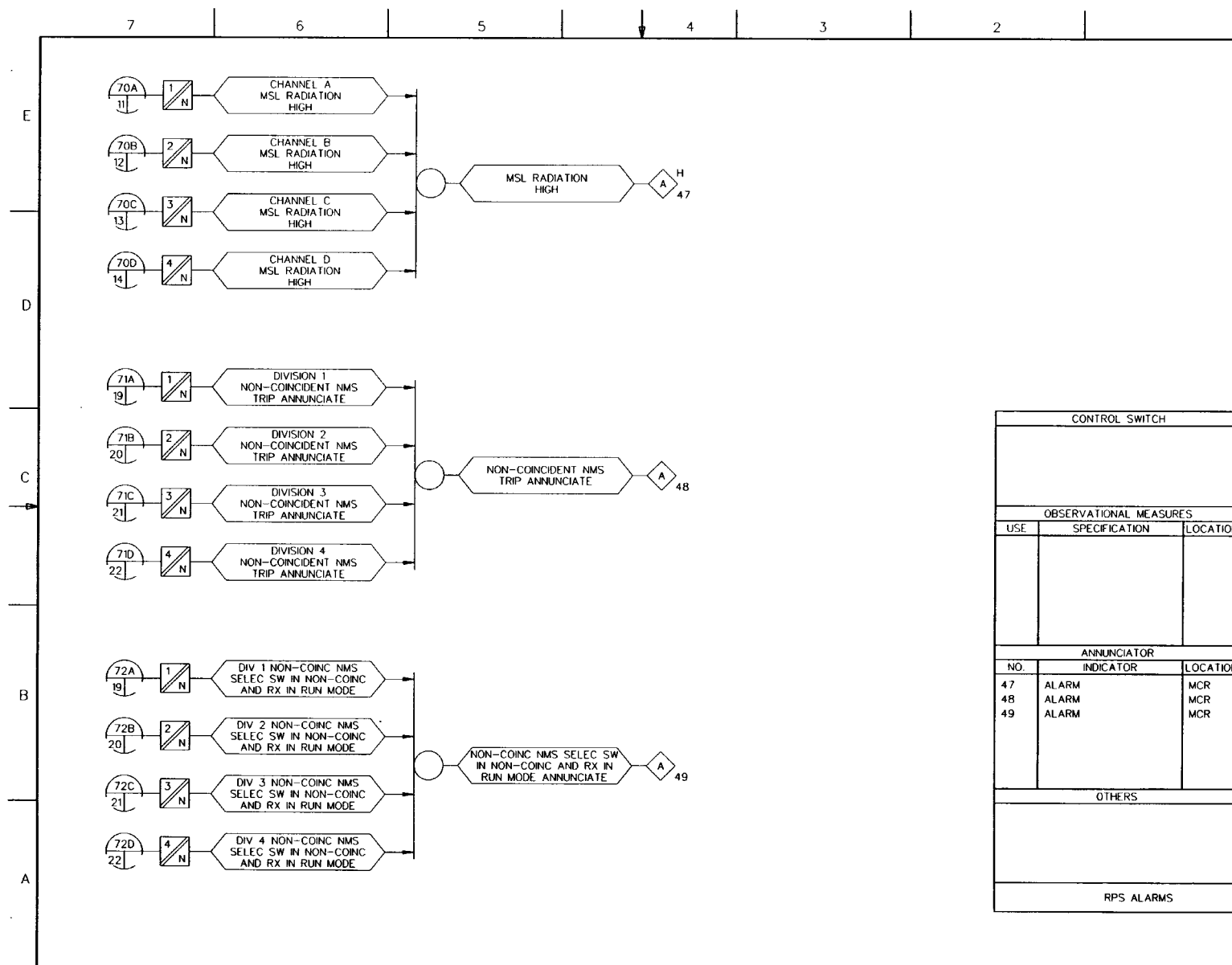


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 71 of 72)
 ABWR DCD/Tier 2 Rev. 0 21-14.3.71

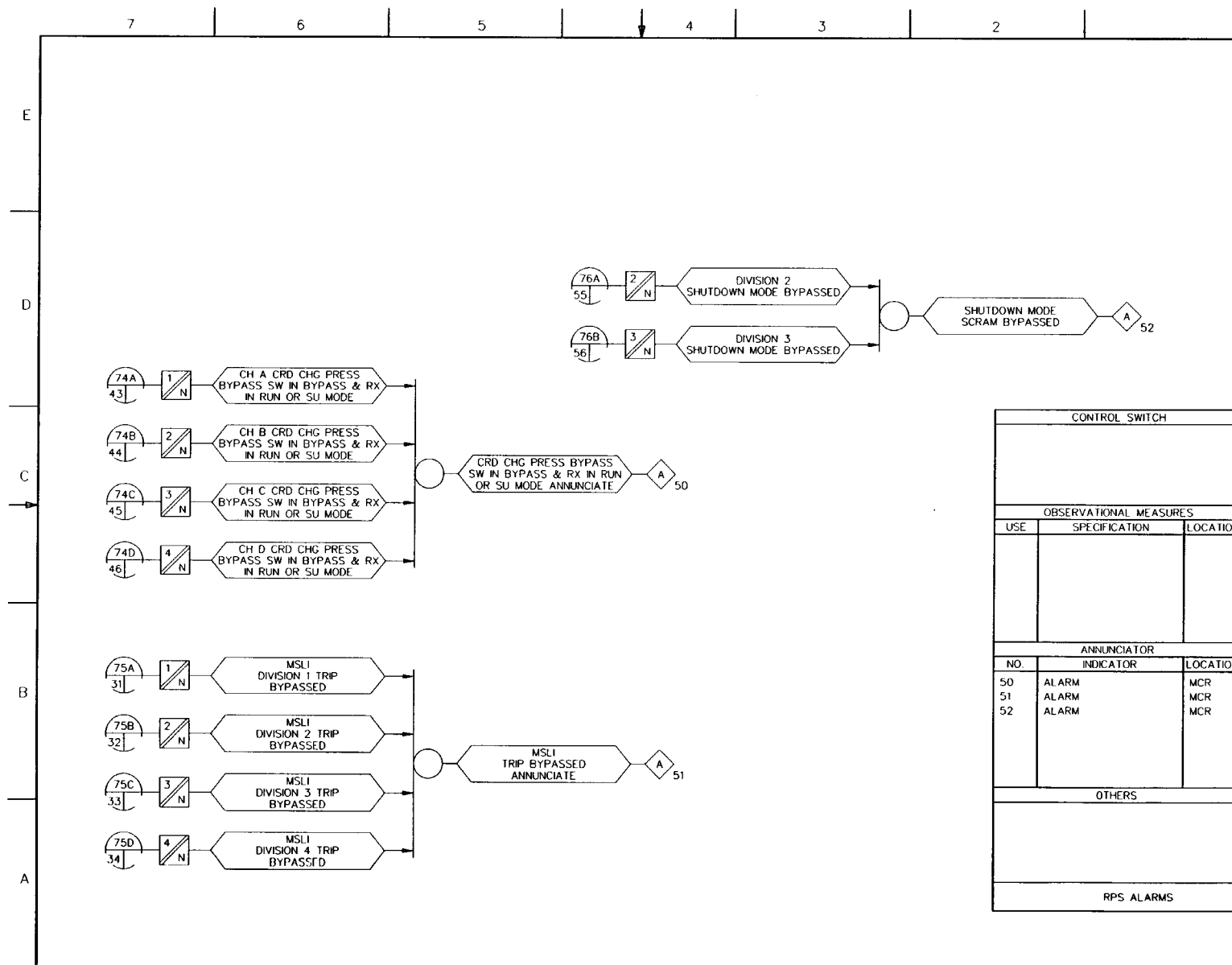


FIGURE 7.2-10 REACTOR PROTECTION SYSTEM IBD (Sheet 72 of 72)

7 6 5 4 3 2

NOTES:

1. ALL EQUIPMENT AND INSTRUMENTS FOR THIS SYSTEM ARE PREFIXED BY SYSTEM MPL NO. E22 UNLESS OTHERWISE NOTED.

2. DIVISIONAL SIGNALS SHALL BE ISOLATED FROM THE NON-IE ALARM.

3. SYSTEM R10, ELECTRICAL POWER DISTRIBUTION SYSTEM, SHALL PERMIT MOTOR TO START ONLY FOR PUMP VOLTAGE >70% NOMINAL.

4. THE LOGIC DESIGN SHALL INCORPORATE PROVISIONS TO REVERT 2/4 LOGIC TO 2/3 LOGIC DURING BYPASS OF A SINGLE DIVISION OF SENSORS. ALSO, THE LOGIC DESIGN SHALL NOT PERMIT THE BYPASS OF MORE THAN ONE DIVISION OF SENSORS AT A TIME.

5. SETPOINT VALUES ARE PRELIMINARY AND WILL BE FINALIZED IN DETAILED DESIGN.

6. THIS EQUIPMENT IS ALSO CONTROLLED BY THE REMOTE SHUTDOWN SYSTEM FOR HPCF LOOP "B" ONLY. SEE REF. DOC. 2 FOR DETAILED HPCF "B" AND RSS INTERFACES.
7. THE ELECTRICAL POWER DISTRIBUTION SYSTEM (REF. DOC. 6) SHALL PROVIDE PUMP STOP SIGNALS DUE TO BUS UNDERVOLTAGE (≤ 30% VOLTAGE) AND ANY OF THE FOLLOWING MOTOR PROTECTIVE RELAY TRIP SIGNALS:
A. MOTOR UNDERCURRENT
B. BUS DIFFERENTIAL CURRENT
C. GROUND OVERCURRENT

8. UNLESS OTHERWISE SPECIFIED, POWER AND CONTROL CIRCUITS ARE DIVISIONS 2 AND 3 FOR LOOP B AND C RESPECTIVELY.

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SH NO.	TITLE
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3	HPCF LOOPS B & C INITIATION LOGIC
4	HPCF LOOPS B & C INITIATION LOGIC (CONTINUED)
5	HPCF LOOP C INITIATION LOGIC
6	TESTABLE CHECK VALVE F004B & C AND EQUALIZING VALVE F019B & C
7	HPCF PUMP C001C
8	HPCF PUMP C001C (CONTINUED)
9	INJECTION VALVE F003B & C
10	INJECTION VALVE F003C (CONTINUED)
11	CONDENSATE STORAGE TANK SUCTION VALVE F001B & C
12	SUPPRESSION POOL SUCTION VALVE F006B
13	SUPPRESSION POOL SUCTION VALVE F006C
14	MINIMUM FLOW VALVE F010B
14	TEST RETURN VALVE (THROTTLEABLE) F008B & C
14	TEST BYPASS VALVE (THROTTLEABLE) F009B & C
15	MINIMUM FLOW VALVE F010C
16	HPCF LOOP B THERMAL RELAY BYPASS LOGIC AND EQUIPMENT LIST
17	HPCF LOOP C THERMAL RELAY BYPASS LOGIC

REFERENCE DOCUMENTS:

	MPL NO.
1. NUCLEAR BOILER SYSTEM P&ID	B21-1010
2. REMOTE SHUTDOWN SYSTEM IBD	C61-1030
3. HPCF SYSTEM P&ID	E22-1010
4. NUCLEAR BOILER SYSTEM IBD	B21-1030
5. REMOTE SHUTDOWN SYSTEM IBD	C61-1030
6. ELECTRICAL POWER DISTRIBUTION SYSTEM	R10-1030
7. INTERLOCK BLOCK DIAGRAM (IBD) STANDARDS	A10-3070

	7	6	5	4	3	2	
E							
	TABLE 1: ANNUNCIATORS/ALARM LIGHTS						
	INDICATION	FUNCTION	SOURCE OF SIGNAL				
	ALARM	LOW REACTOR WATER LEVEL 1.5	LOGIC OUTPUT				
	ALARM	HIGH DRYWELL PRESSURE	LOGIC OUTPUT				
	ALARM	HPCF PUMP MOTOR OVERLOAD LOOP B	M/C HPCF PUMP B POWER FAILURE				
D	ALARM	HPCF PUMP MOTOR OVERLOAD LOOP C	M/C HPCF PUMP C POWER FAILURE				
	ALARM	OVERLOAD ANY HPCF VLV MOTOR LOOP B	MOTOR CONTROL CENTER				
	ALARM	OVERLOAD ANY HPCF VLV MOTOR LOOP C	MOTOR CONTROL CENTER				
	ALARM	HPCF LOOP B MANUAL INITIATION ARMED	PBS				
	ALARM	HPCF LOOP C MANUAL INITIATION ARMED	PBS				
	ALARM	HIGH REACTOR WATER LEVEL 8	LOGIC OUTPUT				
	ALARM	HPCF LOOP B INITIATED	LOGIC OUTPUT				
	ALARM	HPCF LOOP C AUTO INITIATION	LOGIC OUTPUT				
	ALARM	HPCF LOOP B OUT OF SERVICE	LOGIC OUTPUT, COS				
C	ALARM	HPCF LOOP C OUT OF SERVICE	LOGIC OUTPUT, COS				
	ALARM	HPCF PUMP B LOW-LOW SUCTION PRESSURE	PSZ603B				
	ALARM	HPCF PUMP C LOW-LOW SUCTION PRESSURE	PSZ603C (MULTIPLEX)				
	ALARM	HPCF PUMP B DISCHARGE LINE NOT FILLED	PSZ602B-2				
	ALARM	HPCF PUMP B HIGH SUCTION PRESSURE	PSZ602B-1				
	ALARM	HPCF PUMP C DISCHARGE LINE NOT FILLED	PSZ602C-2				
	ALARM	HPCF PUMP C HIGH SUCTION PRESSURE	PSZ602C-1				
	WHITE LIGHT	HPCF PUMP B MANUAL OVERRIDE	LOGIC OUTPUT, CS				
	WHITE LIGHT	HPCF PUMP C MANUAL OVERRIDE OF AUTO INITIATION	LOGIC OUTPUT, CS				
B	WHITE LIGHT	HPCF INJECTION VALVE F003B MANUAL OVERRIDE	LOGIC OUTPUT, CS				
	WHITE LIGHT	HPCF INJECTION VALVE F003C MANUAL OVERRIDE OF AUTO INITIATION	LOGIC OUTPUT, CS				
	WHITE LIGHT	HPCF LOOP B INITIATION SEALED-IN	LOGIC OUTPUT				
	WHITE LIGHT	HPCF LOOP C AUTO INITIATION SEALED-IN	LOGIC OUTPUT				
	ALARM	HPCF C MANUAL INITIATION	PBS				
	ALARM	HPCF C PUMP C LOW-LOW SUCTION PRESSURE	PS603C (HARDWIRED)				
	WHITE LIGHT	HPCF C MANUAL INITIATION SEALED-IN	LOGIC OUTPUT				
A	WHITE LIGHT	HPCF C INJECTION VALVE F003C MANUAL OVERRIDE OF MANUAL INITIATION	LOGIC OUTPUT, CS				
	TABLE 1: ANNUNCIATORS/ALARM LIGHTS (CONT'D)						
	INDICATION	FUNCTION	SOURCE OF SIGNAL				
	ALARM	HPCF LOOP B LOW CST WATER LEVEL	LOGIC OUTPUT				
	ALARM	HPCF LOOP B HIGH SUPPR POOL WATER LEVEL	LOGIC OUTPUT				
	ALARM	HPCF LOOP C LOW CST WATER LEVEL	LOGIC OUTPUT				
	ALARM	HPCF LOOP C HIGH SUPPR POOL WATER LEVEL	LOGIC OUTPUT				
	WHITE LIGHT	HPCF LOOP B HIGH REACTOR WATER LEVEL 8 SEALED-IN	LOGIC OUTPUT				
	WHITE LIGHT	HPCF LOOP C HIGH REACTOR WATER LEVEL 8 SEALED-IN	LOGIC OUTPUT				
	ALARM	HPCF LOOP B PUMP CONTROL SW IN PULL LOCK	PULL LOCK				
	ALARM	HPCF LOOP C PUMP CONTROL SW IN PULL LOCK	PULL LOCK				
	ALARM	HPCF LOOP B LOSS OF LOGIC POWER SOURCE	LOGIC OUTPUT				
	ALARM	HPCF LOOP C LOSS OF LOGIC POWER SOURCE	LOGIC OUTPUT				
	ALARM	HPCF LOOP B TESTING	CS				
	ALARM	HPCF LOOP C TESTING	CS				
	ALARM	HPCF PUMP B TRIP	LOGIC OUTPUT				
	ALARM	HPCF PUMP C TRIP	LOGIC OUTPUT				
	ALARM	EMERGENCY CONTAINMENT FLOODING -CST/SP SUCTION TRANSFER OVERRIDE LOOP B	KOS				
	ALARM	EMERGENCY CONTAINMENT FLOODING -CST/SP SUCTION TRANSFER OVERRIDE LOOP C	KOS				
	ALARM	MCC EQUIPMENT IN TEST MODE (THERMAL RELAY NOT BYPASSED) FOR LOOP B	KOS				
	ALARM	MCC EQUIPMENT IN TEST MODE (THERMAL RELAY NOT BYPASSED) FOR LOOP C	KOS				
	ALARM	HPCF LOOP B FLOW LOW	FIS-Z608B, PS-Z607B				
	ALARM	HPCF LOOP C FLOW LOW	FIS-Z608C, PS-Z607C				



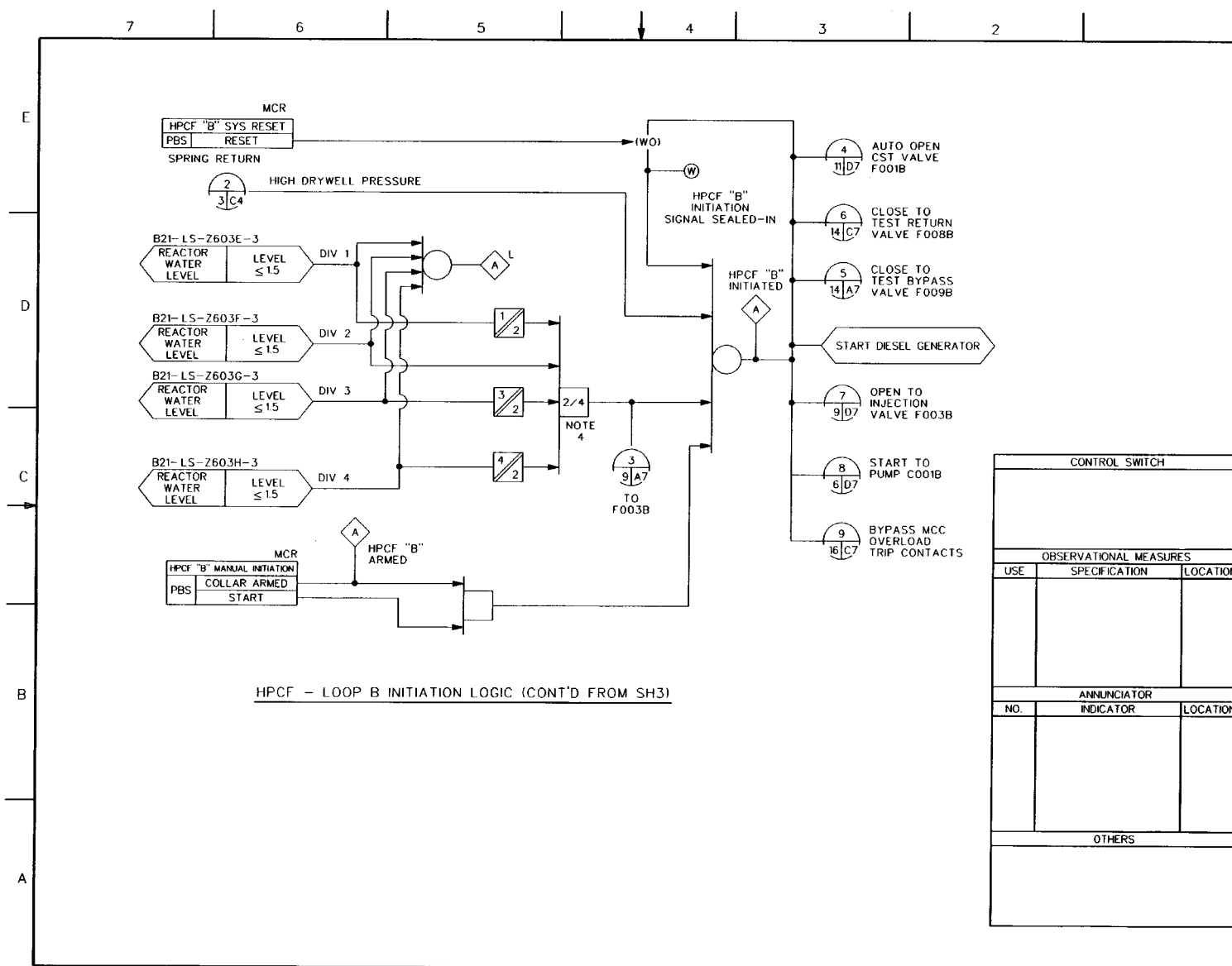


FIGURE 7.3-1 HIGH PRESSURE CORE FLOUNDER SYSTEM IBD (Sheet 4 of 17)

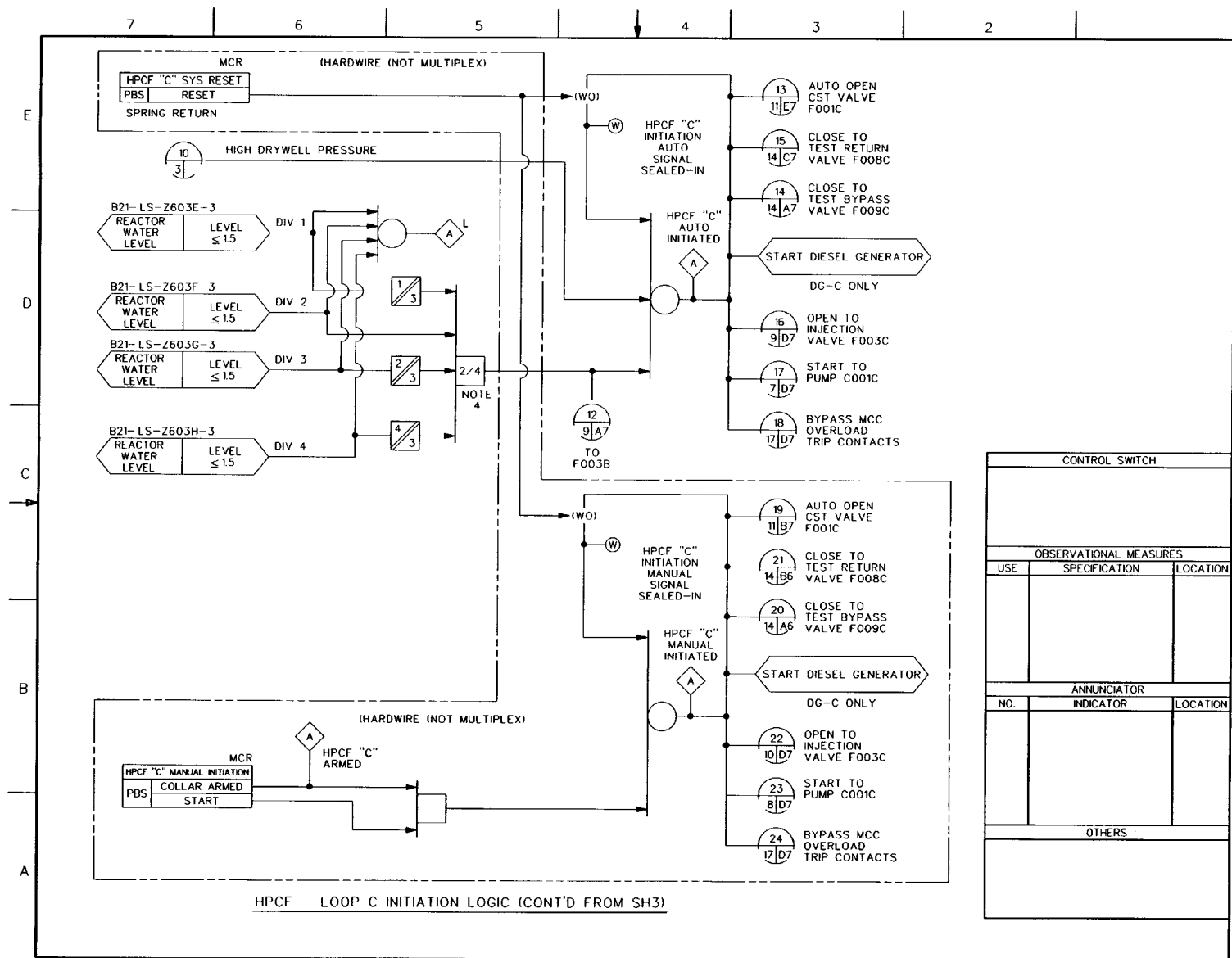


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM BD (Sheet 5 of 17)

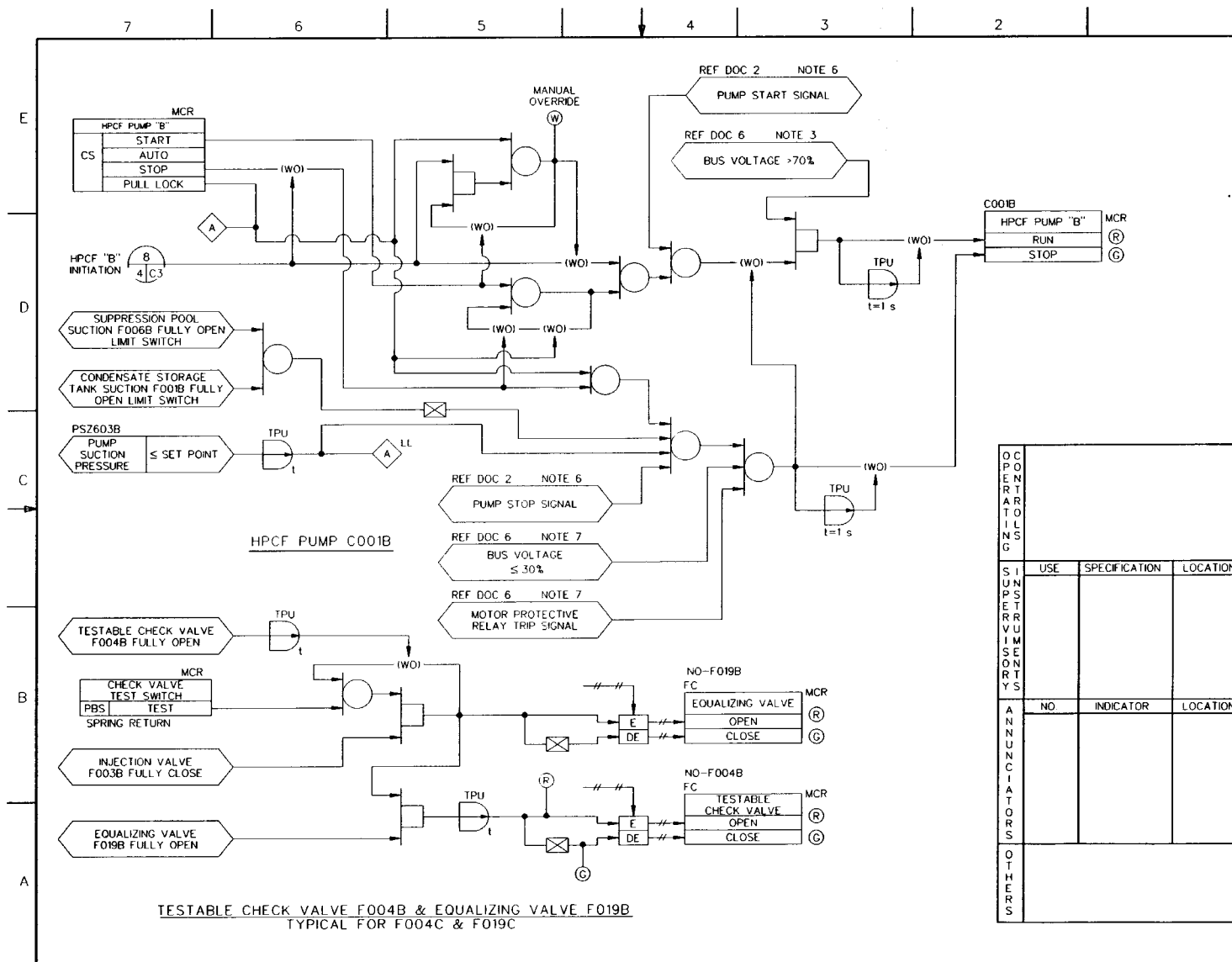


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 6 of 17)

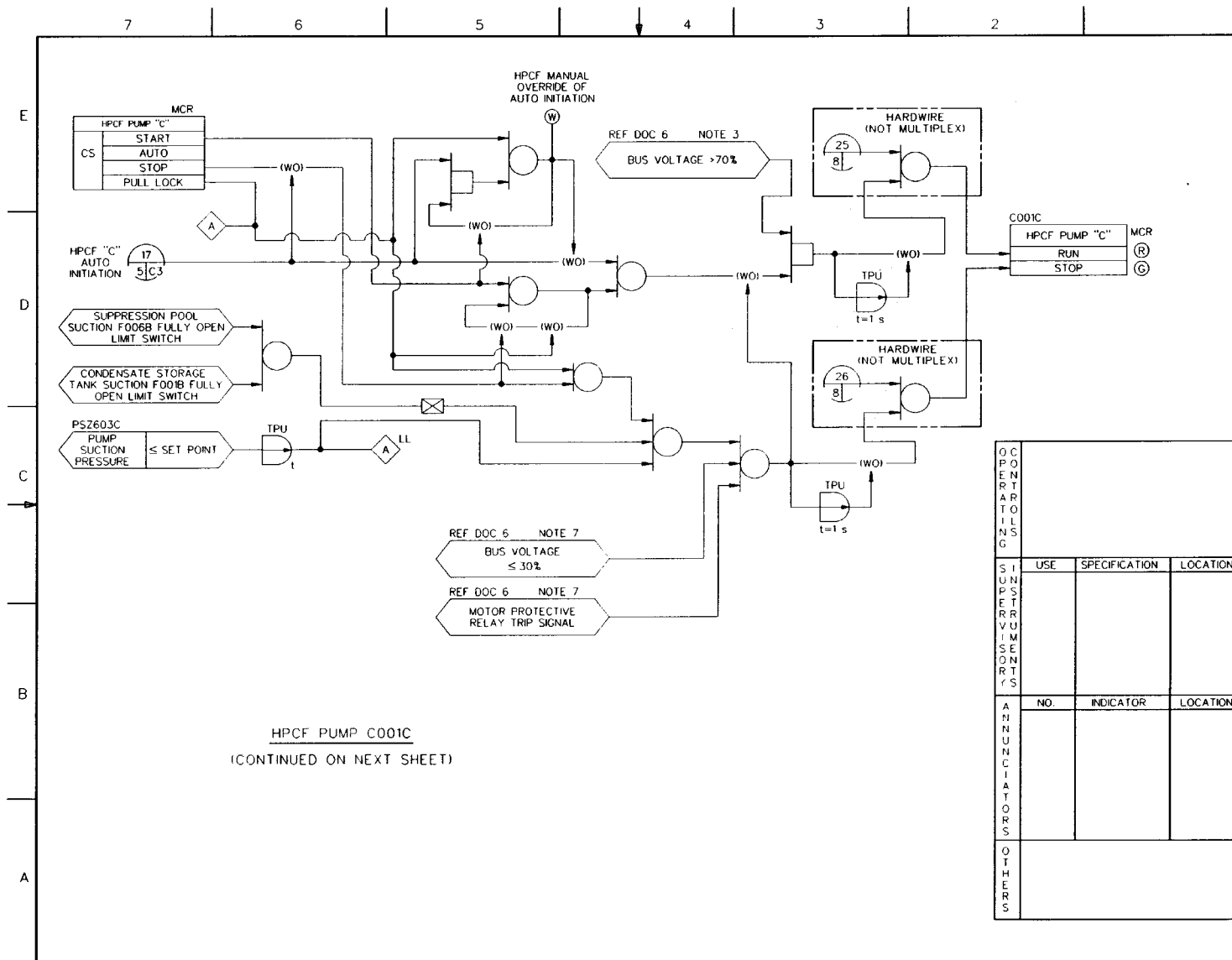


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 7 of 17)
ABWR DCD/Tier 2 Rev. 0 21-150

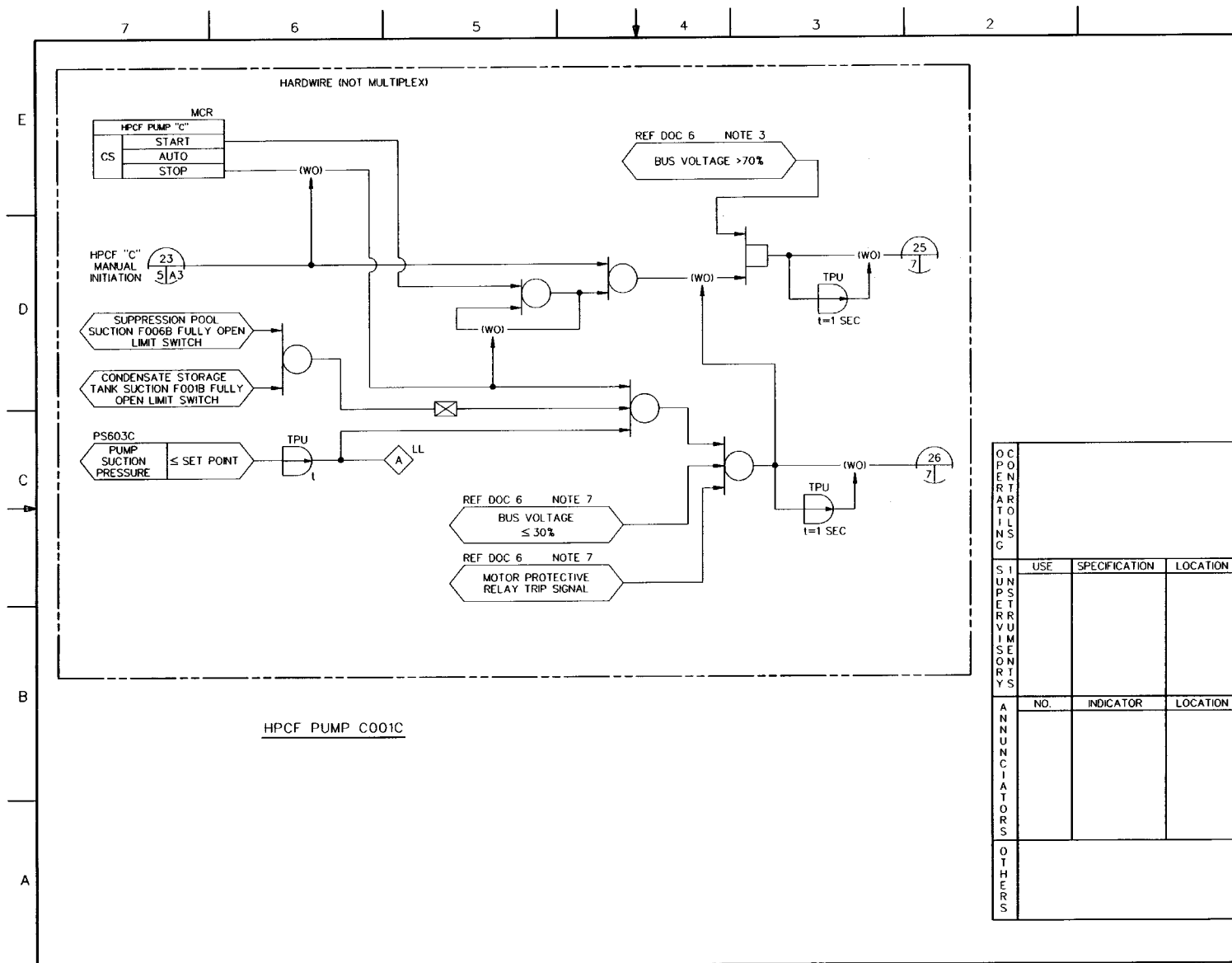


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 8 of 17)

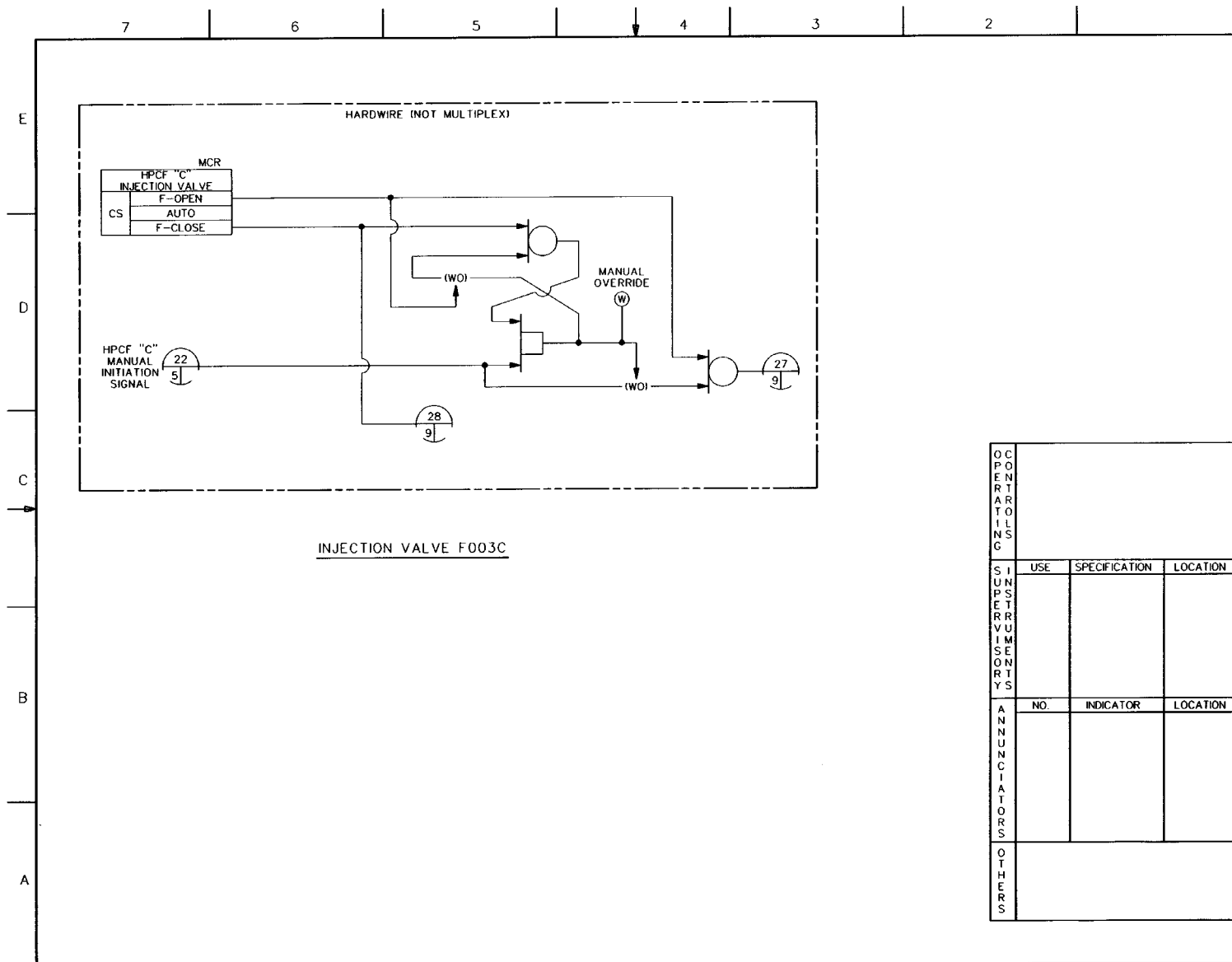


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 10 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-153

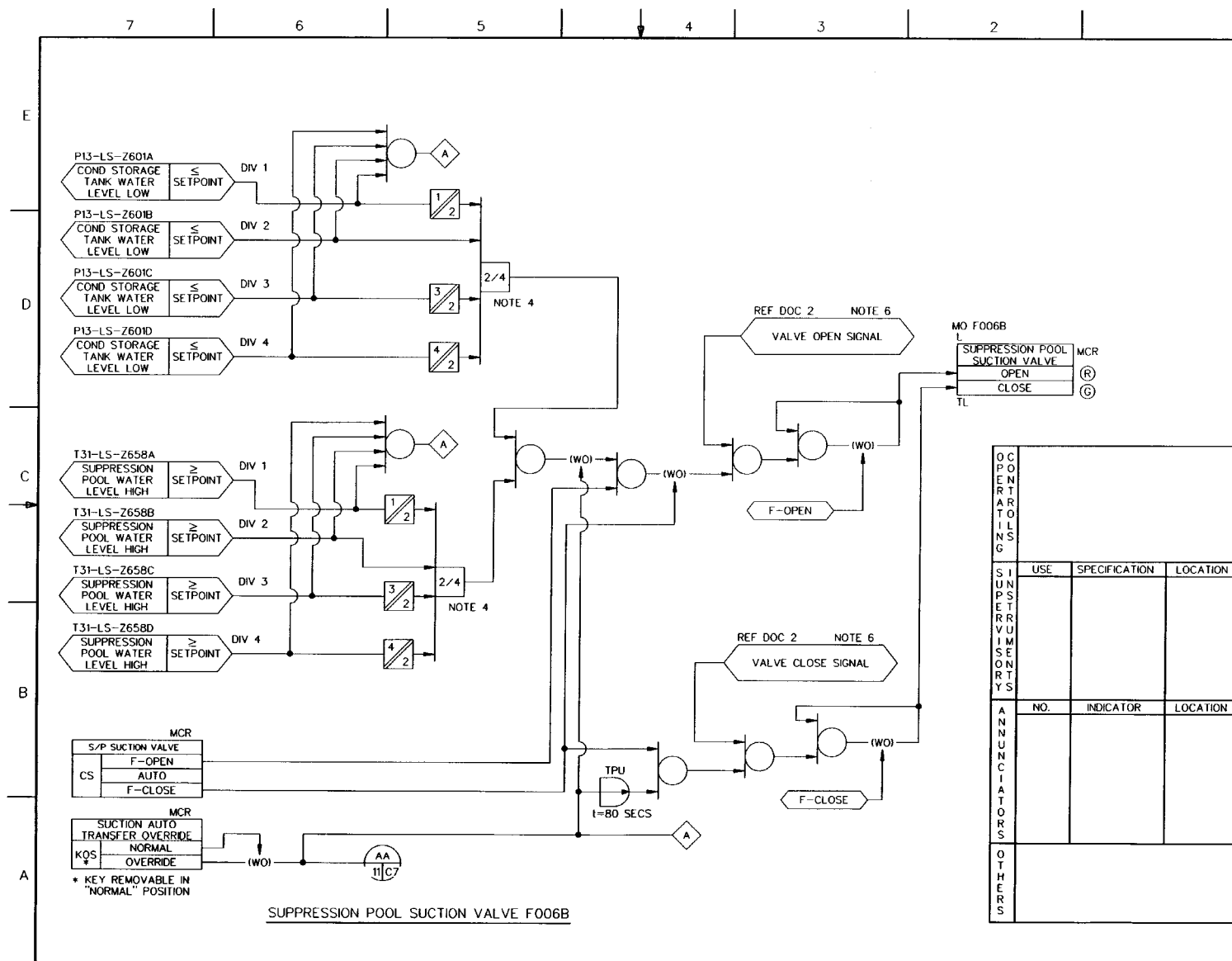


FIGURE 7.3-1 HIGH PRESSURE CORE FLODER SYSTEM 1B0 (Sheet 12 of 17)
ABWR DCD/Tier 2 Rev. 0 21-154.1

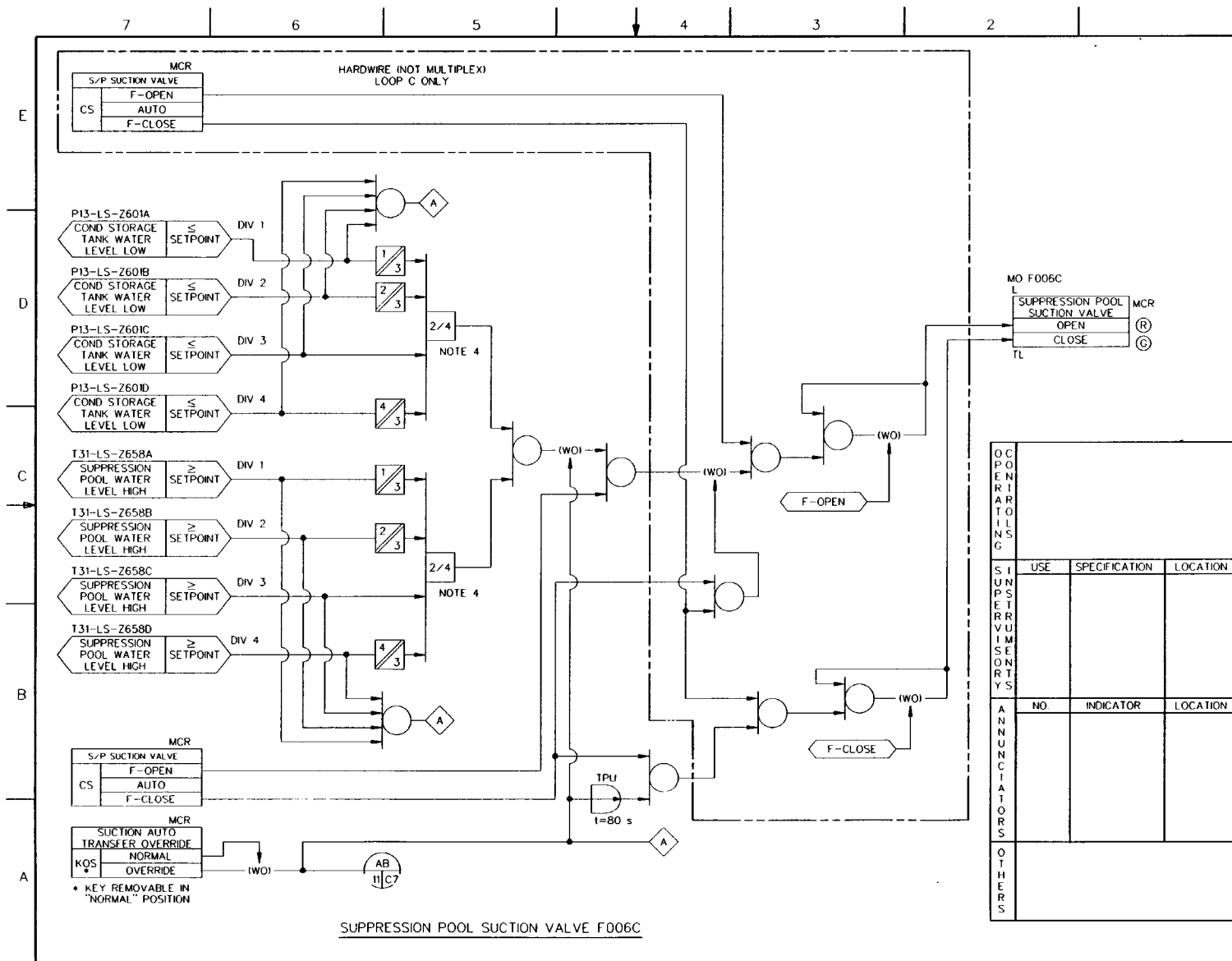


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 13 of 17)

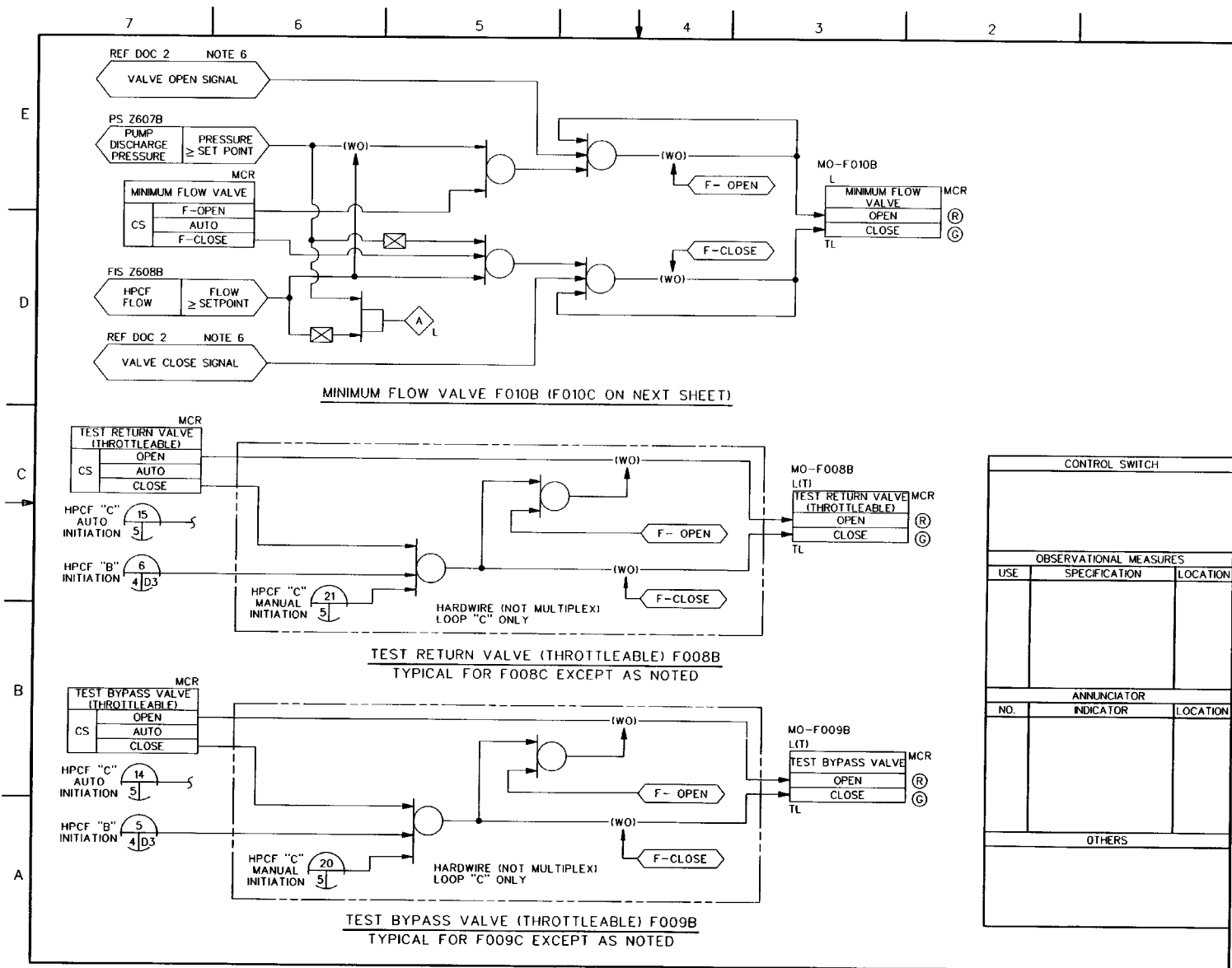


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 14 of 17)
ABWR DCD/Tier 2 Rev. 0 21-554.3

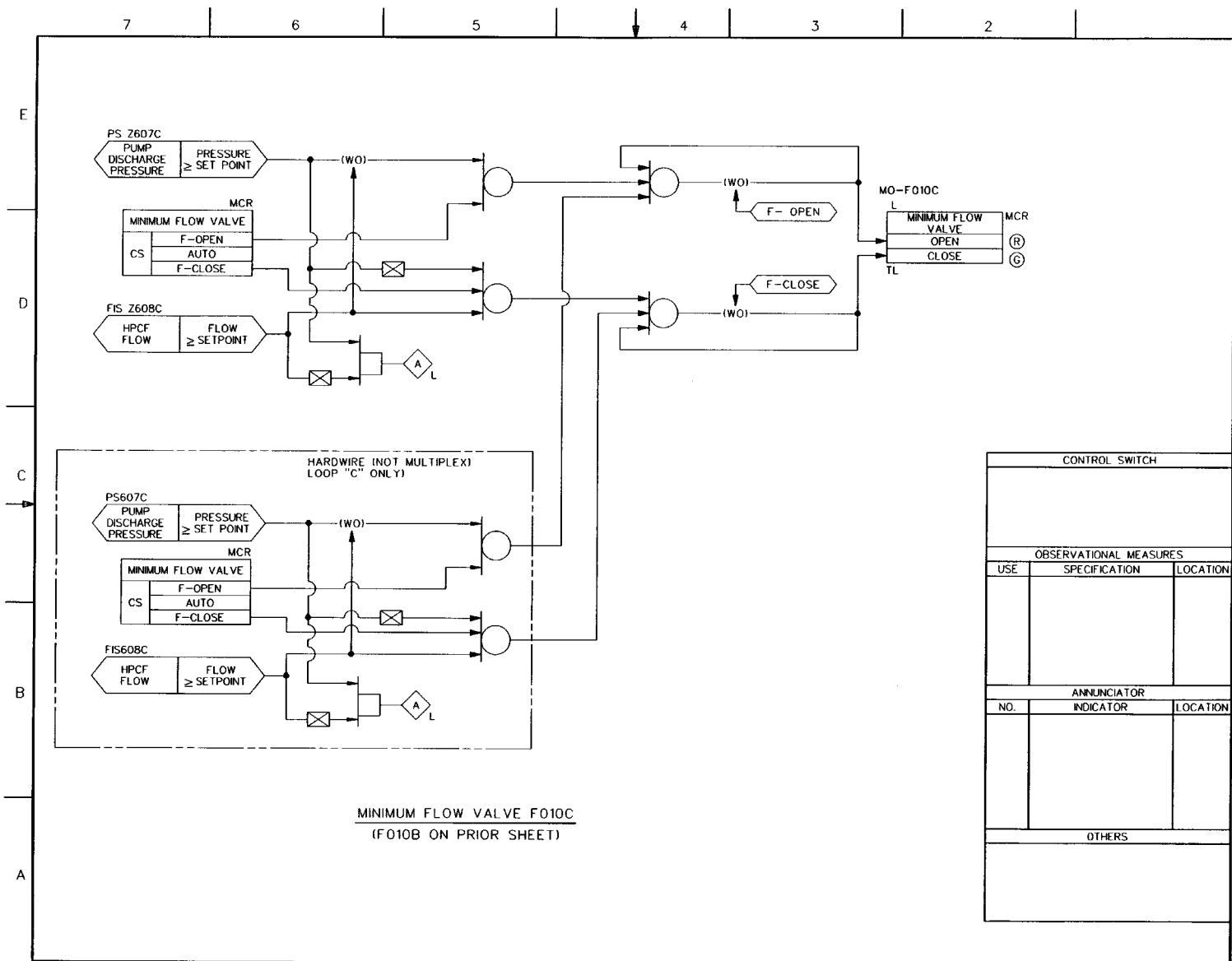


FIGURE 7.3-1 HIGH PRESSURE CORE FLOOER SYSTEM IBD (Sheet 15 of 17)
ABWR DCD/Tier 2 Rev. 0 21-154.4

SYSTEM	EQUIPMENT ID	DESCRIPTION
HPCF LOOP B	E22-MO-F001B	HPCF CST SUCTION VALVE
	E22-MO-F003B	HPCF INJECTION VALVE
	E22-MO-F006B	HPCF S/P SUCTION VALVE
	E22-MO-F008B	HPCF TEST RETURN VALVE (THROTTLEABLE)
	E22-MO-F009B	HPCF TEST BYPASS VALVE
	E22-MO-F010B	HPCF MINIMUM FLOW VALVE

FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 16 of 17)

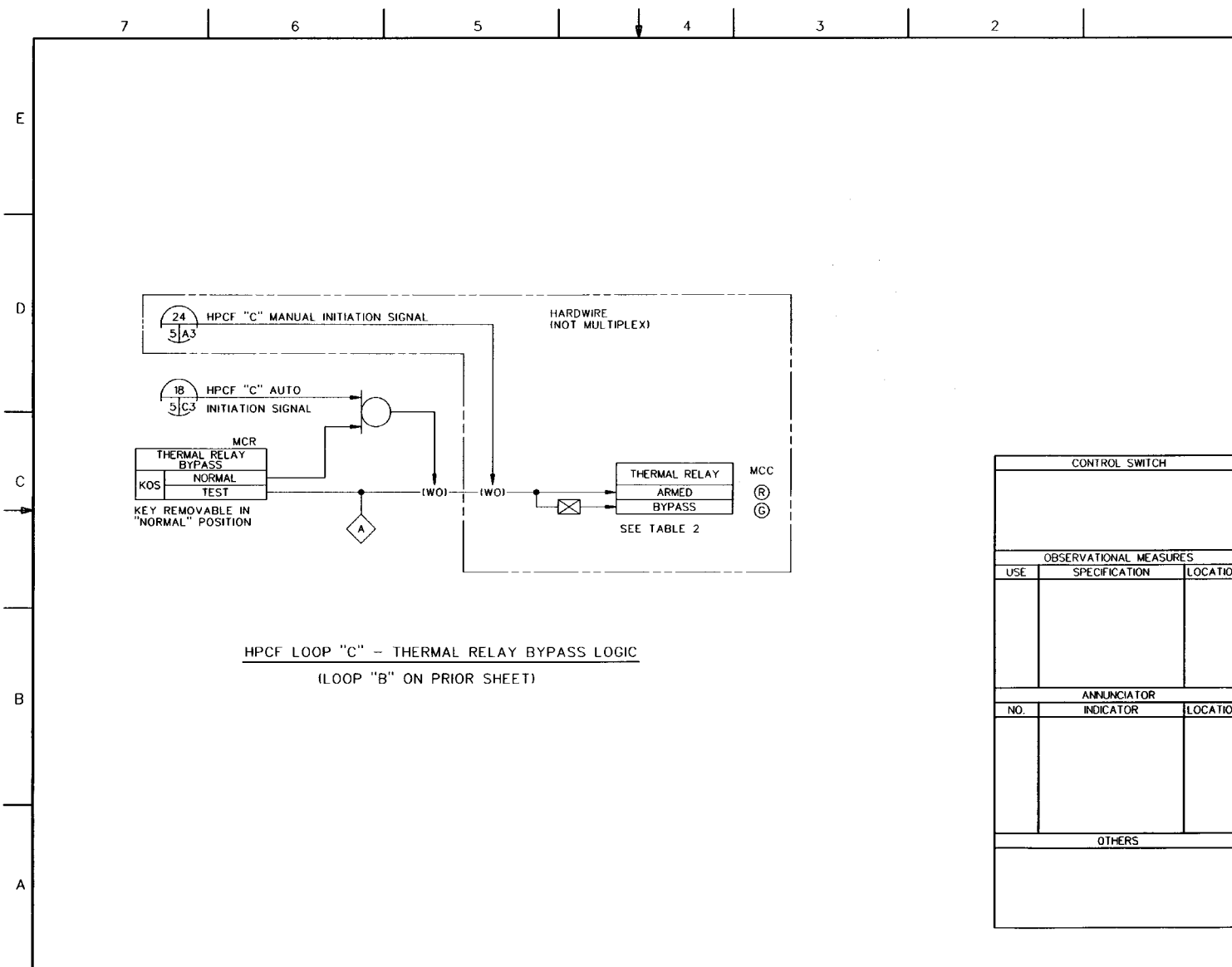


FIGURE 7.3-1 HIGH PRESSURE CORE FLOODER SYSTEM IBD (Sheet 17 of 17)
ABWR DCD/Tier 2 Rev. 0 21-D4.6

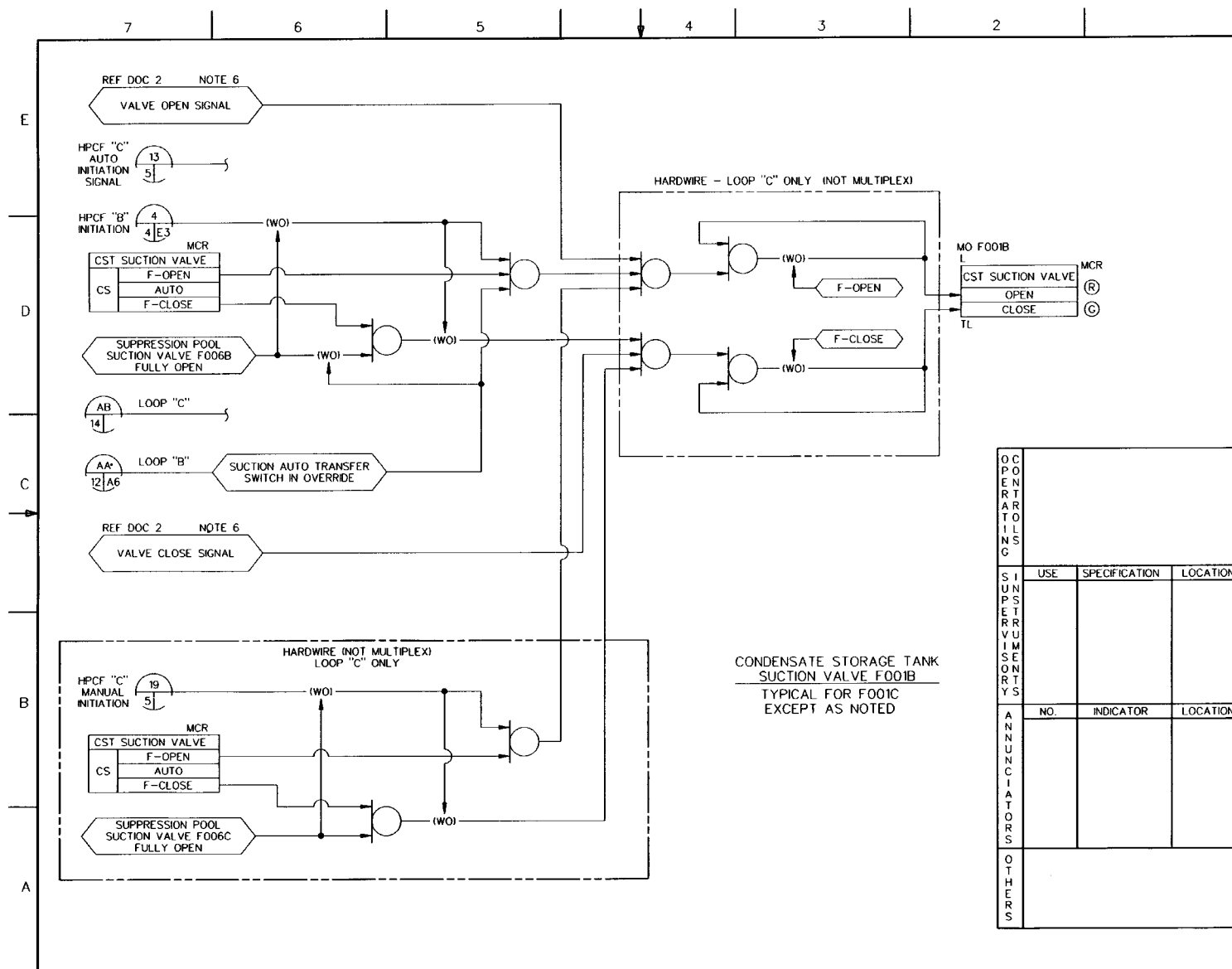
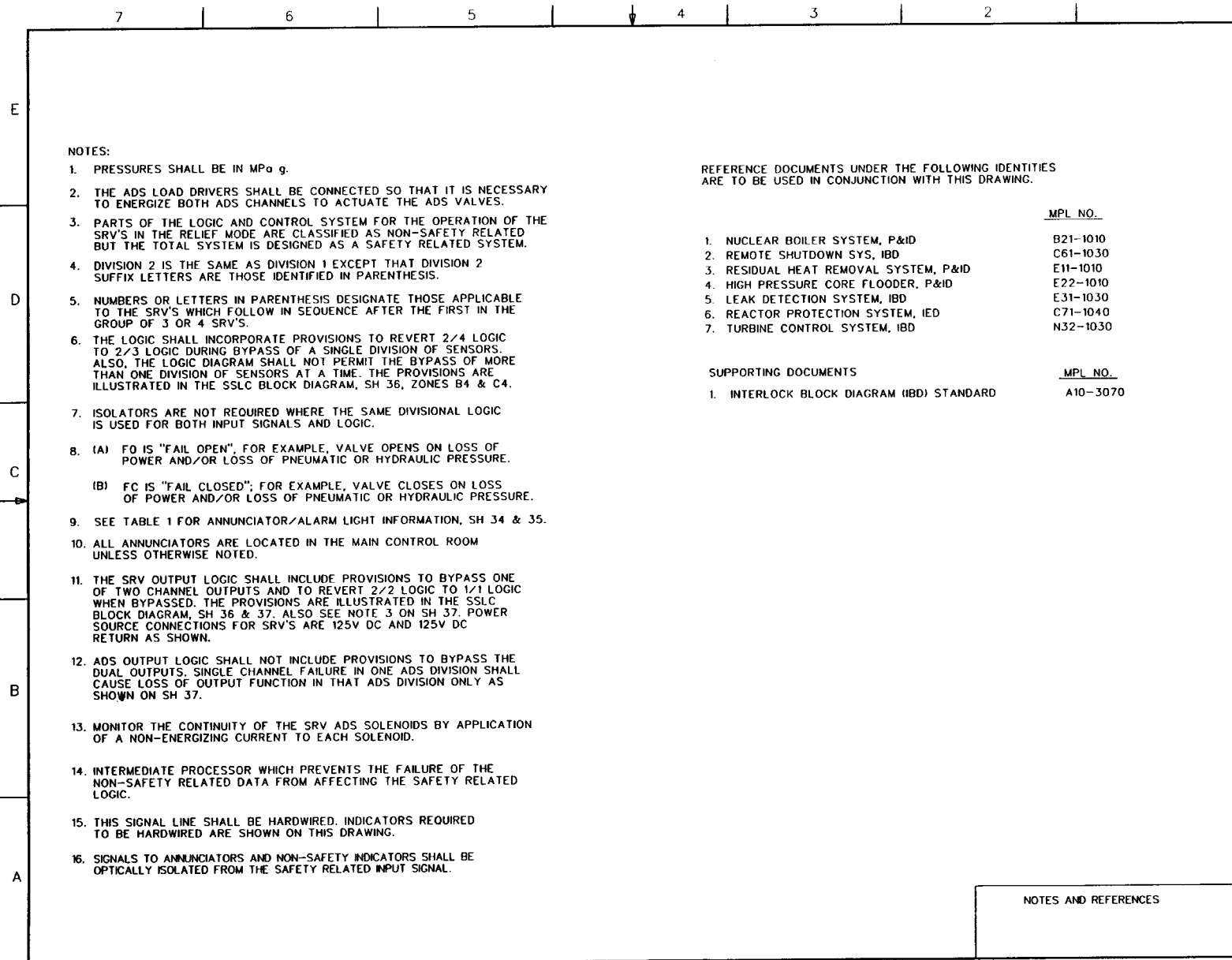


FIGURE 7.3-1 HIGH PRESSURE CORE FLODER SYSTEM IBD (Sheet 11 of 17)
ABWR DCD/Rev 2 Rev. 0 21-154

		7	6	5	4	3	2	
		SH. NO.	TITLES					
E		1	CONTENTS					
		2	NOTES AND REFERENCES					
		3	SRV LOGIC AND CONTROL DIVISION 1 FOR SRV F010P					
		4	SRV LOGIC AND CONTROL DIVISION 2 FOR SRV F010J					
		5	SRV LOGIC AND CONTROL DIVISIONS 3(2,3) FOR SRV'S F010M(F010S, F010B)					
		6	SRV LOGIC AND CONTROL DIVISION 1 FOR SRV F010G					
		7	SRV LOGIC AND CONTROL DIVISION 1 FOR SRV F010K					
		8	SRV LOGIC AND CONTROL DIVISIONS 2(3,1) FOR SRV'S F010E(F010U, F010D)					
D		9	SRV LOGIC AND CONTROL DIVISIONS 2(3,1,2) FOR SRV'S F010N(F010H, F010T, F010C)					
		10	SRV LOGIC AND CONTROL DIVISIONS 3(1,2,3) FOR SRV'S F010L(F010F, F010R, F010A)					
		11	ADS LOGIC AND CONTROL					
		12	ADS LOGIC AND CONTROL (CONTINUED)					
		13	ADS LOGIC AND CONTROL (CONTINUED)					
		14	ADS LOGIC AND CONTROL (CONTINUED)					
		15	ADS LOGIC AND CONTROL (CONTINUED)					
		16	ADS LOGIC AND CONTROL (CONTINUED)					
C		17	ADS LOGIC AND CONTROL (CONTINUED)					
		18	ADS LOGIC AND CONTROL (CONTINUED)					
		19	FEEDWATER VALVES F001A(F001B)					
		20	FEEDWATER CHECK VALVES F003A(F003B)					
		21	FEEDWATER GATE VALVES F005A(F005B)					
		22	CUW RETURN FW LOOP SELECTOR VALVES F007A(F007B)					
		23	MAIN STEAM BYPASS/DRAIN ISOLATION VALVE F011(F012)					
		24	STEAM LINE DRAIN VALVES F013(F014, F016)					
		25	MAIN STEAM DRAIN LINE AOV'S F015(F017)					
		26	RPV HEAD VENT VALVES F018(F019, F020)					
B		27	RPV WATER LEVEL ALARMS AND INDICATORS					
		28	LOW RPV METAL & BOTTOM DRAIN TEMPERATURE ALARM & RECORDER					
		29	HIGH DRYWELL PRESSURE ALARMS AND INDICATORS					
		30	SRV VALVE STEM POSITION ALARM					
		31	SRV DISCHARGE LINE AND RPV VENT DISCHARGE LINE HIGH TEMP ALARM					
		32	MSIV VALVE STEM POSITION SWITCHES					
		33	RPV HEAD SEAL LEAKOFF HIGH PRESSURE ALARM					
		34	ANNUNCIATOR LIST					
		35	ANNUNCIATOR LIST (CONTINUED)					
A		36	SSLC (LDS/ECCS) BLOCK DIAGRAM DIV 1 (TYPICAL FOR DIV 2 & DIV 3)					
		37	SSLC (LDS/ECCS) BLOCK DIAGRAM (CONTINUED)					

MPL NO. B21-1030

CONTENTS



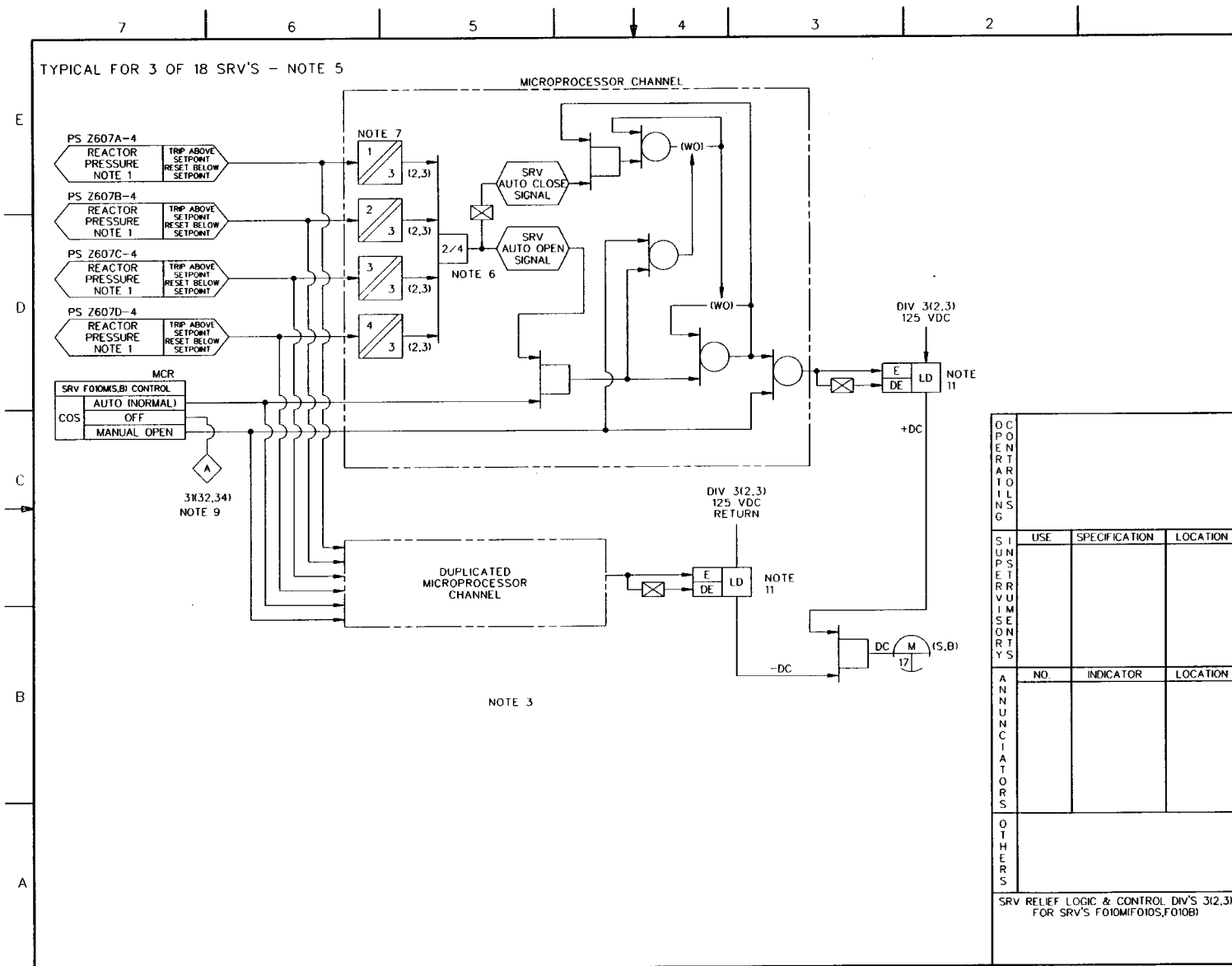


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 5 of 37)
ABWR DCD/Tier 2 Rev. 0 21-159

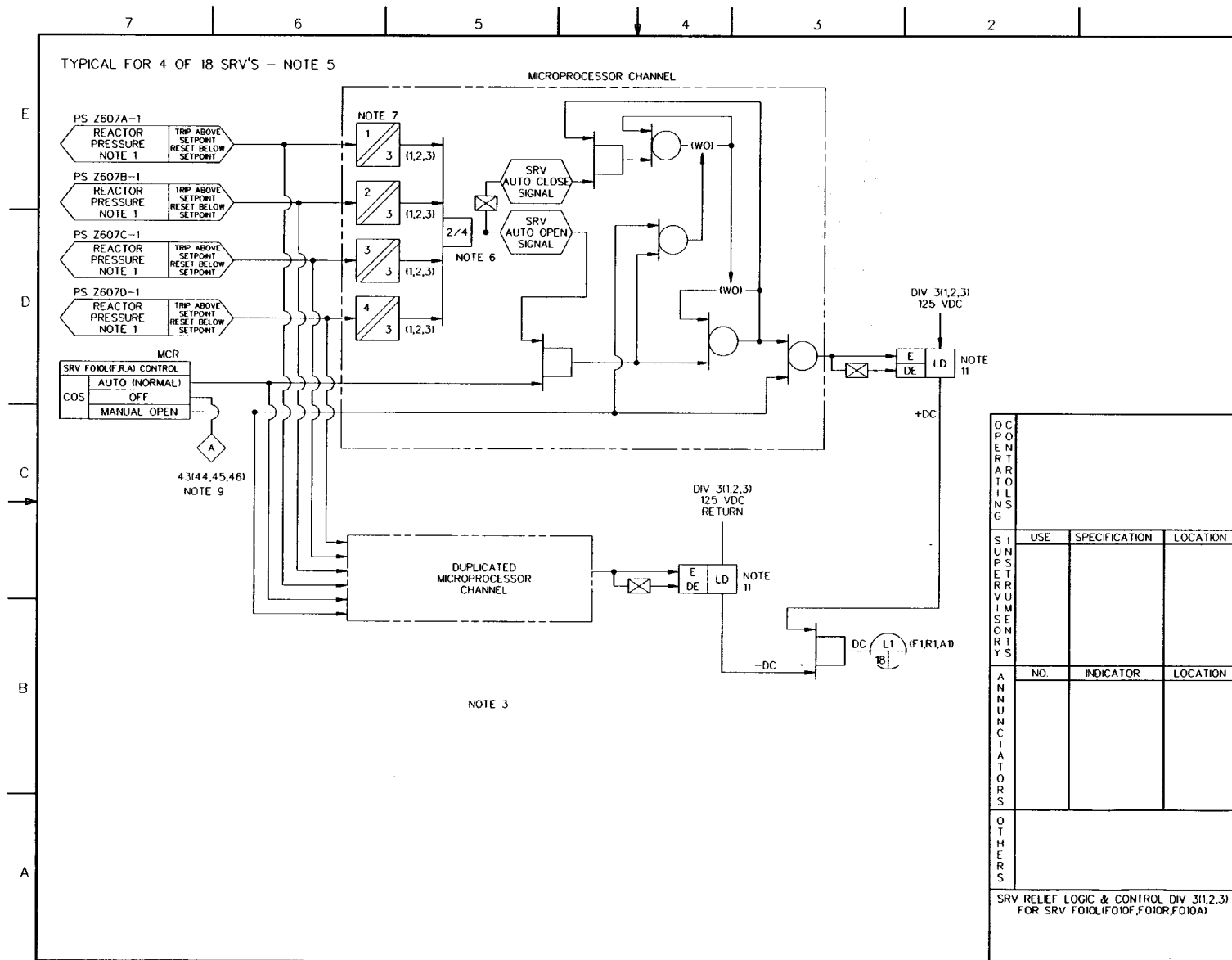


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 10 of 37)
ABWR DCD/Tier 2 Rev. 0 21-864

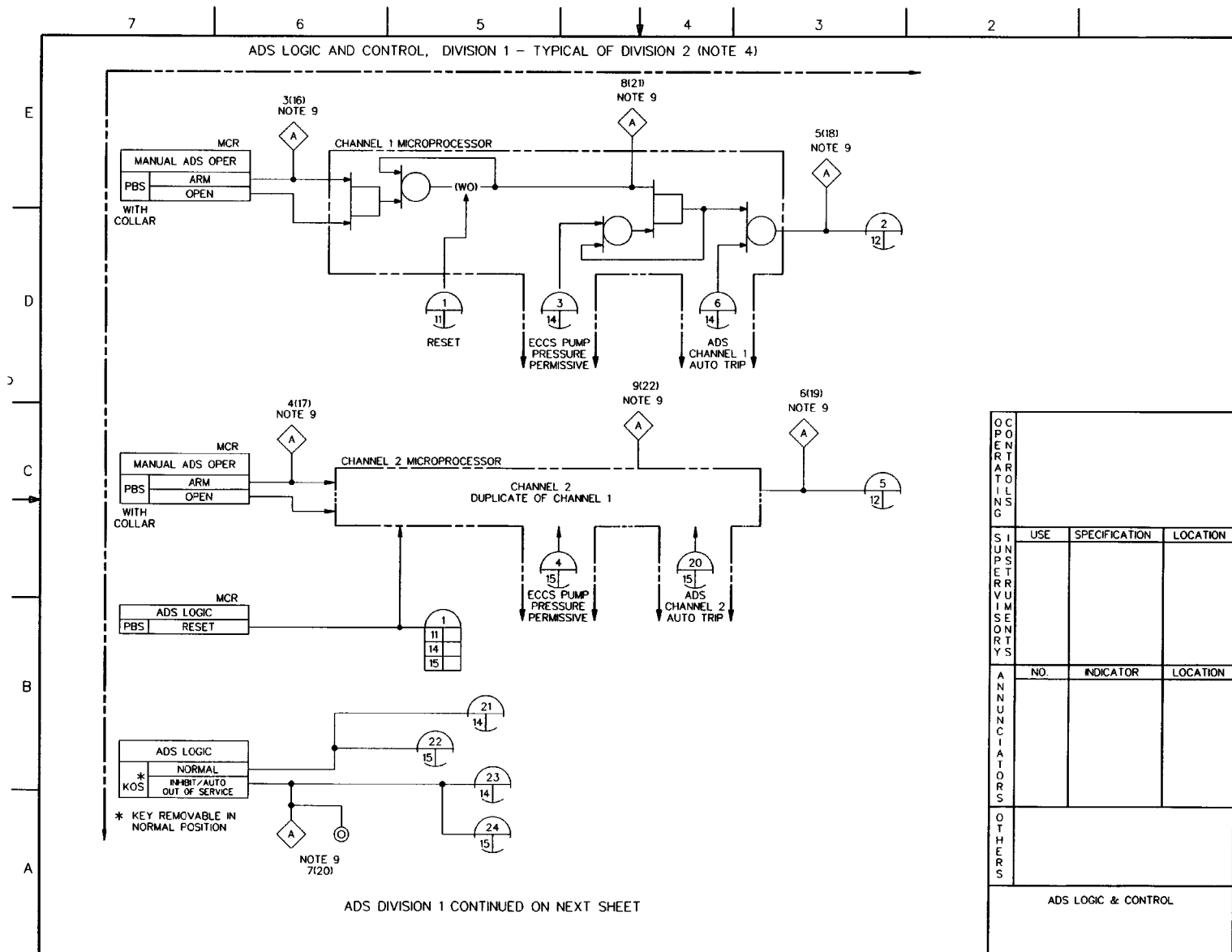


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 11 of 37)
ABWR DCD/Tier 2 Rev. 0 21-165

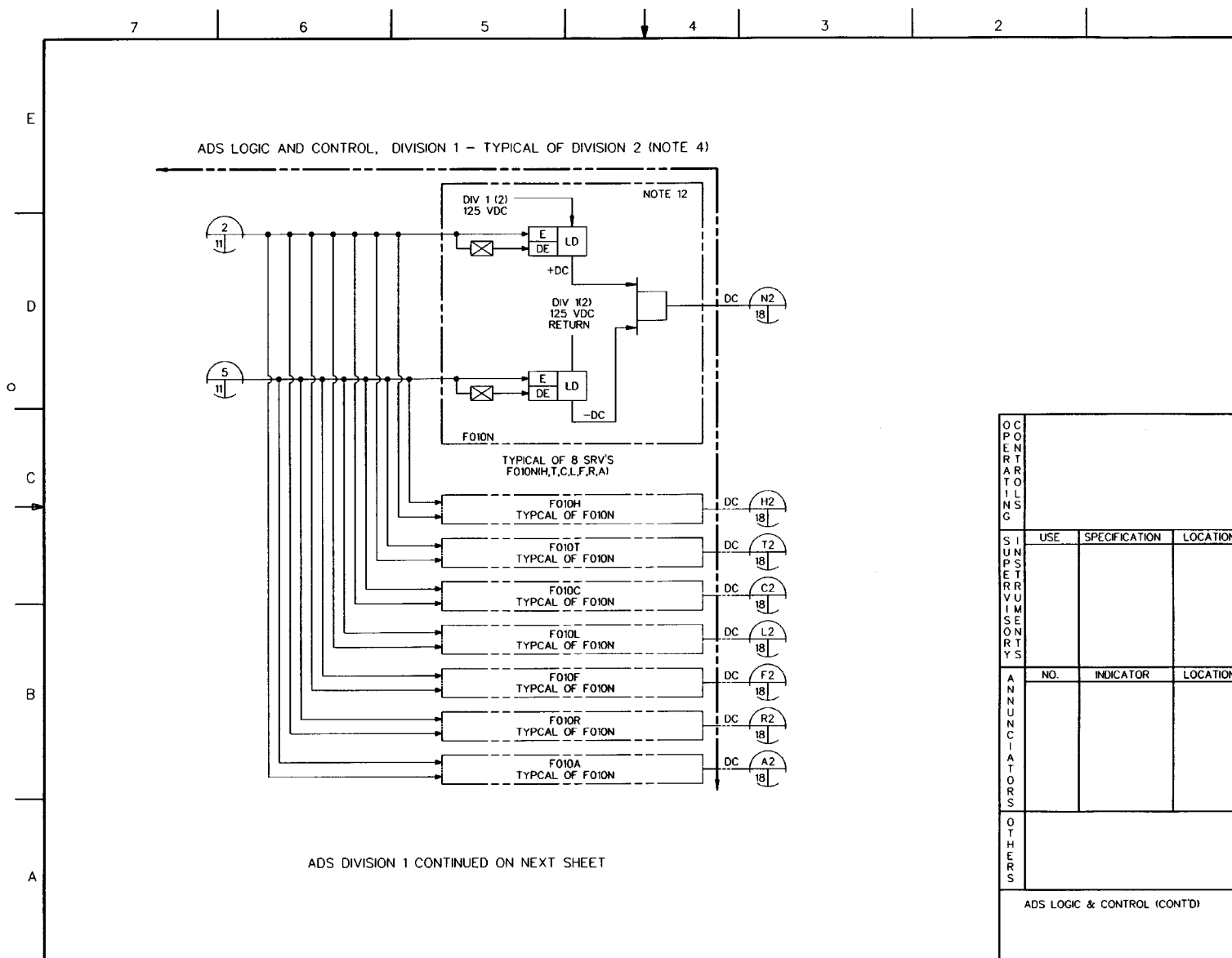


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 12 of 37)
ABWR DCD/Tier 2 Rev. 0 21-100

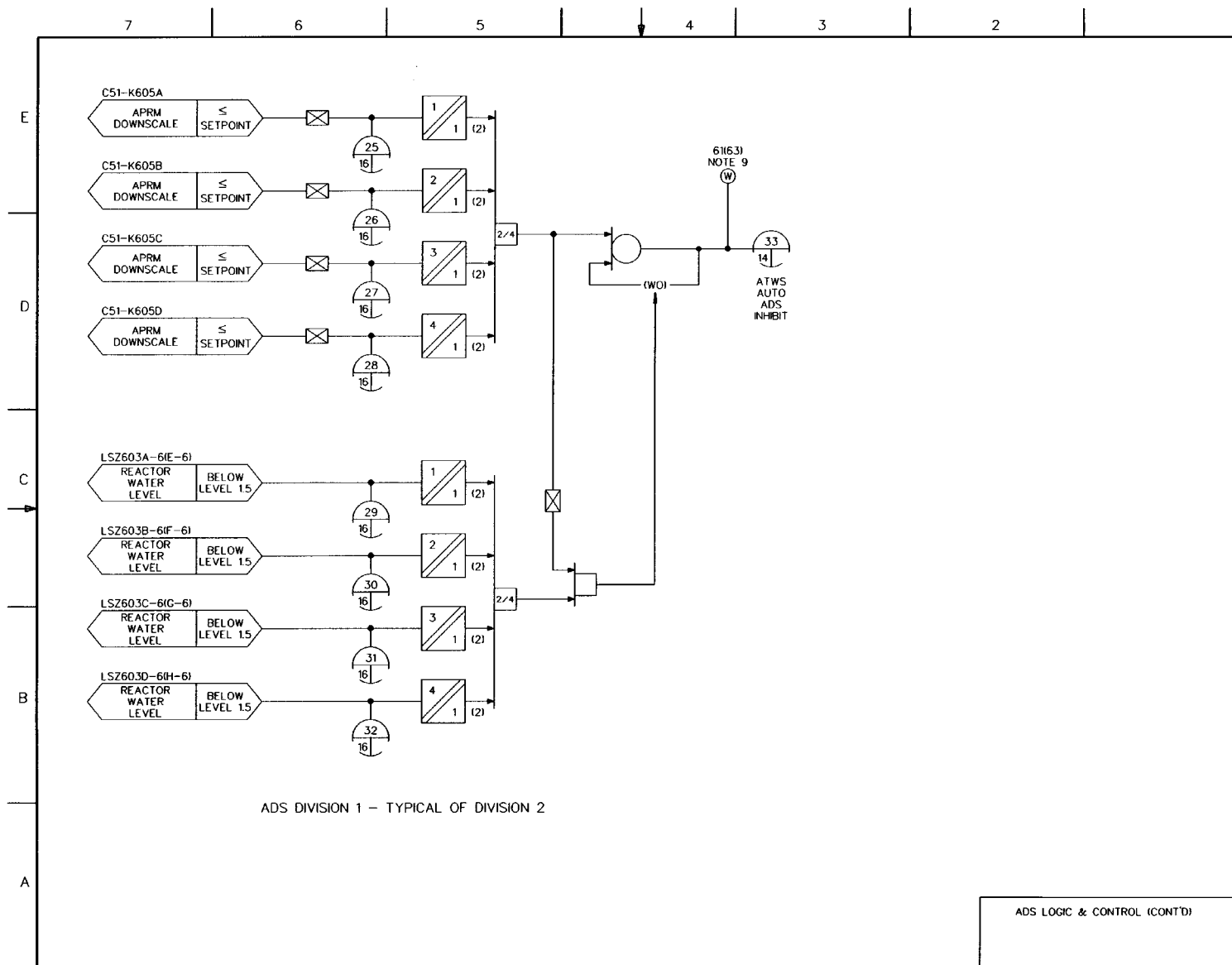
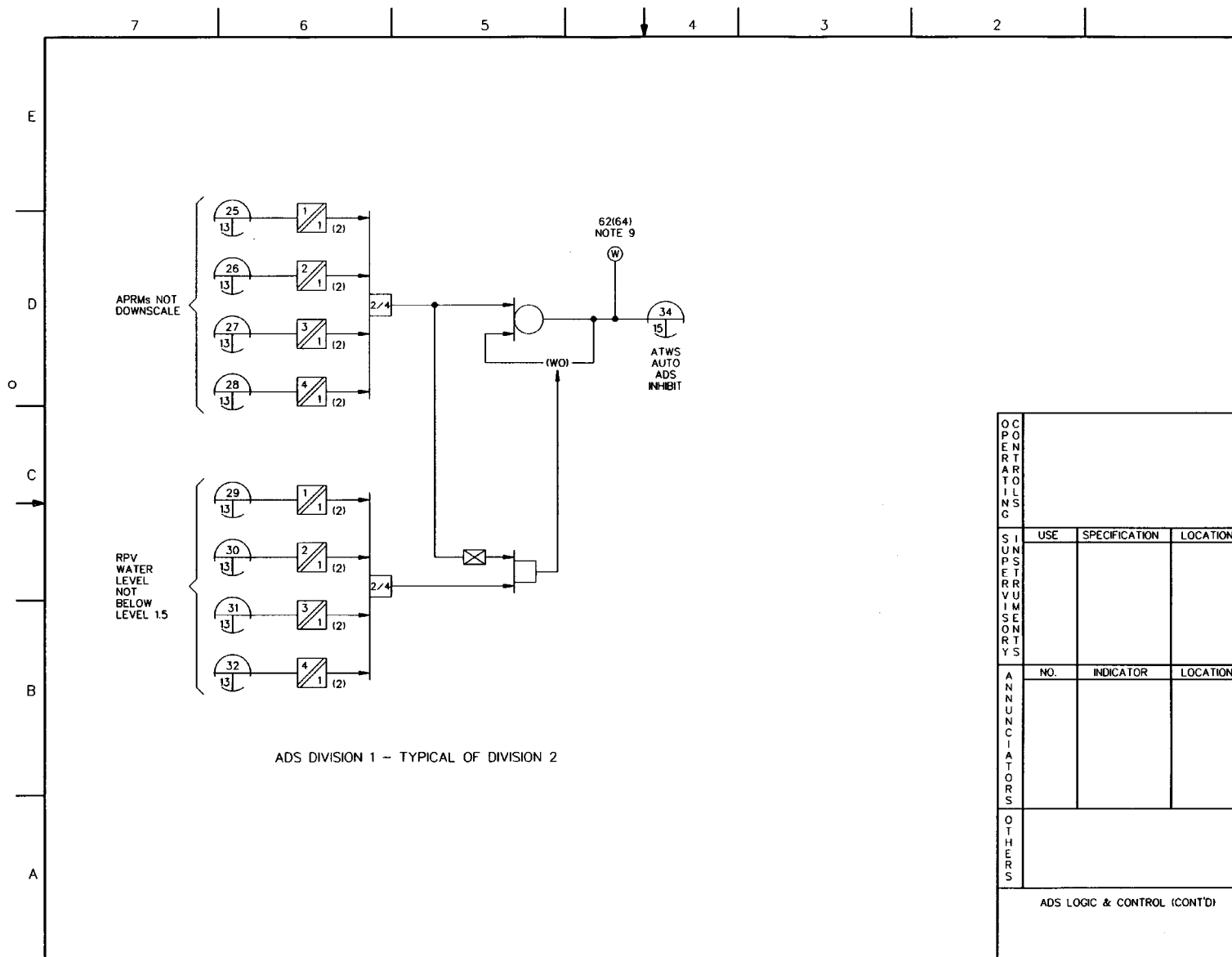


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 13 of 37)



OPERATIONAL			
	USE	SPECIFICATION	LOCATION
SIGNALS			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			
	ADS LOGIC & CONTROL (CONT'D)		

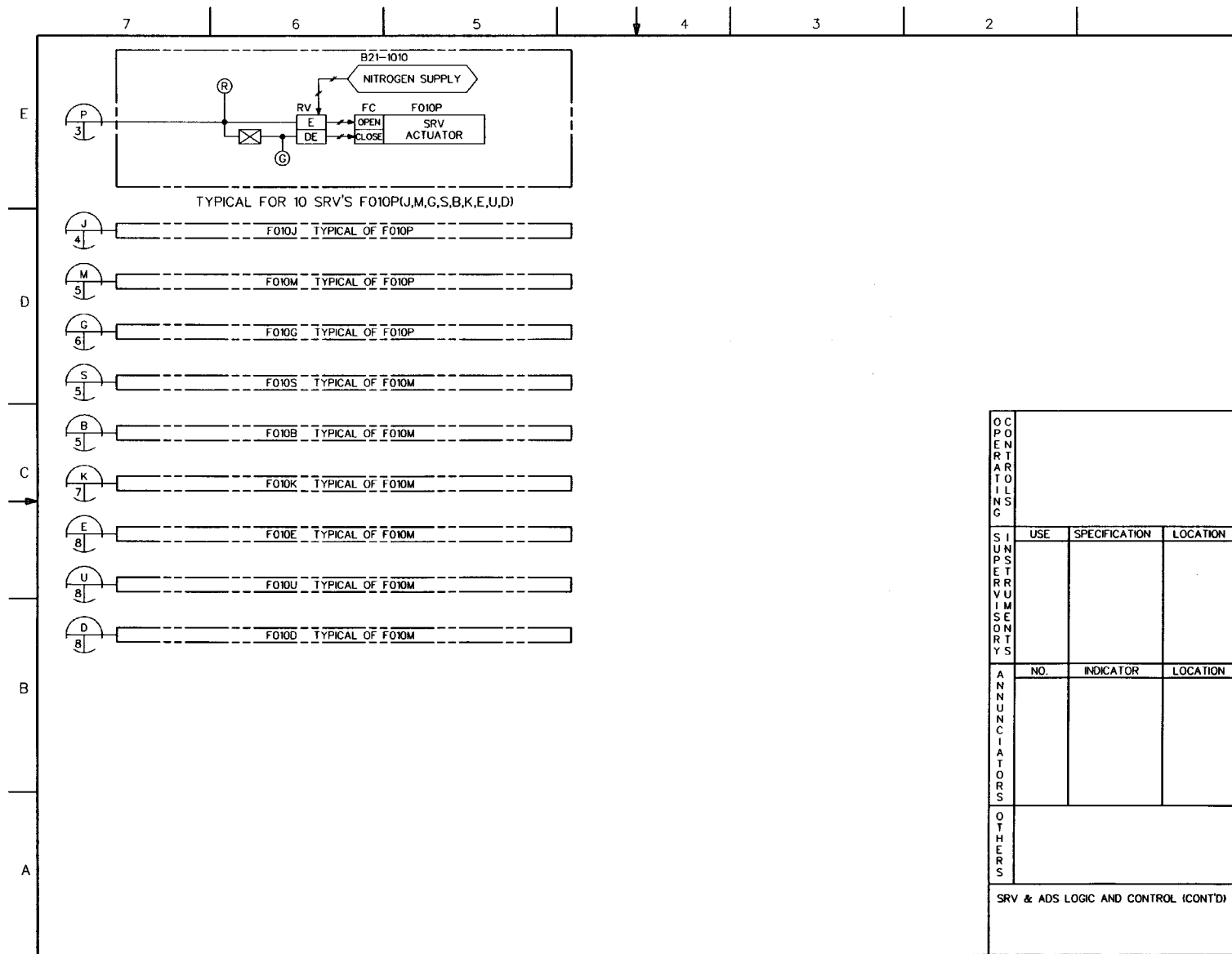


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 17 of 37)
ABWR DCD/Tier 2 Rev. 0 21-171

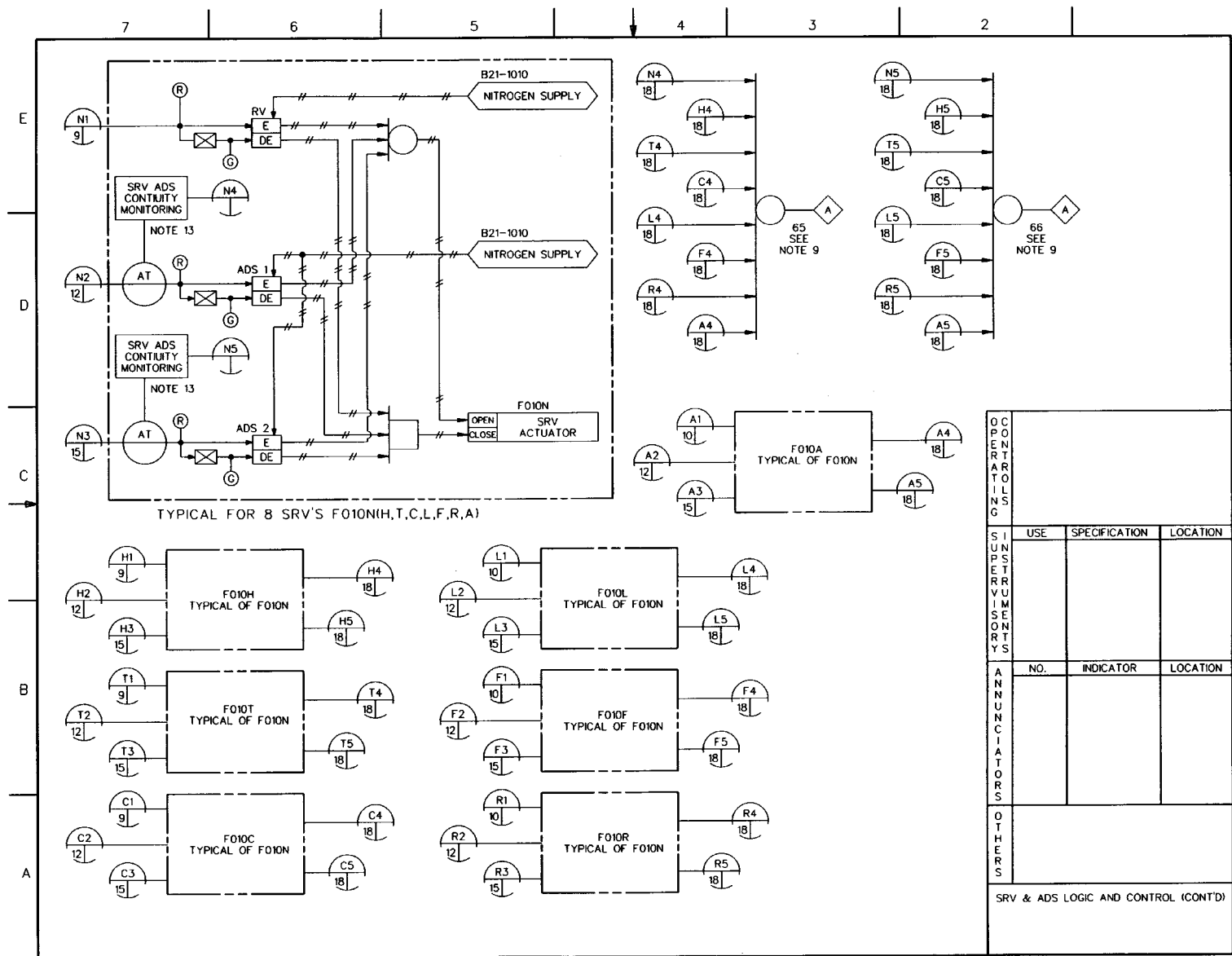


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 18 of 37)
ABWR DCD/Tier 2 Rev. 0 21-172

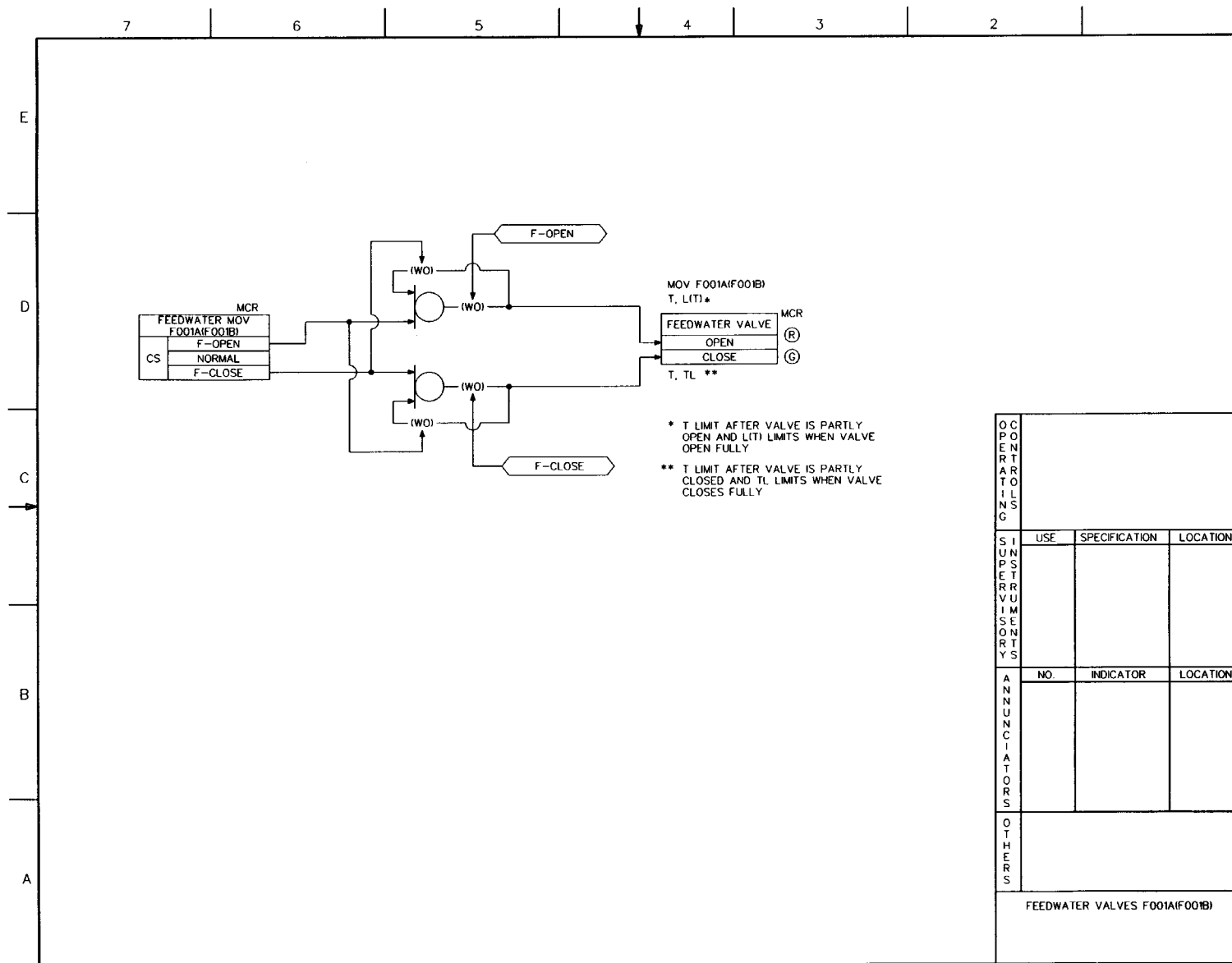


Figure 7.3-2 NUCLEAR BOILER SYSTEM ISD (Sheet 19 of 37)
 ABWR DCD/Tier 2 Rev. 0 21-173

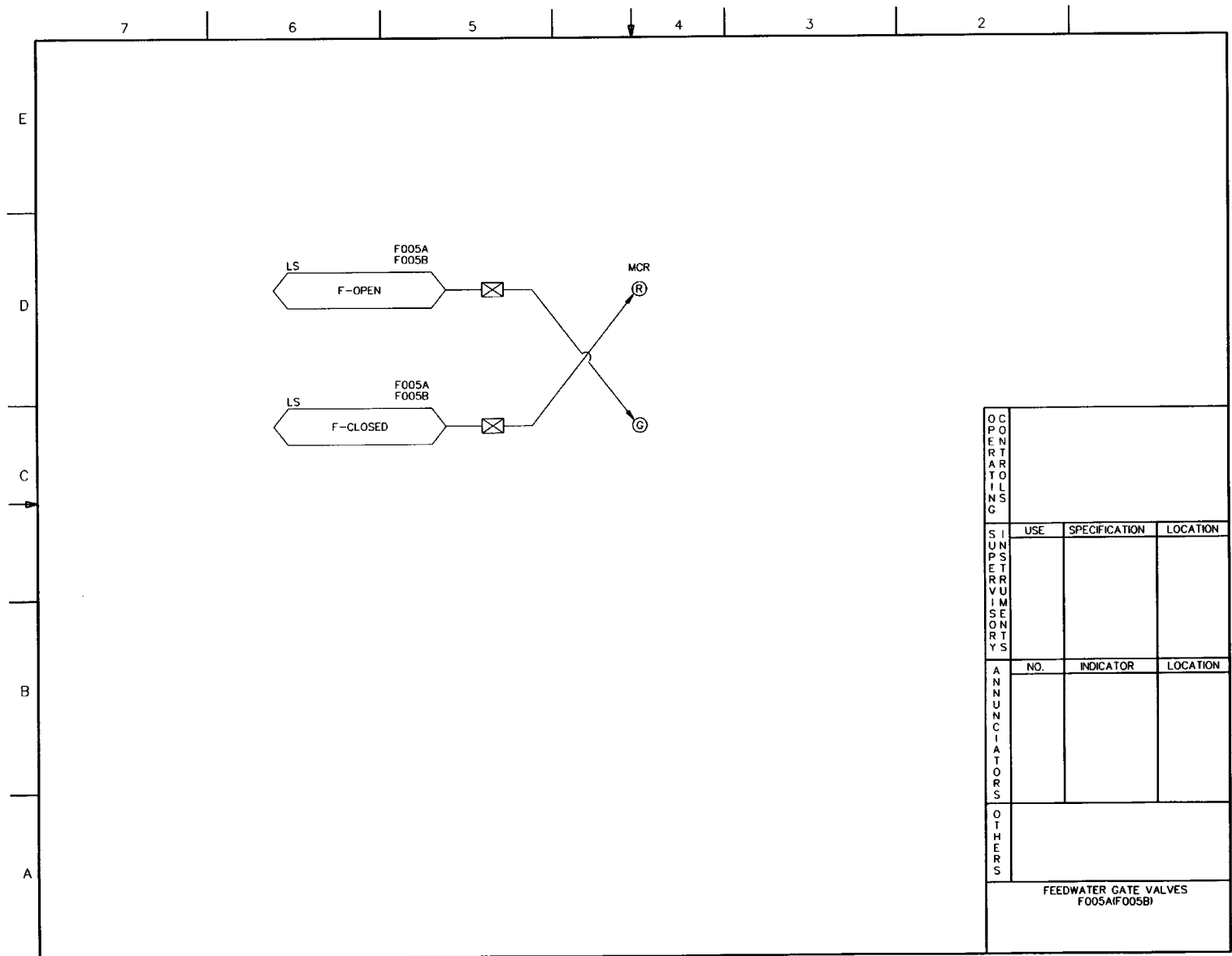


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 21 of 37)

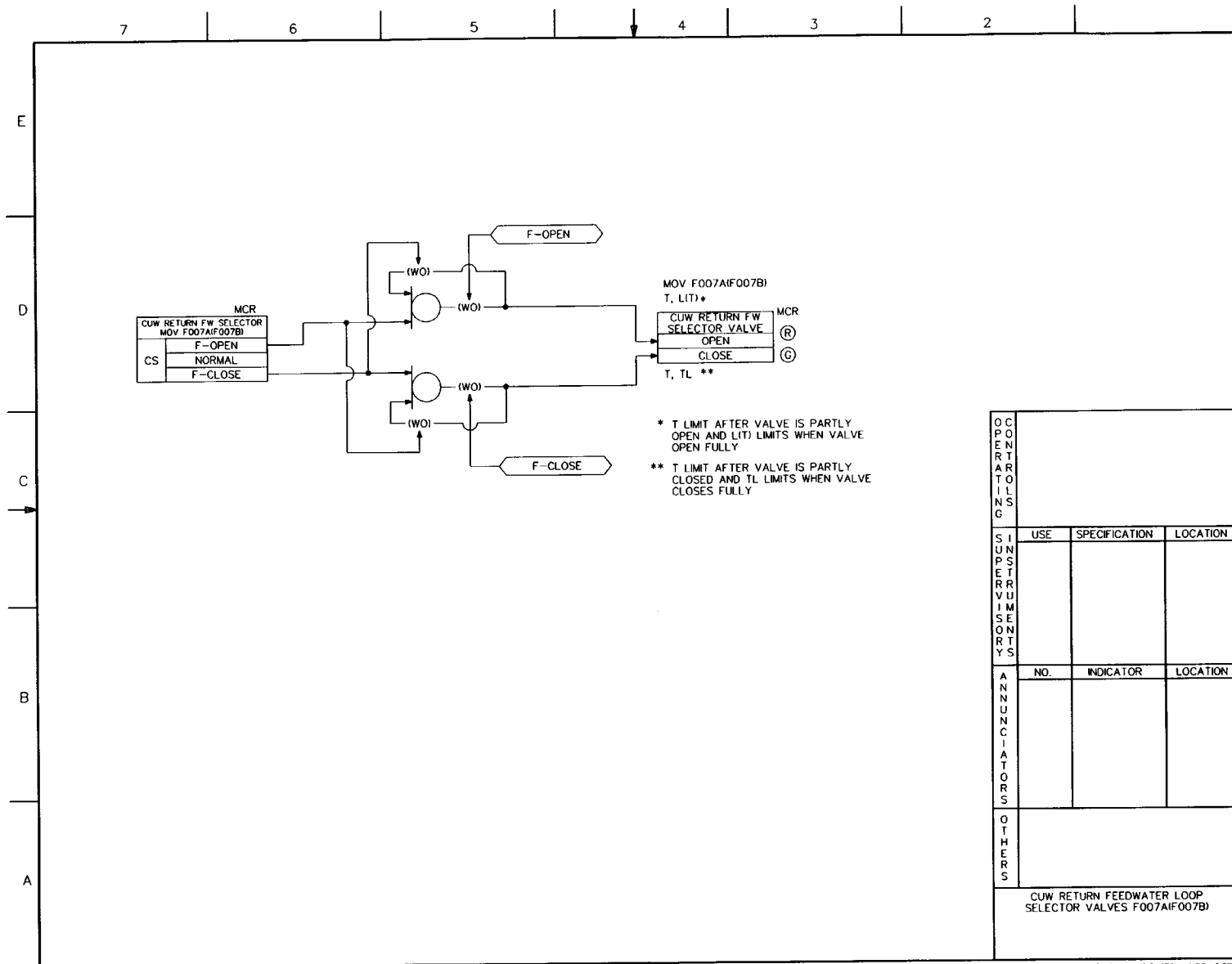


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 22 of 37)
ABWR DCD/Tier 2 Rev. 0 21-176

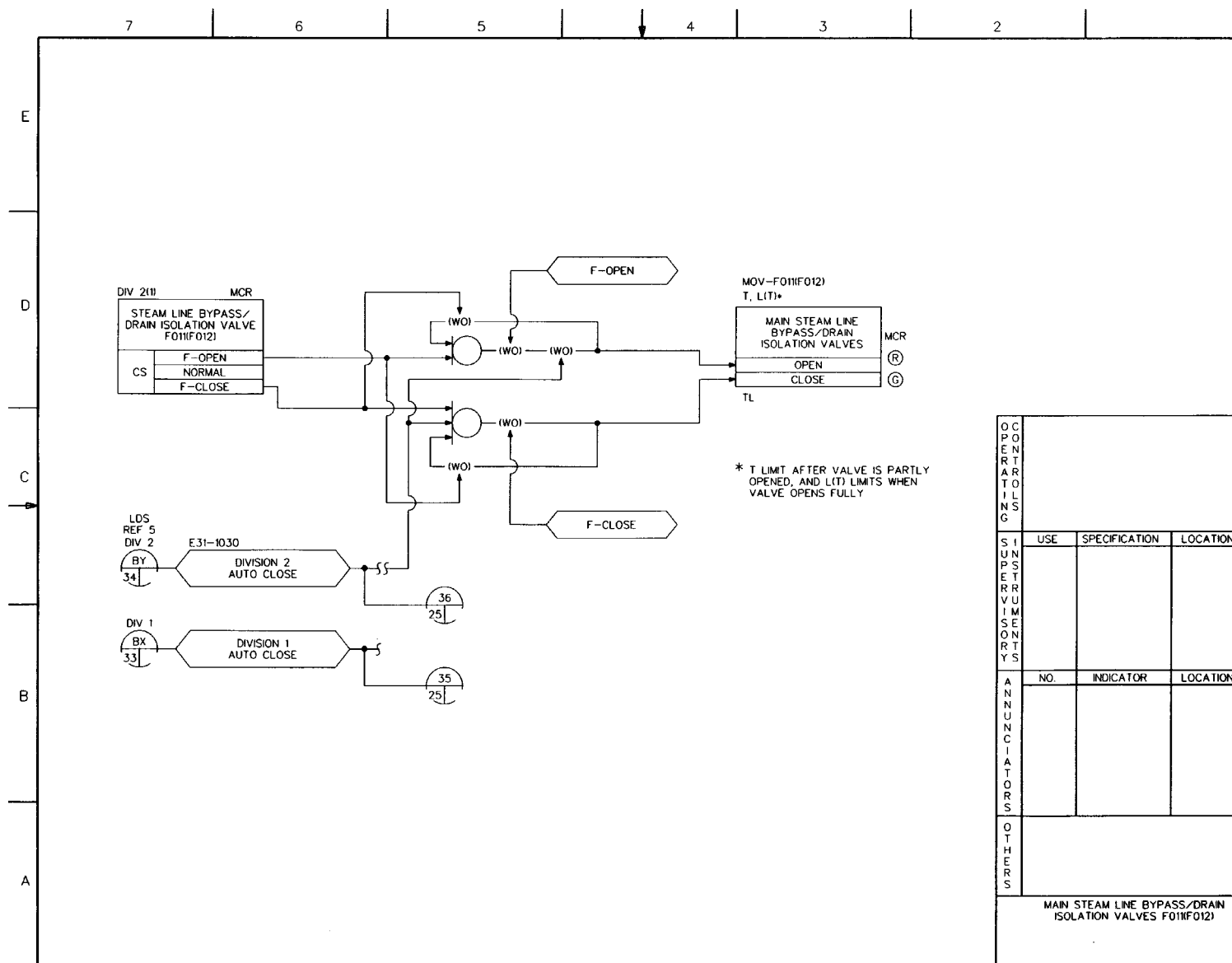


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 23 of 37)

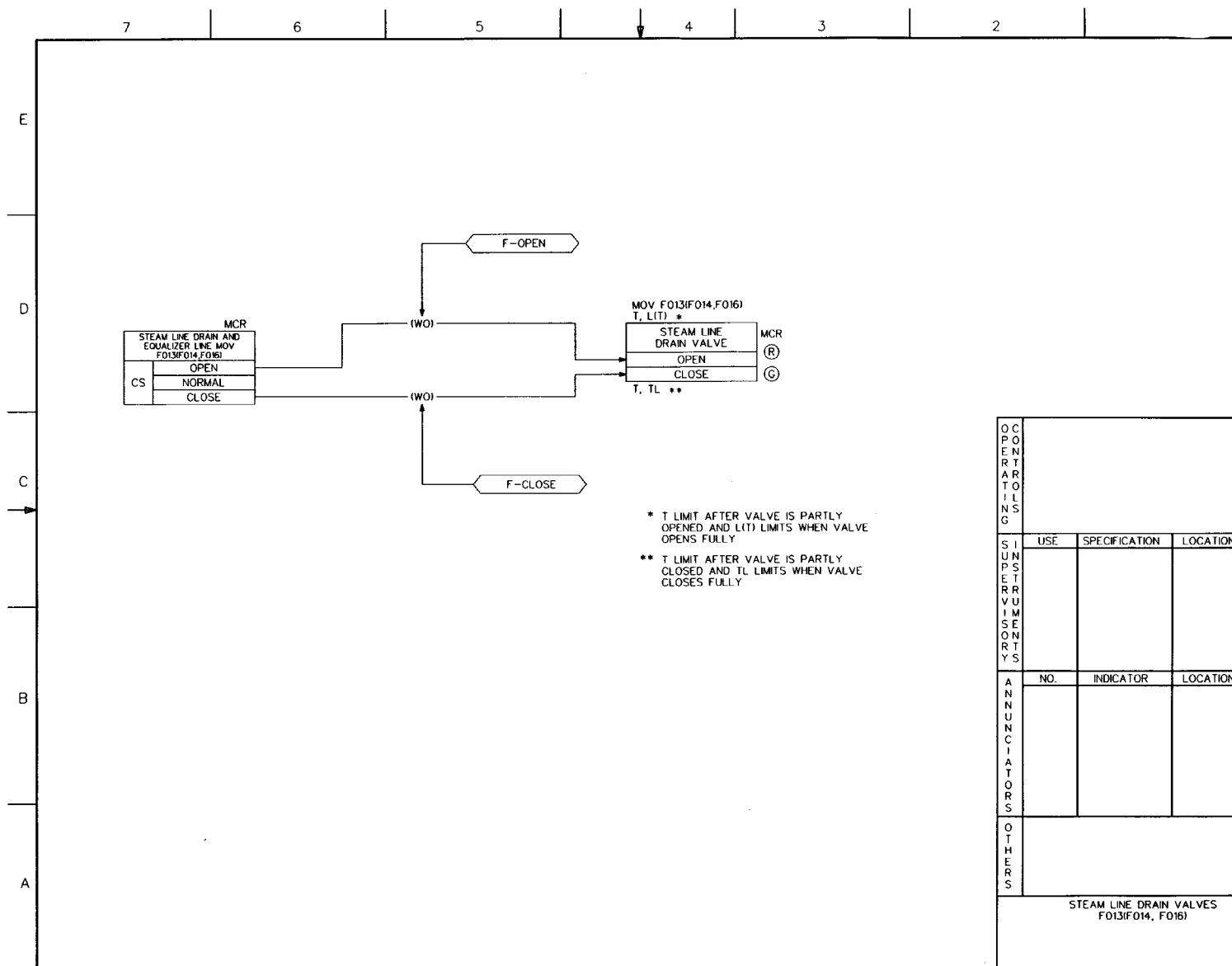


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 24 of 37)
ABWR DCD/Tier 2 Rev. 0 21-178

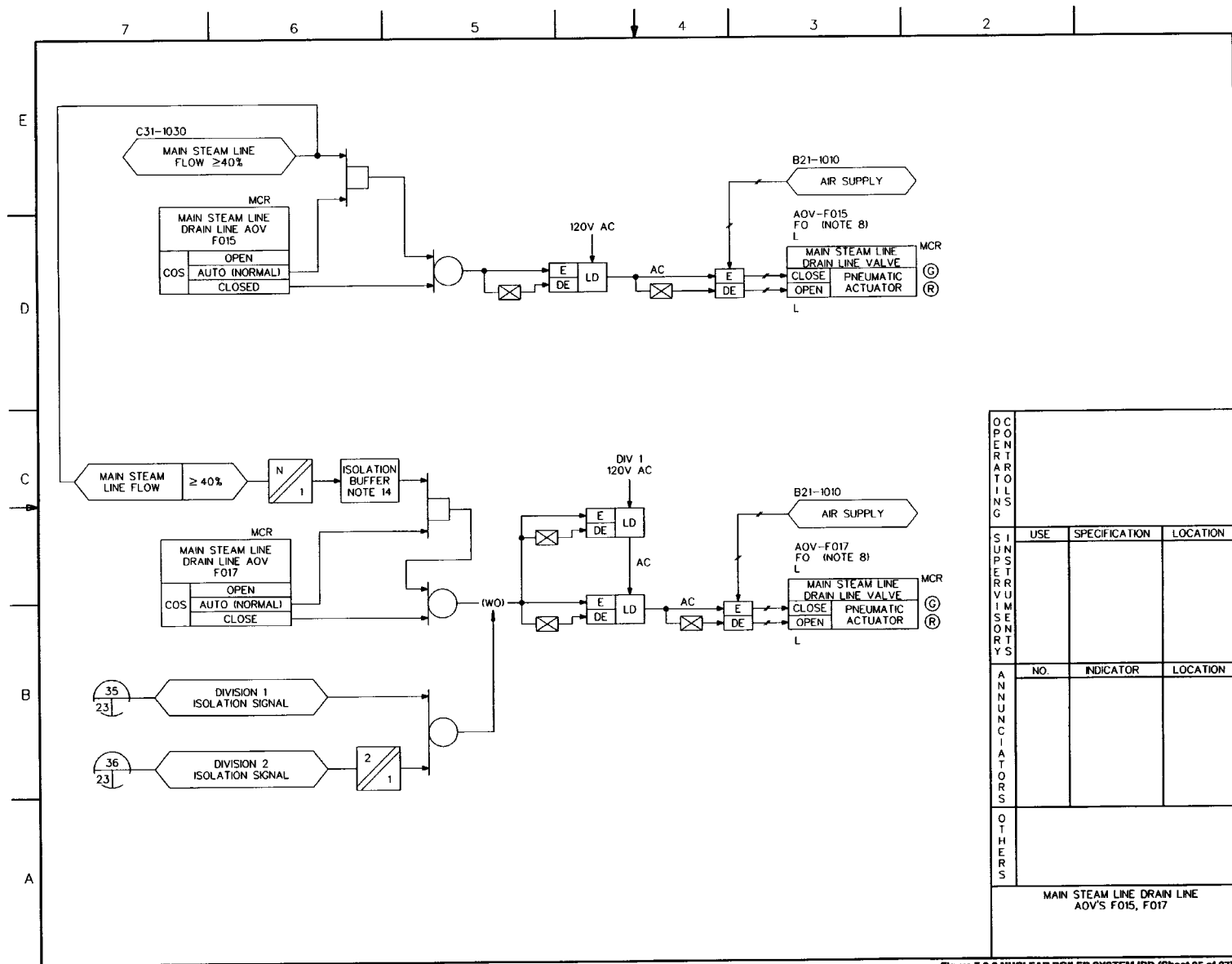


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 25 of 37)

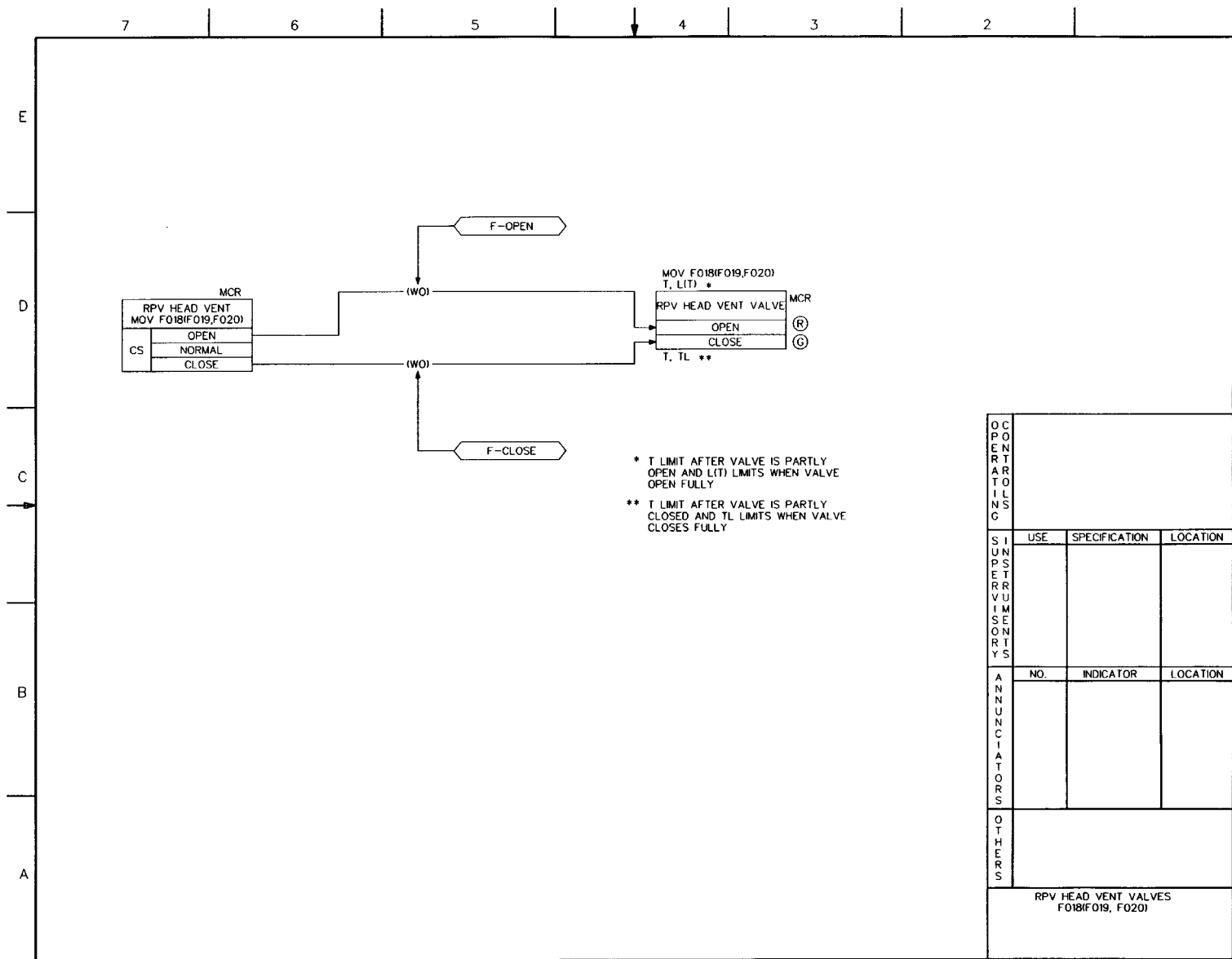


Figure 7.3-2 NUCLEAR BOILER SYSTEM (SD (Sheet 26 of 37))
ABWR DCD/Tier 2 Rev. 0 21-100

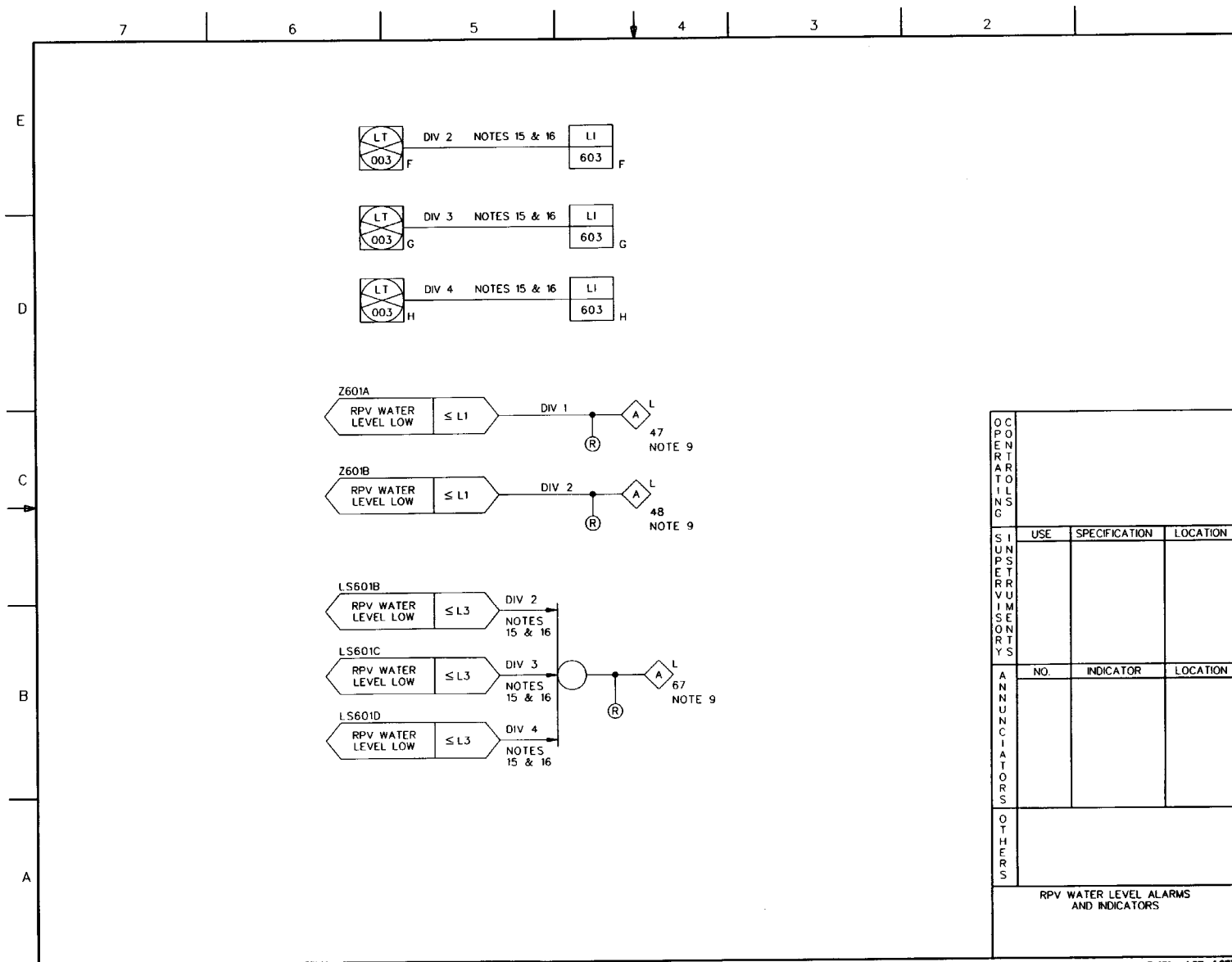


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 27 of 37)
ABWR DCD/Tier 2 Rev. 0 21-181

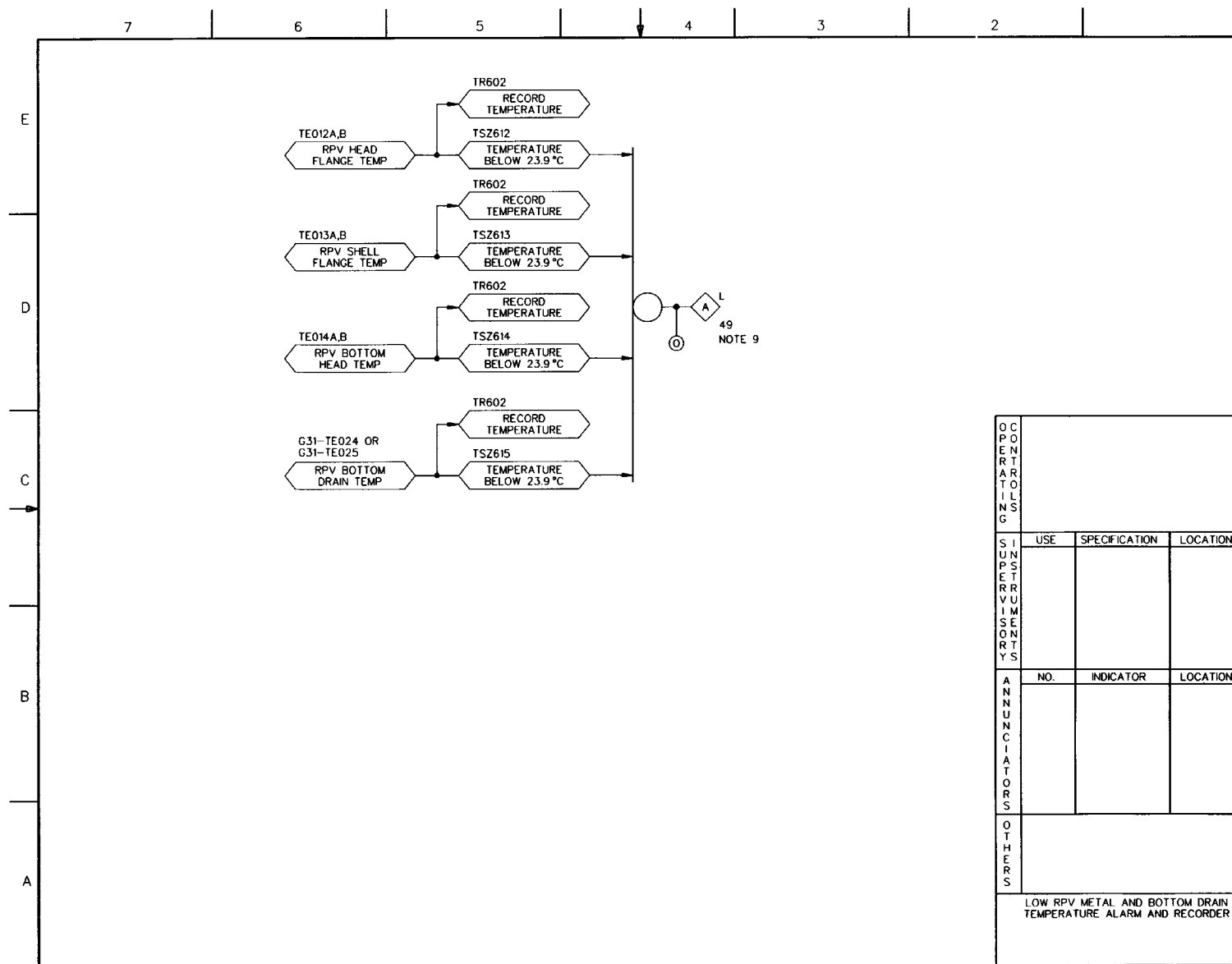


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBO (Sheet 28 of 37)
 ABWR DCD/Tier 2 Rev. 0 21-182

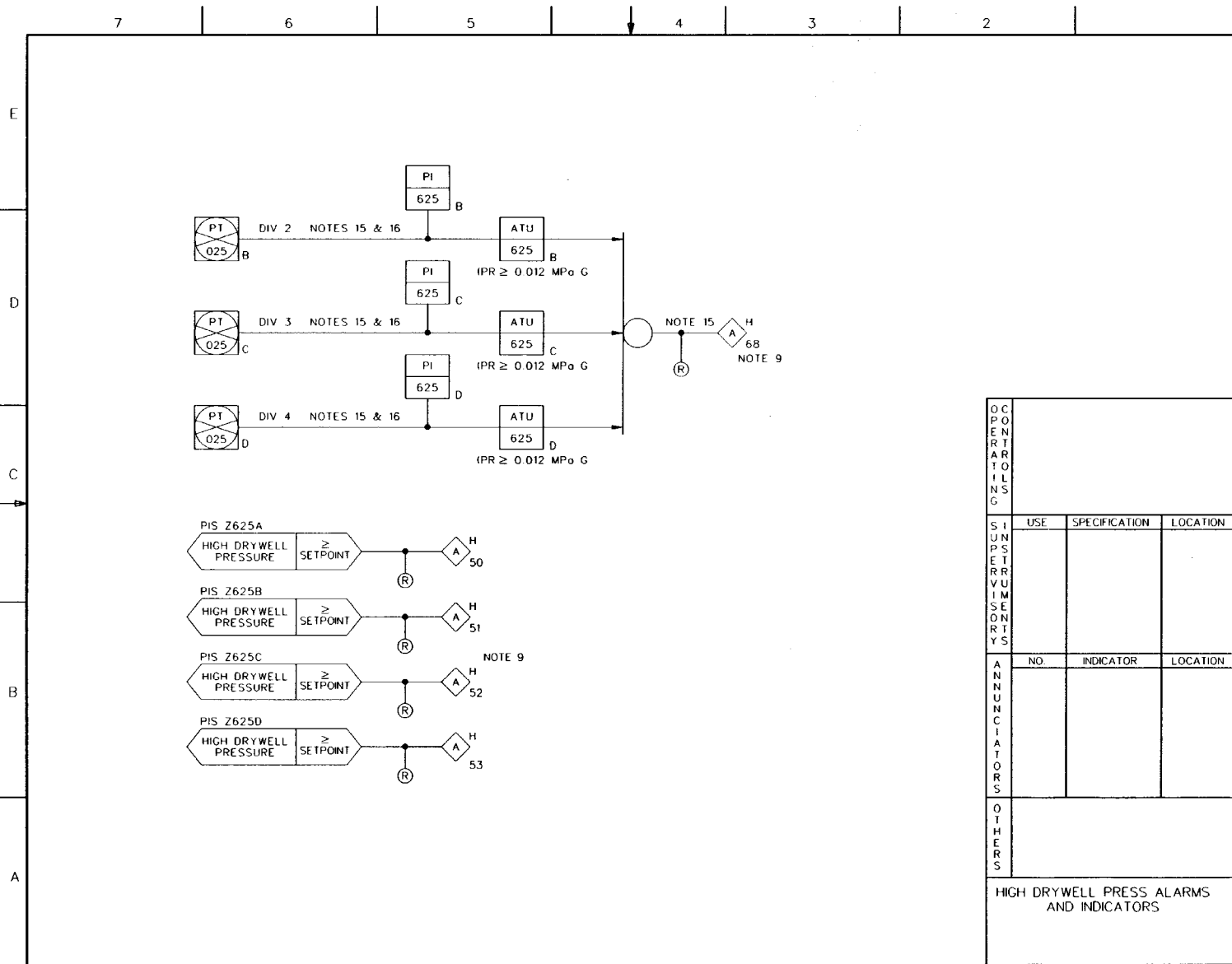


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 29 of 37)
ABWR DCD/Tier 2 Rev. 0 21-183

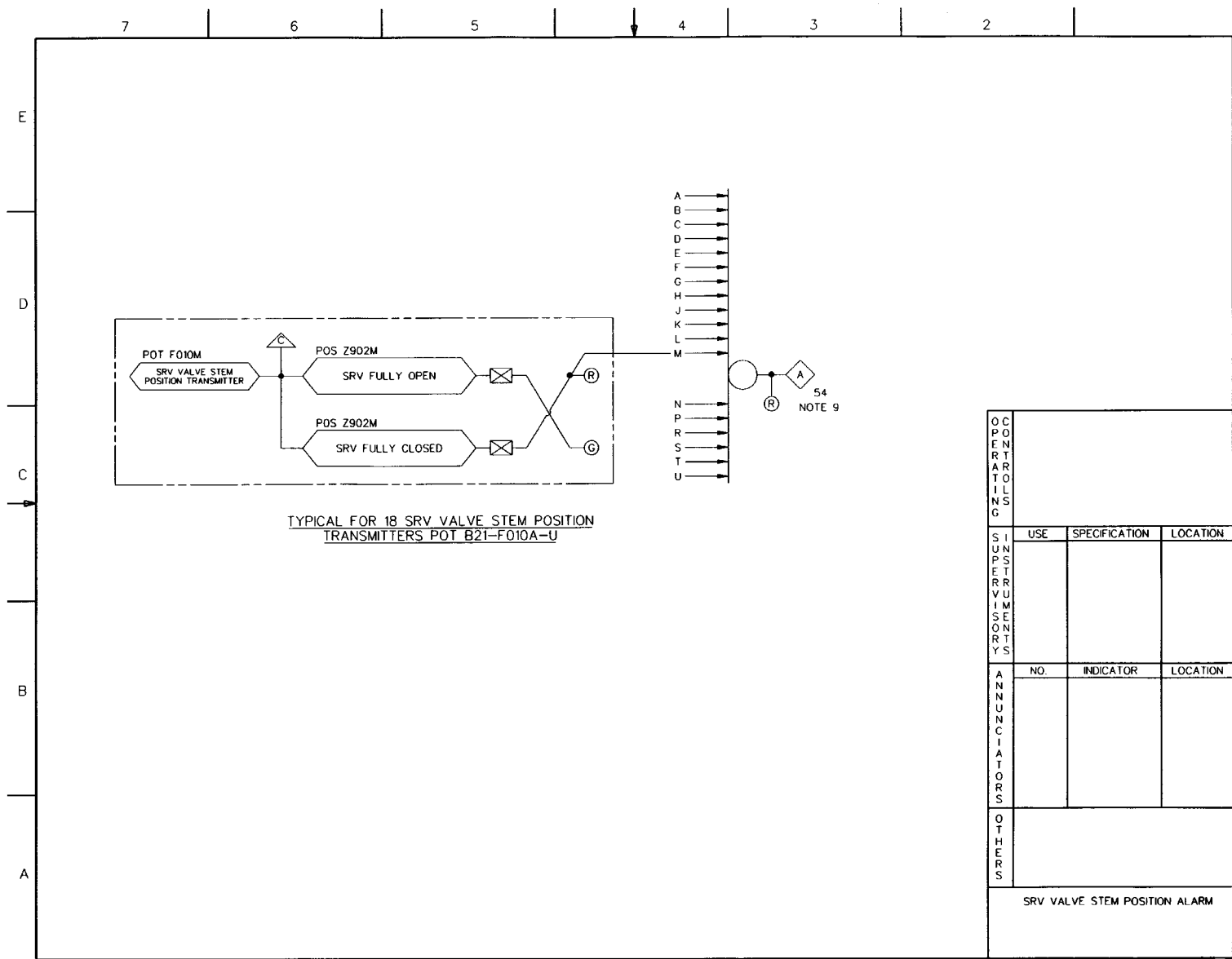


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 30 of 37)

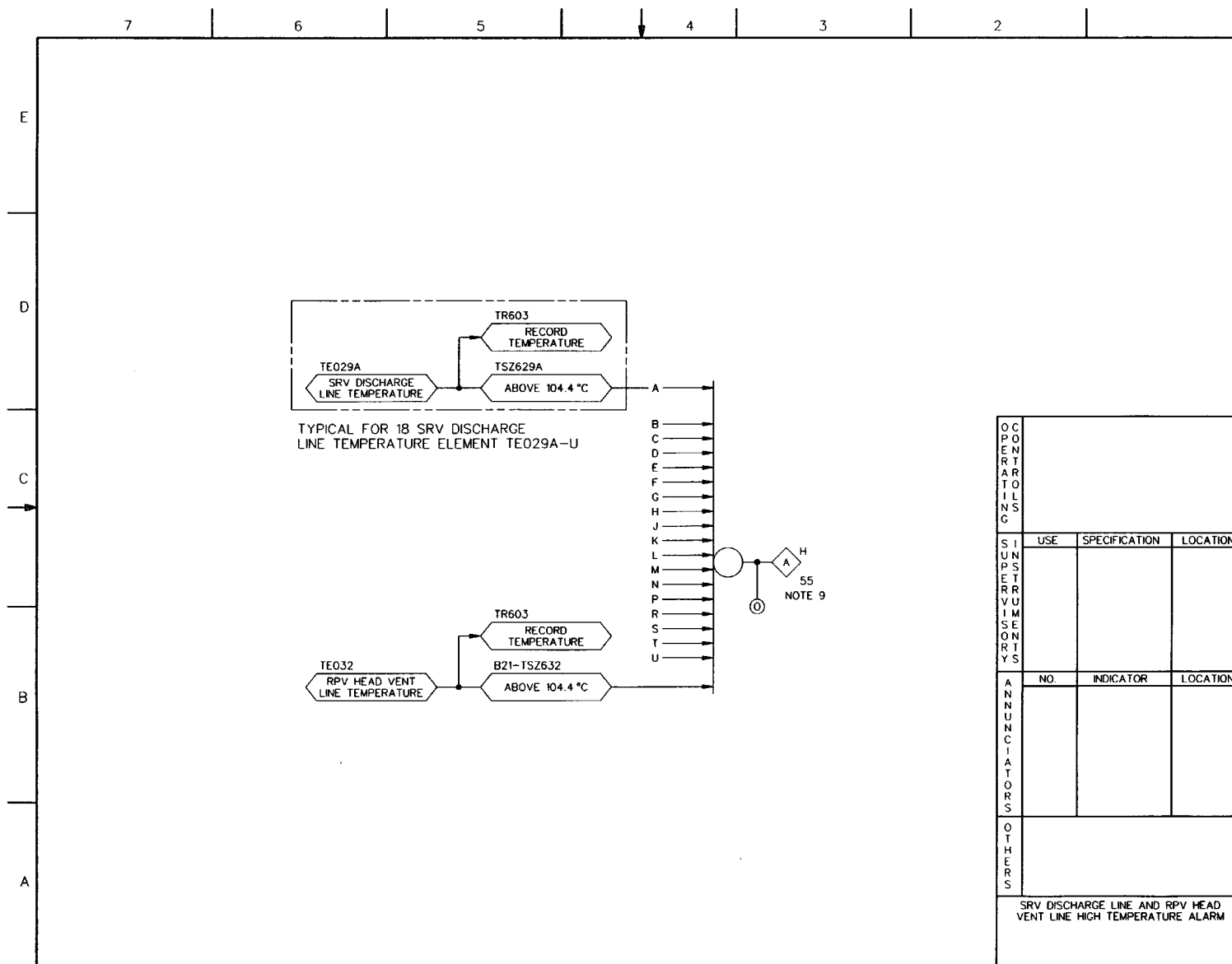


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 31 of 37)

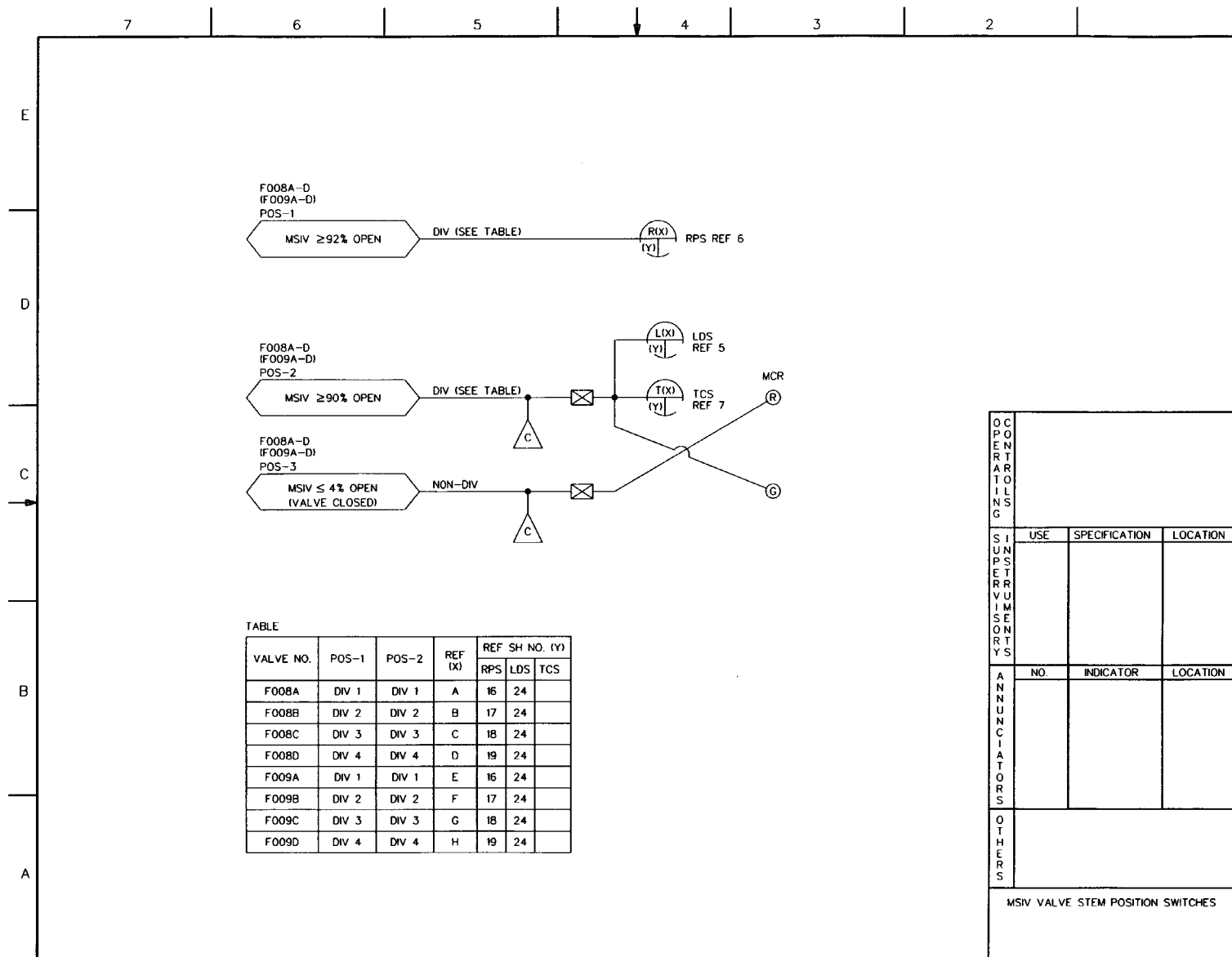


Figure 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 32 of 37)
ABWR DCD/Tier 2 Rev. 0 21-186

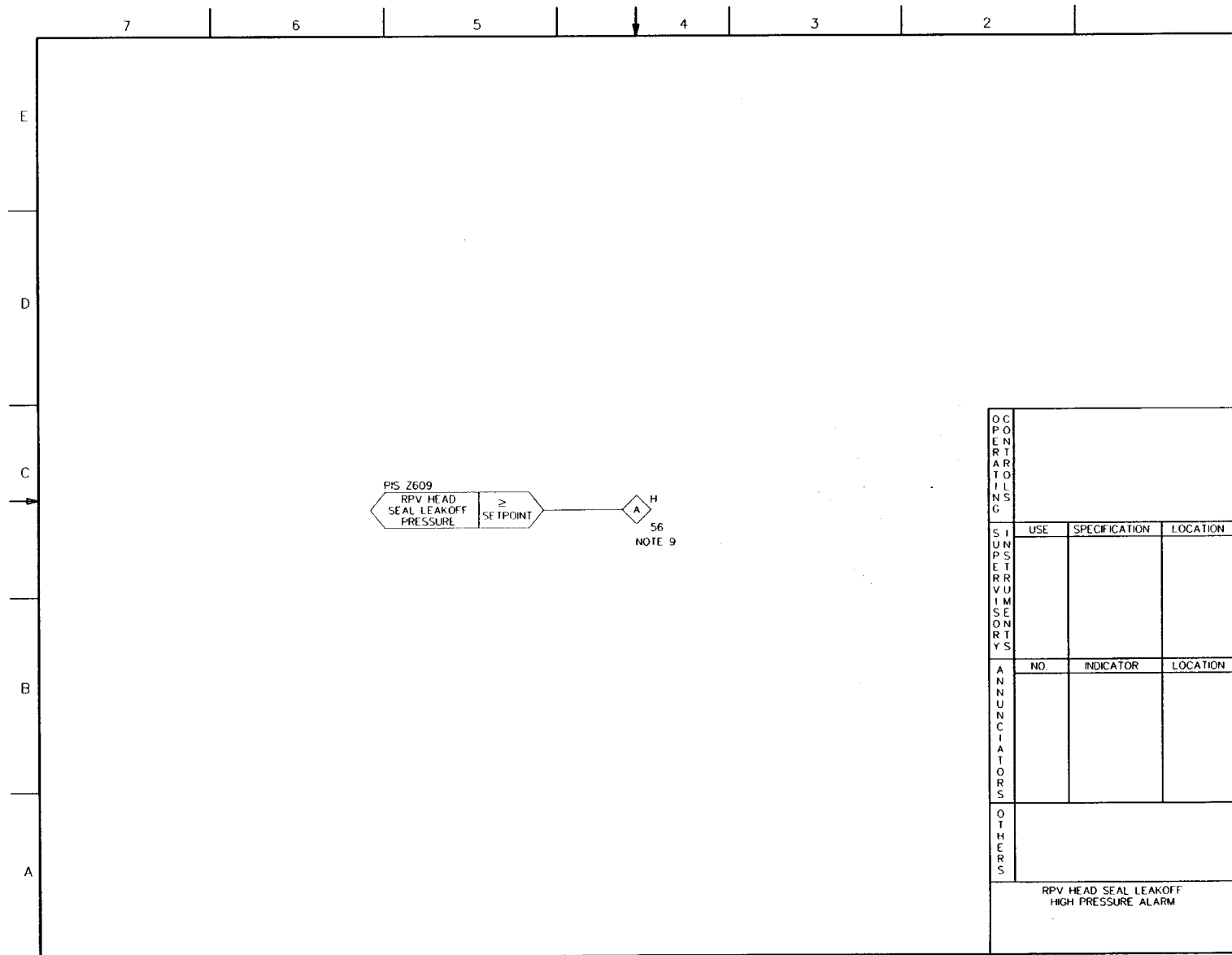


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 33 of 37)
ABWR DCD/Tier 2 Rev. 0 21-197

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TABLE 1: ANNUNCIATOR/ALARM LIGHTS - NOTE 10

ALARM NO.	INDICATION	FUNCTION	SOURCE OF SIGNAL
1	ALARM/RED LIGHT	HIGH REACTOR PRESSURE DIVISION 1	LOGIC OUTPUT FOR SRV B21-F010P SHEET 3
2	ALARM/RED LIGHT	HIGH REACTOR PRESSURE DIVISION 2	LOGIC OUTPUT FOR SRV B21-F010J SHEET 4
3	ALARM	ADS CHANNEL 1 ARMED DIVISION 1	LOGIC OUTPUT SHEET 11
4	ALARM	ADS CHANNEL 2 ARMED DIVISION 1	LOGIC OUTPUT SHEET 11
5	ALARM	ADS CHANNEL 1 TRIP DIVISION 1	LOGIC OUTPUT SHEET 11
6	ALARM	ADS CHANNEL 2 TRIP DIVISION 1	LOGIC OUTPUT SHEET 11
7	ALARM/ORANGE LIGHT	ADS INHIBIT SWITCH IN INHIBIT POSITION DIVISION 1	LOGIC OUTPUT SHEET 11
8	ALARM	ADS CHANNEL 1 MANUAL PERMISSIVE DIVISION 1	LOGIC OUTPUT SHEET 11
9	ALARM	ADS CHANNEL 2 MANUAL PERMISSIVE DIVISION 1	LOGIC OUTPUT SHEET 11
10	ALARM	ADS 29 SECOND TIMER RUNNING CHANNEL 1 DIVISION 1	LOGIC OUTPUT SHEET 14
11	ALARM	ADS 29 SECOND TIMER RUNNING CHANNEL 2 DIVISION 1	LOGIC OUTPUT SHEET 15
12	ALARM	ADS HIGH DRYWELL PRESSURE PERMISSIVE CHANNEL 1 DIV 1	LOGIC OUTPUT SHEET 14
13	ALARM	ADS HIGH DRYWELL PRESSURE PERMISSIVE CHANNEL 2 DIV 1	LOGIC OUTPUT SHEET 15
14	ALARM	ADS ECCS PUMP DISC PRESS PERMISSIVE CHANNEL 1 DIV 1	LOGIC OUTPUT SHEET 14
15	ALARM	ADS ECCS PUMP DISC PRESS PERMISSIVE CHANNEL 2 DIV 1	LOGIC OUTPUT SHEET 15
16	ALARM	ADS CHANNEL 1 ARMED DIVISION 2	LOGIC OUTPUT SHEET 11
17	ALARM	ADS CHANNEL 2 ARMED DIVISION 2	LOGIC OUTPUT SHEET 11
18	ALARM	ADS CHANNEL 1 TRIP DIVISION 2	LOGIC OUTPUT SHEET 11
19	ALARM	ADS CHANNEL 2 TRIP DIVISION 2	LOGIC OUTPUT SHEET 11
20	ALARM/ORANGE LIGHT	ADS INHIBIT SWITCH IN INHIBIT POSITION DIVISION 2	LOGIC OUTPUT SHEET 11
21	ALARM	ADS CHANNEL 1 MANUAL PERMISSIVE DIVISION 2	LOGIC OUTPUT SHEET 11
22	ALARM	ADS CHANNEL 2 MANUAL PERMISSIVE DIVISION 2	LOGIC OUTPUT SHEET 11
23	ALARM	ADS 29 SECOND TIMER RUNNING CHANNEL 1 DIVISION 2	LOGIC OUTPUT SHEET 14
24	ALARM	ADS 29 SECOND TIMER RUNNING CHANNEL 2 DIV 2	LOGIC OUTPUT SHEET 15
25	ALARM	ADS HIGH DRYWELL PRESS PERMISSIVE CHANNEL 1 DIV 2	LOGIC OUTPUT SHEET 14
26	ALARM	ADS HIGH DRYWELL PRESS PERMISSIVE CHANNEL 2 DIV 2	LOGIC OUTPUT SHEET 15
27	ALARM	ADS ECCS PUMP DISCH PRESS PERMISSIVE CHANNEL 1 DIV 2	LOGIC OUTPUT SHEET 14
28	ALARM	ADS ECCS PUMP DISCH PRESS PERMISSIVE CHANNEL 2 DIV 2	LOGIC OUTPUT SHEET 15
29	ALARM	SRV RELIEF "P" SWITCHED OFF	SWITCH OUTPUT SHEET 3

TABLE 1 (CONT)

ALARM NO.	INDICATION	FUNCTION	SOURCE OF SIGNAL
30	ALARM	SRV RELIEF "J" SWITCHED OFF	SWITCH OUTPUT SHEET 4
31	ALARM	SRV RELIEF "M" SWITCHED OFF	SWITCH OUTPUT SHEET 5
32	ALARM	SRV RELIEF "S" SWITCHED OFF	SWITCH OUTPUT SHEET 5
33	ALARM	SRV RELIEF "G" SWITCHED OFF	SWITCH OUTPUT SHEET 6
34	ALARM	SRV RELIEF "B" SWITCHED OFF	SWITCH OUTPUT SHEET 5
35	ALARM	SRV RELIEF "K" SWITCHED OFF	SWITCH OUTPUT SHEET 7
36	ALARM	SRV RELIEF "E" SWITCHED OFF	SWITCH OUTPUT SHEET 8
37	ALARM	SRV RELIEF "U" SWITCHED OFF	SWITCH OUTPUT SHEET 8
38	ALARM	SRV RELIEF "D" SWITCHED OFF	SWITCH OUTPUT SHEET 8
39	ALARM	SRV RELIEF "N" SWITCHED OFF	SWITCH OUTPUT SHEET 9
40	ALARM	SRV RELIEF "H" SWITCHED OFF	SWITCH OUTPUT SHEET 9
41	ALARM	SRV RELIEF "T" SWITCHED OFF	SWITCH OUTPUT SHEET 9
42	ALARM	SRV RELIEF "C" SWITCHED OFF	SWITCH OUTPUT SHEET 9
43	ALARM	SRV RELIEF "L" SWITCHED OFF	SWITCH OUTPUT SHEET 10
44	ALARM	SRV RELIEF "F" SWITCHED OFF	SWITCH OUTPUT SHEET 10
45	ALARM	SRV RELIEF "R" SWITCHED OFF	SWITCH OUTPUT SHEET 10
46	ALARM	SRV RELIEF "A" SWITCHED OFF	SWITCH OUTPUT SHEET 10
47	ALARM/RED LIGHT	ENHANCED RPV WATER LEVEL LOW DIV 1	LOGIC OUTPUT SHEET 27
48	ALARM/RED LIGHT	ENHANCED RPV WATER LEVEL LOW DIV 2	LOGIC OUTPUT SHEET 27
49	ALARM/ORANGE LIGHT	LOW RPV METAL OR BOTTOM DRAIN TEMP	LOGIC OUTPUT SHEET 28
50	ALARM/RED LIGHT	HIGH DRYWELL PRESSURE DIVISION 1	LOGIC OUTPUT SHEET 29

ANNUNCIATOR LIST

ANNUNCIATOR LIST

	7	6	5	4	3	2	
	TABLE 1 (CONT)						
E	ALARM NO.	INDICATION	FUNCTION	SOURCE OF SIGNAL			
	51	ALARM/RED LIGHT	HIGH DRYWELL PRESSURE DIVISION 2	LOGIC OUTPUT SHEET 29			
	52	ALARM/RED LIGHT	HIGH DRYWELL PRESSURE DIVISION 3	LOGIC OUTPUT SHEET 29			
	53	ALARM/RED LIGHT	HIGH DRYWELL PRESSURE DIVISION 4	LOGIC OUTPUT SHEET 29			
	54	ALARM/RED LIGHT	SRV VALVE(S) OPEN	LOGIC OUTPUT SHEET 30			
	55	ALARM/ORANGE LIGHT	SRV DISCHARGE LINE(S) OR RPV HEAD VENT HIGH TEMP	LOGIC OUTPUT SHEET 31			
D	56	ALARM	RPV HEAD SEAL LEAKOFF HIGH PRESSURE	LOGIC OUTPUT SHEET 33			
	57	ALARM	ADS 8 MINUTE TIMER RUNNING, CHANNEL 1, DIVISION 1	LOGIC OUTPUT SHEET 14			
	58	ALARM	ADS 8 MINUTE TIMER RUNNING, CHANNEL 2, DIVISION 1	LOGIC OUTPUT SHEET 15			
	59	ALARM	ADS 8 MINUTE TIMER RUNNING, CHANNEL 1, DIVISION 2	LOGIC OUTPUT SHEET 14			
	60	ALARM	ADS 8 MINUTE TIMER RUNNING, CHANNEL 2, DIVISION 2	LOGIC OUTPUT SHEET 15			
	61	WHITE LIGHT	ATWS AUTOMATIC INHIBIT OF ADS INITIATION, CHANNEL 1, DIVISION 1	LOGIC OUTPUT SHEET 13			
C	62	WHITE LIGHT	ATWS AUTOMATIC INHIBIT OF ADS INITIATION, CHANNEL 2, DIVISION 1	LOGIC OUTPUT SHEET 16			
	63	WHITE LIGHT	ATWS AUTOMATIC INHIBIT OF ADS INITIATION, CHANNEL 1, DIVISION 2	LOGIC OUTPUT SHEET 13			
	64	WHITE LIGHT	ATWS AUTOMATIC INHIBIT OF ADS INITIATION, CHANNEL 2, DIVISION 2	LOGIC OUTPUT SHEET 16			
	65	ALARM	ADS SRV SOLENOID(S) LOSS OF CONTINUITY DIVISION 1	LOGIC OUTPUT SHEET 18			
	66	ALARM	ADS SRV SOLENOID(S) LOSS OF CONTINUITY DIVISION 2	LOGIC OUTPUT SHEET 18			
	67	ALARM	RPV LOW WATER LEVEL 3 HARDWIRED	LOGIC OUTPUT SHEET 27			
	68	ALARM	HIGH DRYWELL PRESSURE HARDWIRED	LOGIC OUTPUT SHEET 29			
B							
A							
							ANNUNCIATOR LIST

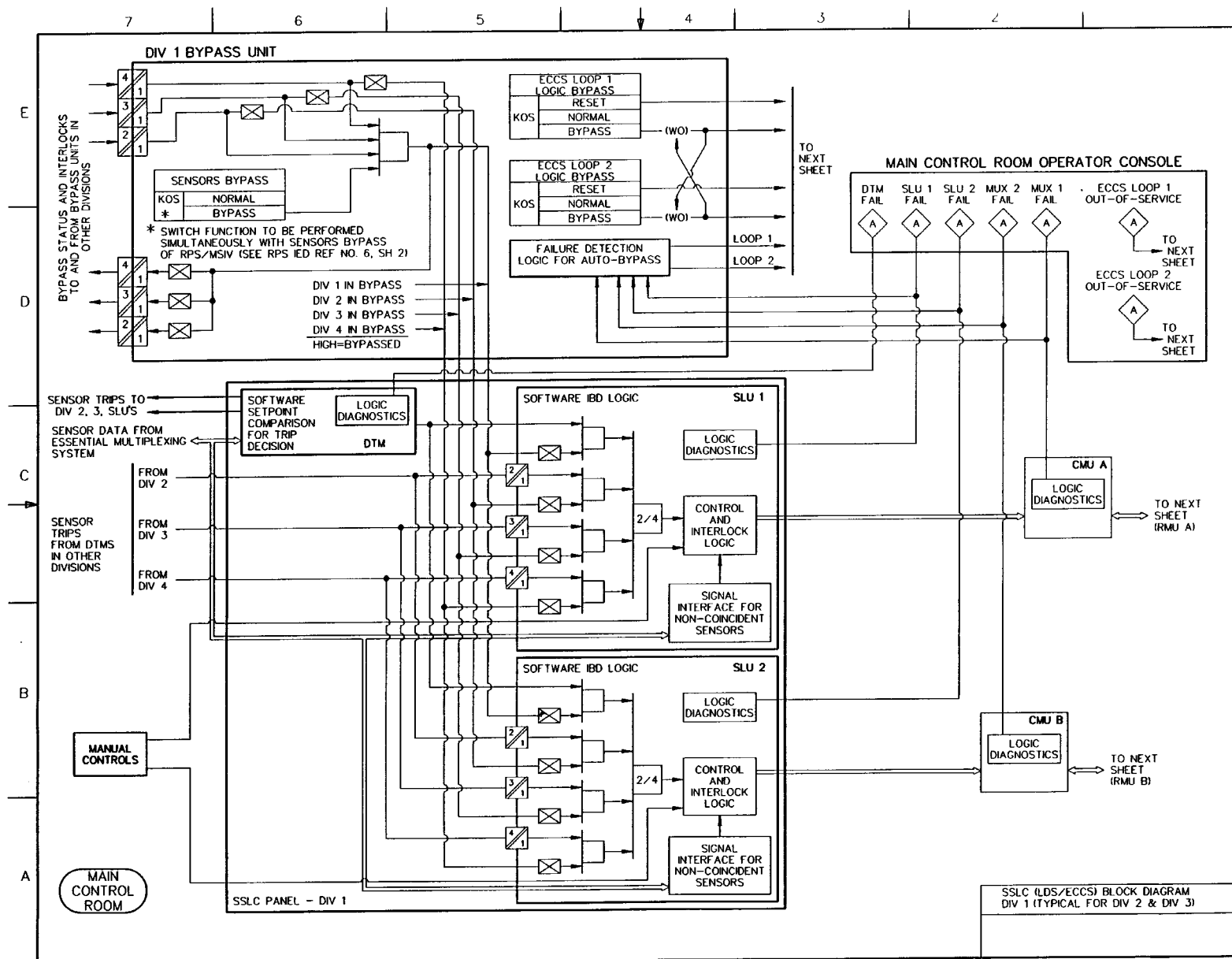


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 36 of 37)

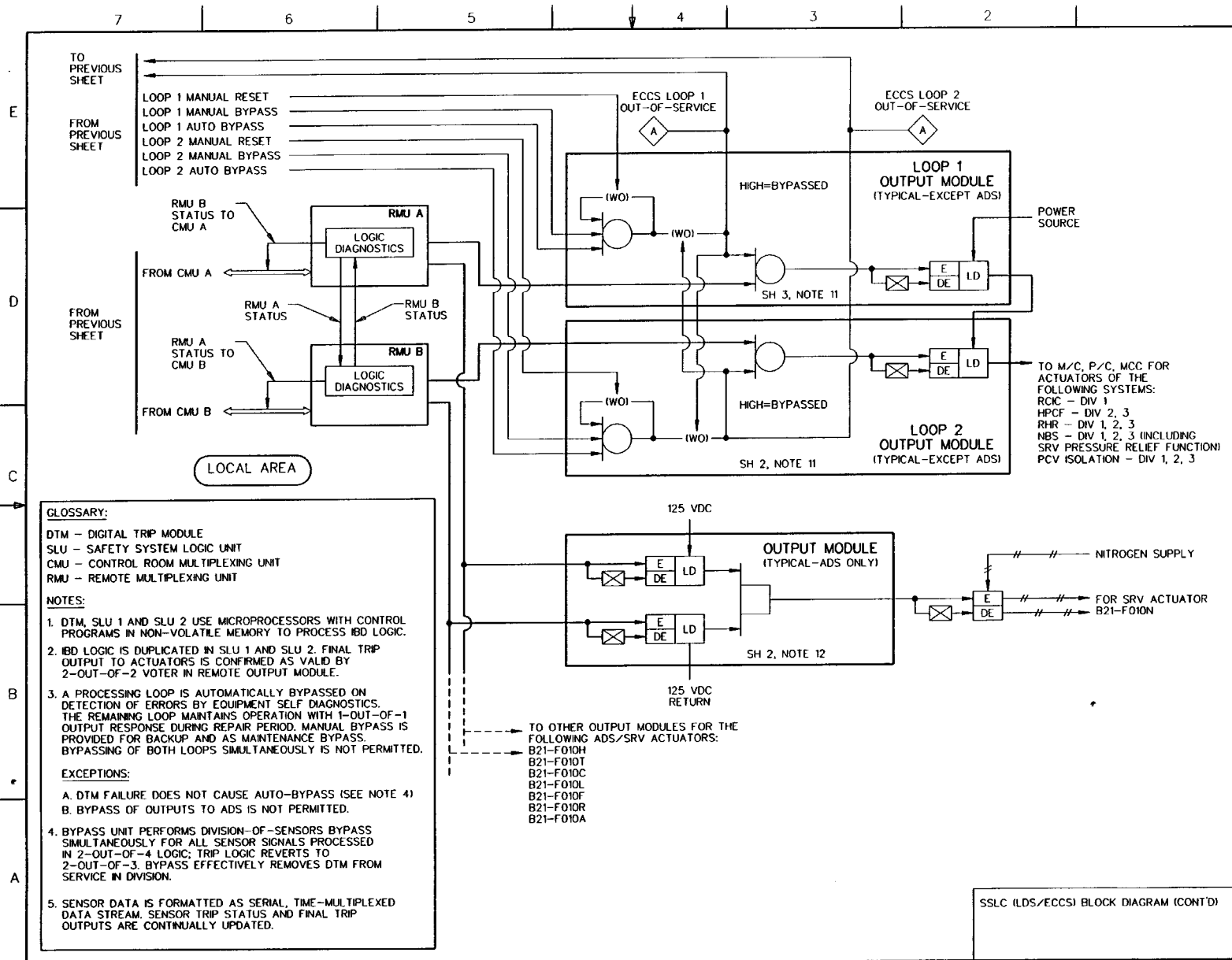


FIGURE 7.3-2 NUCLEAR BOILER SYSTEM IBD (Sheet 37 of 37)
 ABWR DCD/Tier 2 Rev. 0 21-191

REFERENCE DOCUMENTS UNDER THE FOLLOWING IDENTITIES
SHALL BE USED IN CONJUNCTION WITH THIS DRAWING.

1. ALL EQUIPMENT AND INSTRUMENT PREFIXED BY SYSTEM NO. E51- UNLESS OTHERWISE NOTED.
2. DIVISIONAL SIGNALS TO ANNUNCIATORS SHALL BE ISOLATED FROM NON-IE ALARM.
3. THE POWER TO CONTROL LOGIC AND TO THE MOTOR OPERATED F036 VALVE SHALL BE SUPPLIED FROM DIVISION 2 POWER.
4. THE LOGIC DESIGN SHALL INCORPORATE PROVISIONS TO REVERT 2/4 LOGIC TO 2/3 LOGIC DURING BYPASS OF A SINGLE DIVISION OF SENSORS. ALSO, THE LOGIC DESIGN SHALL NOT PERMIT THE BYPASS OF MORE THAN ONE DIVISION OF SENSORS AT A TIME.
5. SETPOINT VALUE IS NOT SUBJECT TO THE APPROVAL OF THIS DOCUMENT.
6. POWER SUPPLY SHALL BE DIVISION 1 UNLESS OTHERWISE SPECIFIED.
7. THE INBOARD CONTAINMENT ISOLATION VALVE F035 MANUAL CONTROL AND VALVE POSITION STATUS INDICATION (IN ADDITION TO BEING MULTIPLEXED) SHALL BE HARDWIRED TO THE MAIN CONTROL ROOM.

- | | <u>MPL NO.</u> |
|--|----------------|
| 1. MAKEUP WATER CONDENSATE SYSTEM IBD | P13-1030 |
| 2. RCIC SYSTEM P&ID | E51-1010 |
| 3. NUCLEAR BOILER SYSTEM P&ID | B21-1010 |
| 4. LEAK DETECTION & ISOLATION SYSTEM IBD | E31-1030 |
| 5. ATMOSPHERIC CONTROL SYSTEM IBD | T31-1030 |

SH NO.	TITLE
1	COVER/CONTENTS/NOTES
2	TABLE 1: ANNUNCIATOR/ALARM LIST
3	RCIC INITIATION LOGIC
4	RCIC AUTO SHUTDOWN
4	LEAK DETECTION ISOLATION
4	CONDENSATE PUMP DISCHARGE DRAIN VALVE F031
5	CONDENSATE PUMP DISCHARGE DRAIN VALVE F032
5	DRAIN POT SYSTEM ISOLATION VALVE F040
5	STEAM INLET TRAP BYPASS VALVE F058
5	DRAIN POT SYSTEM ISOLATION VALVE F041
6	TURBINE GOVERNOR VALVE
6	VACUUM PUMP
7	TESTABLE CHECK VALVE F005 AND EQUALIZING VALVE F026
7	CONDENSATE PUMP
8	INJECTION VALVE F004
8	MINIMUM FLOW BYPASS TO SUPPRESSION POOL VALVE F011
9	CONDENSATE STORAGE TANK SUCTION VALVE F001
9	SUPPRESSION POOL SUCTION VALVE F006
10	STEAM SUPPLY TO TURBINE VALVE F037
10	COOLING WATER SUPPLY VALVE F012
11	TEST BYPASS TO SUPPRESSION POOL VALVE F008
11	TEST BYPASS TO SUPPRESSION POOL VALVE F009

SH NO.	TITLE
12	STEAM SUPPLY LINE INBOARD ISOL VALVE F035
12	STEAM SUPPLY LINE OUTBOARD ISOL VALVE F036
12	TURBINE EXHAUST TO SUPPRESSION POOL VALVE F039
12	VACUUM PUMP DISCHARGE ISOL VALVE F047
13	STEAM LINE WARM UP VALVE F048
13	STEAM SUPPLY BYPASS VALVE F045
14	MOTOR OPERATED TURBINE TRIP & THROTTLE VALVE
15	THERMAL OVERLOAD RELAY BYPASS
15	TABLE 2: LIST OF EQUIPMENT WITH THERMAL OVERLOAD RELAY BYPASS
16	TURBINE EXHAUST DIAPHRAM HIGH PRESS ISOLATION
16	RCIC OUT-OF-SERVICE ALARM
17	MISCELLANEOUS ALARMS

MPL NO. E51-1030

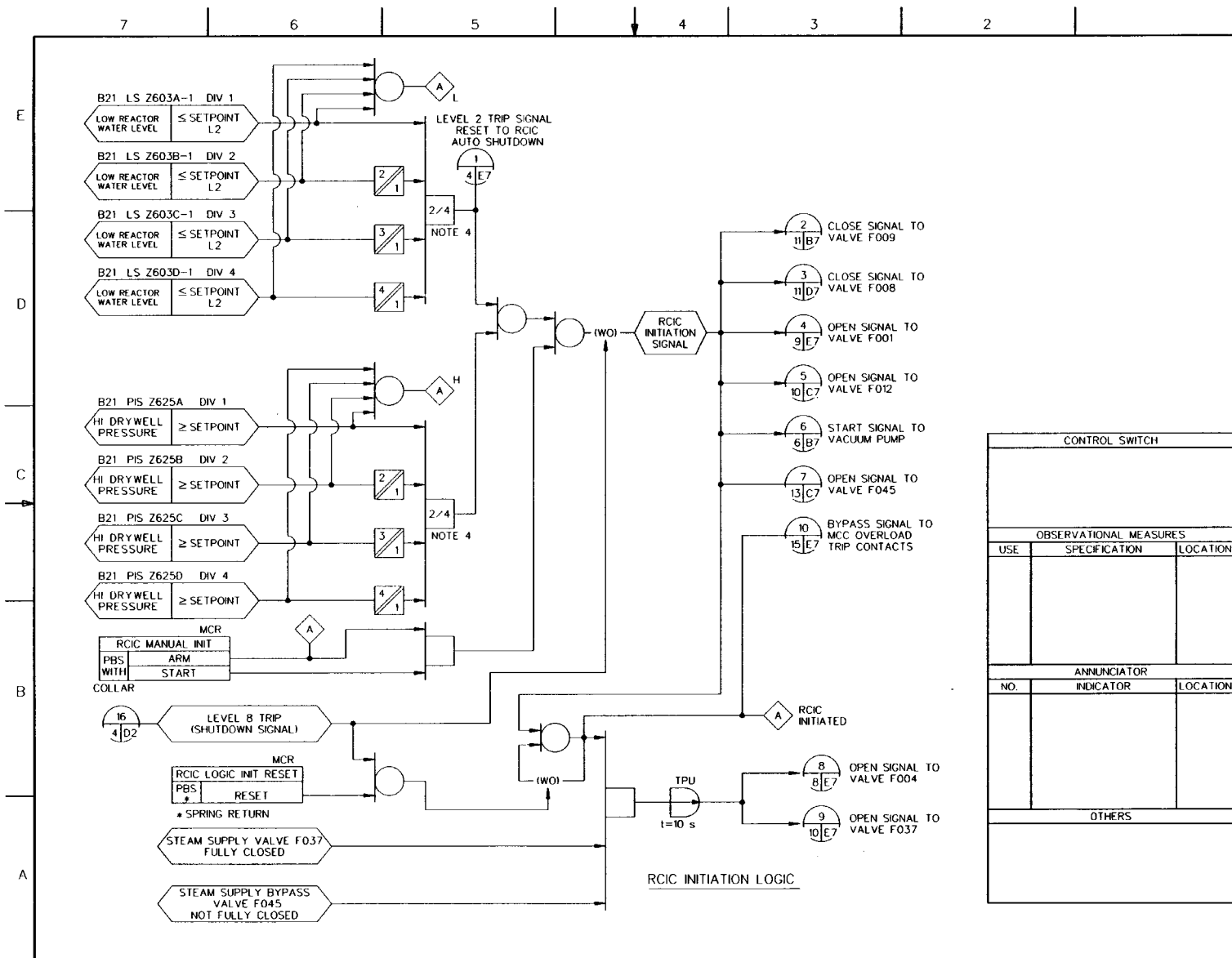


FIGURE 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 3 of 171)
ABWR DCD/Tier 2 Rev. 0 21-194

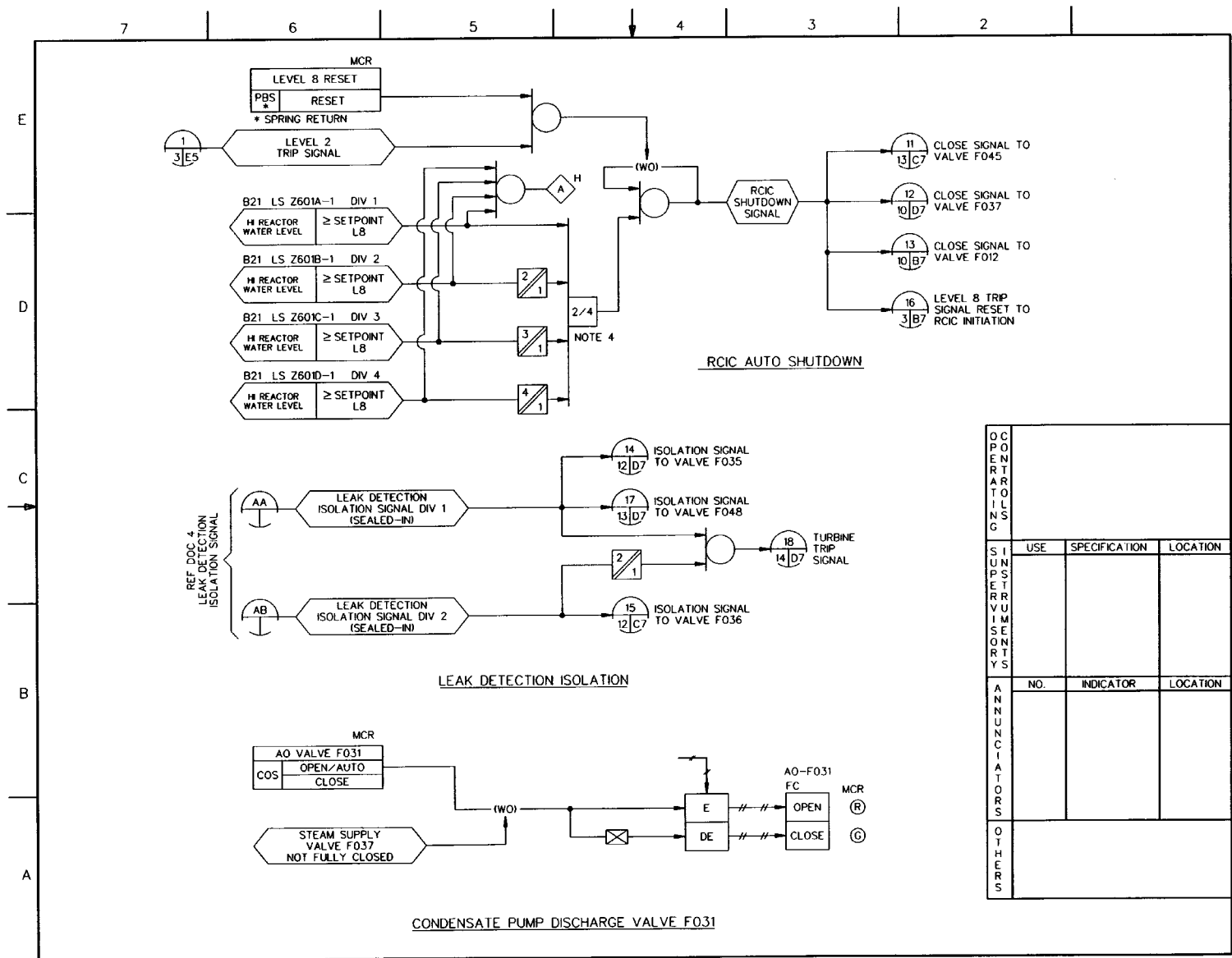
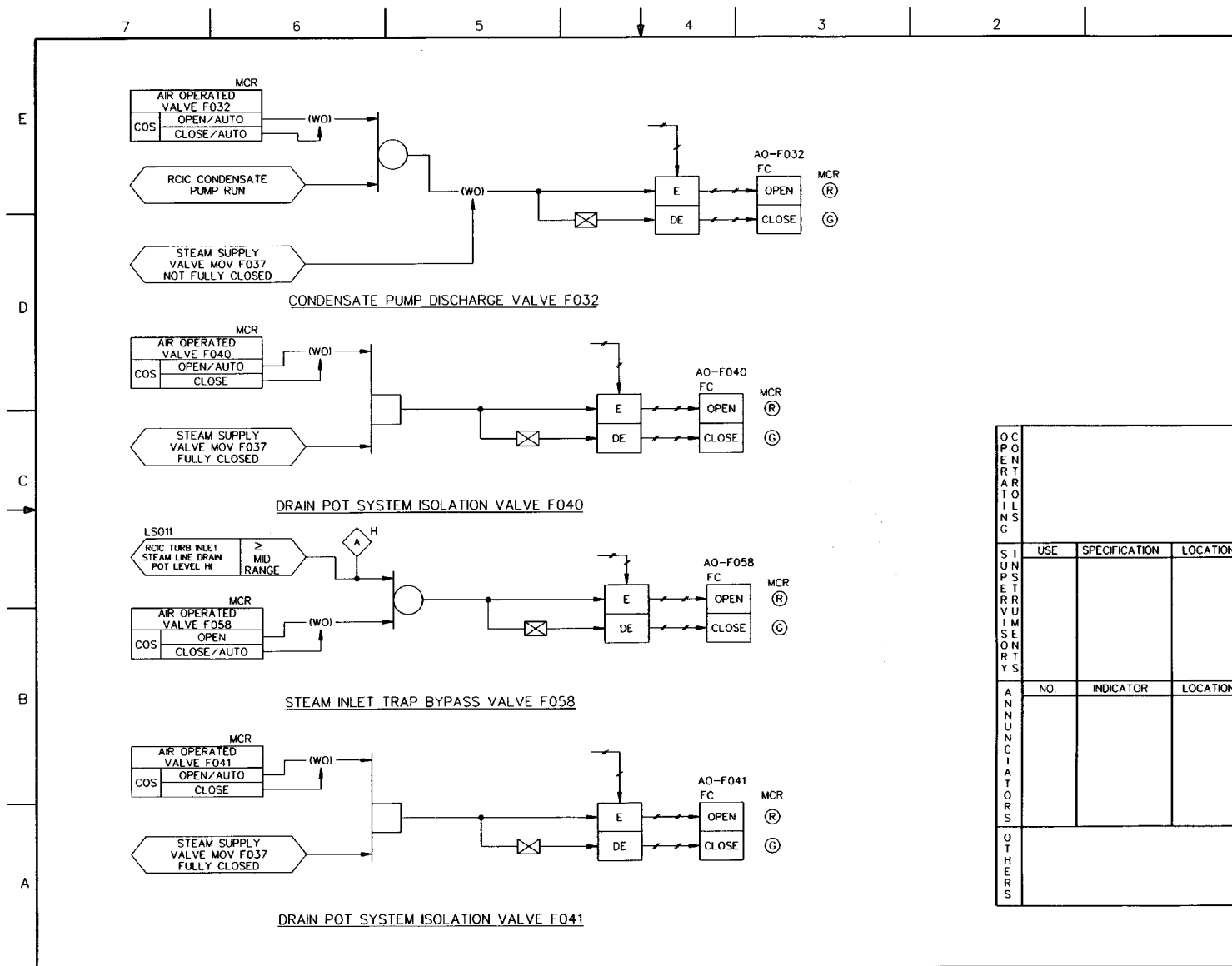


Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 4 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-195



OPERATIONAL			
	USE	SPECIFICATION	LOCATION
SUPPORT			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 5 of 17)
ABWR DCD/Tier 2 Rev. 0 21-196

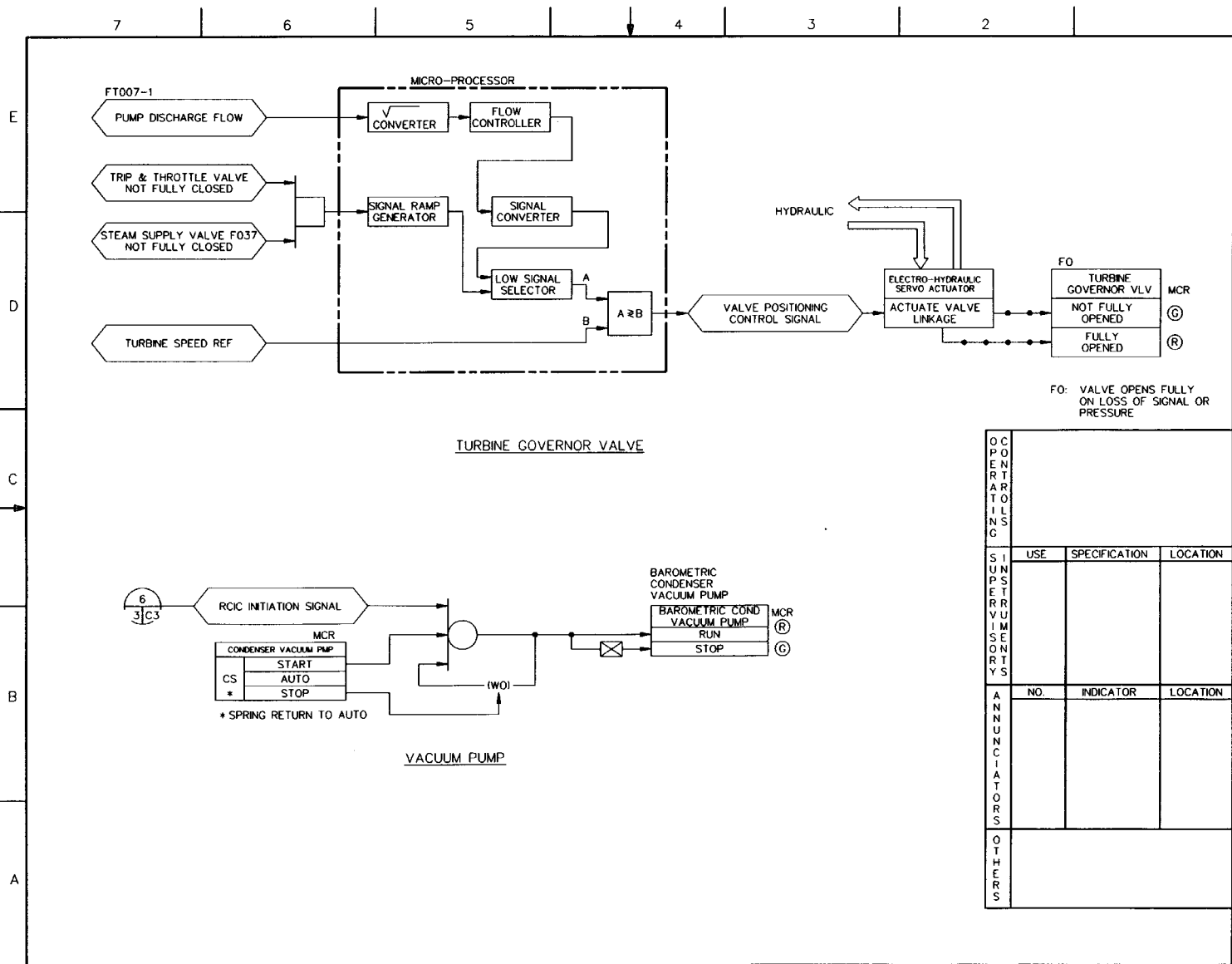


Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 8 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-197

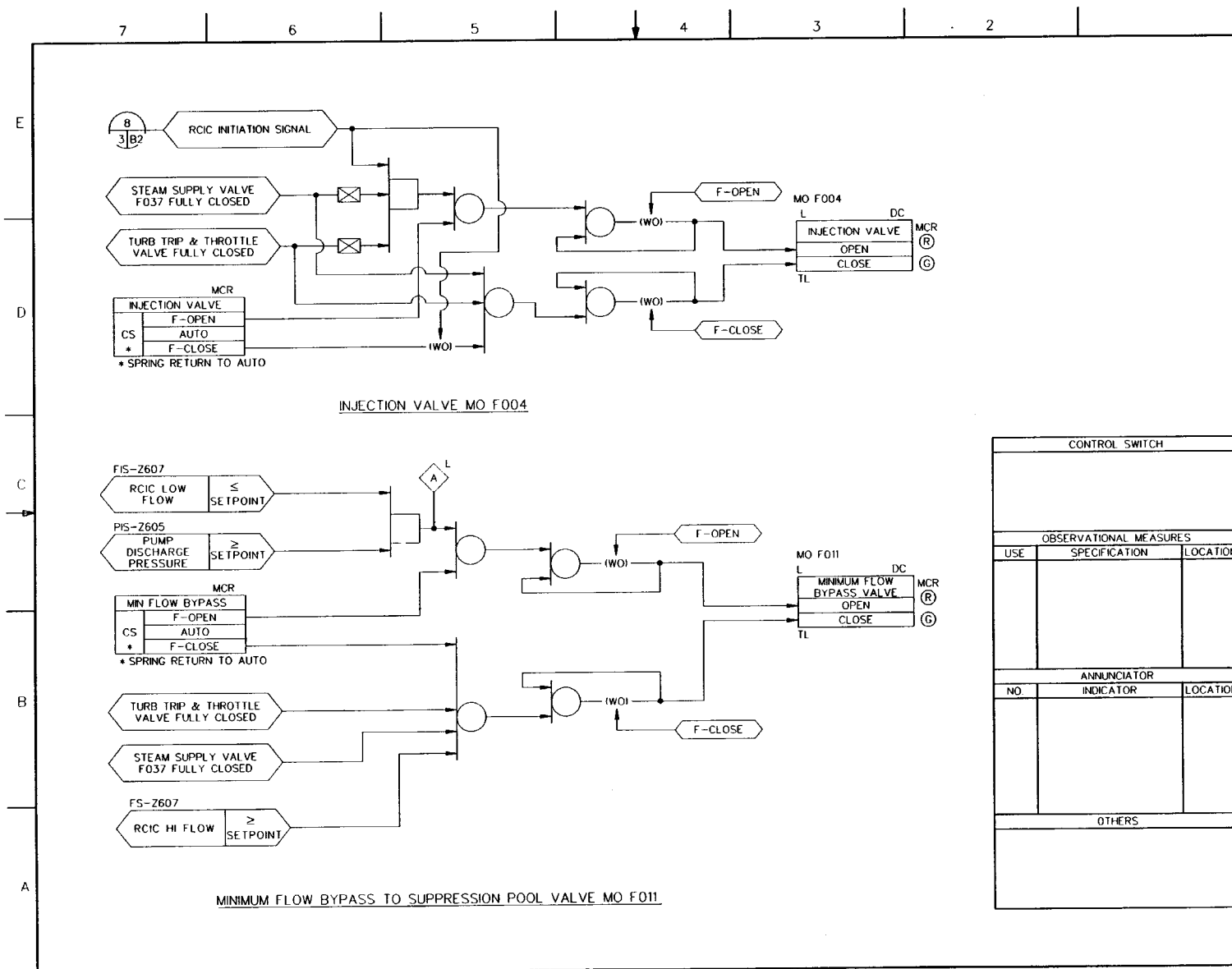


FIGURE 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 8 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-199

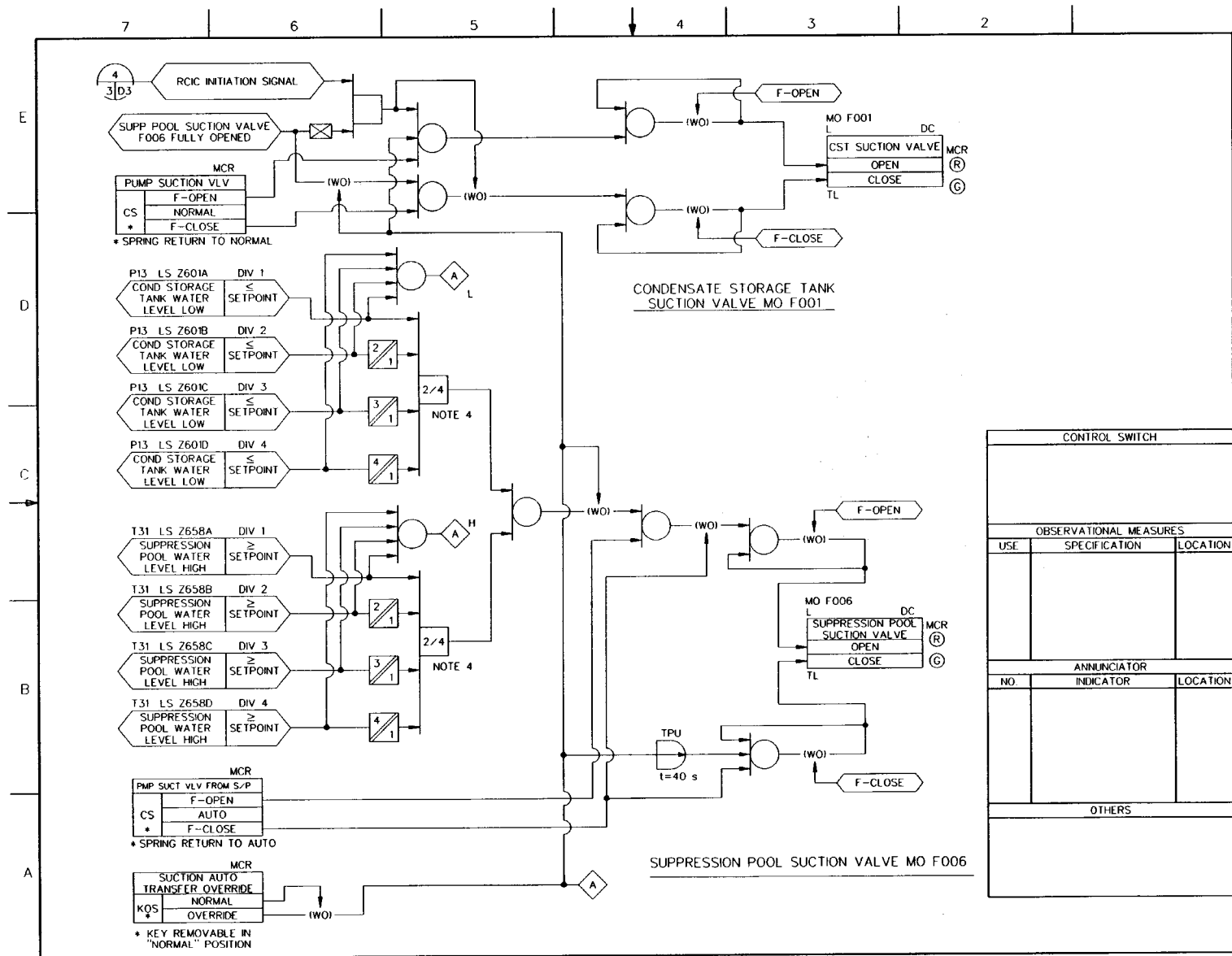


FIGURE 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM ICD (Sheet 9 of 17)

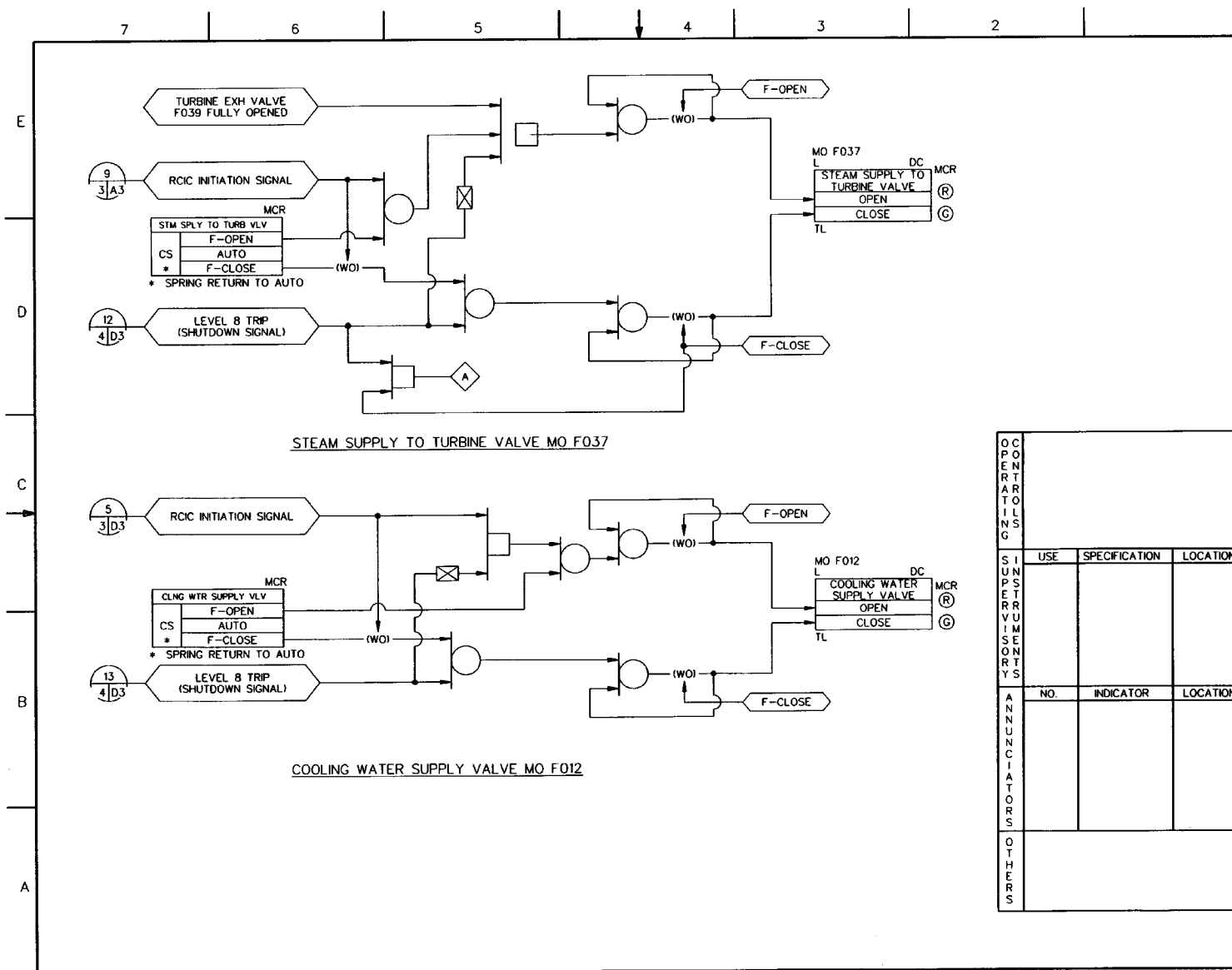
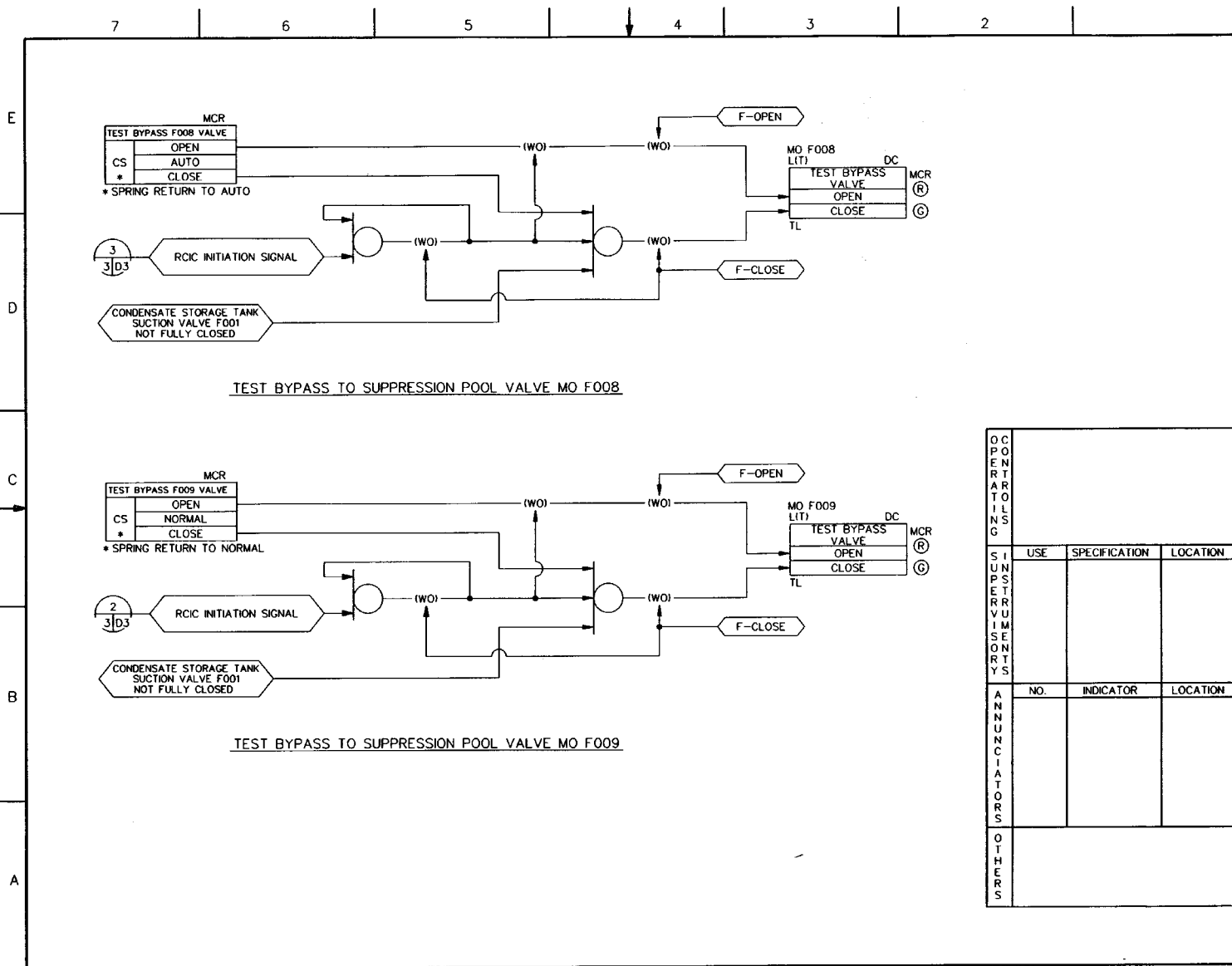


Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 10 of 17)



OPERATOR ACTIONS			
	USE	SPECIFICATION	LOCATION
SUPPLEMENTARY INSTRUMENTS			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 11 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-202

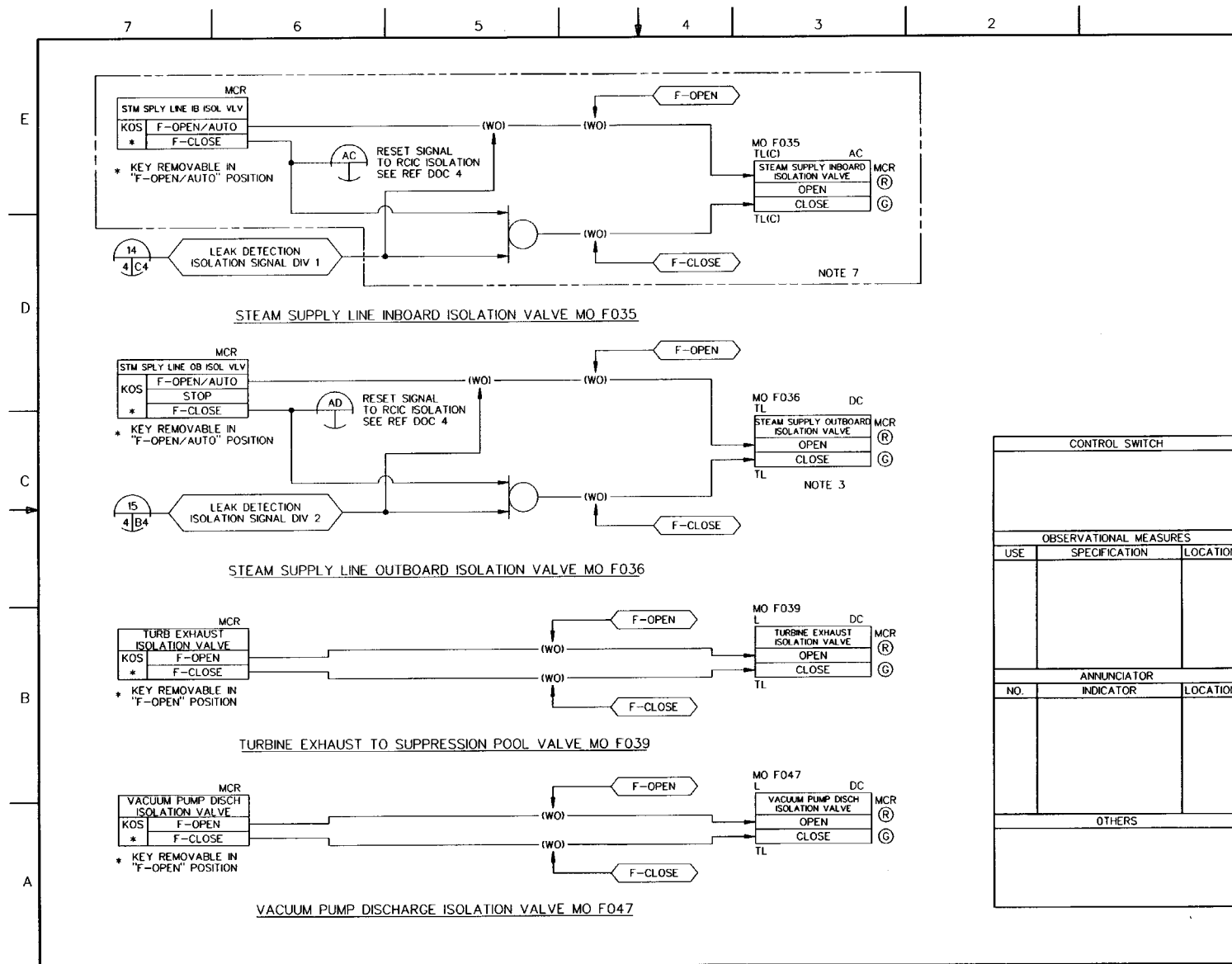


FIGURE 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 12 of 17)

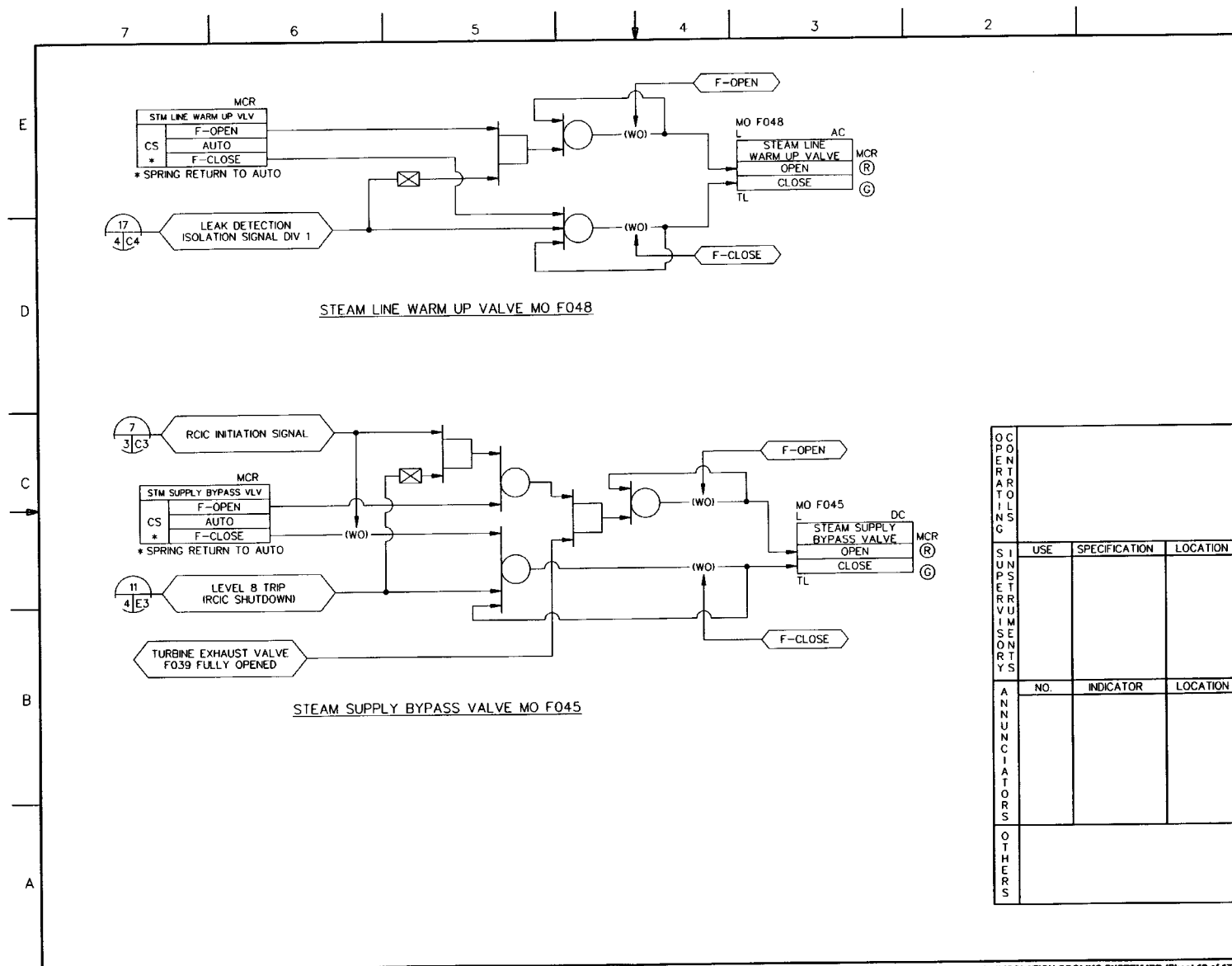
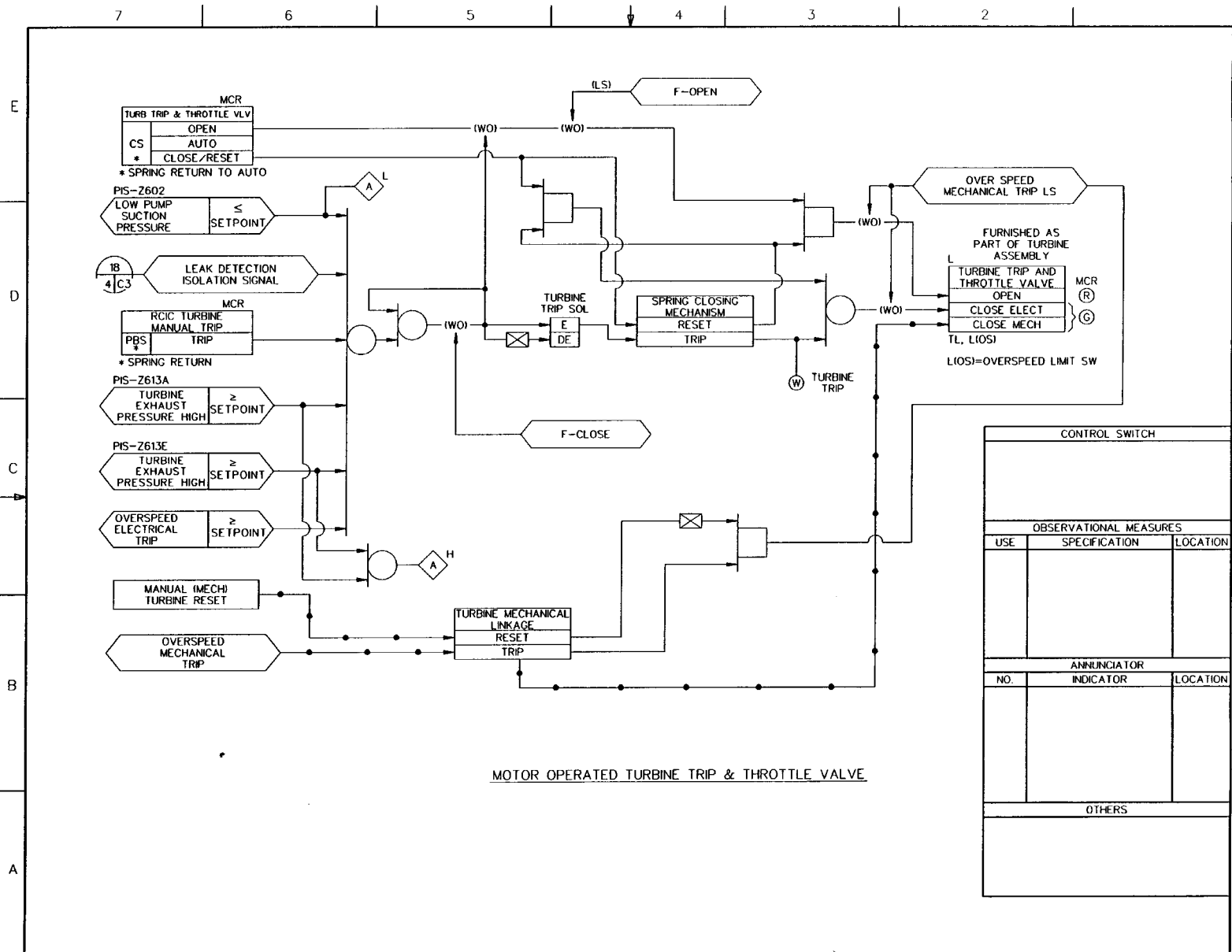
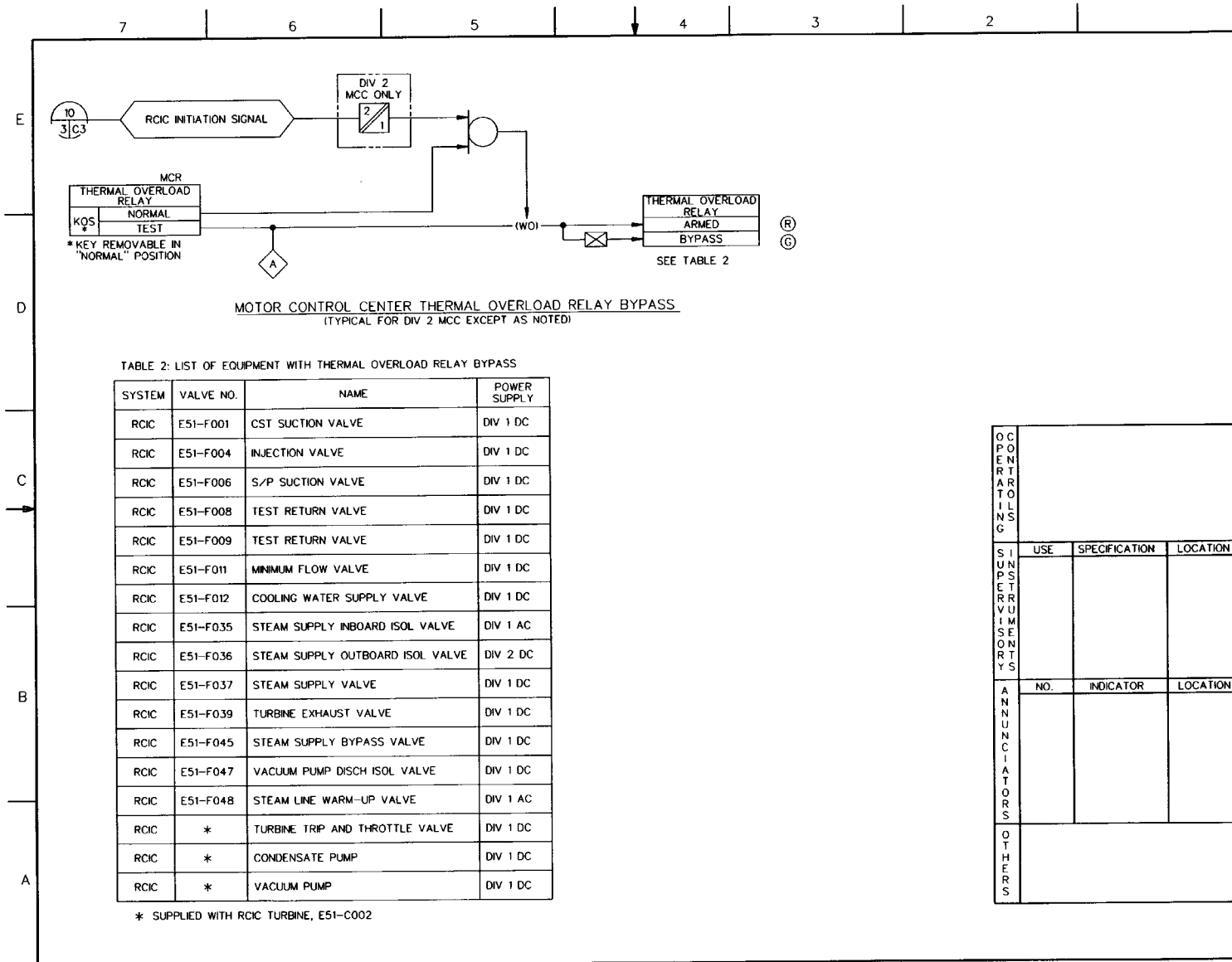


Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 13 of 17)



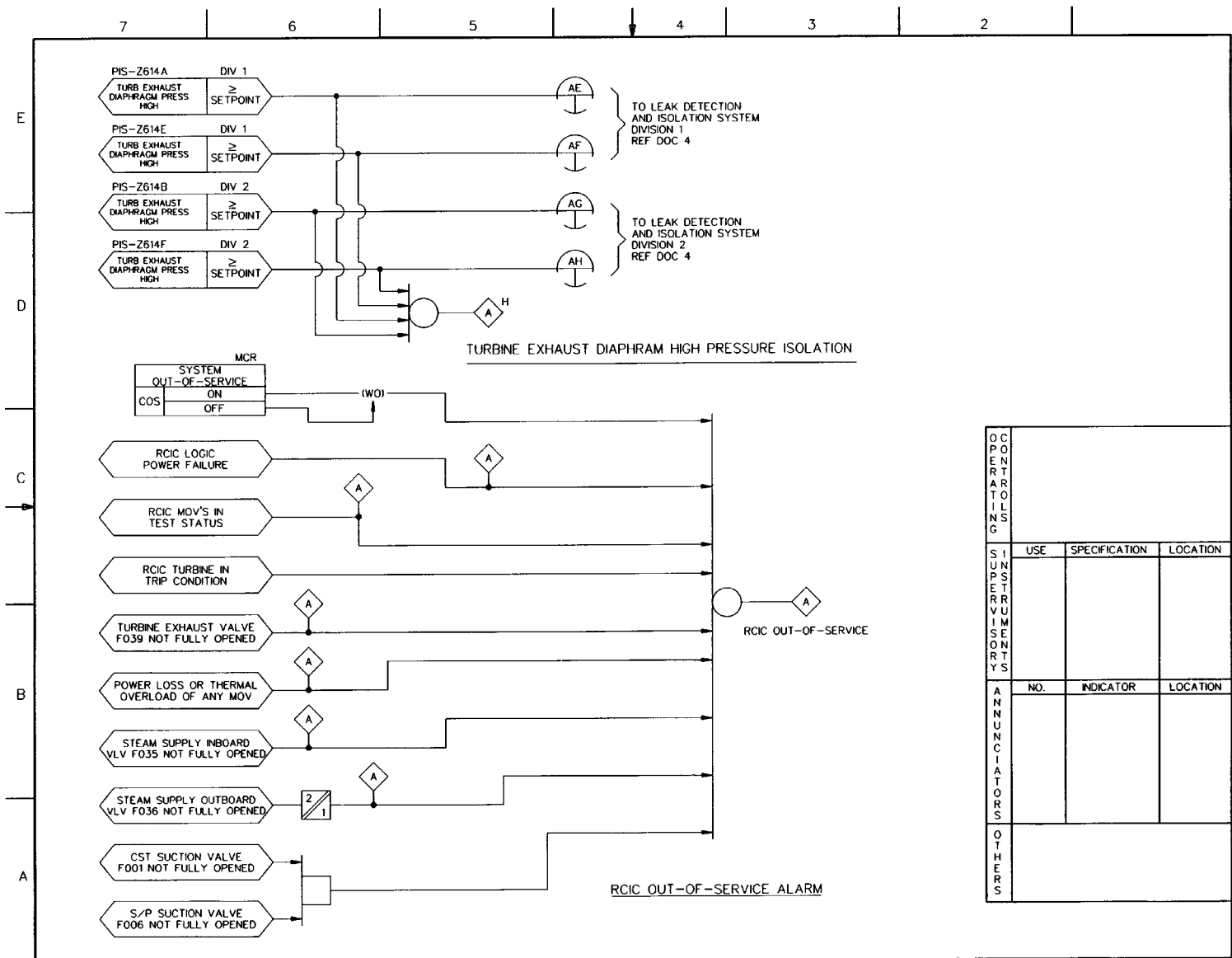
CONTROL SWITCH		
OBSERVATIONAL MEASURES		
USE	SPECIFICATION	LOCATION
ANNUNCIATOR		
NO.	INDICATOR	LOCATION
OTHERS		

FIGURE 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 14 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-205



OPERATIONS			
SUPPORT SERVICES	USE	SPECIFICATION	LOCATION
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 15 of 17)



OPERATIONAL			
SUNSET	USE	SPECIFICATION	LOCATION
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 16 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-207

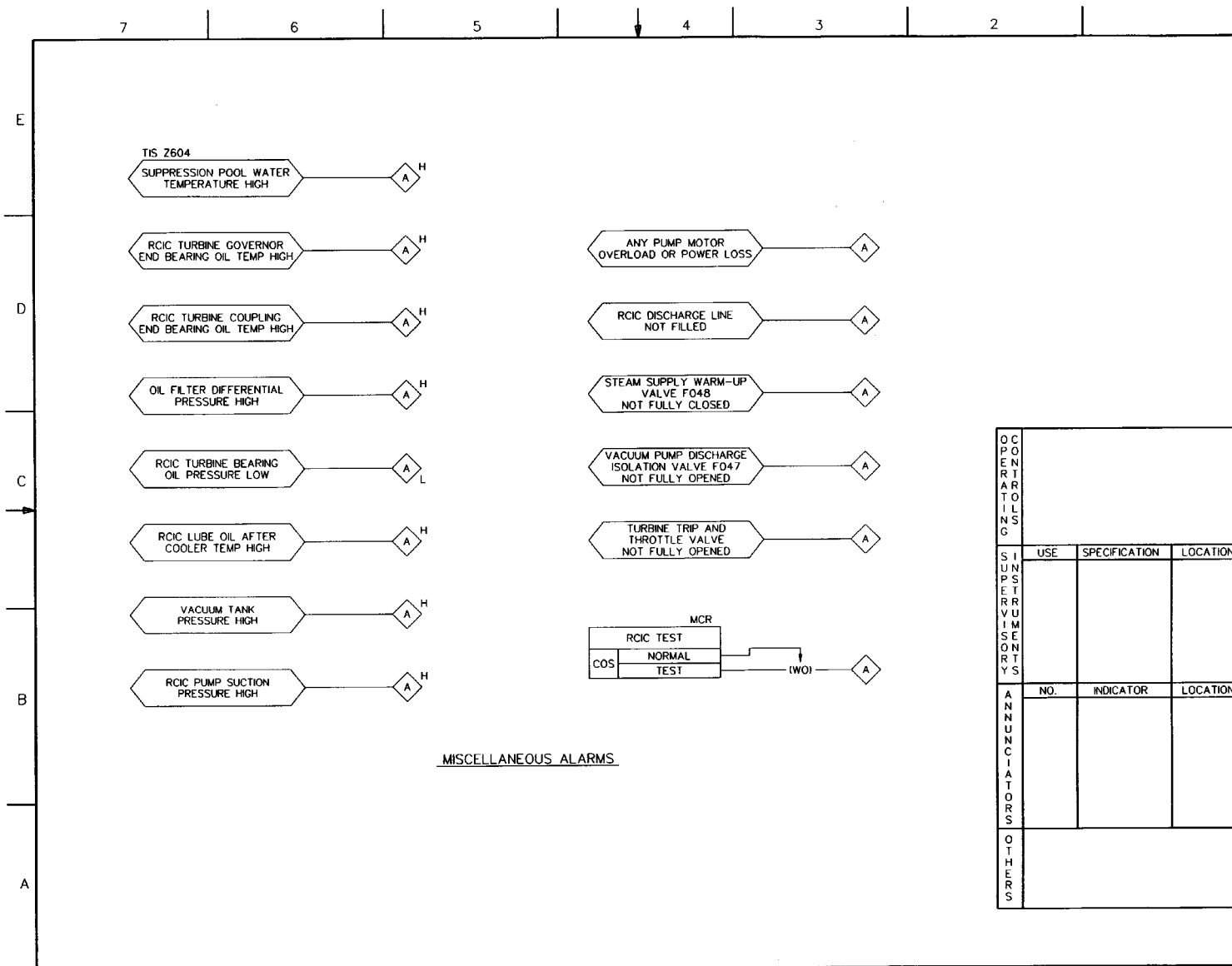


Figure 7.3-3 REACTOR CORE ISOLATION COOLING SYSTEM IBD (Sheet 17 of 17)
 ABWR DCD/Tier 2 Rev. 0 21-208

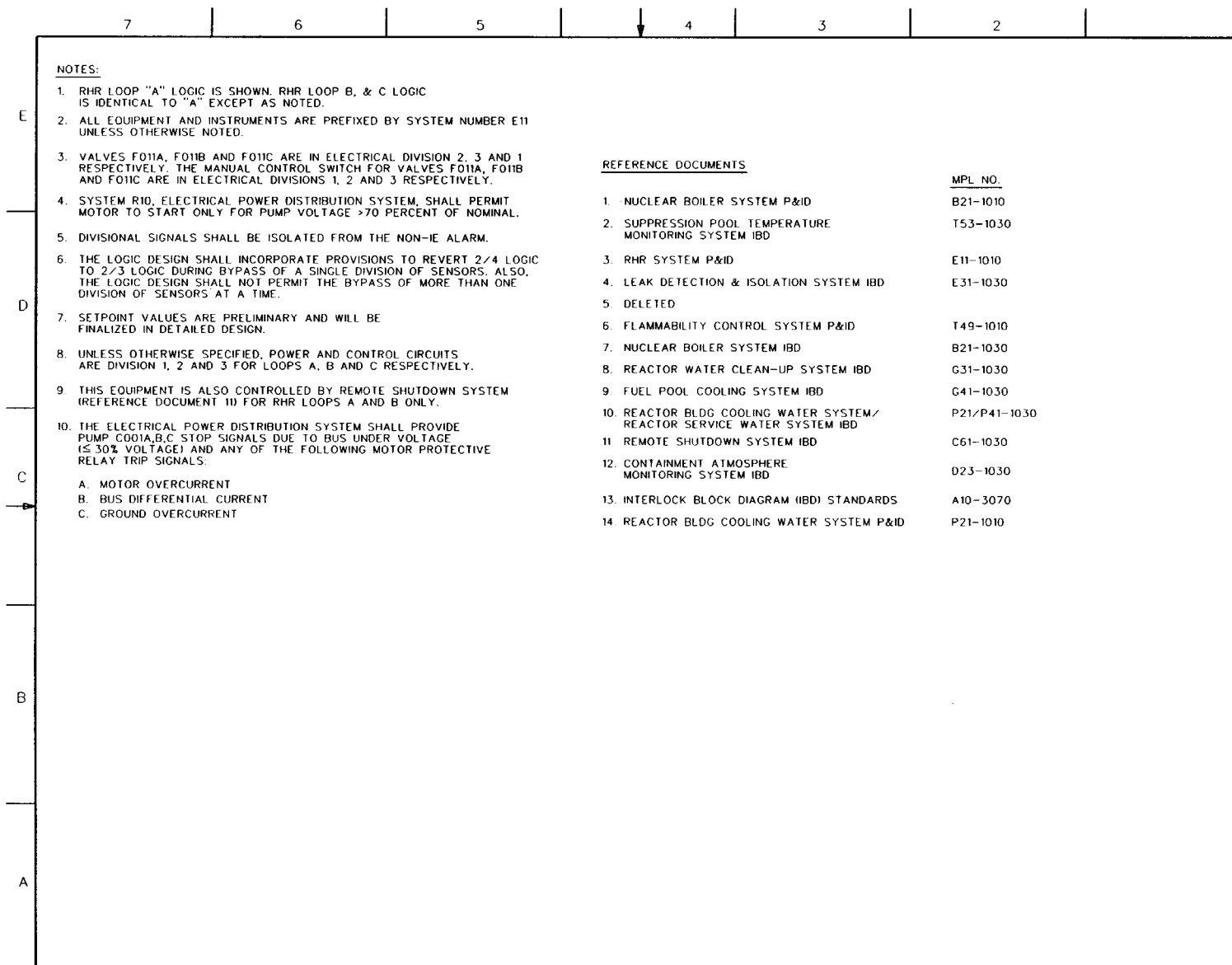
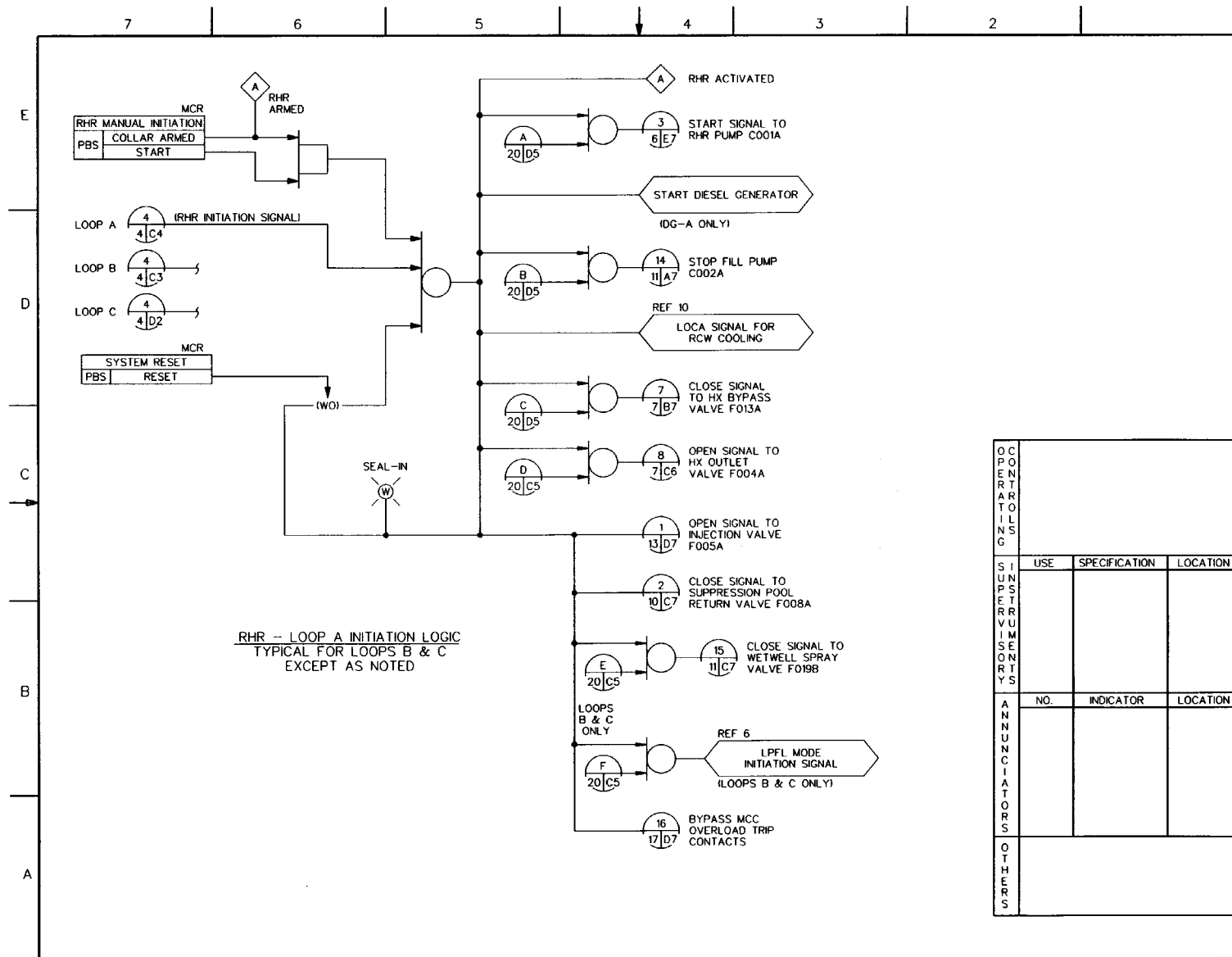


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 1 of 20)
 ABWR DCD/Tier 2 Rev. 0 21-209

	7	6	5	4	3	2
	TABLE OF CONTENTS					
E	SH NO.	TITLE				
	1	COVER, NOTES AND REFERENCE DOCUMENTS				
	2	TABLE OF CONTENTS				
	3	RHR INITIATION LOGIC FOR LOOP A,B&C				
	4	LOCA SIGNAL FOR RHR				
	5	MISCELLANEOUS ALARMS				
	6	PUMP C001A,B&C				
	6	PUMP SUCTION VALVE F001A,B&C				
	7	SHUTDOWN COOLING SUCTION VALVE F012A,B&C				
	7	HEAT EXCHANGER TUBE SIDE OUTLET VALVE F004A,B&C				
D	7	HEAT EXCHANGER TUBE SIDE BYPASS VALVE F013A,B&C				
	8	SHUTDOWN COOLING INBOARD SUCTION ISOLATION VALVE F010A,B&C				
	8	SHUTDOWN COOLING OUTBOARD SUCTION ISOLATION VALVE F011A				
	9	SHUTDOWN COOLING OUTBOARD SUCTION ISOLATION VALVE F011B				
	9	SHUTDOWN COOLING OUTBOARD SUCTION ISOLATION VALVE F011C				
	10	SUPPRESSION POOL RETURN VALVE F008A,B&C				
	10	TESTABLE CHECK VALVE F006A,B&C AND WARM-UP VALVE F036A,B&C				
	11	WETWELL SPRAY VALVE F019B&C				
C	11	RHR DISCHARGE LINE FILL PUMP C002A,B&C				
	12	MINIMUM FLOW VALVE F021A,B&C				
	12	FUEL POOL ISOLATION VALVE F014B&C				
	12	FUEL POOL ISOLATION VALVE F015B&C				
	13	INJECTION VALVE F005A,B&C				
	13	REACTOR LOW PRESSURE PERMISSIVE LOGIC				
	14	DRYWELL SPRAY VALVE F017B&C				
	14	DRYWELL SPRAY VALVE F018B&C				
	15	LIQUID WASTE FLUSH VALVE F029A,B&C				
	15	LIQUID WASTE FLUSH VALVE F030A,B&C				
B	15	WARM-UP VALVE F031A,B&C				
	16	SAMPLING VALVE F043A,B&C				
	16	SAMPLING VALVE F044A,B&C				
	16	SAMPLING VALVE F045A				
	16	SAMPLING VALVE F046A				
	17	RHR THERMAL OVERLOAD BYPASS LOGIC AND EQUIPMENT LIST				
	18	OUT-OF-SERVICE ALARM FOR LOOP A,B&C				
	19	ANNUNCIATOR/ALARM LIGHTS/STATUS LIGHTS				
A	20	SUPPRESSION POOL COOLING AUTO INITIATION LOGIC				



OPERATIONAL SIGNALS			
	USE	SPECIFICATION	LOCATION
SIGNALS RETURNED TO SYSTEMS			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 3 of 20)

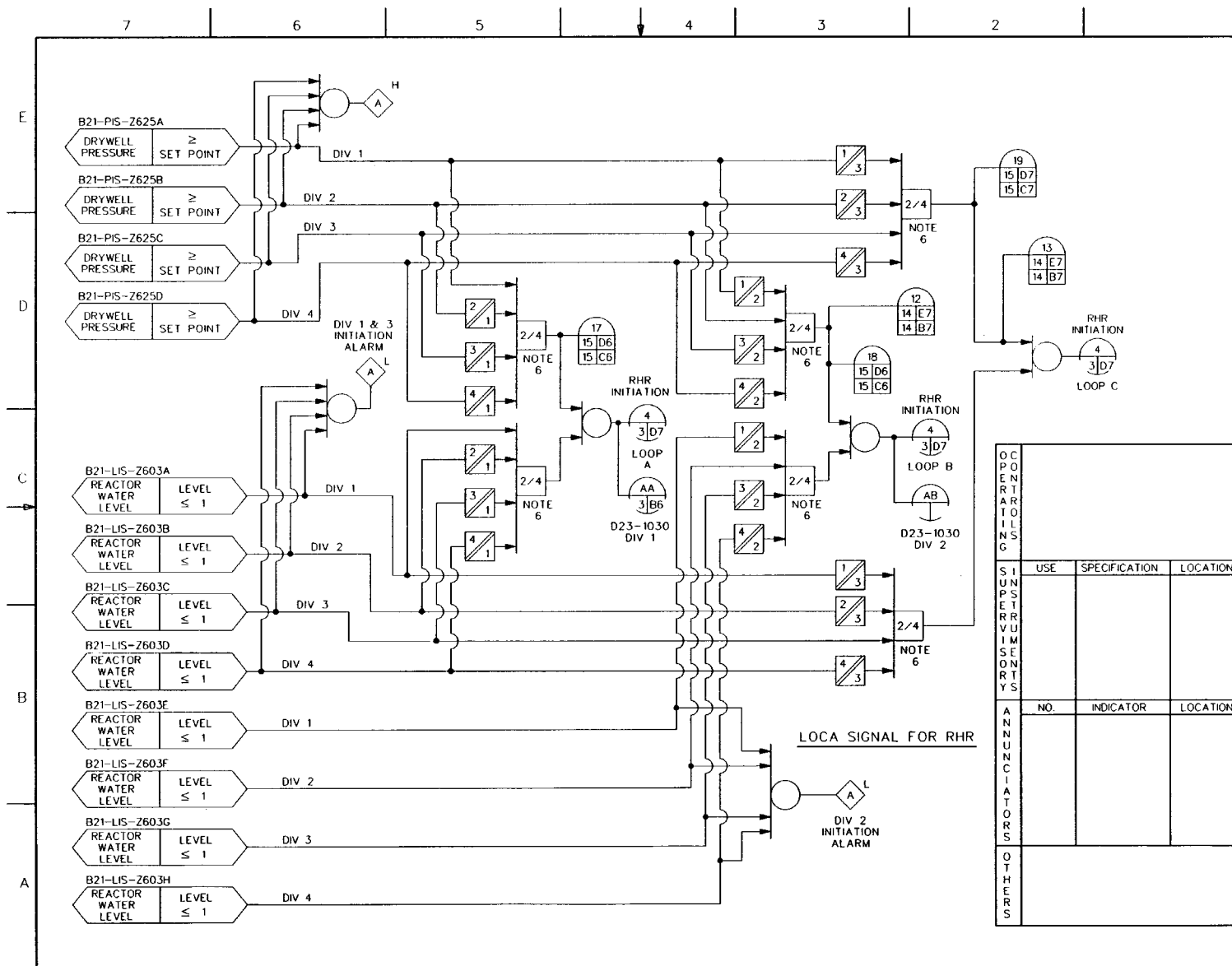


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 4 of 20)
ABWR DCD/Tier 2 Rev. 0 21-212

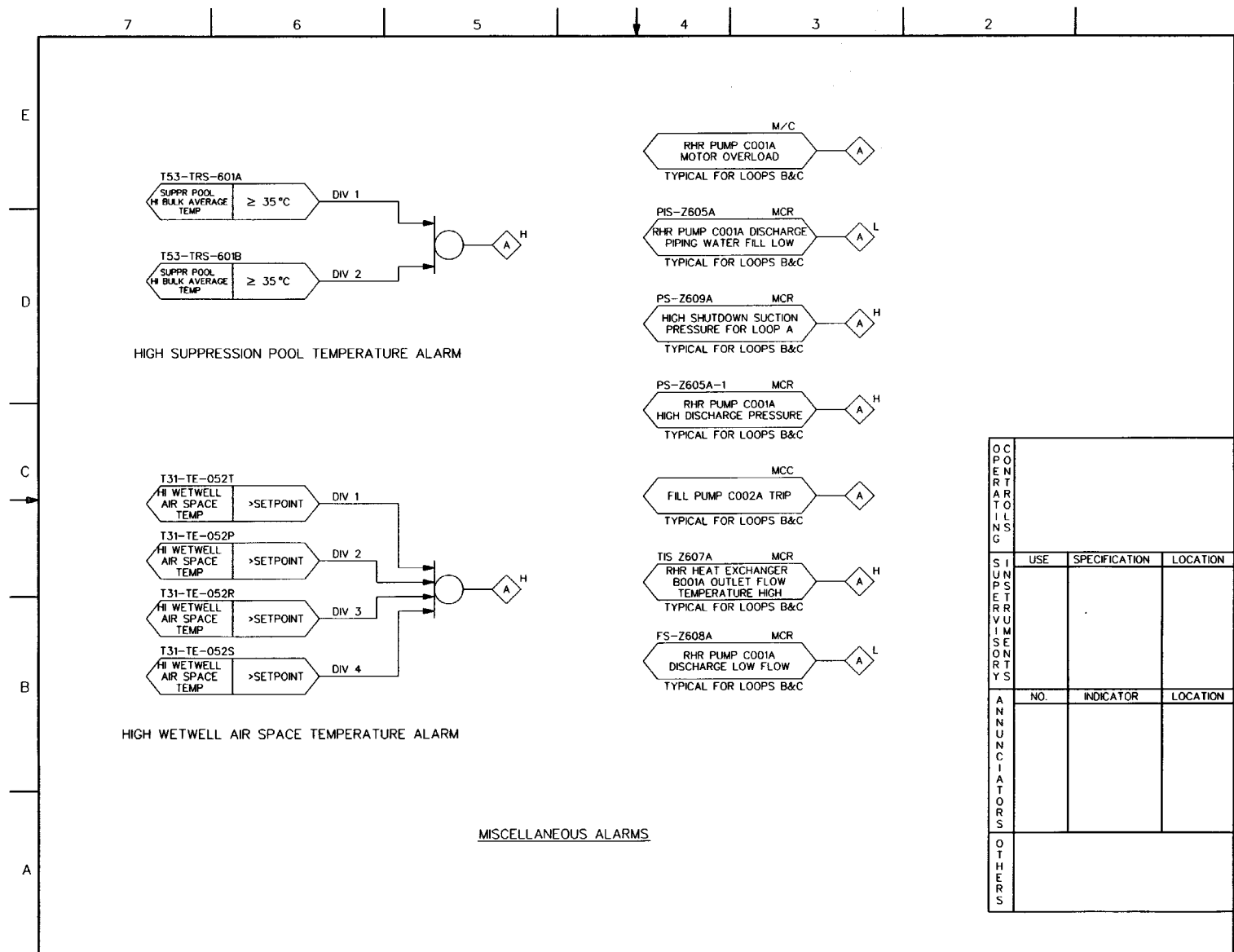


Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 5 of 20)
ABWR DCD/Tier 2 Rev. 0 21-213

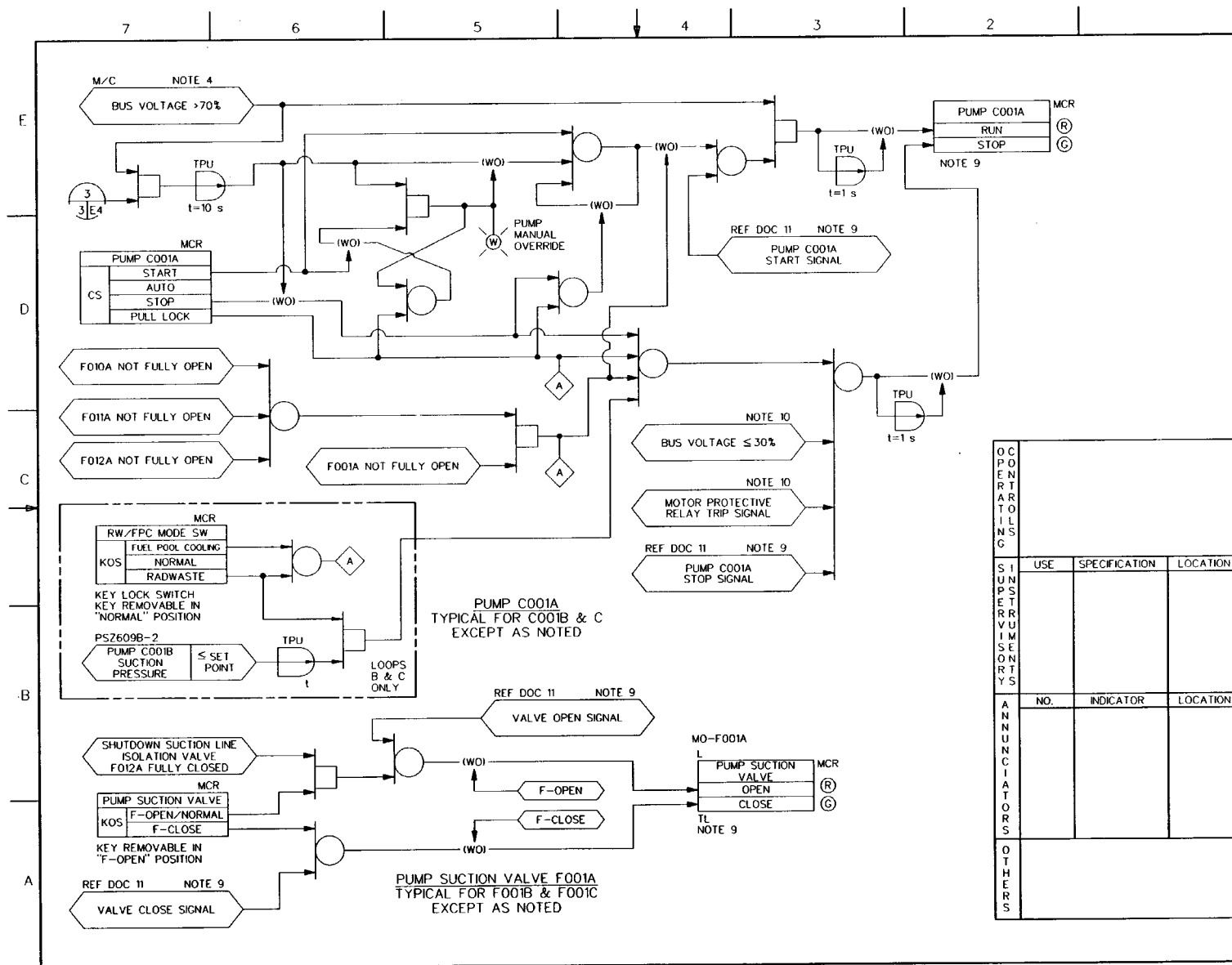
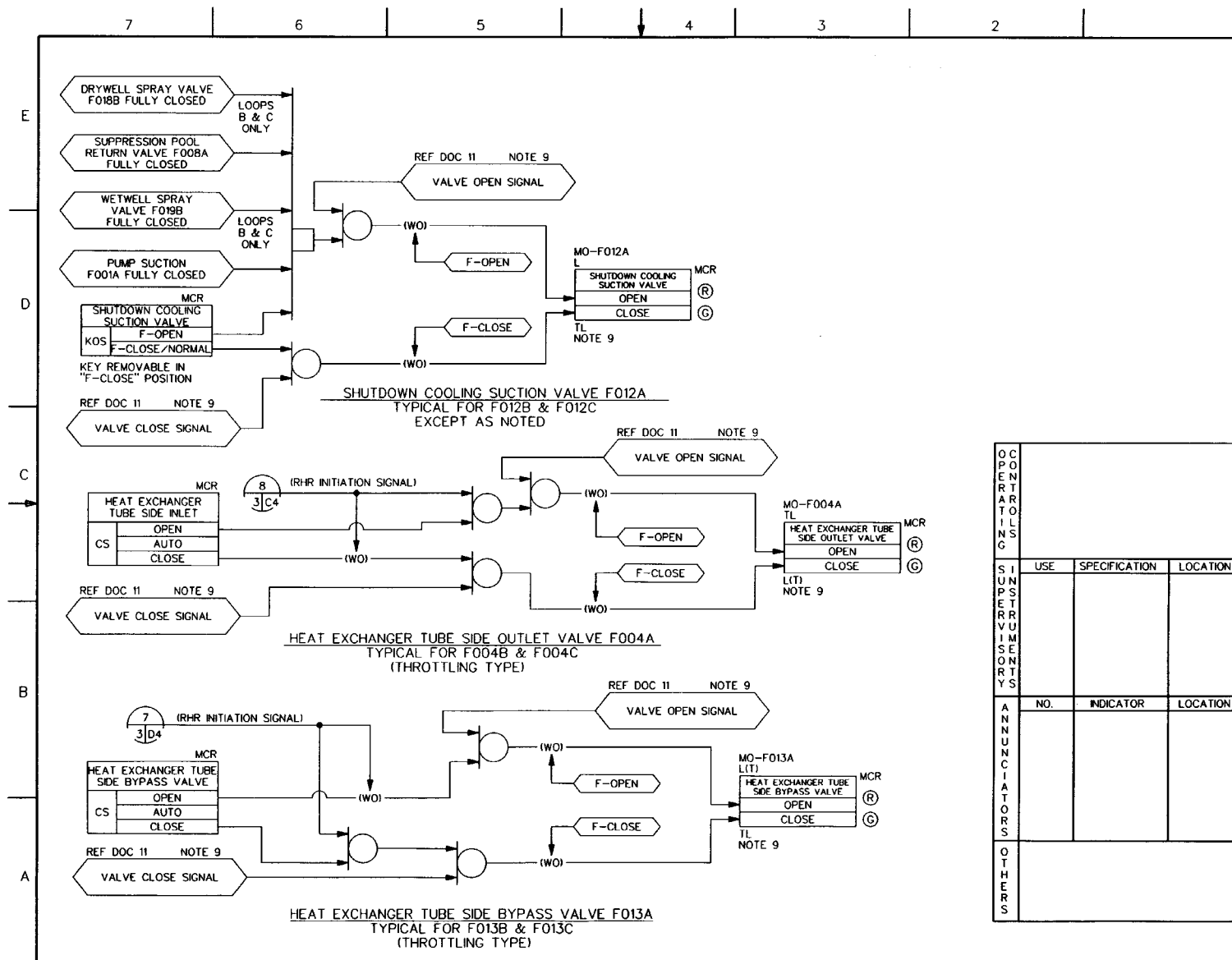


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 6 of 20)
 ABWR DCD/Tier 2 Rev. 0 21-214



OPERATOR TO ILLUS			
	USE	SPECIFICATION	LOCATION
SUNSPETRY VIMSE ONRTYS			
	NO.	INDICATOR	LOCATION
ANNUNCIATORS			
OTHERS			

Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 7 of 20)
ABWR DCD/Tier 2 Rev. 0 21-215

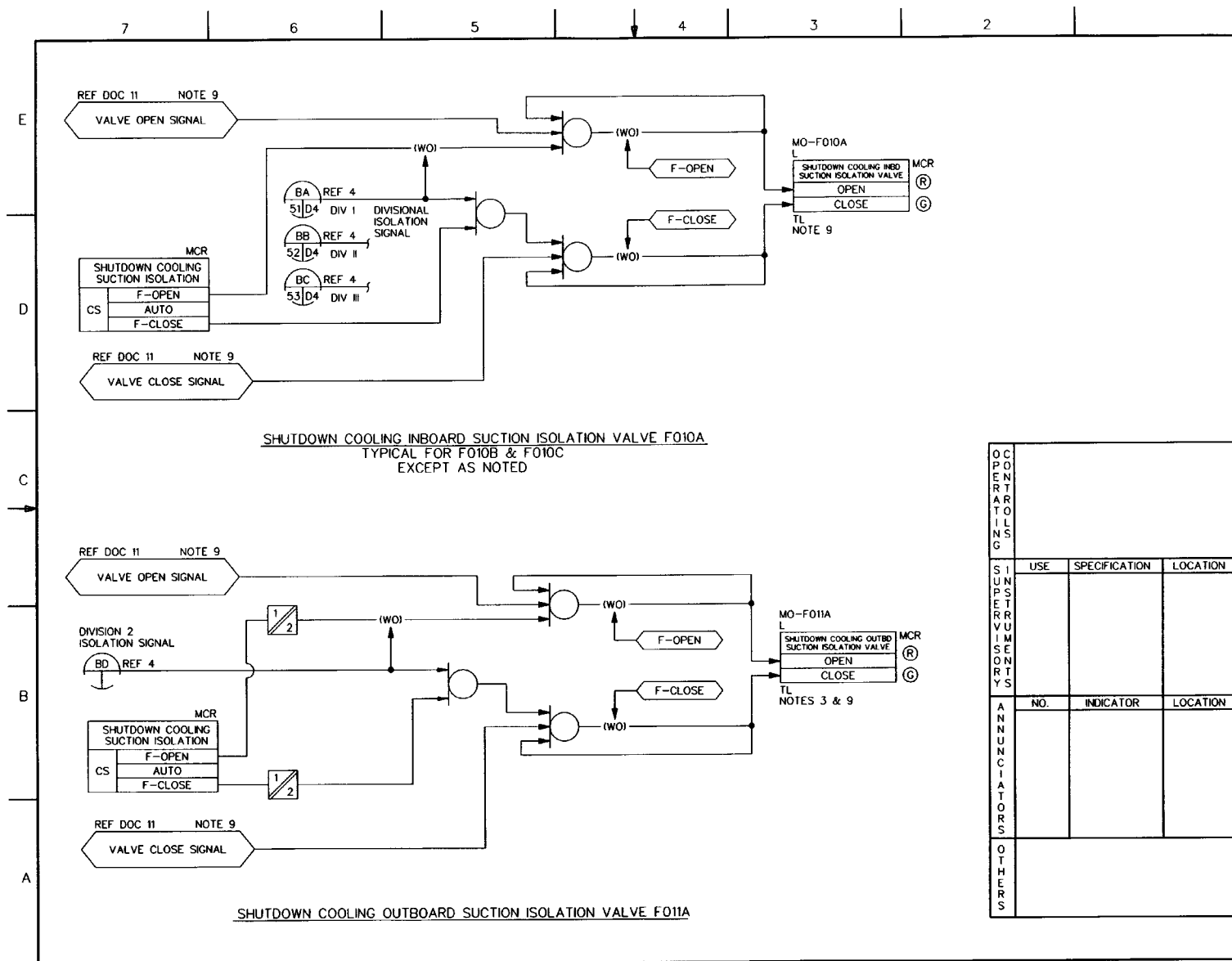
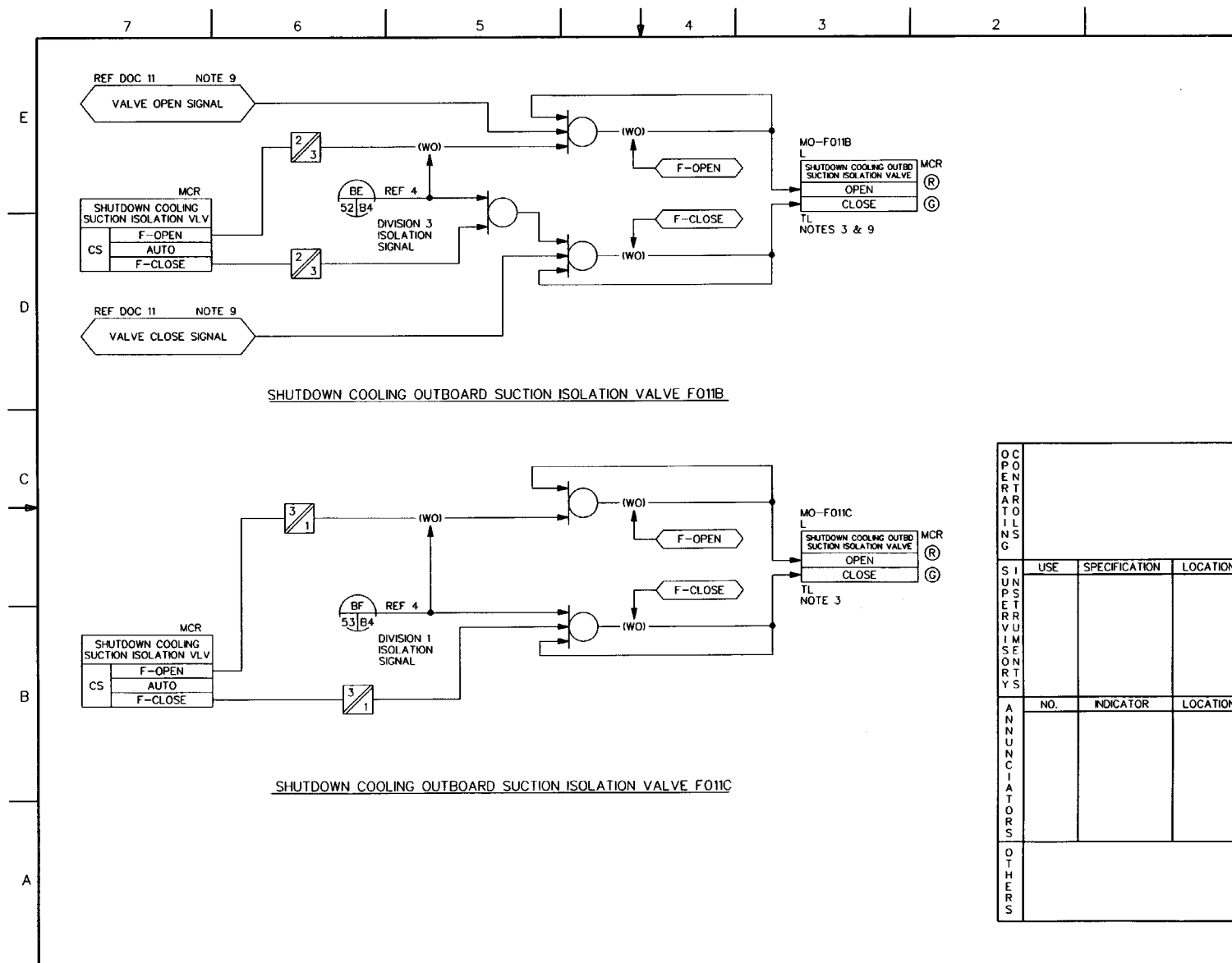


Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 6 of 20)
ABWR DCD/Tier 2 Rev. 0 21-216



OPERATING			
	USE	SPECIFICATION	LOCATION
SIGNALS			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 9 of 20)
 ABWR DCD/Tier 2 Rev. 0 21-217

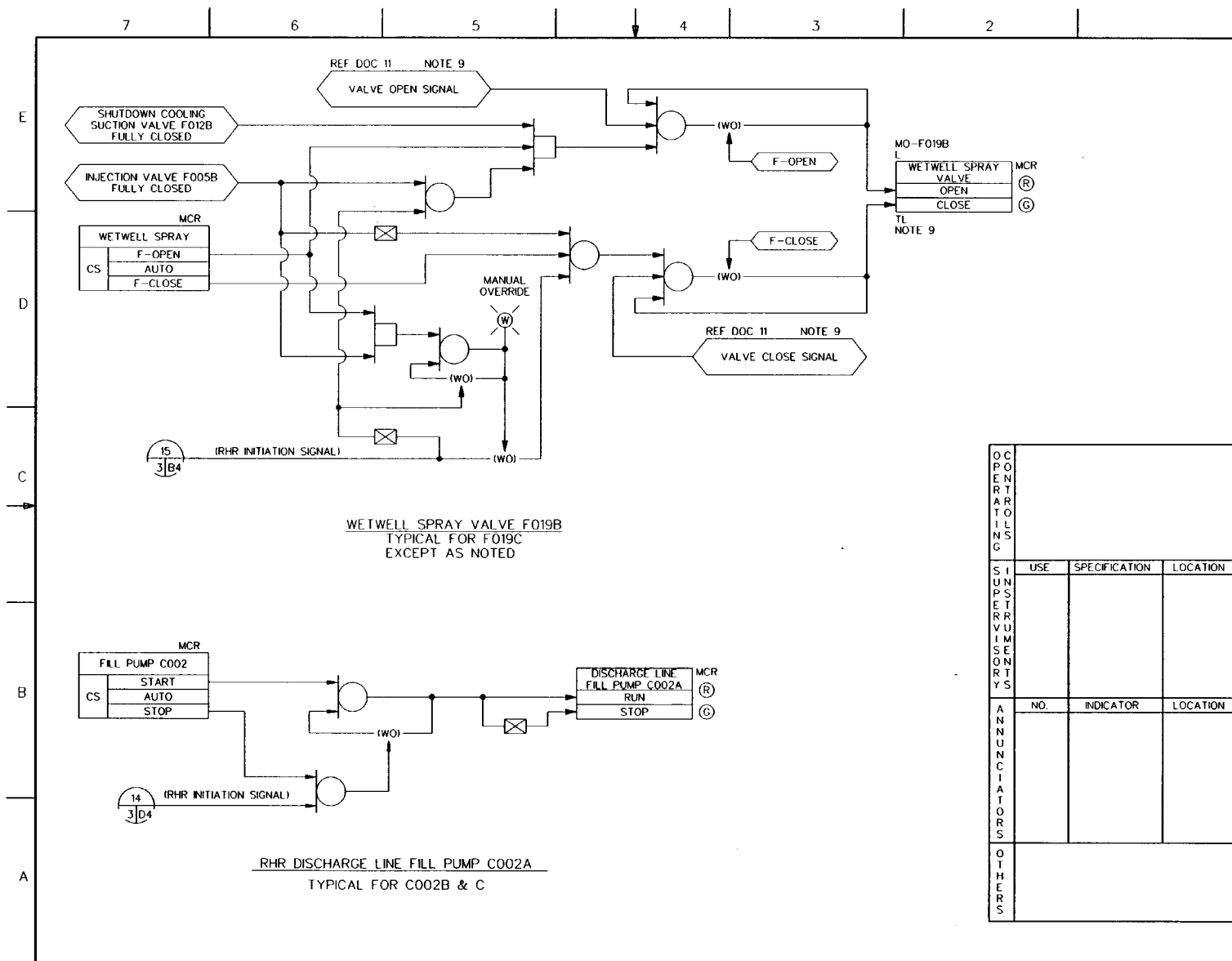


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 11 of 20)
ABWR DCD/Tier 2 Rev. 0 21-219

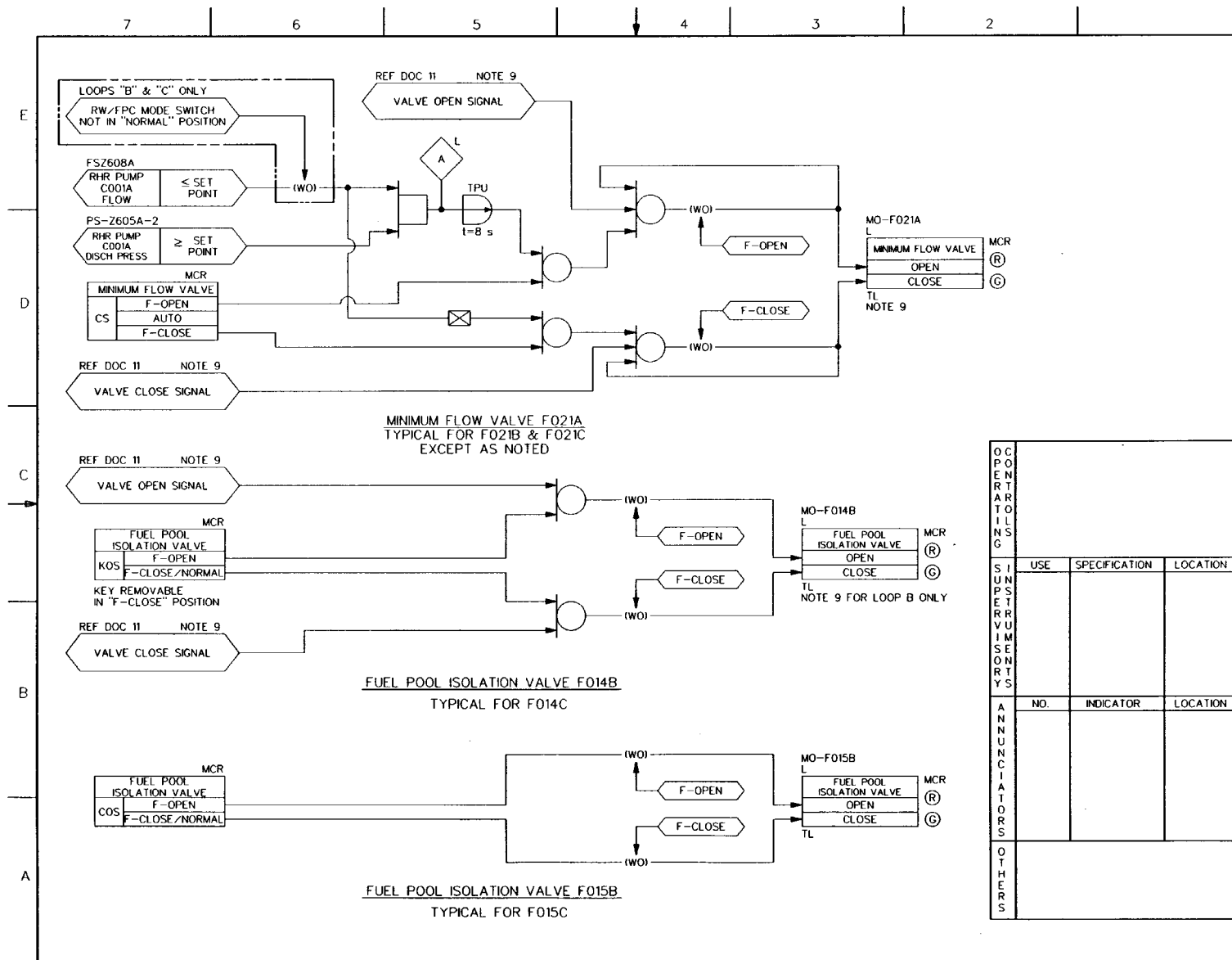


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM (Sheet 12 of 20)
ABWR DCD/Tier 2 Rev. 0 21-220

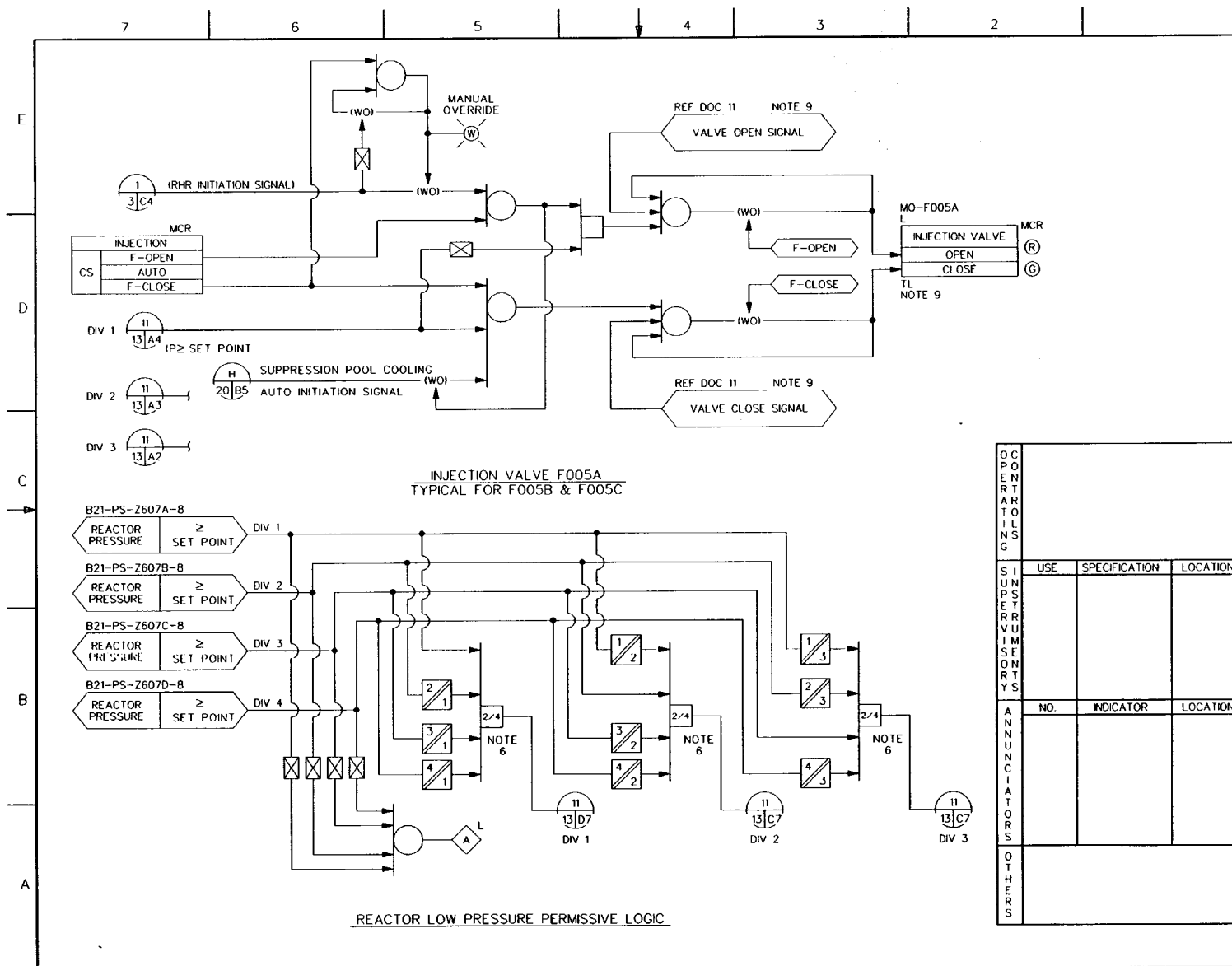
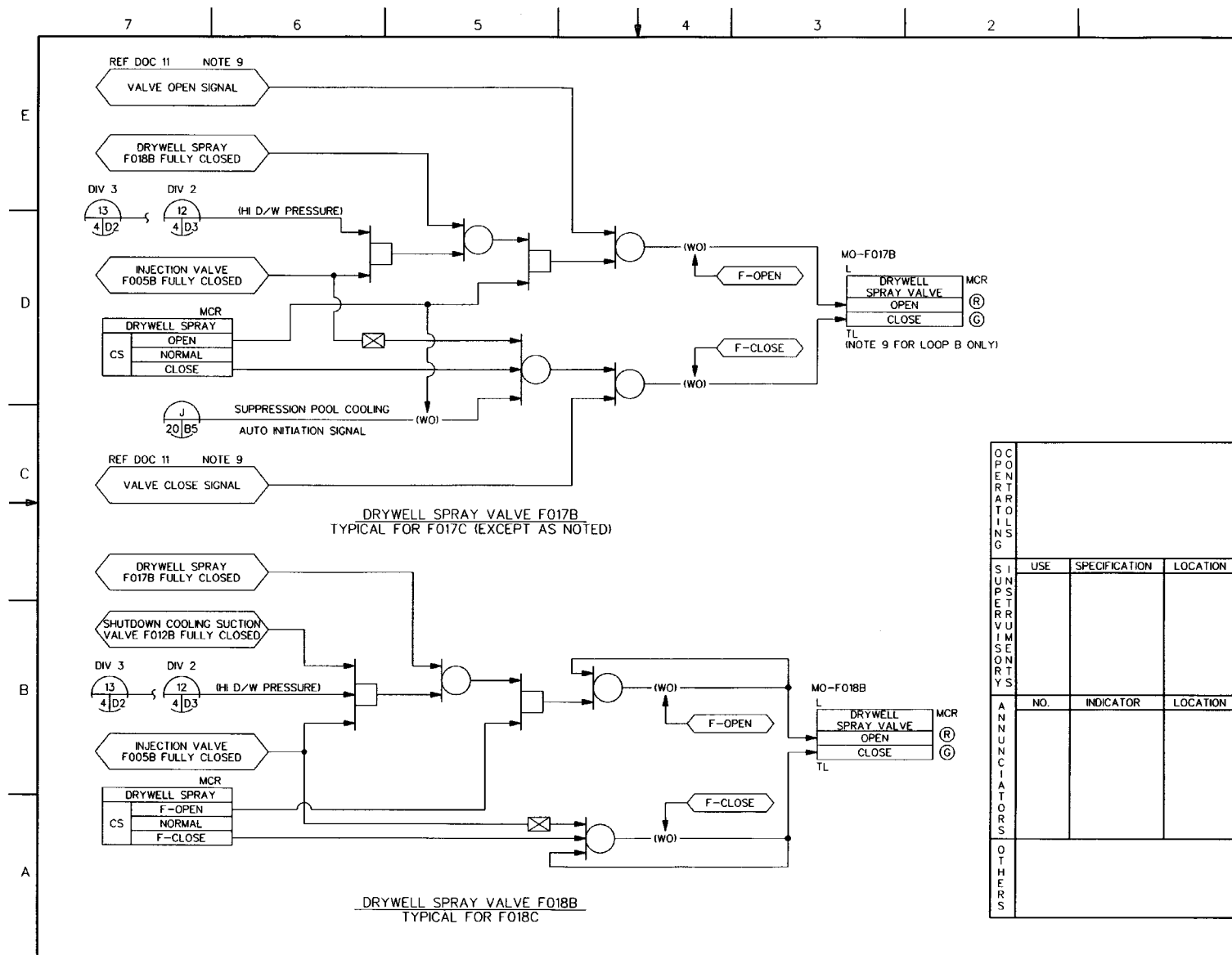


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 13 of 201)
ABWR DCD/Tier 2 Rev. 0 21-221



OPERATIONAL STATUS			
	USE	SPECIFICATION	LOCATION
SUPPORT FUNCTIONS			
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

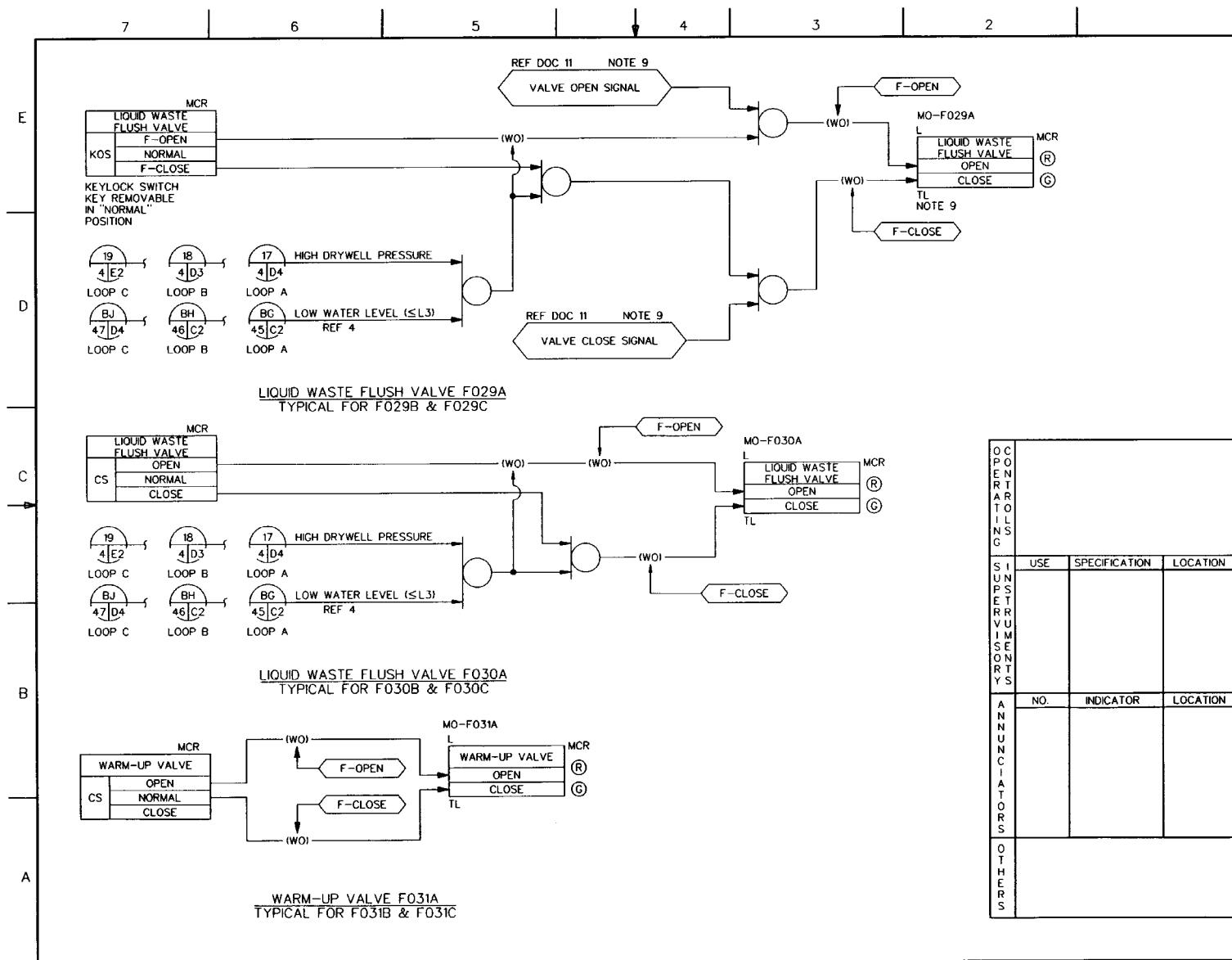
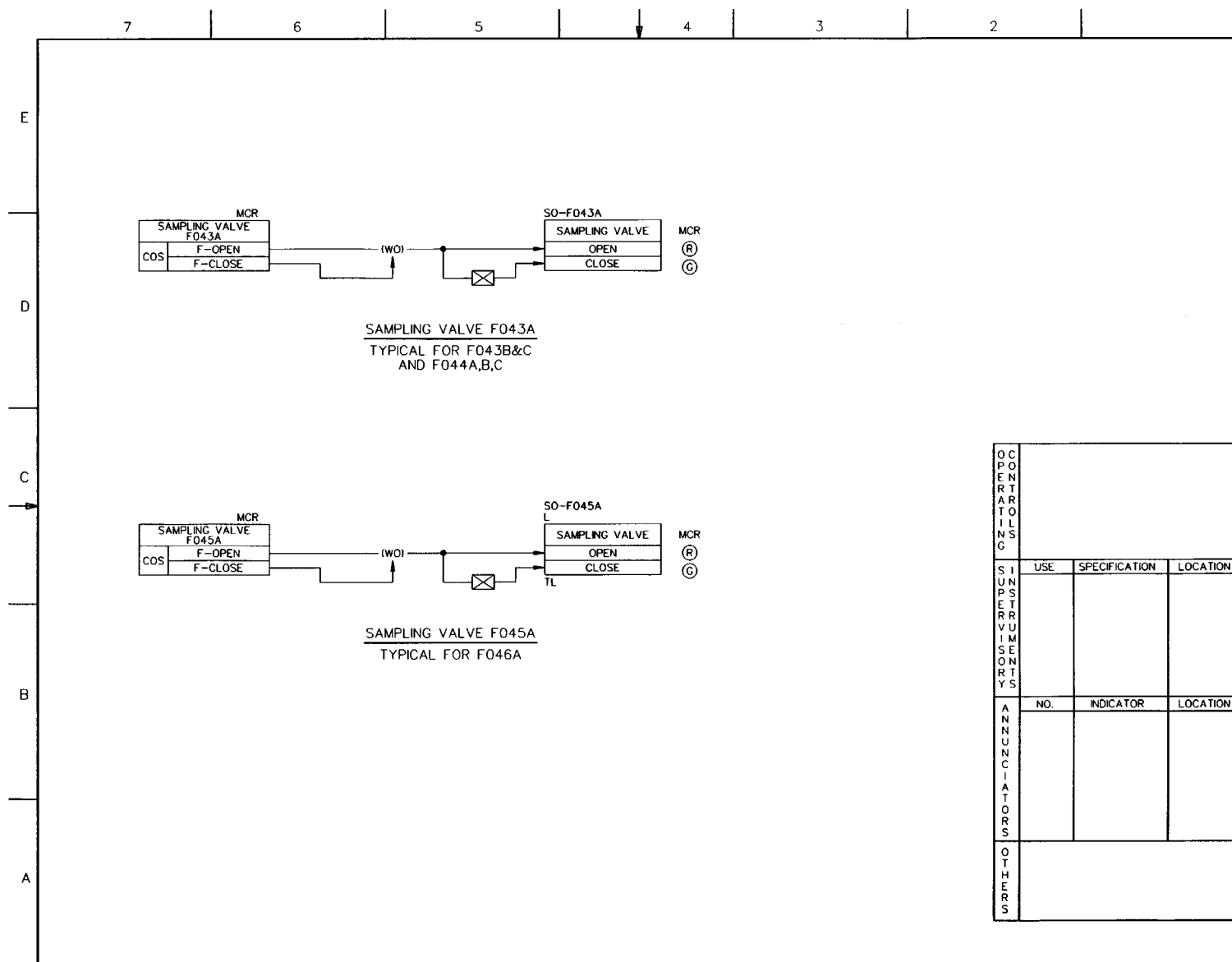


Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 15 of 20)
ABWR DCD/Tier 2 Rev. 0 21-223



OPERATIONAL INSTRUMENTS			
	USE	SPECIFICATION	LOCATION
ANNUNCIATORS	NO.	INDICATOR	LOCATION
OTHERS			

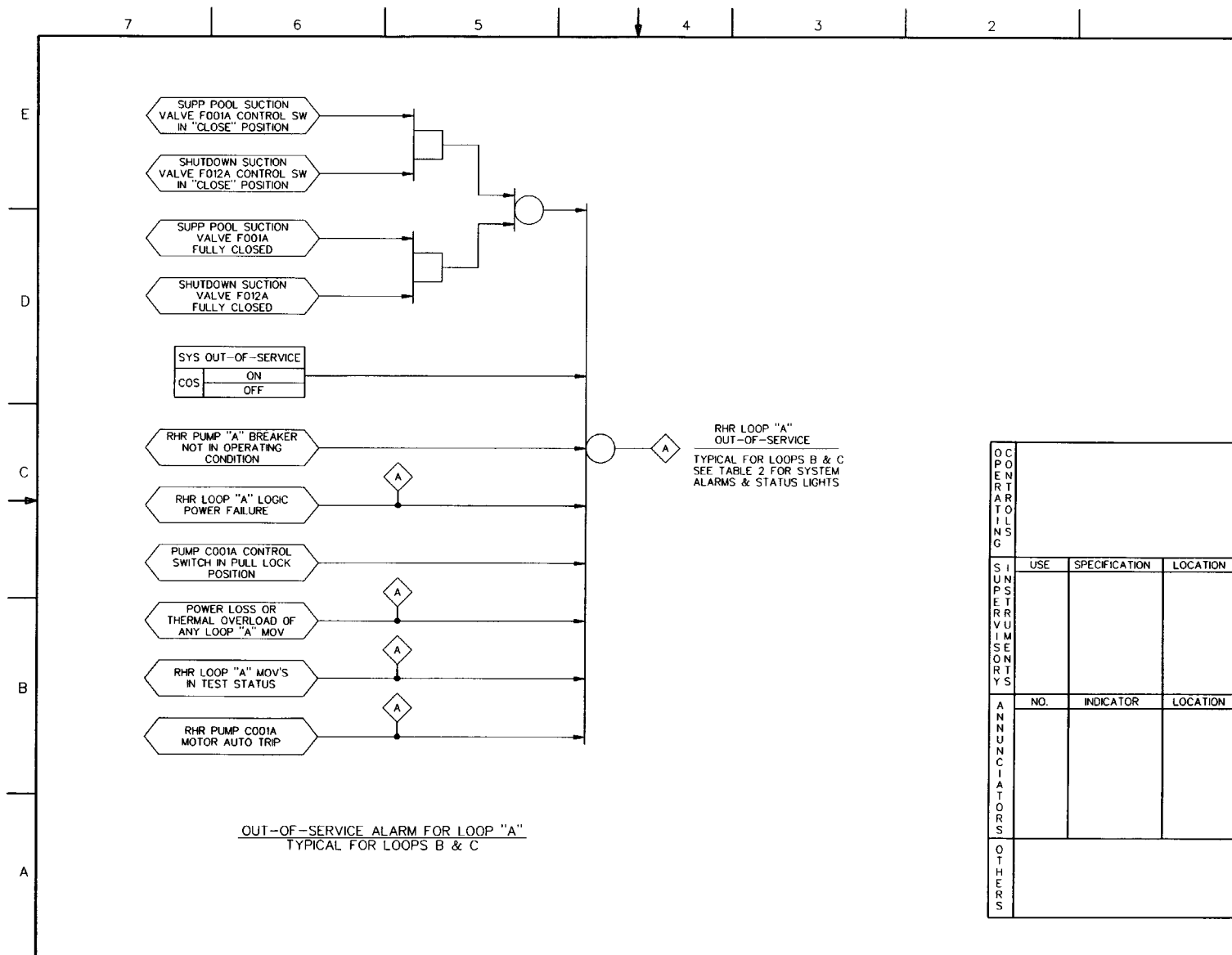


Figure 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 18 of 20)
ABWR DCD/Tier 2 Rev. 0 21-226

TABLE 2

ANNUNCIATOR / ALARM LIGHTS / STATUS LIGHTS		
INDICATOR	FUNCTION	INITIATING DEVICE
ALARMS	HIGH DRYWELL PRESSURE	LOGIC OUTPUT
	HIGH SUPPRESSION POOL TEMPERATURE	LOGIC OUTPUT
	LOW REACTOR WATER LEVEL 1	LOGIC OUTPUT
	HIGH WETWELL AIR SPACE TEMPERATURE	LOGIC OUTPUT
	RHR PUMP C001A,B,C HIGH DISCHARGE PRESSURE	PSZ605A-1, B-1, C-1
	RHR LOOP A,B,C ACTIVATED	LOGIC OUTPUT
	RHR PUMP C001A,B,C MOTOR OVERLOAD	METAL CLAD SWITCHGEAR
	LOW REACTOR PRESSURE	LOGIC OUTPUT
	RHR LOOP A,B,C MANUAL INITIATION SWITCH IN ARMED POSITION	PBS
	RHR LOOP A,B,C OUT-OF-SERVICE	COS, LOGIC OUTPUT
	HIGH SHUTDOWN SUCTION PRESSURE LOOP A,B,C	PSZ609A-1, B-1, C-1
	RHR PUMP C001A,B,C DISCHARGE PIPING WATER FILL LOW	PSZ604A, B, C
	RHR LOOP A,B,C LOGIC POWER FAILURE	LOGIC OUTPUT
	POWER LOSS OR THERMAL OVERLOAD OF ANY RHR LOOP A,B,C MOV	MCC
	RHR LOOP A,B,C MOV'S IN TEST STATUS	CS
	RHR C001A,B,C PUMP MOTOR AUTO TRIP	LOGIC OUTPUT
	FILL PUMP C002A,B,C TRIP	MCC
	RHR HEAT EXCHANGER B001A,B,C OUTLET FLOW TEMP HIGH	TIS-Z607A,B,C
	RHR PUMP C001A,B,C OPERATION SWITCH IN PULL-LOCK	PULL LOCK
	RHR PUMPS C001A,B,C SUCTION VALVES CLOSED	LOGIC OUTPUT
	MODE SWITCH IN RW/FPC FOR RHR LOOPS B&C	KOS
	MCC EQUIPMENT IN TEST MODE (THERMAL OVERLOAD RELAY NOT BYPASSED)	KOS
	RHR PUMP C001A,B,C FLOW LOW	LOGIC OUTPUT

TABLE 2 (CON'T)

ANNUNCIATOR / ALARM LIGHTS / STATUS LIGHTS		
INDICATOR	FUNCTION	INITIATING DEVICE
WHITE LIGHT	RHR LOOPS A,B,C INITIATION SIGNAL SEALED-IN	LOGIC OUTPUT
WHITE LIGHT	RHR INJECTION VALVE F005A,B,C MANUAL OVERRIDE	CS, LOGIC OUTPUT
WHITE LIGHT	RHR PUMP C001A,B,C MANUAL OVERRIDE	CS, LOGIC OUTPUT
WHITE LIGHT	WETWELL SPRAY VALVE F019B,C MANUAL OVERRIDE	CS, LOGIC OUTPUT
WHITE LIGHT	SUPPRESSION POOL RETURN VALVE F008A,B,C MANUAL OVERRIDE	CS, LOGIC OUTPUT
RED LIGHT	SUPPRESSION POOL COOLING INITIATION	LOGIC OUTPUT
RED LIGHT	RCW COOLING OFF FOR TEST OR DRAIN	KOS

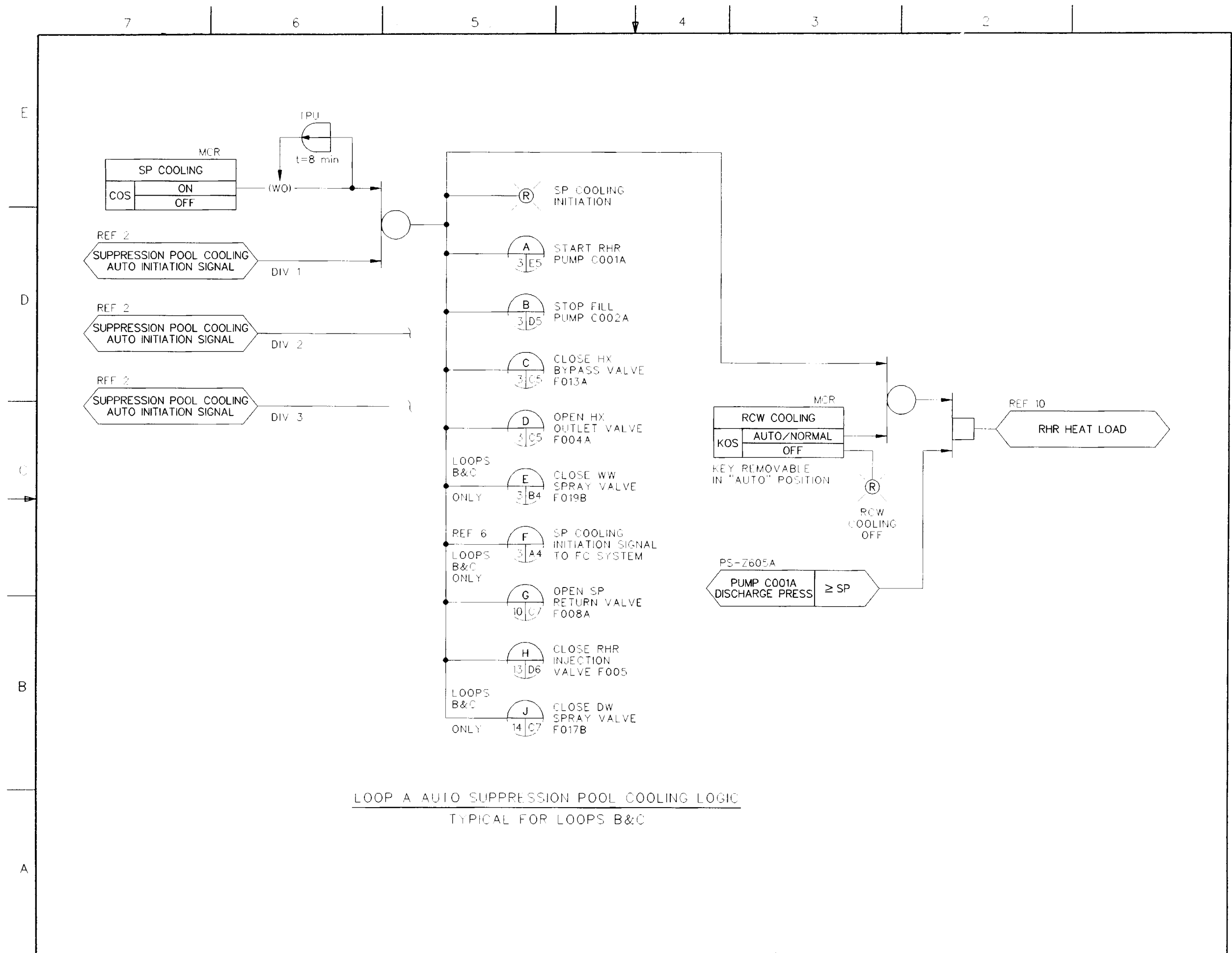


FIGURE 7.3-4 RESIDUAL HEAT REMOVAL SYSTEM IBD (Sheet 20 of 20)