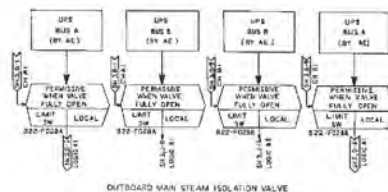


SOURCE: 0007.225-001-024 REV. 01

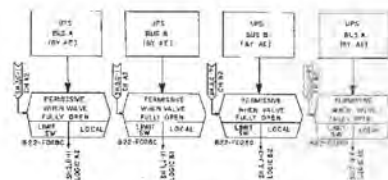
FIGURE 7.2-1

REACTOR PROTECTION SYSTEM
SHEET 2 OF 5

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



OUTBOARD MAIN STEAM ISOLATION VALVE



OUTBOARD MAIN STEAM ISOLATION VALVE

FIGURE 7.2-1

REACTOR PROTECTION SYSTEM
SHEET 5 OF 5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

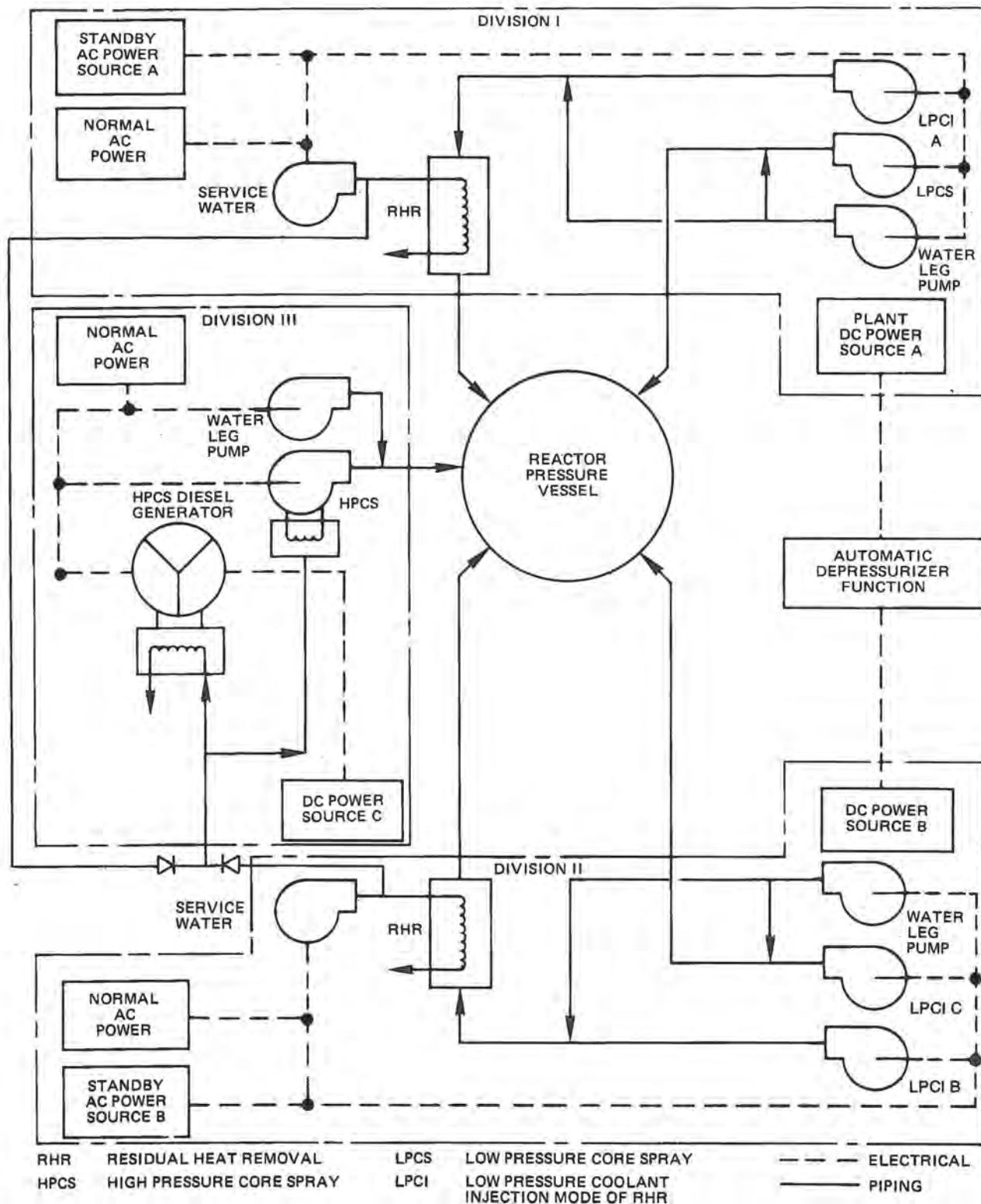


FIGURE 7.3-1

EMERGENCY COOLING SYSTEM NETWORK

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
 FINAL SAFETY ANALYSIS REPORT

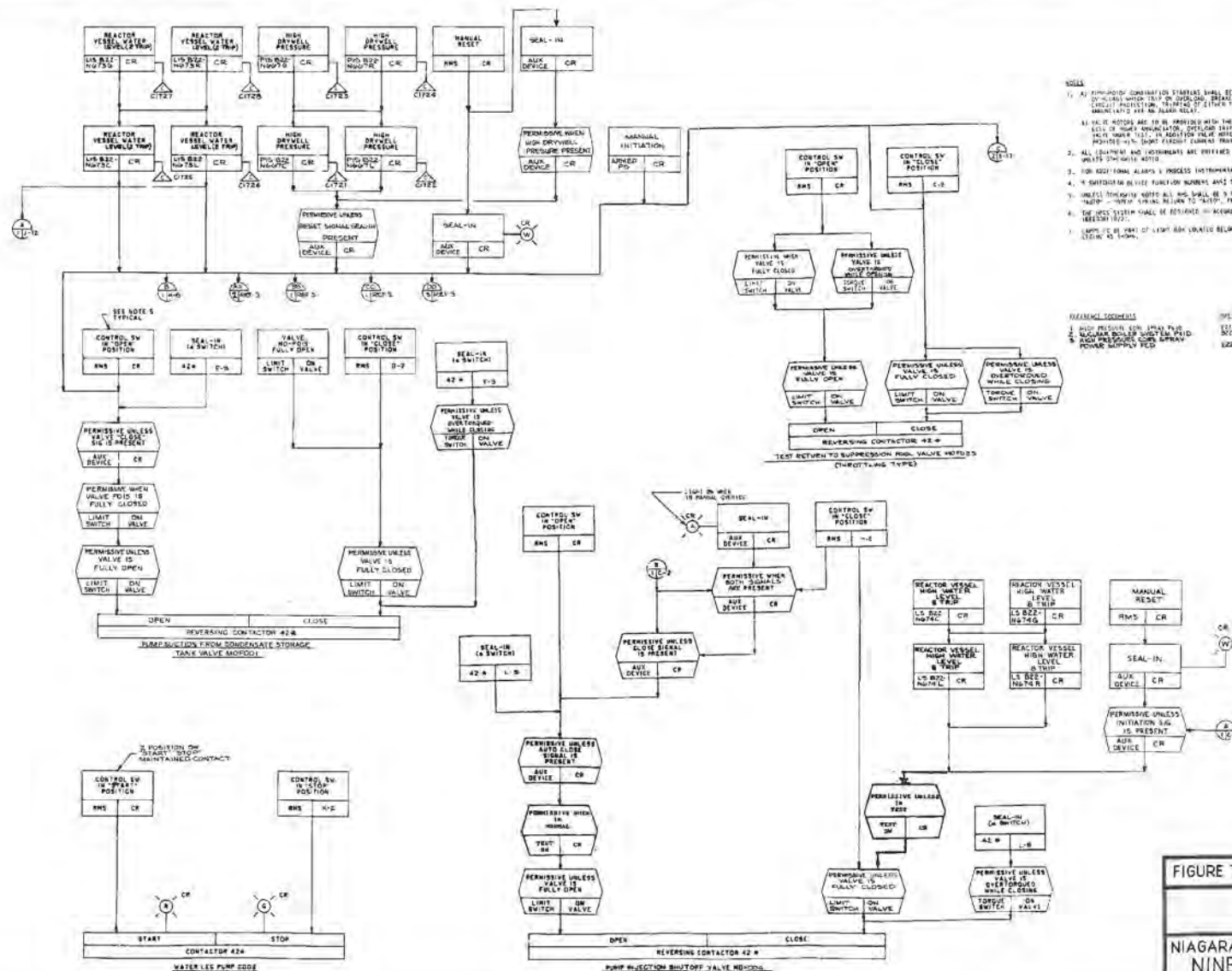


FIGURE 7.3-2

HPSC SYSTEM FCD
SHEET 1 OF 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
UPDATED SAFETY ANALYSIS REPORT

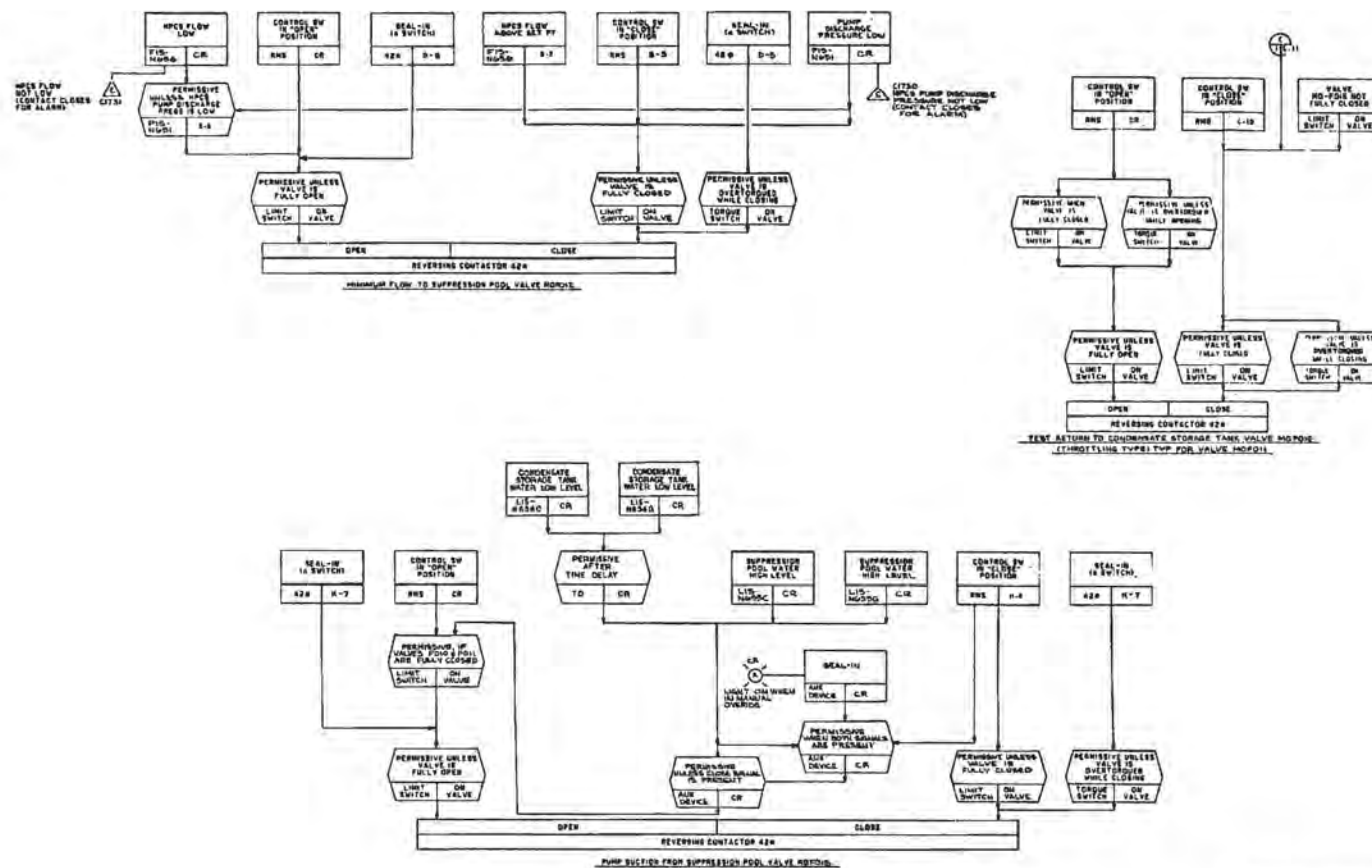


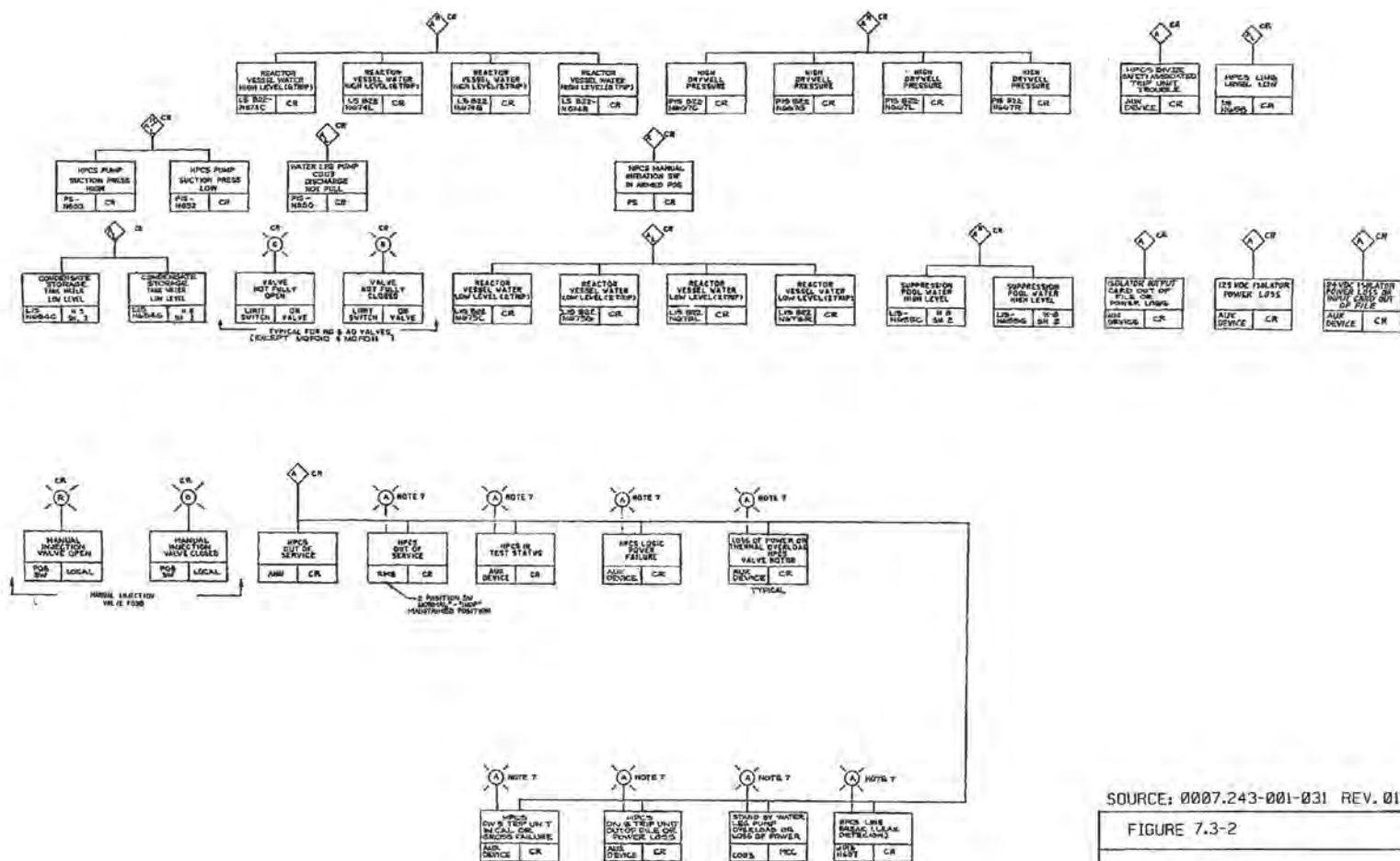
FIGURE 7.3-2

HPCS SYSTEM FCD
SHEET 2 OF 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

AMENDMENT 23

DECEMBER 1985

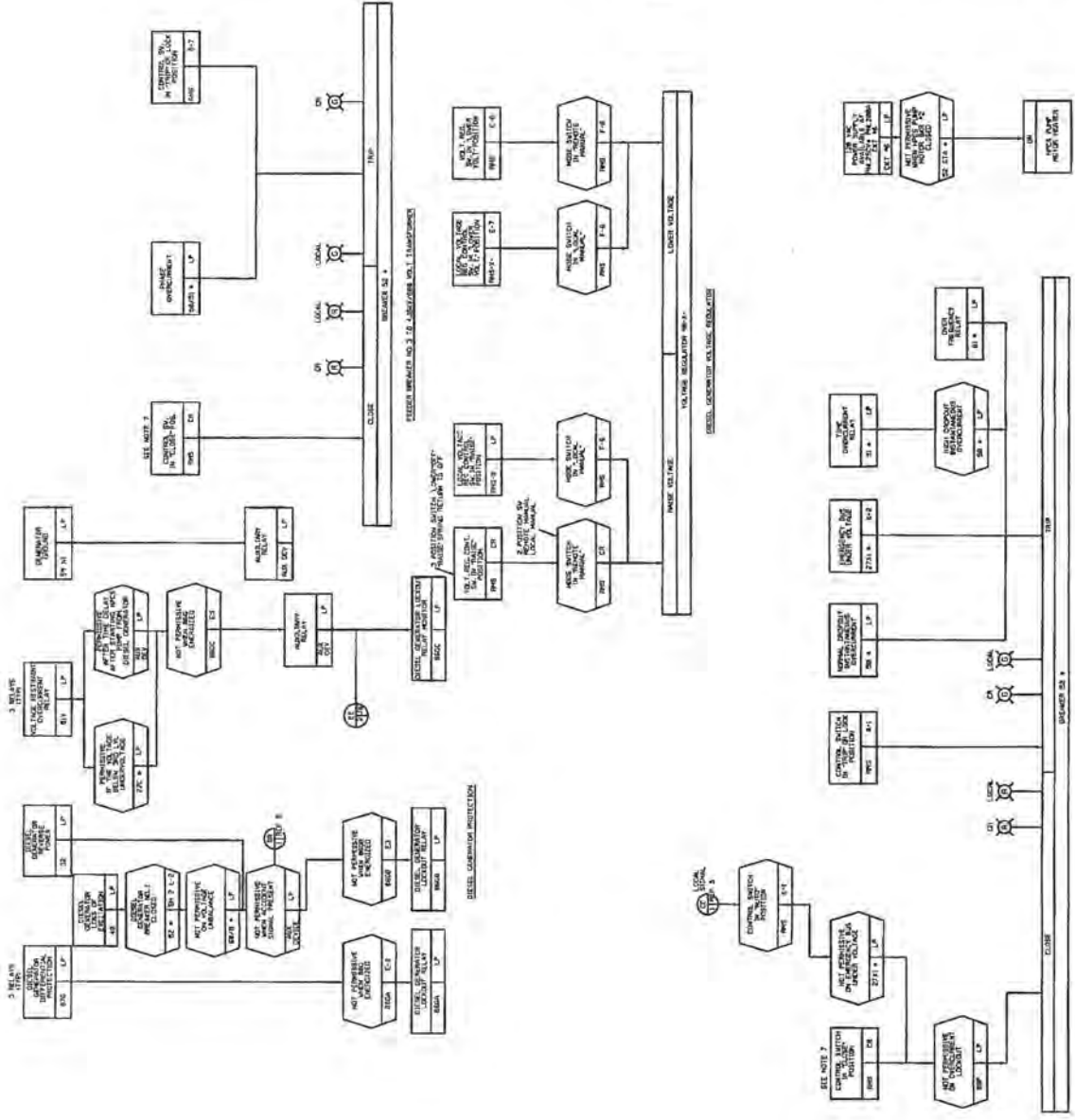


SOURCE: 0007.243-001-031 REV. 01

FIGURE 7.3-2

HPCS SYSTEM FCD
SHEET 3 OF 3

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



NOTES

1. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
2. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
3. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
4. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
5. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
6. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
7. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
8. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
9. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.
10. ALL RELAYS AND CONTACTS ARE TO BE PROVIDED WITH A TRIP POINT OF 100% OF THE RATED CURRENT.

REFERENCE DOCUMENTS

1. HPS POWER SUPPLY FCD SHEET 1 OF 3
2. HPS POWER SUPPLY FCD SHEET 2 OF 3
3. HPS POWER SUPPLY FCD SHEET 3 OF 3
4. HPS POWER SUPPLY FCD SHEET 4 OF 3
5. HPS POWER SUPPLY FCD SHEET 5 OF 3
6. HPS POWER SUPPLY FCD SHEET 6 OF 3
7. HPS POWER SUPPLY FCD SHEET 7 OF 3
8. HPS POWER SUPPLY FCD SHEET 8 OF 3
9. HPS POWER SUPPLY FCD SHEET 9 OF 3
10. HPS POWER SUPPLY FCD SHEET 10 OF 3

SOURCE: 0207.243-001-045 REV. B

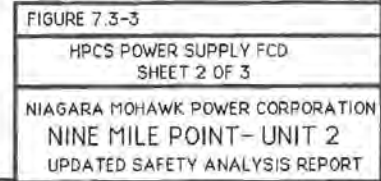
FIGURE 7.3-3

HPCS POWER SUPPLY FCD
SHEET 1 OF 3

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 15

OCTOBER 2002



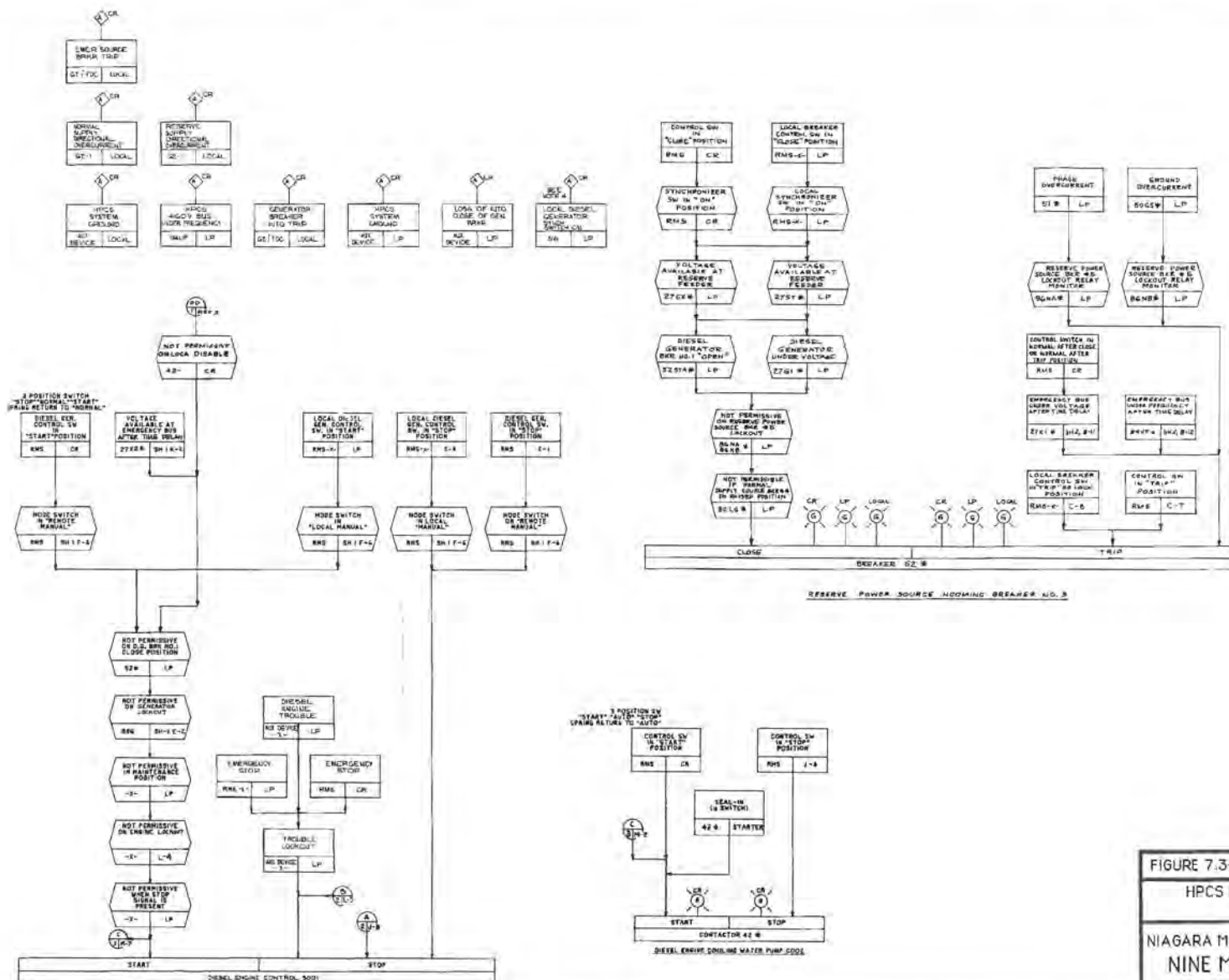
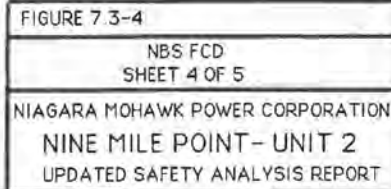
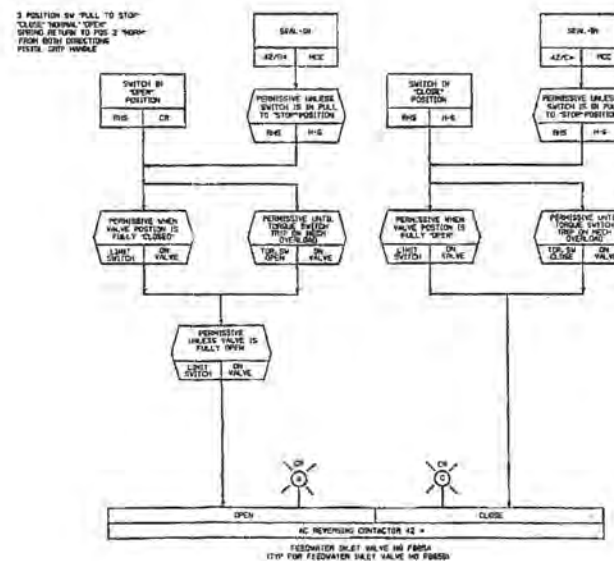
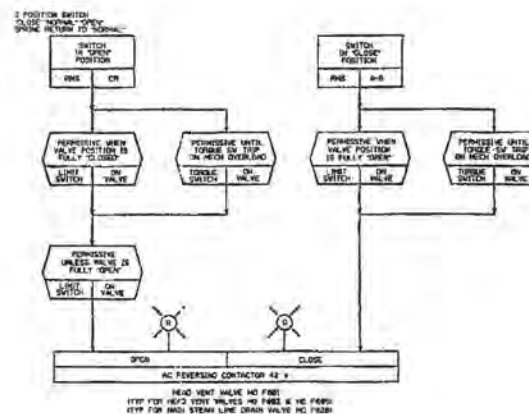


FIGURE 7.3-3
HPCS POWER SUPPLY FCD.
SHEET 3 OF 3
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT- UNIT 2
UPDATED SAFETY ANALYSIS REPORT



USAR REVISION 0 APRIL 1989





SOURCE: 0007.212-001-056 REV. 02

FIGURE 7.3-4

NBS FCD
SHEET 5 OF 5

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

[illegible][illegible]

For the complete Adairville Foundation web, and more, visit www.adairville.org.

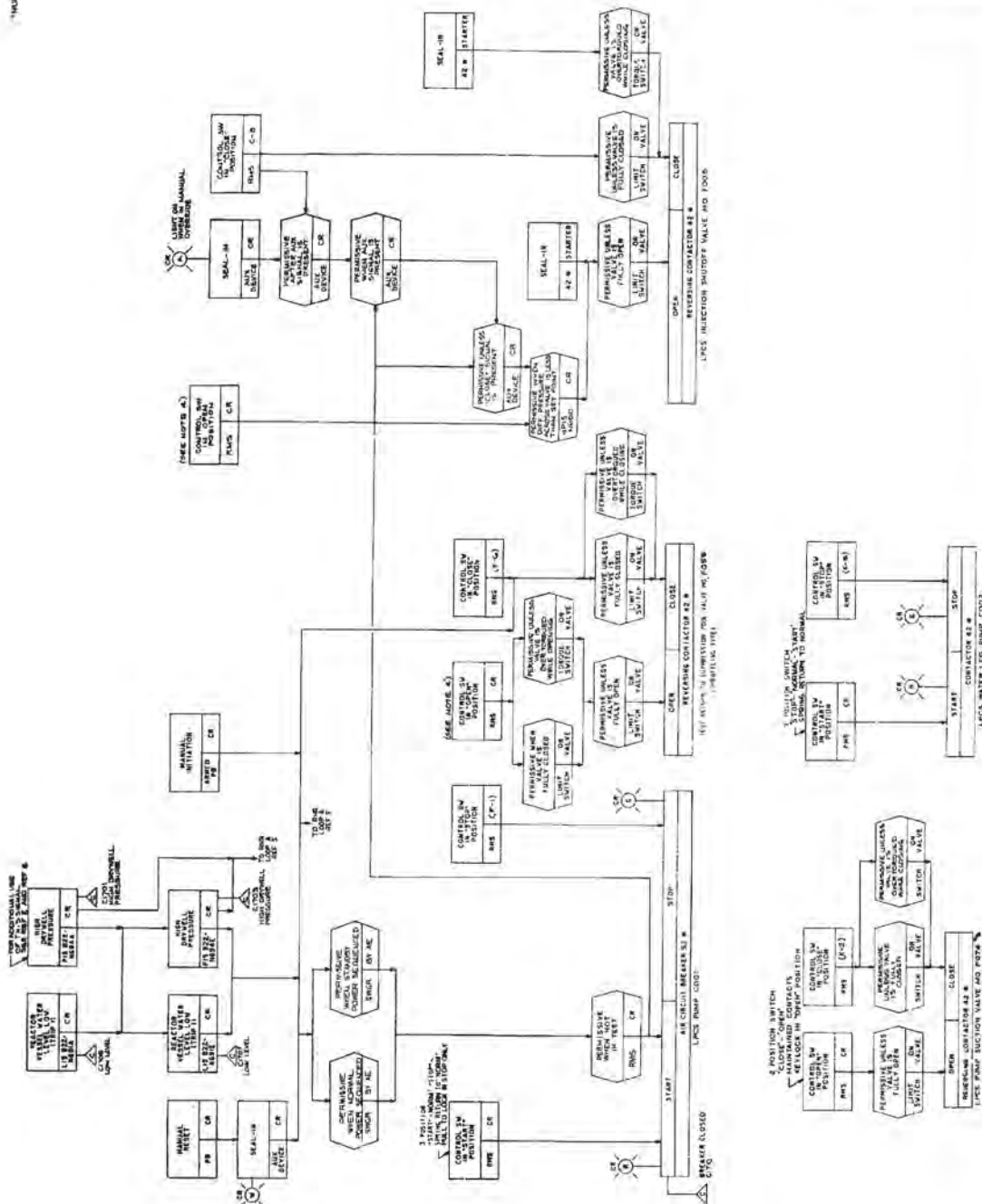
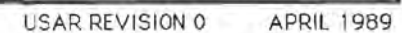


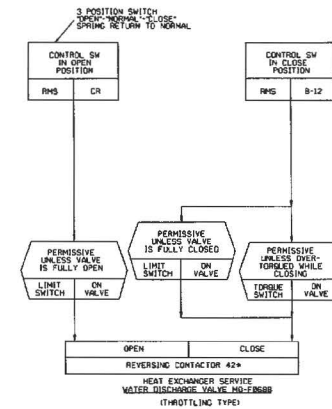
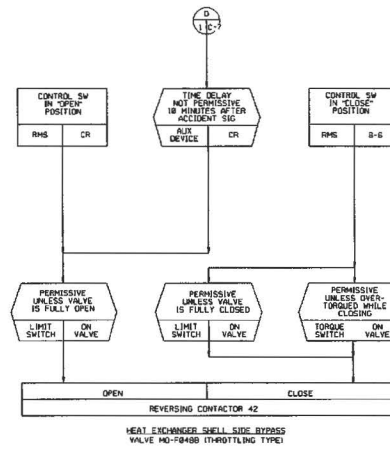
FIGURE 7.3-5

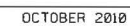
LPCS FCD
SHEET 1 OF 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 0 APRIL 1989







APRIL 1989



OCTOBER 2016

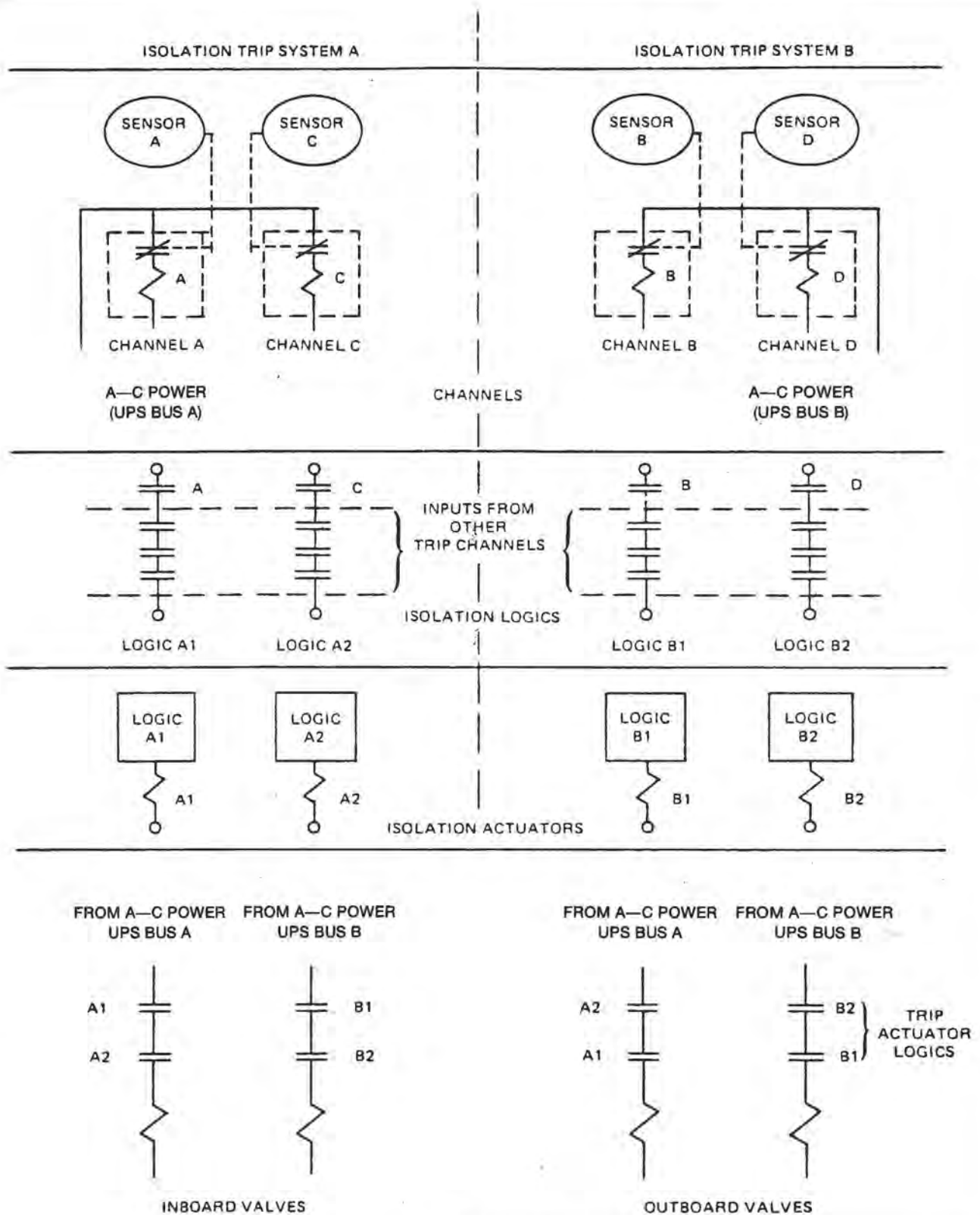


FIGURE 7.3-8

ISOLATION CONTROL SYSTEM FOR MAIN
STEAM LINE ISOLATION VALVES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

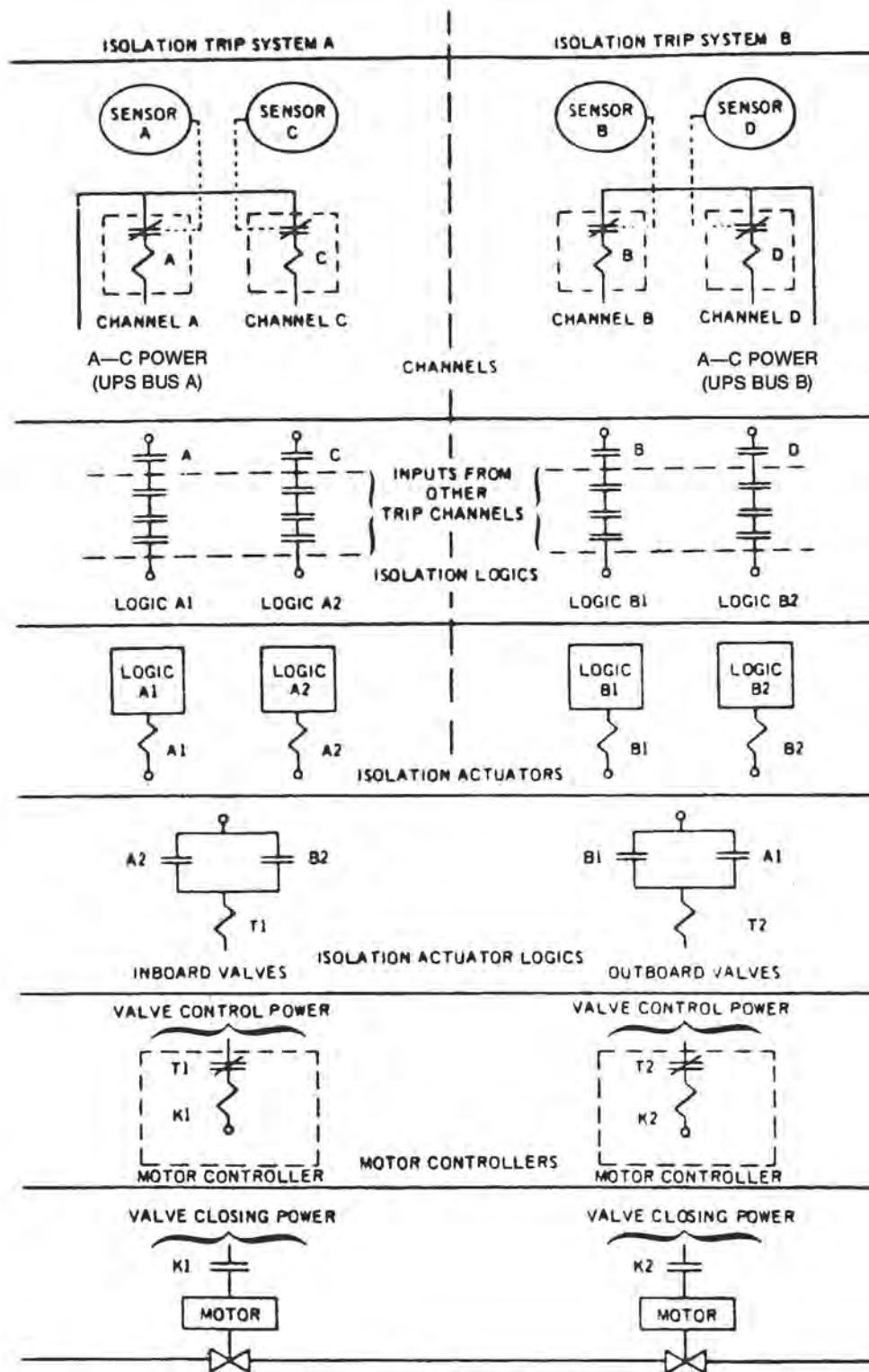
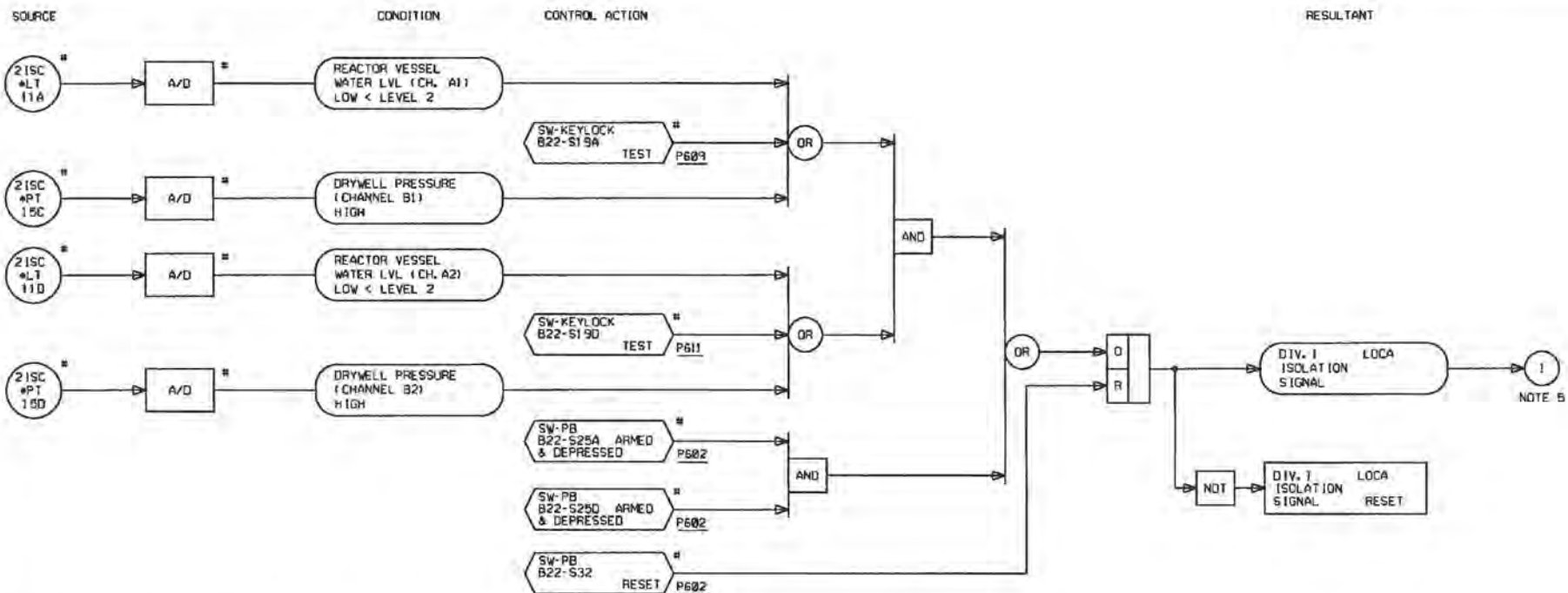


FIGURE 7.3-9

ISOLATION CONTROL SYSTEM USING
MOTOR-OPERATED VALVES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES:

1. LOGIC FOR DIV. I LOCA ISOLATION SIGNAL IS SHOWN. LOGIC FOR DIV. II

LOCA ISOLATION IS SIMILAR.

2. ASSOCIATED EQUIPMENT MARK NO.'S:

DIV. I	DIV. II
2ISC-LT11A (B22-N081A)	2ISC-LT11B (B22-N081B)
2ISC-LT11D (B22-N081D)	2ISC-LT11C (B22-N081C)
2ISC-PT15C (C72-N050A)	2ISC-PT15B (C72-N050B)
2ISC-PT15D (C72-N050D)	2ISC-PT15A (C72-N050C)
B22-S19A	B22-S19B
B22-S19D	B22-S19C
B22-S25A	B22-S25B
B22-S25D	B22-S25C
B22-S32	B22-S33

3. # SUPPLIED BY GE-NEBG.

4. REFER TO GE FCD 731E788TY FOR ALARMS, INDICATION AND OTHER RELATED FUNCTIONS.

5. LSK REFERENCES:

9-1(CICCP)	N/A
9-10F(SWP)	N/A
12-1H(IAS)	N/A
22-1D(HVR)	N/A
22-23A(CPS)	N/A
23-6D(OFI)	3-1(KMSS)
24-9,AD(LOAD SEQUENCE)	6-1,IF(FWS)
27-13A(HCS)	25-1A(RCS)
32-9C(DER)	
33-1A(LMS)	

LSK/FCD REFERENCES:

761E221TY SH1 (0007.245-001-030)
731E999AF SH1 (0007.241-001-025)
761E218 SH1 (0016.130-001-002)
731E760AF SH1 (0007.242-001-011)
731E950AF SH1 (0007.243-001-029)
731E788TY SH2 (0007.212-001-053)
731E783TY SH1 (0007.212-001-052)

5. (CONT'D)

33-2H (CMS)
3-1K (MSS)
6-1,IE (FWS)
25-1A (RCS)
22-1E (HVR)
22-1W (HVR)
22-9,1A (HVC)

SETPOINTS SHOWN ON LOGIC DIAGRAMS ARE FOR LOGIC CLARIFICATION ONLY AND MAY BE ONLY APPROXIMATIONS OF THE ACTUAL PROCESS SETPOINT. REFER TO SETPOINT DATA SHEETS FOR ACTUAL PROCESS SETPOINTS.

SOURCE: LSK-27-19G REV.15

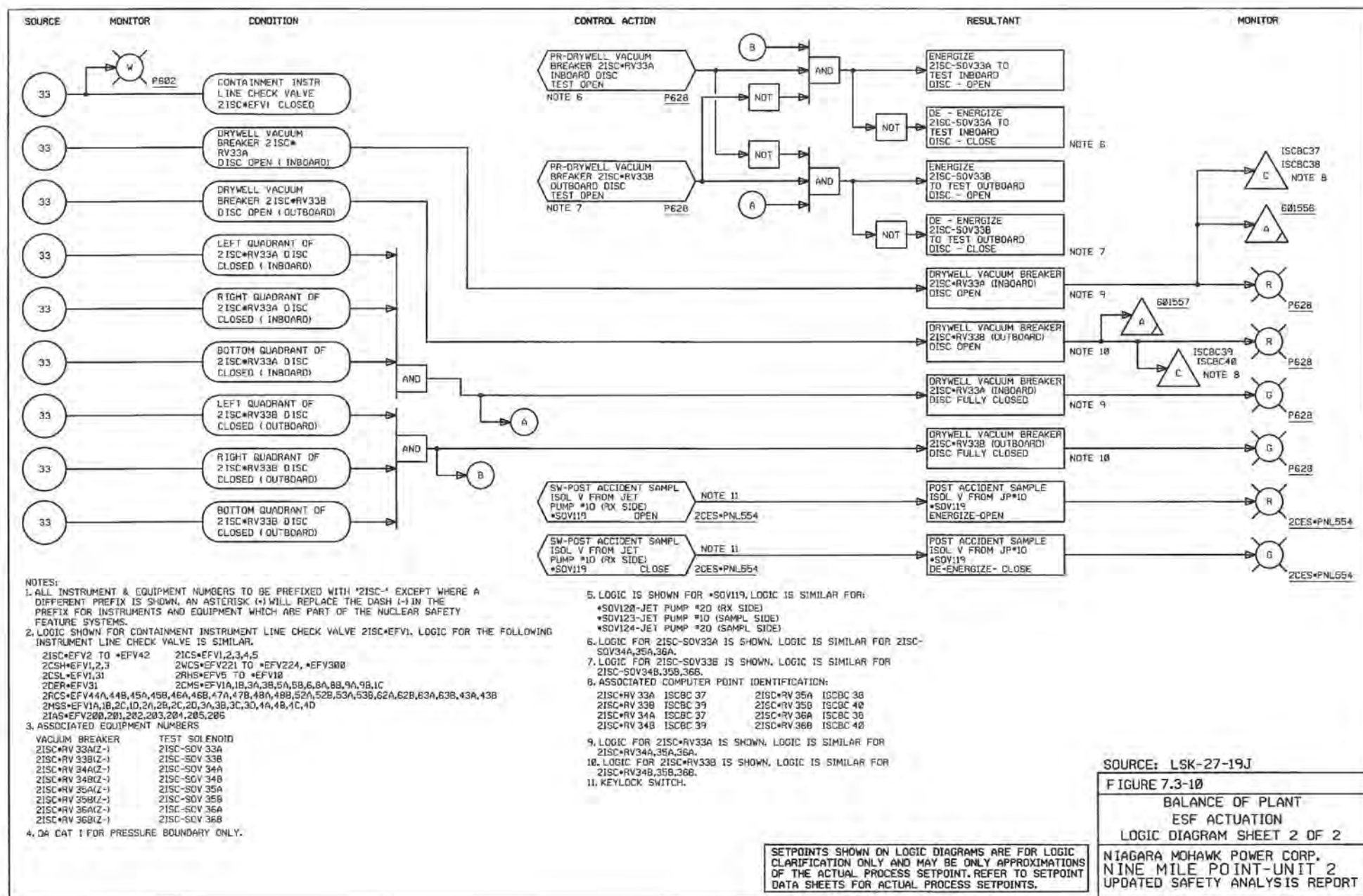
FIGURE 7.3-10

BALANCE OF PLANT
ESF ACTUATION
LOGIC DIAGRAM SHEET 1 OF 2

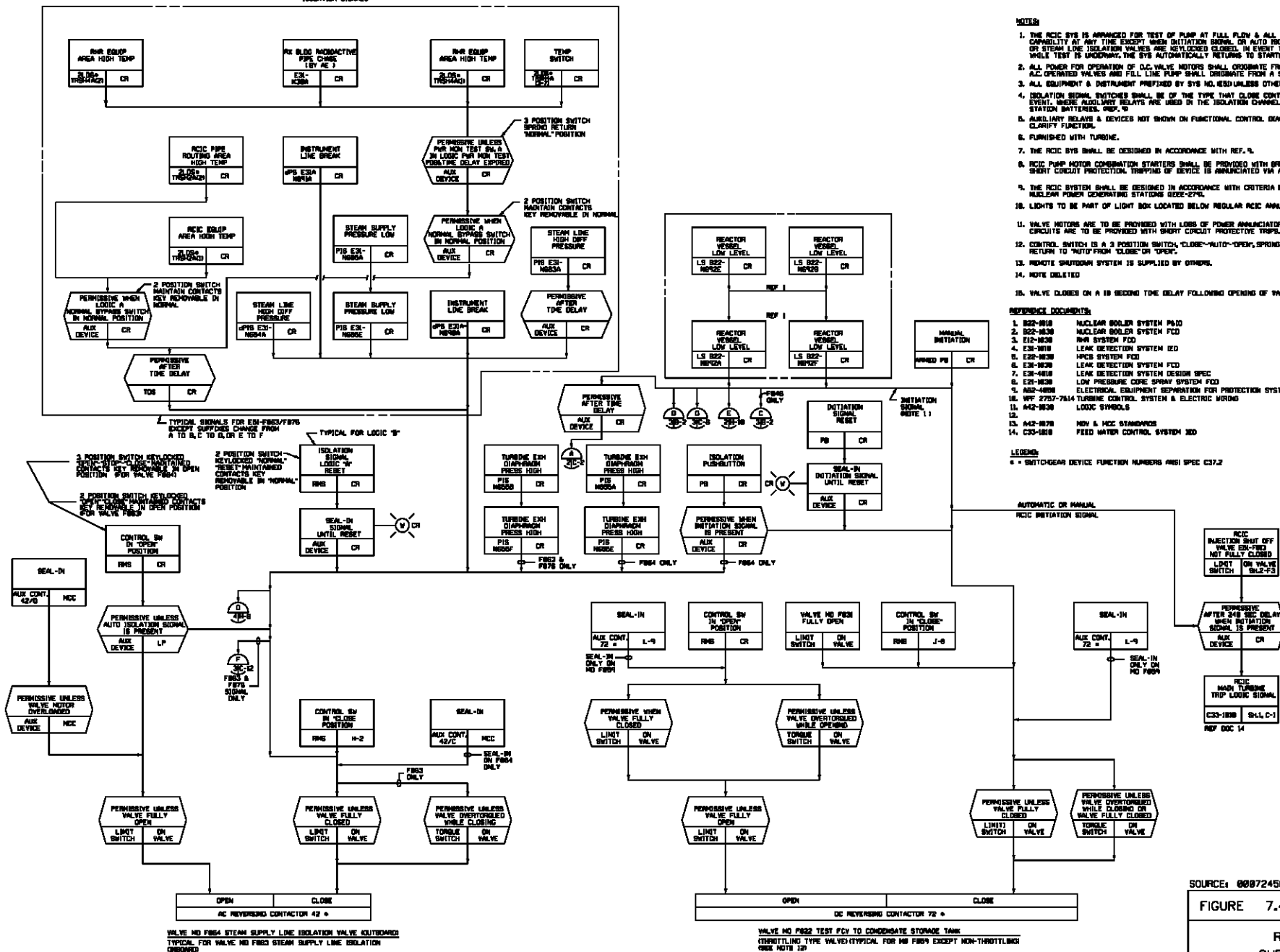
NIAGARA MOHAWK POWER CORP.
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 8

NOVEMBER 1995



ISOLATION SIGNALS



SOURCE: 0007245001030

FIGURE 7.4-1

RCIC FCD
SHEET 1 OF 6NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

NUCLEAR SAFETY RELATED

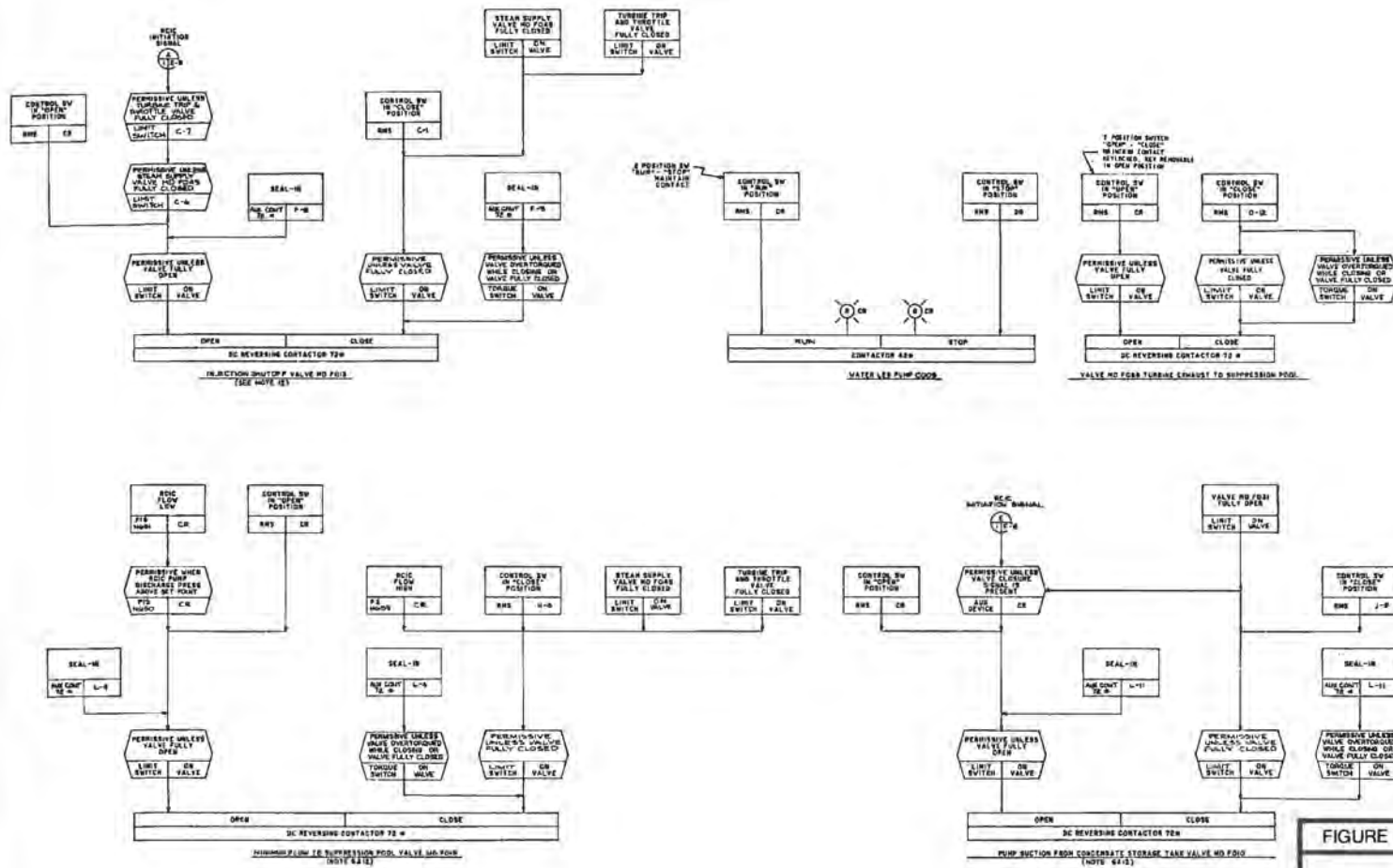


FIGURE 7.4-1

RCIC FCD
SHEET 2 OF 6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

AMENDMENT 23

DECEMBER 1985

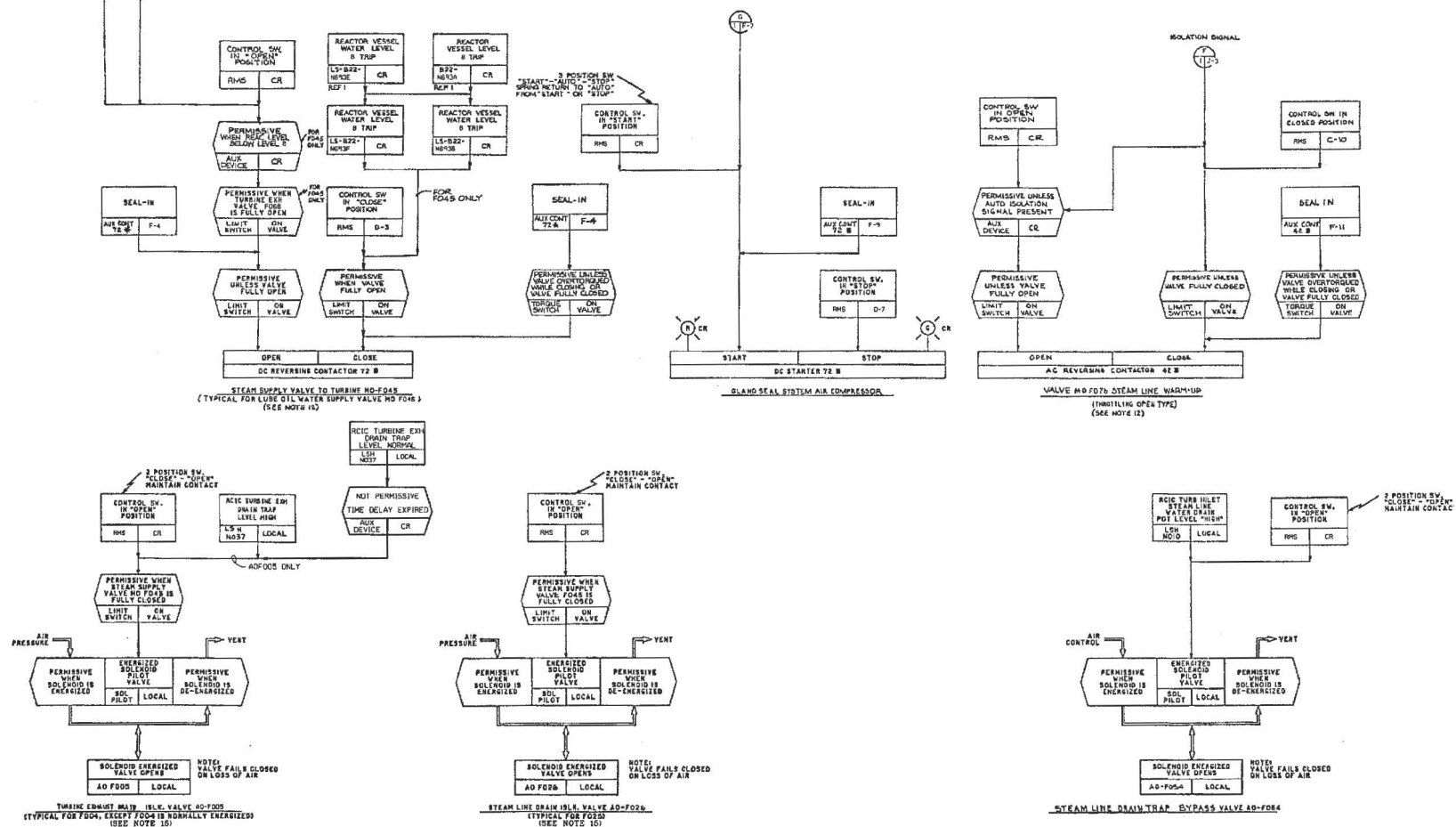
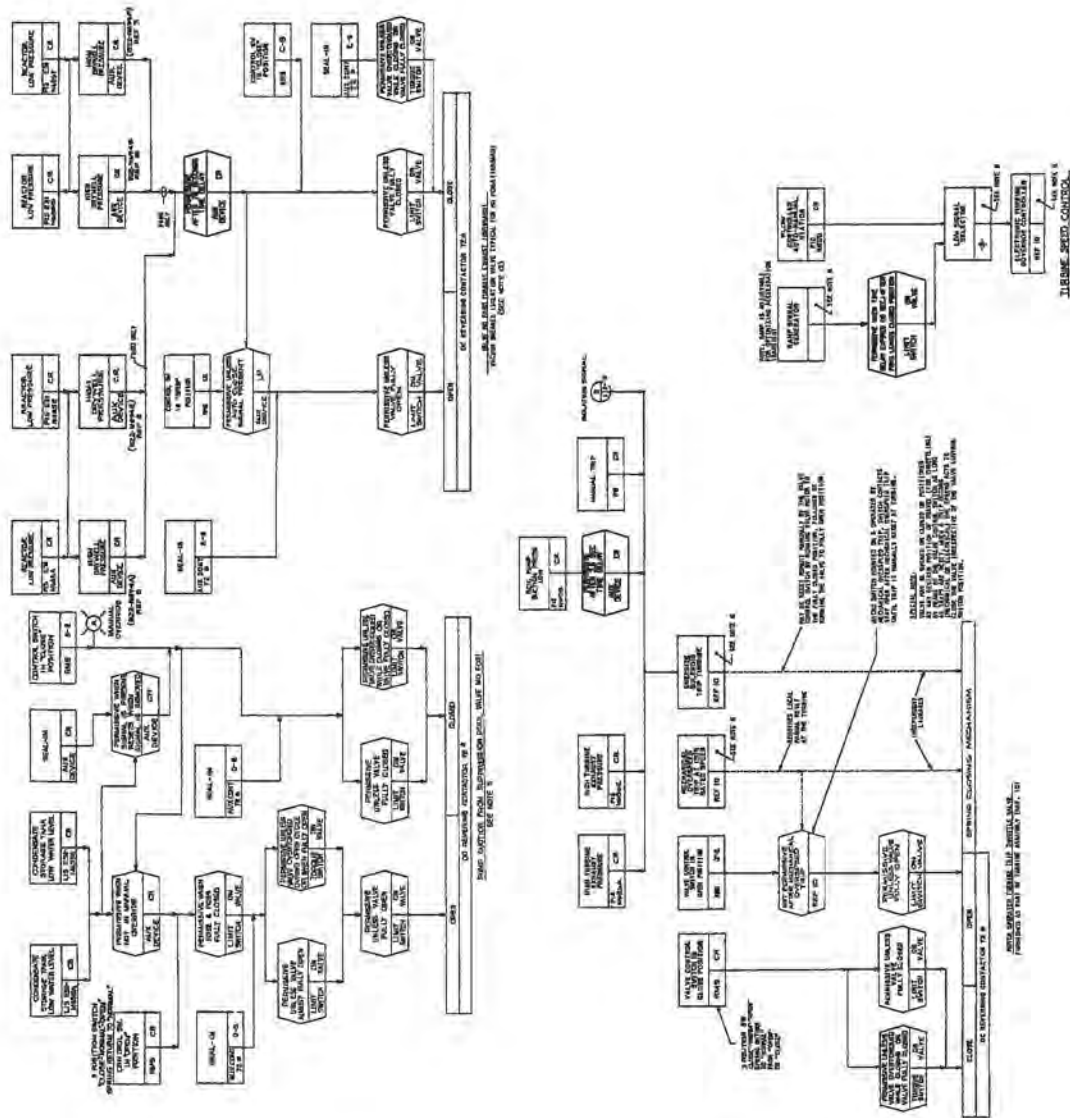


FIGURE 7.4-1

RCIC FCD
SHEET 3 OF 6

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



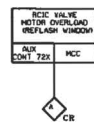
SOURCE: 00072450010330
FIGURE 7.4-1

RCIC FCD
SHEET 4 OF 5

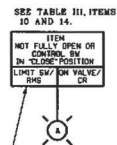
NINE MILE POINT
NUCLEAR STATION - UNIT 2
SCRIBA, N.Y.

UPDATED SAFETY ANALYSIS REPORT
USAR REVISION 20 OCTOBER 2012

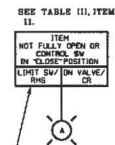
ITEM	REF. DESIG	DESCRIPTION	DIV
1	E51-C098	TURBINE TRIP AND THROTTLING VALVE	1
2	E51-F010	MO VALVE PUMP SECTION FROM COND STORAGE TANK	1
3	E51-F013	MO VALVE RCI INJECTION SHUTOFF	1
4	E51-P019	MO VALVE MIN FLOW TO SUPPER POOL	1
5	E51-P022	MO VALVE TEST FCV TO COND STORAGE TANK	1
6	E51-P031	MO VALVE PUMP SECTION FROM SUPPER POOL	1
7	E51-P045	MO VALVE STEAM TO TURBINE	1
8	E51-P046	MO VALVE RCI TURBINE COOLING WATER SUPPLY	1
9	E51-P069	MO VALVE TEST RETURN TO COND STORAGE TANK	1
10	E51-P074	MO VALVE STEAM SUPPLY LINE INLN (OUTBOARD)	1
11	E51-P085	MO VALVE TURB EXHAUST TO SUPPER POOL	1
12	E51-P080	MO VALVE VAC. BKR ISOLATION (OUTBOARD)	1
14	E51-P063	MO VALVE STEAM SUPPLY LINE INLN (INBOARD)	2
15	E51-P076	MO VALVE STEAM LINE WARM UP LINE ISOLATION	2
16	E51-P086	MO VALVE VAC. BKR ISOLATION (INBOARD)	2
17	E51-C003	RCIC WATER LEO PUMP	1



SEE TABLE III
ITEMS 1 THRU 16
FOR VALVE NO.



3 POSITION SWITCH
KEYLOCKED, SPRING R.
CONTACTS, KEY REMOV
IN "AUTO" POSITION.



2 POSITION SWITCH
KEYLOCKED, MAINTAINED
CONTACTS, KEY REMOVABLE
IN "OPEN" POSITION.

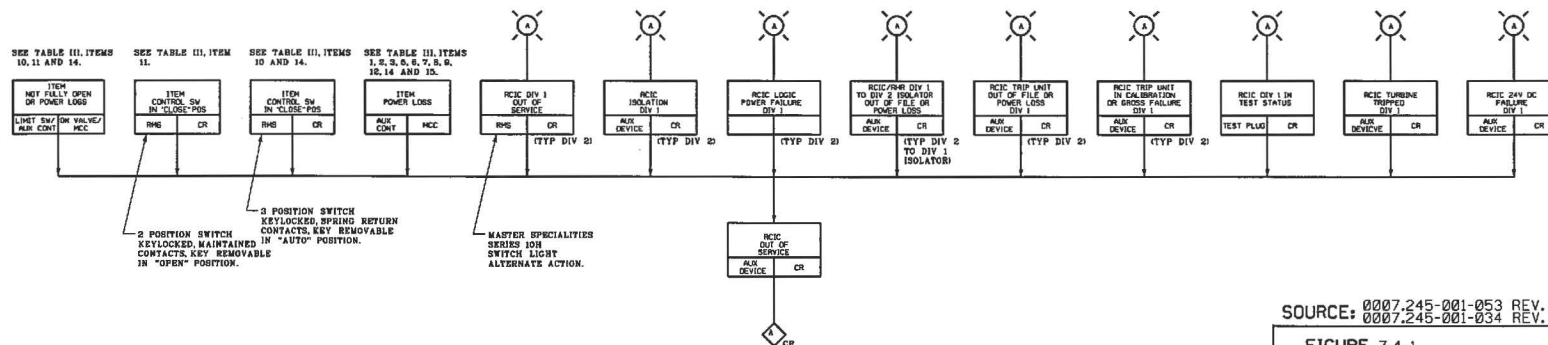
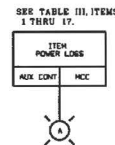
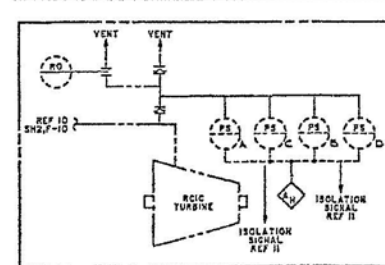
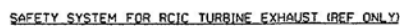
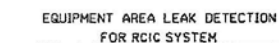
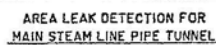
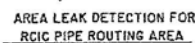
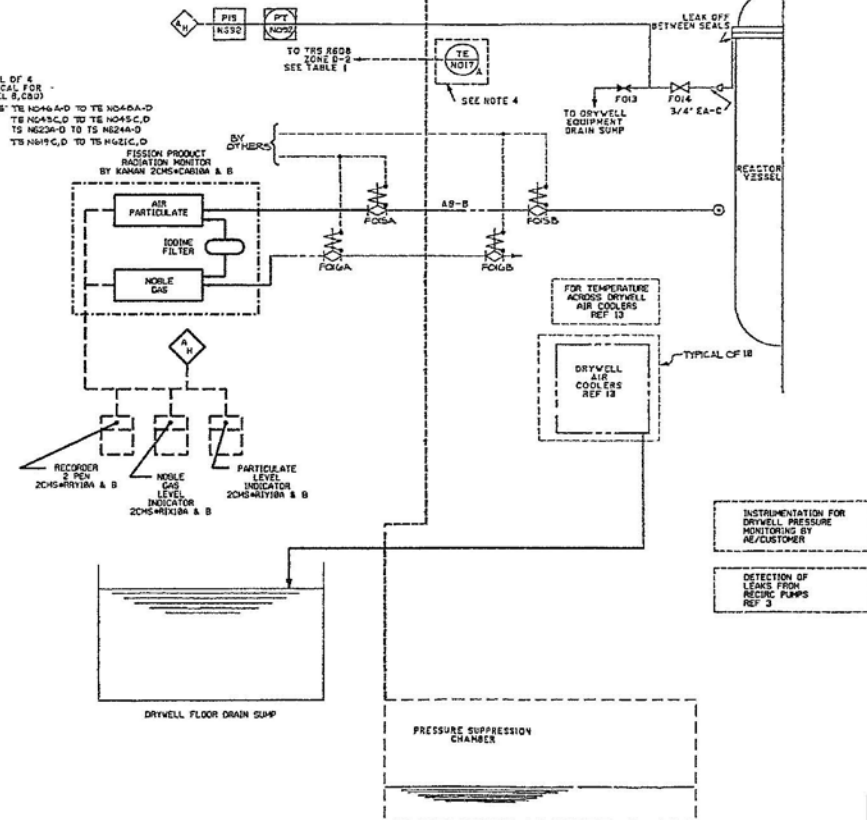
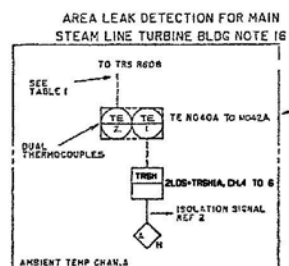


FIGURE 7.4-1

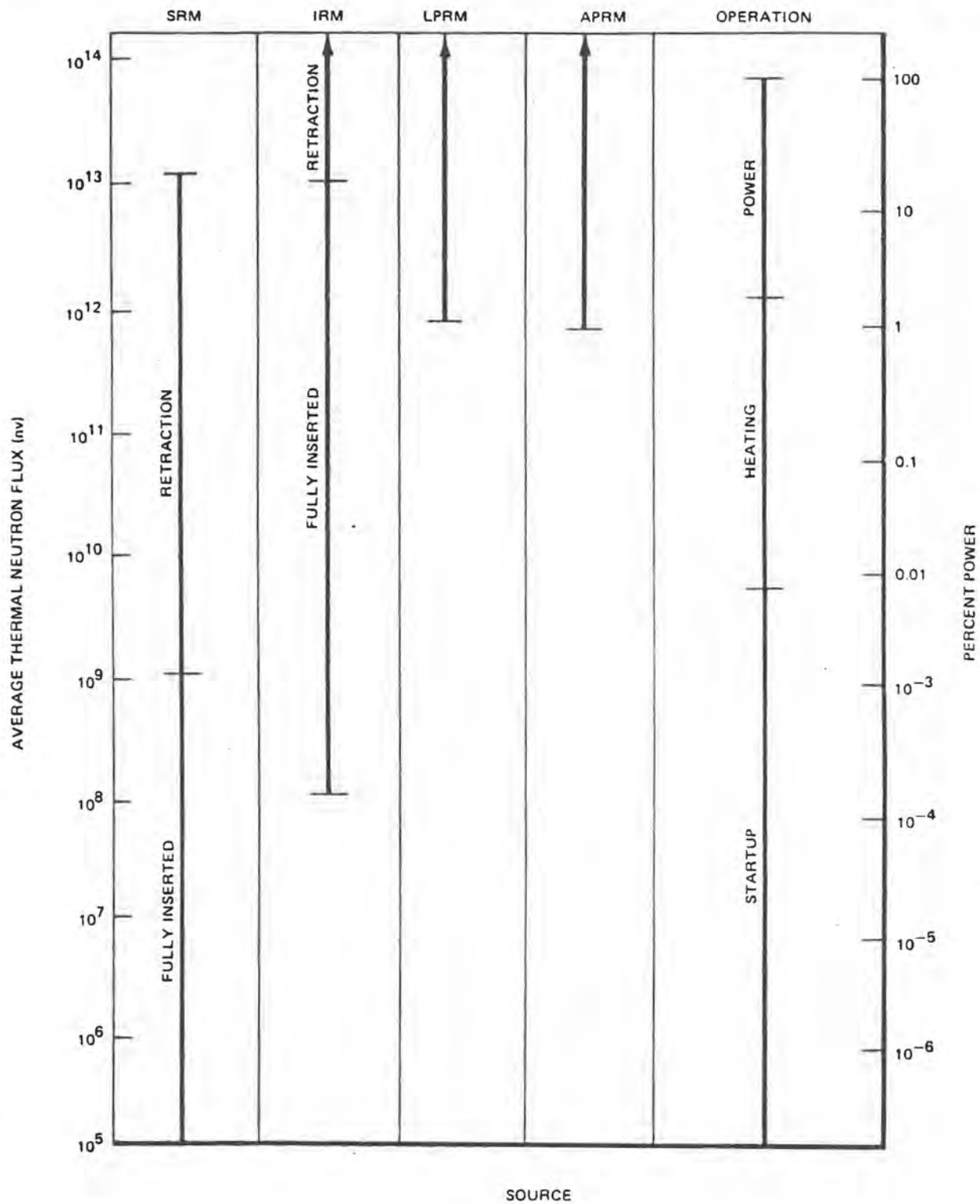
RCIC FCD
SHEET 6 OF 6

NINE MILE POINT-UNIT 2 UPDATED SAFETY ANALYSIS REPORT

AREA MONITORED	AMBIENT TEMPERATURE			DIFFERENTIAL TEMPERATURE		
	TE	TE POINT NO.	ALARM GROUPING	TE INLET	TE OUTLET	TE NO. / ALARM GROUPING
TECHN PLYT. TANK	H017A	R008-1	SW-1	H025A	H011-1	SW-3
PRIMARY CONTAINMENT	H017B H017C H017D	R008-2 R008-3 R008-4 R008-5	SW-2			
RWR EQUIP. ROOM 1	H018A	R008-6	SW-3			SW-3
RWR EQUIP. ROOM 2	H018D	R008-7				
RECIP PIPE ROUTING	H024A	R008-8	SW-4			SW-4
ESOLV. CYCL. AREA	H004A	R025-9	SW-5			SW-5
RECIP PUMP ROOM 1	H025A	R008-10				
AMCS PUMP ROOM 1	H025C	R008-11	SW-6			SW-6
AMCS RWR ROOM	H025E	R008-12				
TURBINE BLDG	H042A H041A H041B	R008-13 R008-14 R008-15 R008-16				
REACTOR. BLDG	H041A H041B	R008-17 R008-18	SW-8			
MODERATOR. BLDG	H041A H041B H044D H045D	R008-19 R008-20 R008-21 R008-22				
REACTOR. CHASE	H045D	R008-23	SW-9			

[illegible]

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

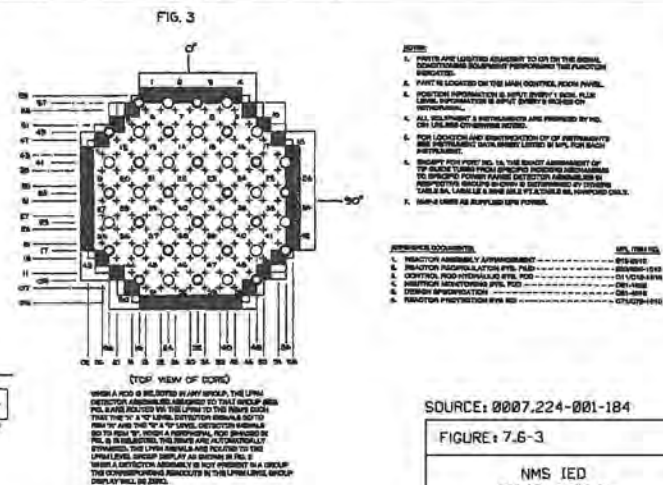
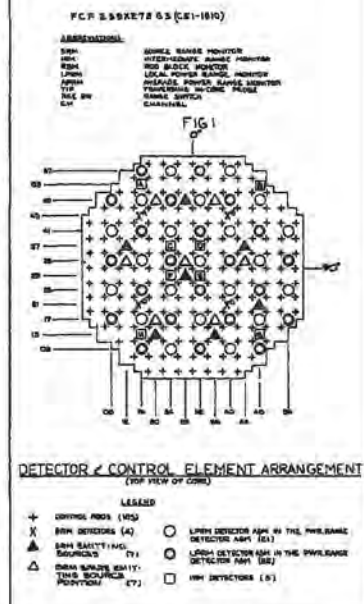


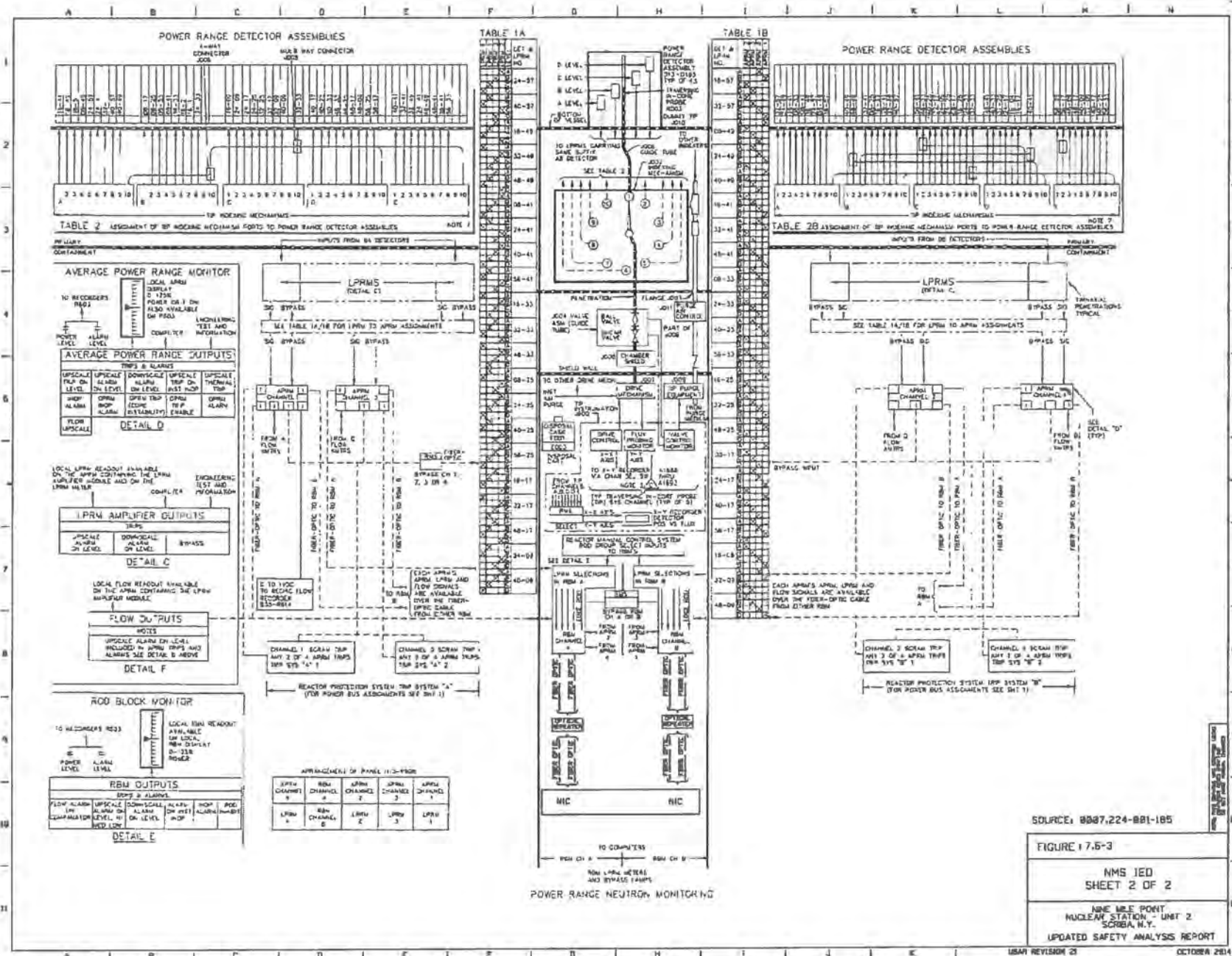
SOURCE

FIGURE 7.6-2

RANGES OF NEUTRON MONITORING SYSTEM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
 FINAL SAFETY ANALYSIS REPORT





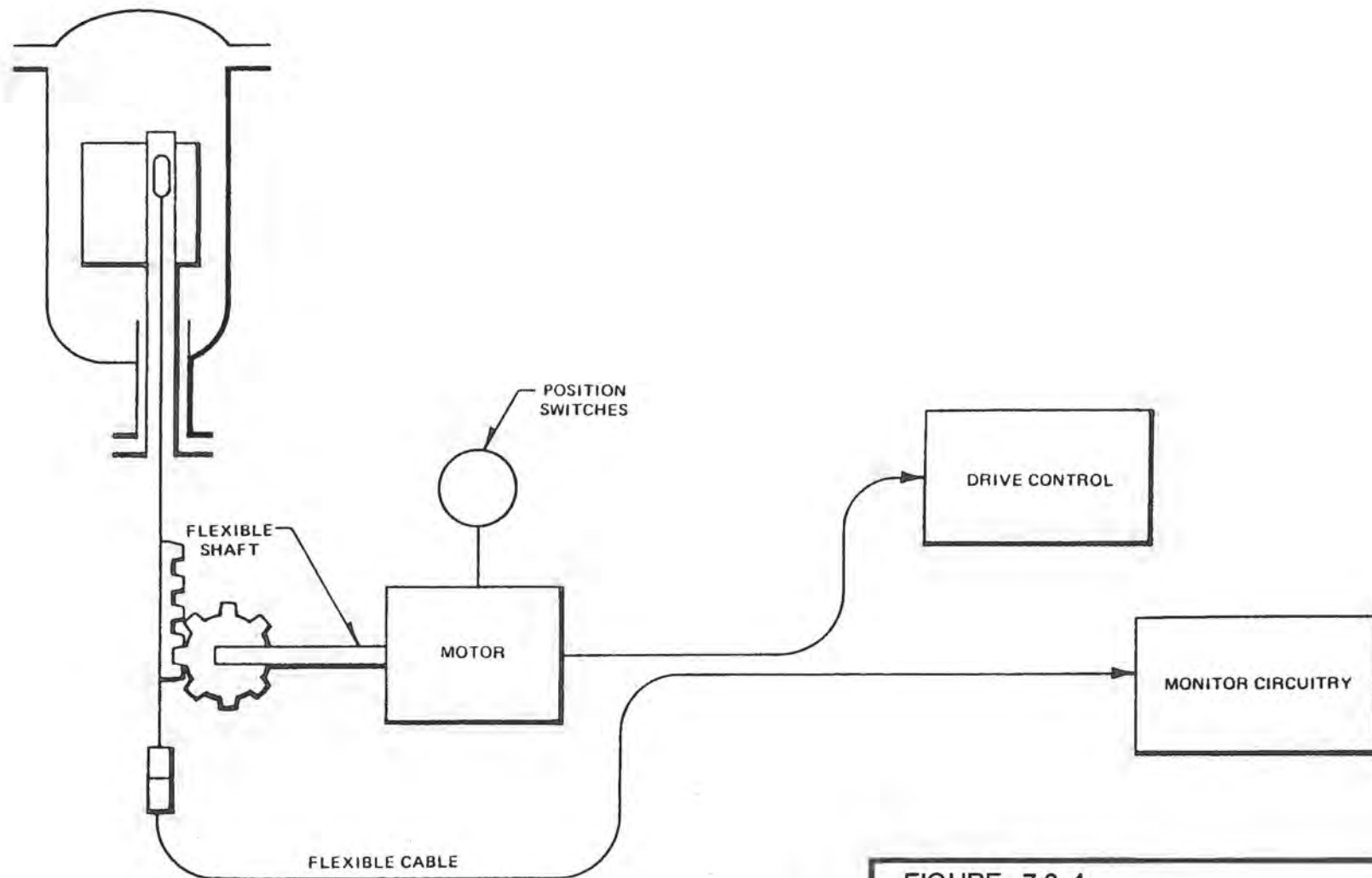


FIGURE 7.6-4

DETECTOR DRIVE SYSTEM

NIAGARA MOHAWK POWER CORPORATION-
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

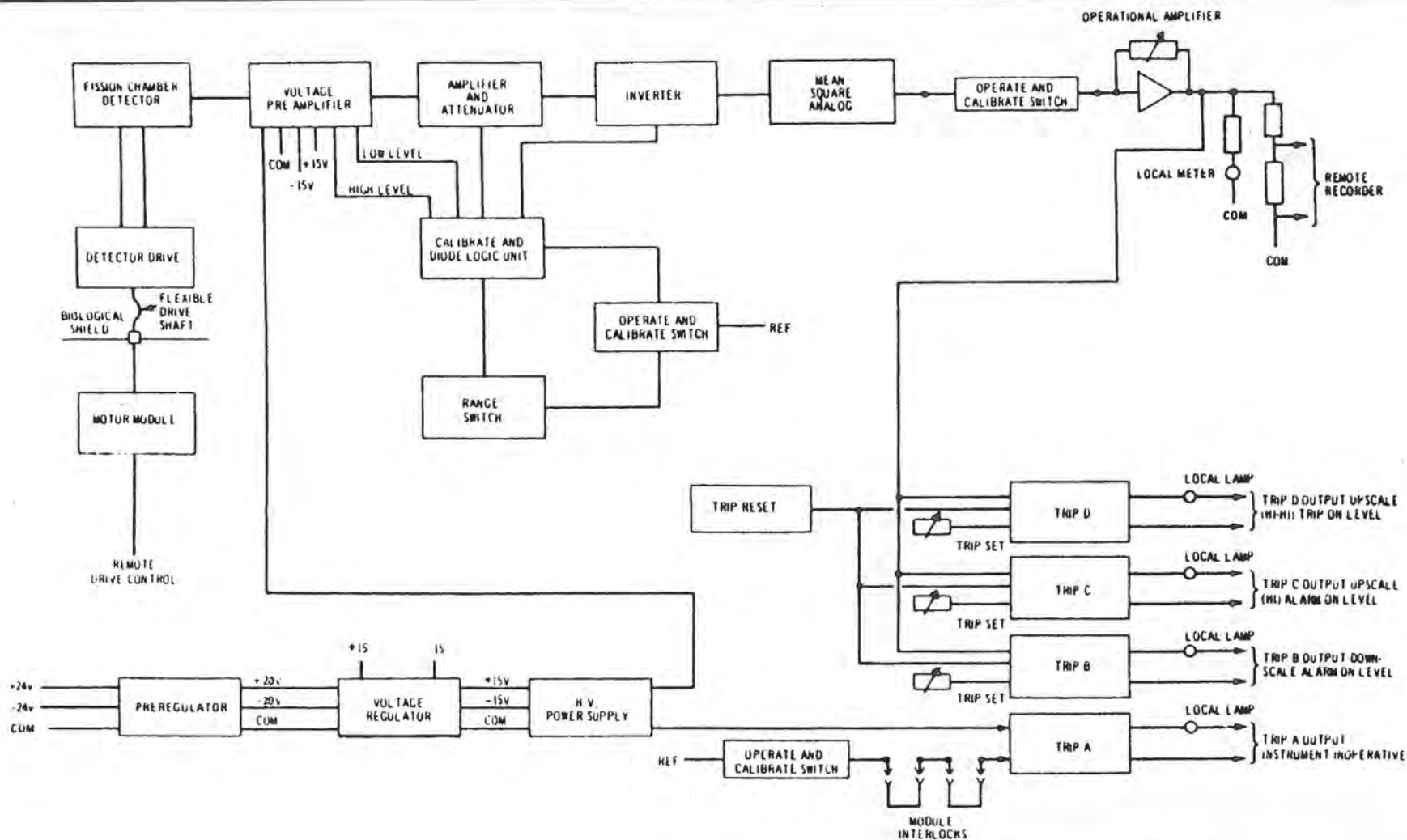
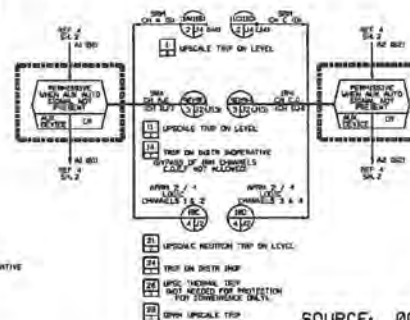
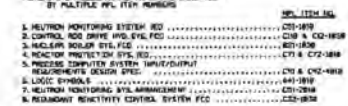


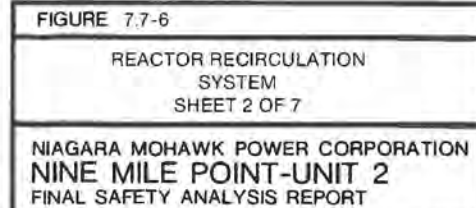
FIGURE 7.6-5

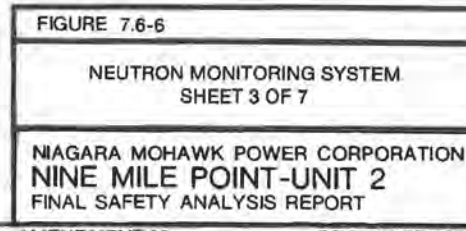
FUNCTIONAL BLOCK DIAGRAM OF
IRM CHANNEL

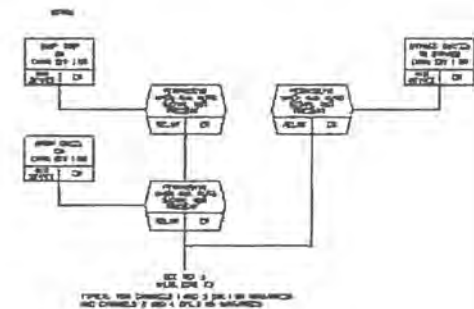
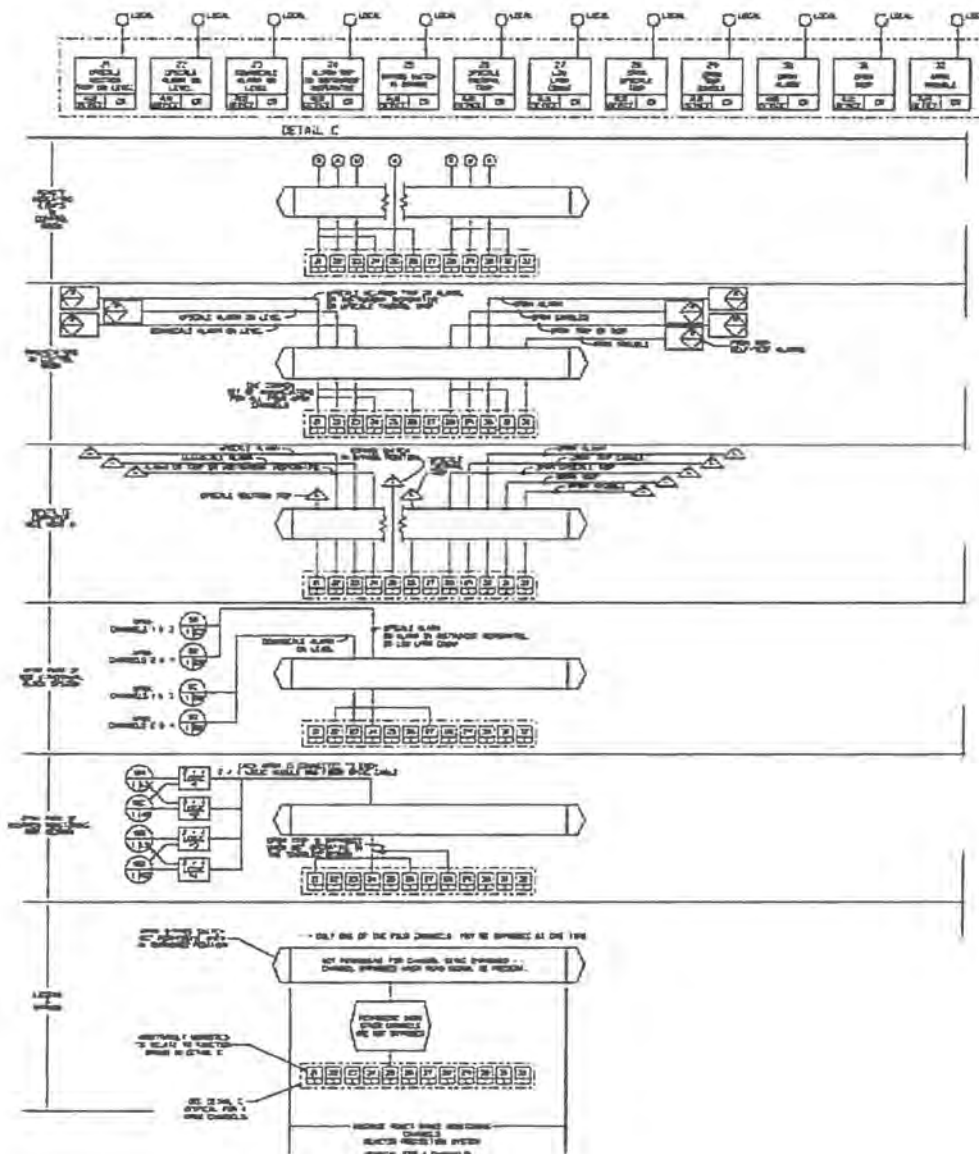
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



OCTOBER 2000







SOURCE: DD07224281123

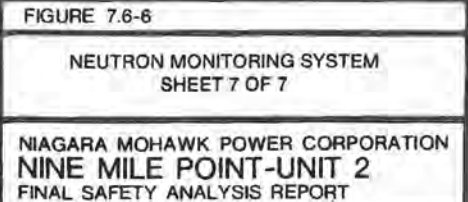
FIGURE 7.6-6

NEUTRON MONITORING SYSTEM
SHEET 4 OF 7

NINE MILE POINT
NUCLEAR STATION-UNIT 2
SCRIBA, N.Y.
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 21

OCTOBER 2014



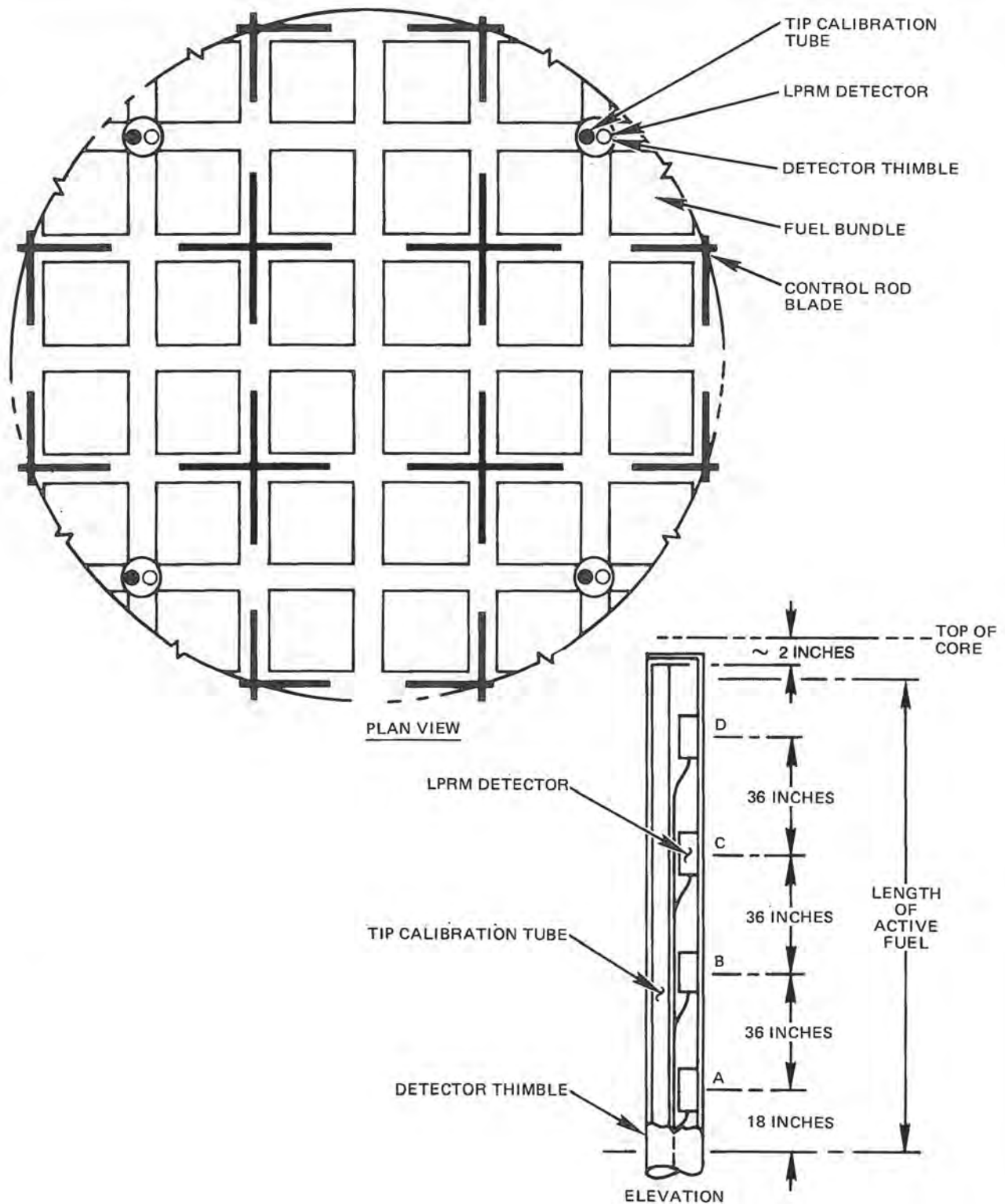
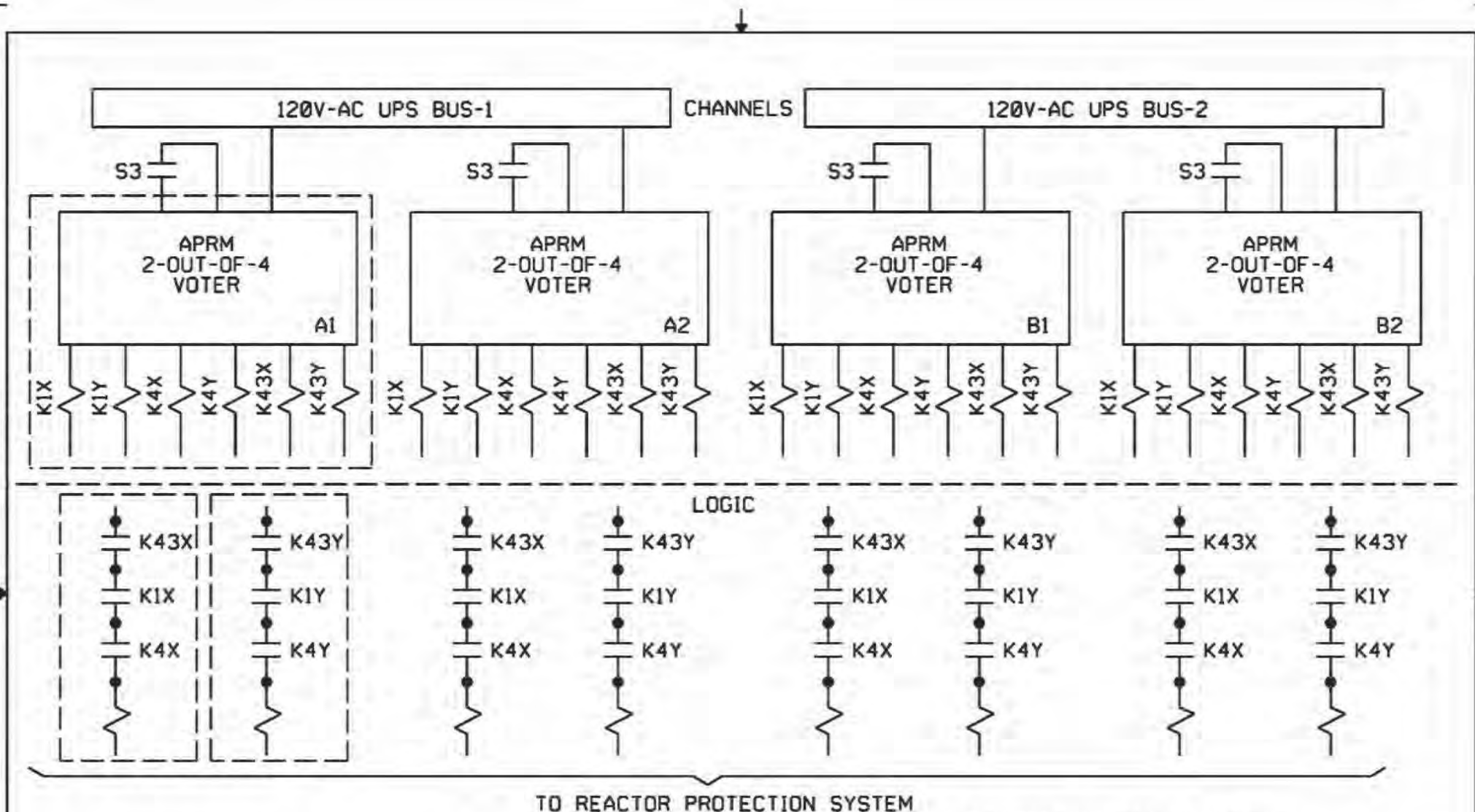


FIGURE 7.6-7

POWER RANGE MONITOR DETECTOR
ASSEMBLY LOCATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND

K1X -- UPSCALE NEUTRON TRIP OR UPSCALE THERMAL
& K1Y TRIP OR INOP AND NOT BYPASSED

K4X -- OPRM DIDA TRIP OR OPRM INOP AND NOT BYPASSED
& K4Y

K43X -- OPRM CDA TRIP OR OPRM INOP AND NOT BYPASSED
& K43Y (JUMPED OUT UNTIL DSS-CD IMPLEMENTED)

NOTE: CONTACTS SHOWN IN TRIPPED, UNBYPASSED POSITION

SOURCE: 0007224001137-018

FIGURE 7.6-8

APRM CIRCUIT ARRANGEMENT FOR
REACTOR PROTECTION SYSTEM INPUT

NINE MILE POINT
NUCLEAR STATION - UNIT 2
SCRIBA, N.Y.

UPDATED SAFETY ANALYSIS REPORT

TABLES ARE TYPICAL FOR
DIVISION 1 AND DIVISION 2

TABLE 1
C22-100H-C22-100B

REDUNDANT REACTIVITY CONTROL SYSTEM LOCAL INDICATORS		
RRCS OUT OF SERVICE		
REACTOR VESSEL HIGH DOME PRESSURE CHANNEL A		
REACTOR VESSEL HIGH DOME PRESSURE CHANNEL B		
REACTOR VESSEL LOW WATER LEVEL 2 CHANNEL A		
REACTOR VESSEL LOW WATER LEVEL 2 CHANNEL B		
RRCS MANUAL INITIATION ARMED		
RRCS MANUAL INITIATION CHANNEL A		
RRCS MANUAL INITIATION CHANNEL B		
RRCS ARM INITIATED		
RRCS ARM READY FOR RESET		
RRCS FMS INITIATED		
RRCS READY FOR RESET		
RRCS RECIRCULATION PUMPS TRIPPED		
RRCS LOW FREQUENCY MOTOR GENERATOR TRANSFER		
RRCS RMCU ISOLATED		
RRCS CONFIRMED ATWS		
RRCS TEST FAULT		
RRCS TROUBLE		
RRCS POTENTIAL ATWS		
RRCS SLCS STORAGE TANK LOW LEVEL CHANNEL A		
RRCS SLCS STORAGE TANK LOW LEVEL CHANNEL B		
RRCS ATW VALVE/RODS FAILURE		
RRCS VALVE F100A DIV 1 ONLY		
RRCS VALVE F100B DIV 1 ONLY		
RRCS VALVE F100A DIV 2 ONLY		
RRCS VALVE F100B DIV 2 ONLY		

TABLE 3

CONTROL ROOM ANNUNCIATOR ALARMS/INDICATORS H13-1003		
DESCRIPTION	FUNCTION IDENT	
RRCS OUT OF SERVICE	AL	IND
RRCS MANUAL INITIATION ARMED	AL	IND
RRCS ARM INITIATED	AL	IND
RRCS ARM READY FOR RESET	AL	IND
RRCS FMS INITIATED	AL	IND
RRCS READY FOR RESET	AL	IND
RRCS RECIRCULATION PUMPS TRIPPED	AL	IND
RRCS LOW FREQUENCY MOTOR GENERATOR TRANSFER	AL	IND
RRCS TEST FAULT	AL	IND
RRCS TROUBLE	AL	IND
RRCS POTENTIAL ATWS	AL	IND
RRCS CONFIRMED ATWS	AL	IND

(1) ONE ALARM PROVIDED FOR BOTH DIVISIONS.

TABLE 4

PANEL INPUTS H13-1003		
DESCRIPTION	FUNCTION IDENT	
RRCS RMCU ISOLATED	AL	IND
RRCS TEST FAULT	AL	IND
RRCS SLCS STORAGE TANK LOW LEVEL	AL	IND

TABLE 5

PWS COMPUTER INPUTS		
DESCRIPTION	ANALOG SIGNAL (AI)	DIGITAL SIGNAL (DI)
RRCS REACTOR VESSEL HIGH DOME PRESSURE CHANNEL A	-	
RRCS REACTOR VESSEL HIGH DOME PRESSURE CHANNEL B	-	
RRCS REACTOR VESSEL LOW WATER LEVEL 2 CHANNEL A	-	
RRCS REACTOR VESSEL LOW WATER LEVEL 2 CHANNEL B	-	
RRCS MANUAL INITIATION CHANNEL A		D
RRCS MANUAL INITIATION CHANNEL B		D
RRCS ARM INITIATED		D
RRCS ARM READY FOR RESET		D
RRCS RECIRCULATION PUMPS TRIPPED		D
RRCS LOW FREQUENCY MOTOR GENERATOR TRANSFER		D
RRCS RMCU ISOLATED		D
RRCS CONFIRMED ATWS		D
RRCS POTENTIAL ATWS		D
RRCS SLCS STORAGE TANK LOW LEVEL CHANNEL A	-	
RRCS SLCS STORAGE TANK LOW LEVEL CHANNEL B	-	

LEGEND

CLASS I (DIV 1 & DIV 2), NUCLEAR SAFETY RELATED
ASSOCIATED WITH AND TREATED AS CLASS I (DIV 1 AND DIV 2)
DIV 1 RPS
DIV 2 RPS
NON DIVISIONAL
HPI HIGH POWER OUTPUT ISOLATION
I ISOLATOR
LEDC LOW LEVEL: DIGITAL SIGNAL CONDITIONING
TIME DELAY
ANALOG TRIP MODULE
AC LEAD DRIVER
DC LEAD DRIVER

NUCLEAR SAFETY RELATED

NOTES

- LOGIC SYMBOLS ARE IN ACCORDANCE WITH ANSI.
- THE RRCS PANELS CONSIST OF TWO CHANNELS OF LOGIC: CHANNEL A AND CHANNEL B.
- ALL RRCS INPUTS ARE INDEPENDENT AND ELECTRICALLY SEPARATED FROM ONE ANOTHER.
- ALL SIGNALS (INCLUDING DIVISIONAL BOUNDARIES) ARE THROUGH OPTICAL ISOLATORS.
- CHANNEL A AND CHANNEL B LOGIC WITHIN EACH DIVISIONAL PANEL ARE ELECTRICALLY AND PHYSICALLY SEPARATED.
- ALL CHANNEL B INPUT AND OUTPUT SIGNALS ARE INPUTS TO AND OUTPUTS FROM CHANNEL A AND ELECTRICALLY AND PHYSICALLY SEPARATED FROM CHANNEL A.
- ATW LOGIC OUTPUT WILL GO HIGH (TRIP) IF MEASURED VARIABLE EXCEEDS PRESET SIGNAL THRESHOLD.
- ATW LOGIC WILL GO HIGH (TRIP) IF MEASURED VARIABLE DECREASES BELOW SET SIGNAL LEVEL.
- ALL LOGIC STATEMENTS IN THE SYSTEM ARE USING NORMAL LOGIC (NORMALIZED, NORMAL TO BE INITIALIZED, INITIALIZED LOGIC).
- TIMER OUTPUTS ARE HIGH AFTER A TIME DELAY TO IN RESPONSE TO AN INPUT LOW TO HIGH TRANSITION. INPUTS IN STATE OF LOGIC 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

FIGURE 7.6-9

REDUNDANT REACTIVITY
CONTROL SYSTEM
SHEET 1 OF 10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

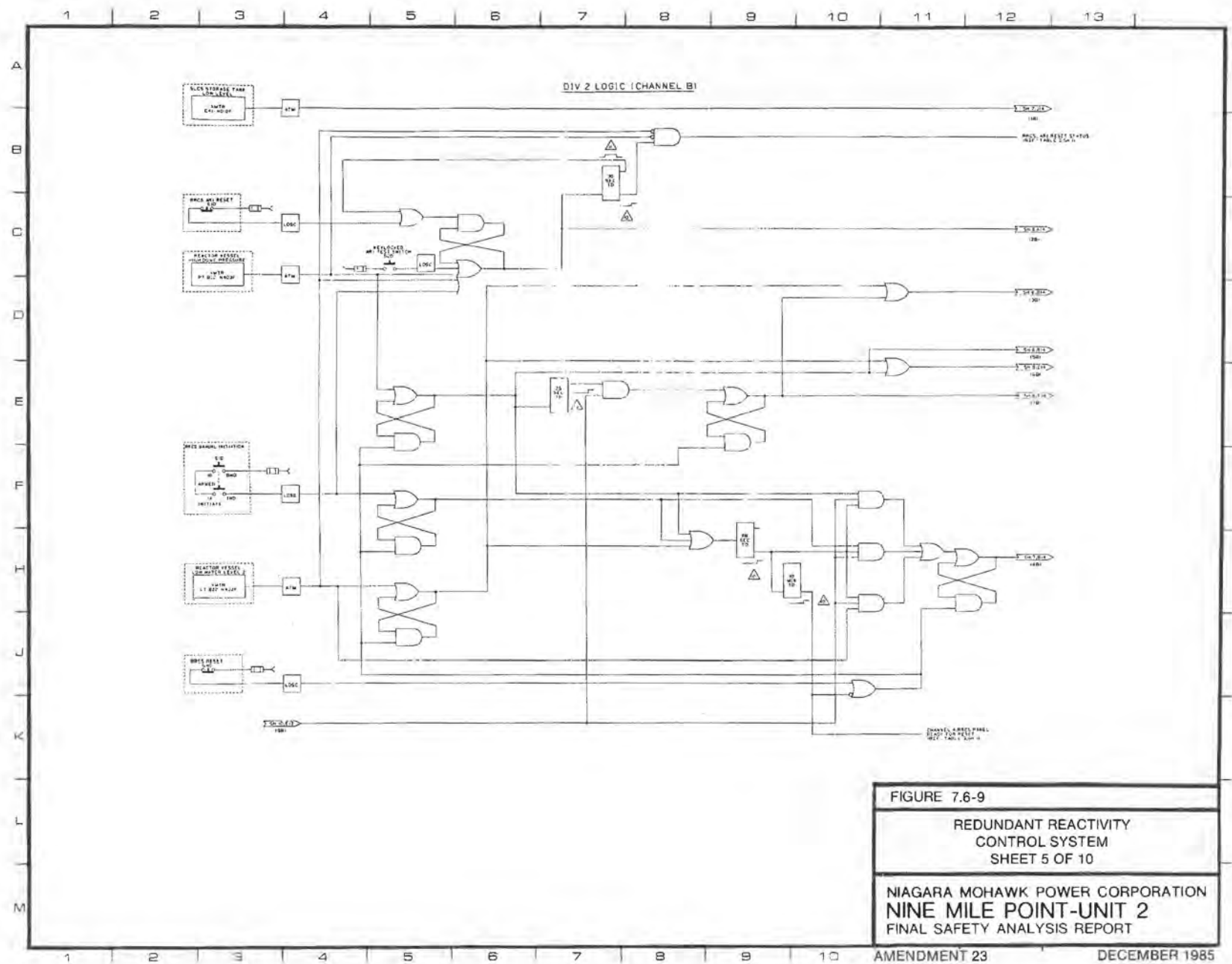


FIGURE 7.6-9
 REDUNDANT REACTIVITY
 CONTROL SYSTEM
 SHEET 5 OF 10
 NIAGARA MOHAWK POWER CORPORATION
 NINE MILE POINT-UNIT 2
 FINAL SAFETY ANALYSIS REPORT

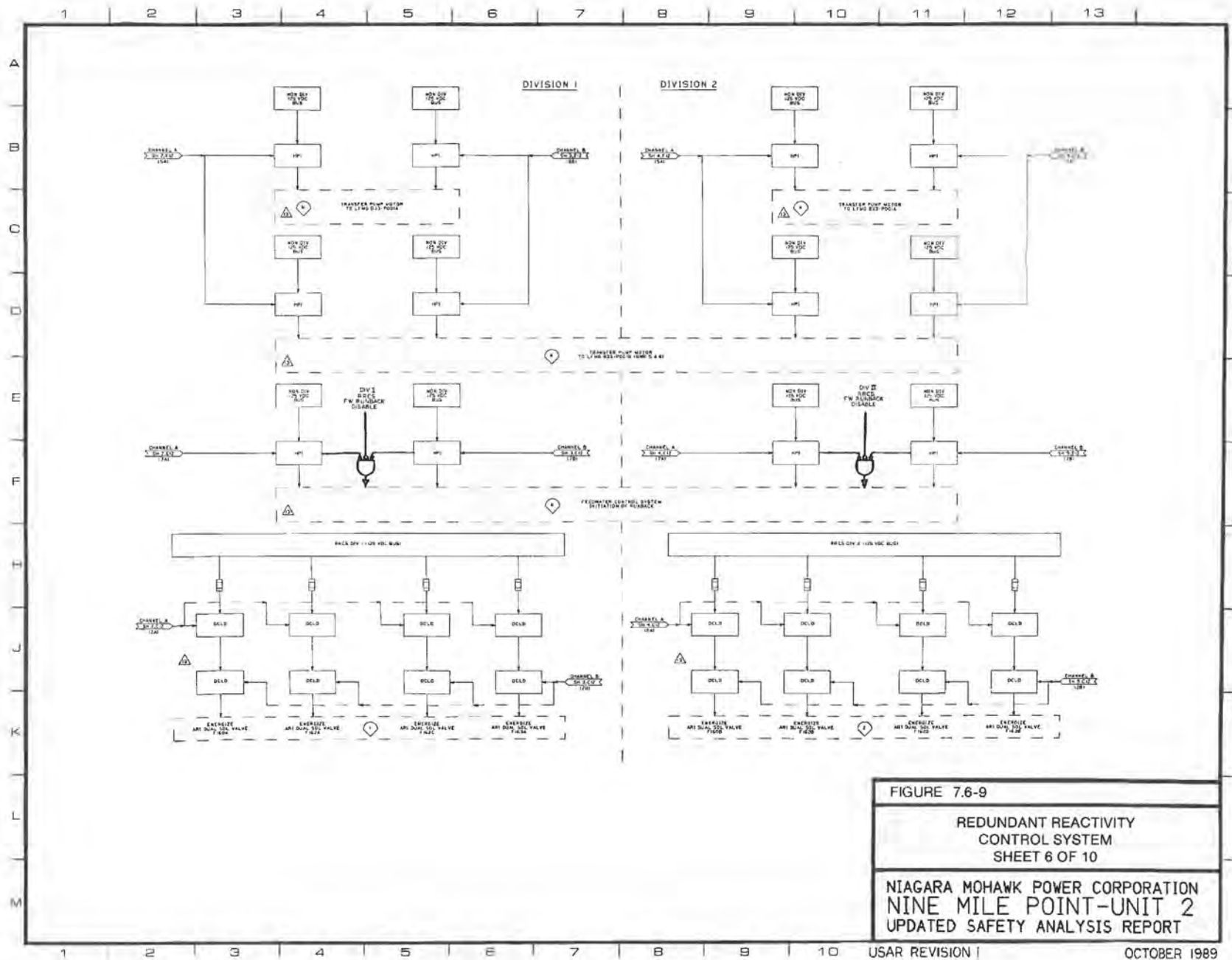
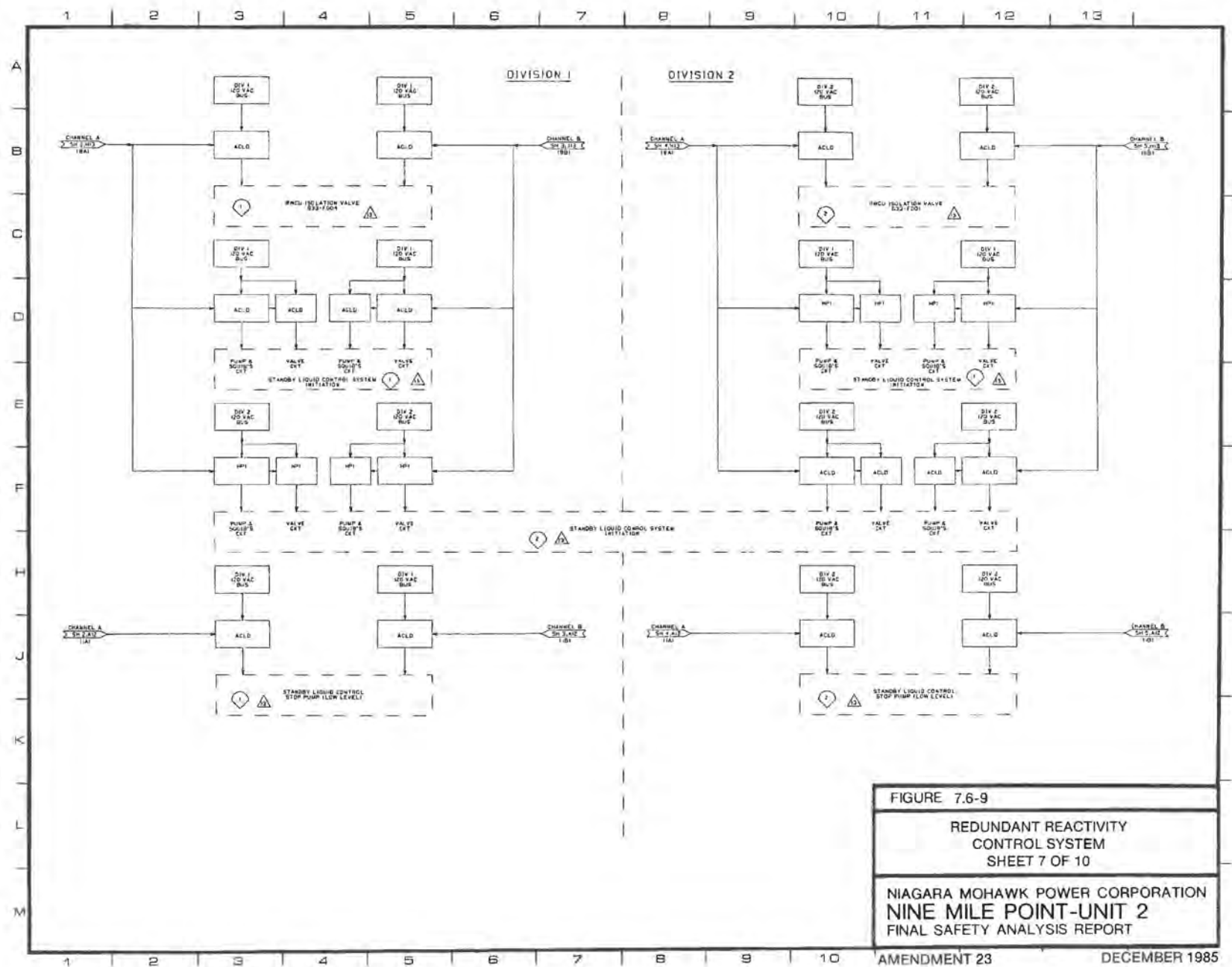
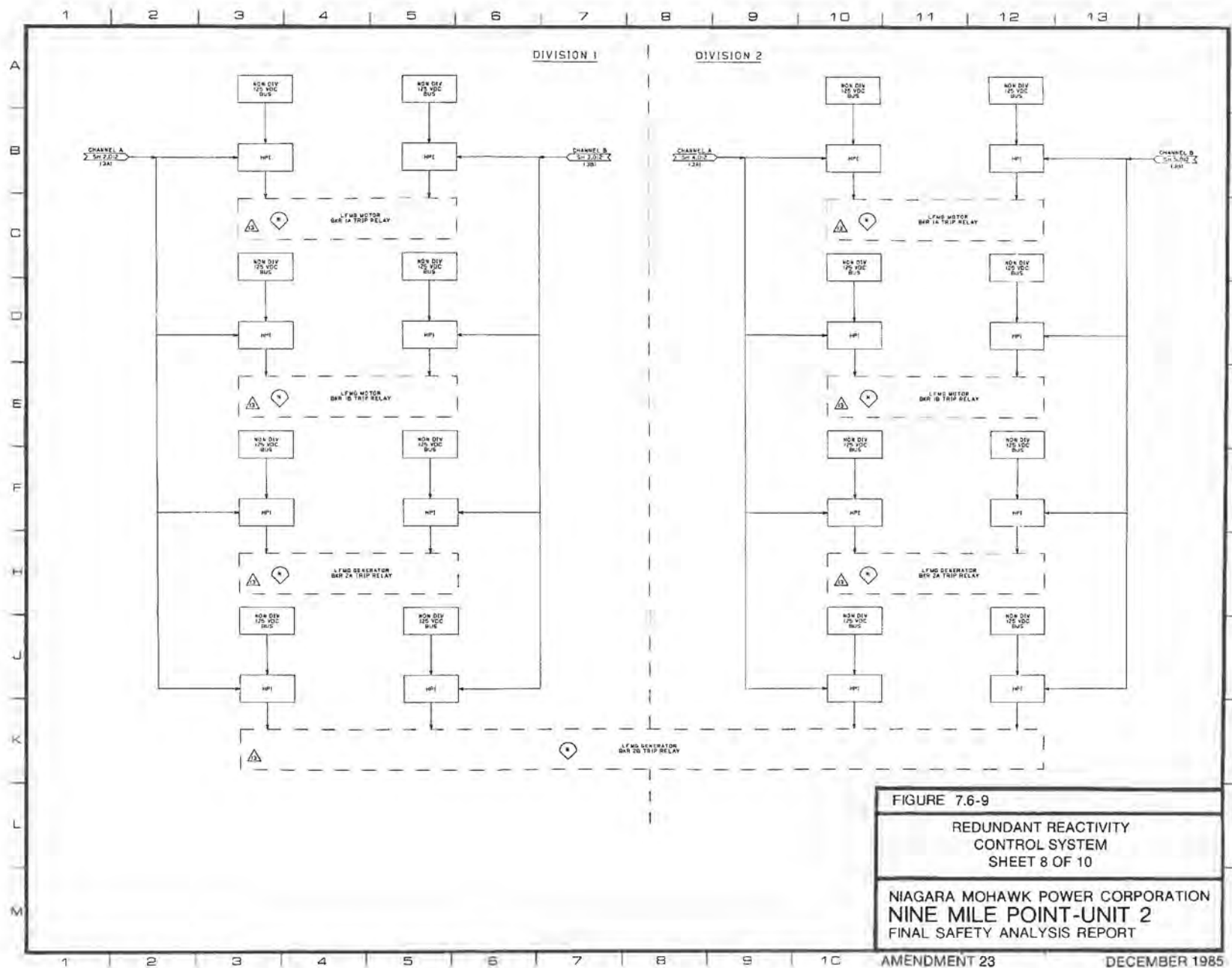


FIGURE 7.6-9

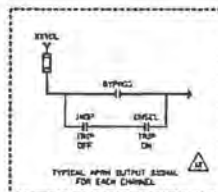
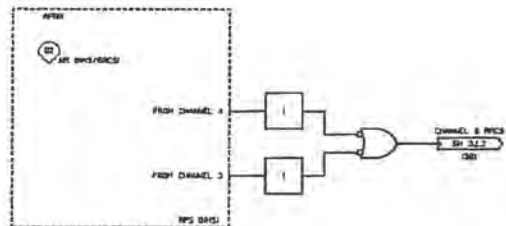
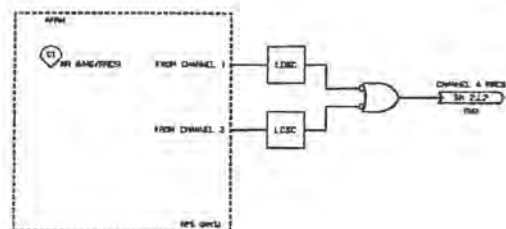
REDUNDANT REACTIVITY
CONTROL SYSTEM
SHEET 6 OF 10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

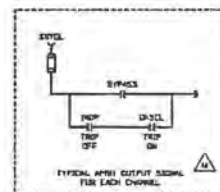
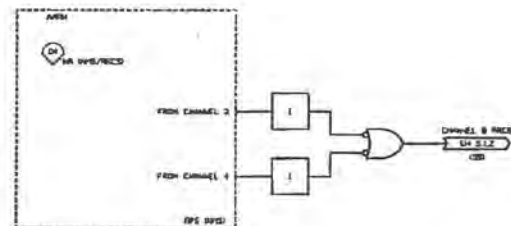
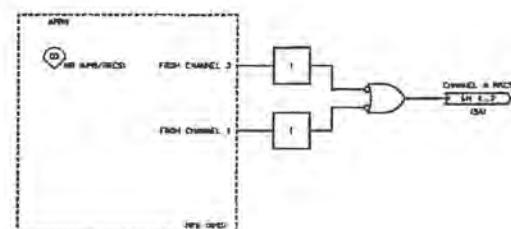




DIVISION 1



DIVISION 2



SOURCE: 0007.226-001-075

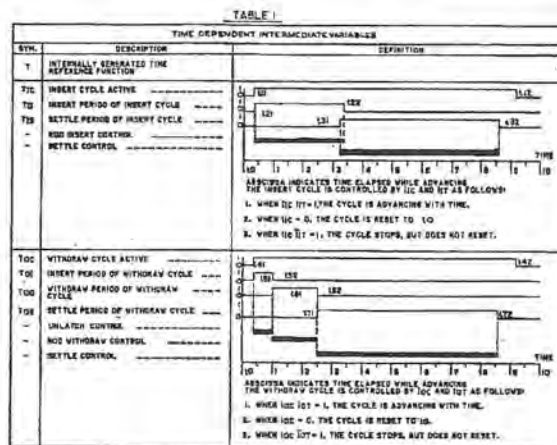
FIGURE 7.6-9

REDUNDANT REACTIVITY
CONTROL SYSTEM
SHEET 10 OF 10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 10

NOVEMBER 1998



SEE TABLE 2

SYSTEM PERFORMANCE					
	INTERVAL	PARAMETER (SEE TABLE 2)	VALUE	MAX ALLOWED TIME TO RETURN PROPER PERFORMANCE	UNITS
INSERT CYCLE	TIME DELAY TO ROD INSERT CONTROL	121	0.42	0.0-0.8	SEC
	ROD INSERT CONTROL	122-123	2.40	2.8-3.1	SEC
	WITHDRAW OVERLAP	124-125	0.10	0.0-1.8	SEC
	SETTLE CONTROL	126-127	0.30	4.0-8.3	SEC
WITHDRAW CYCLE	TIME DELAY TO UNLATCH CONTROL	131	0.42	0.0-0.8	SEC
	UNLATCH CONTROL	132-133	2.40	0.8-0.8	SEC
	INTERNAL ALTERNATE AND WITHDRAW CONTROL	134-135	0.10	0.0-1.8	SEC
	ROD WITHDRAWAL CONTROL	136-137	1.50	1.8-1.7	SEC
	SWITCH OPEN UP FROM WITHDRAWAL TO SETTLE CONTROL	138-139	0.10	0.0-1.8	SEC
	SETTLE CONTROL	140-141	0.30	4.0-8.3	SEC

TABLE 5

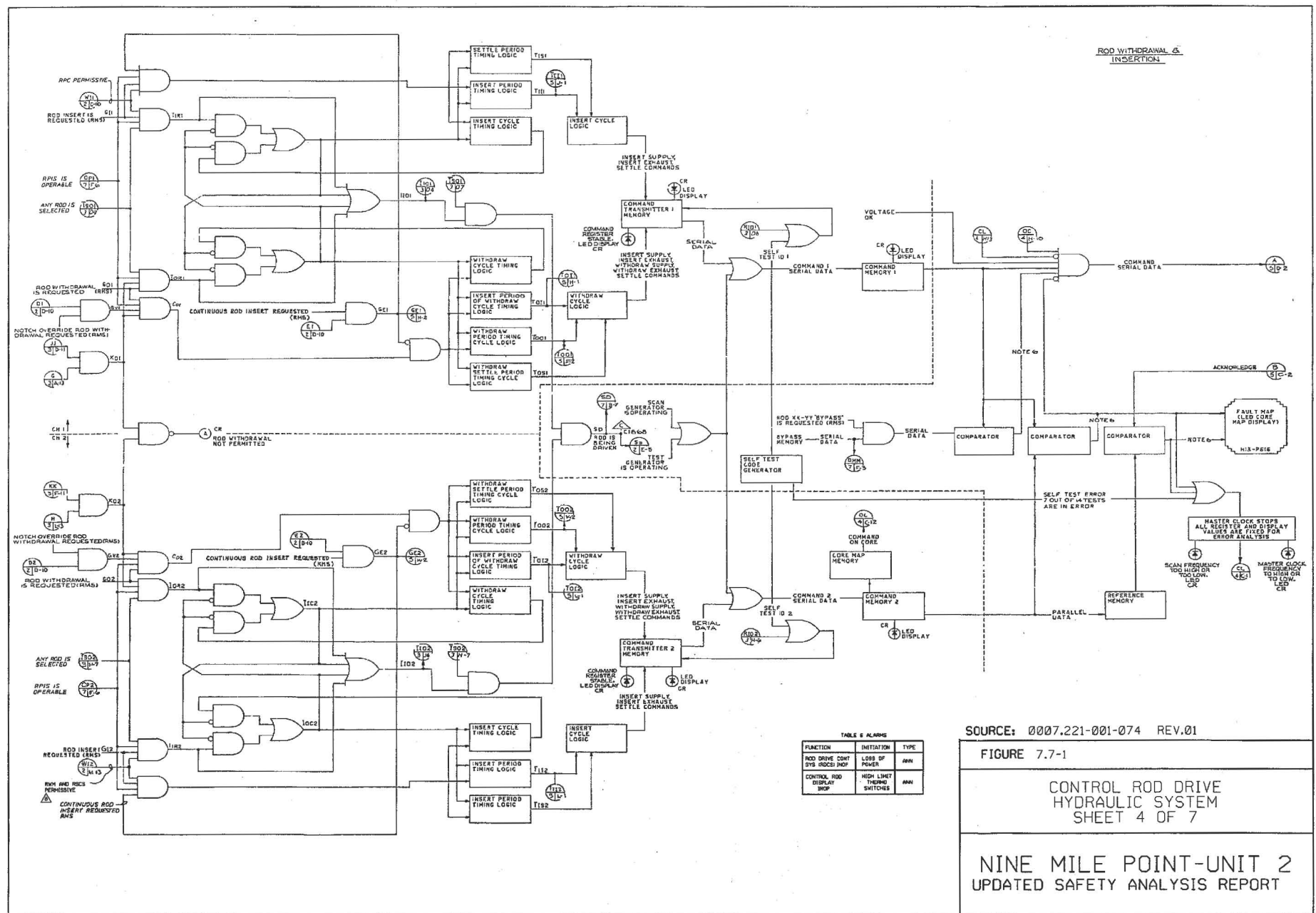
DESCRIPTION

C ₀	ROD BEING CONTINUOUSLY WITHDRAWN
F ₁	ALL RODS IN
F ₂	ALL RODS IN
G ₀	ROD WITHDRAWAL IS REQUESTED
G ₁	ROD WITHDRAWAL IS REQUESTED
G ₂	ROD WITHDRAWAL IS REQUESTED
H ₀	SCRAM DISCHARGE VOLUME HIGH LEVEL (200% BURNUP) REQUESTED
H ₁	SCRAM DISCHARGE VOLUME HI WATER LEVEL
I ₀	NO ROD REQUESTED
I ₁	ROD REQUESTED IS REQUESTED
I ₂	ROD REQUEST IS REQUESTED
I ₃	ROD REQUEST IS REQUESTED
I ₄	WHEN CLOCK IS ACTIVE
I ₅	A ROD IS REQUESTED
K ₀	REPLURAL ROD REQUEST IS REQUESTED
K ₁	REPLURAL ROD REQUEST IS REQUESTED
K ₂	REPLURAL ROD REQUEST IS REQUESTED
K ₃	REPLURAL ROD REQUEST IS REQUESTED
K ₄	REPLURAL ROD REQUEST IS REQUESTED
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K ₇	REPLURAL ROD REQUEST IS REQUESTED
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K ₁₀	REPLURAL ROD REQUEST IS REQUESTED
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K ₈₈	REPLURAL ROD REQUEST IS REQUESTED
K ₈₉	REPLURAL ROD REQUEST IS REQUESTED
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K ₉₂	REPLURAL ROD REQUEST IS REQUESTED
K ₉₃	REPLURAL ROD REQUEST IS REQUESTED
K ₉₄	REPLURAL ROD REQUEST IS REQUESTED
K ₉₅	REPLURAL ROD REQUEST IS REQUESTED
K ₉₆	REPLURAL ROD REQUEST IS REQUESTED
K ₉₇	REPLURAL ROD REQUEST IS REQUESTED
K ₉₈	REPLURAL ROD REQUEST IS REQUESTED
K ₉₉	REPLURAL ROD REQUEST IS REQUESTED

INDEX

NO.	DESCRIPTION
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SOURCE: 0007.221-001-074 REV.01

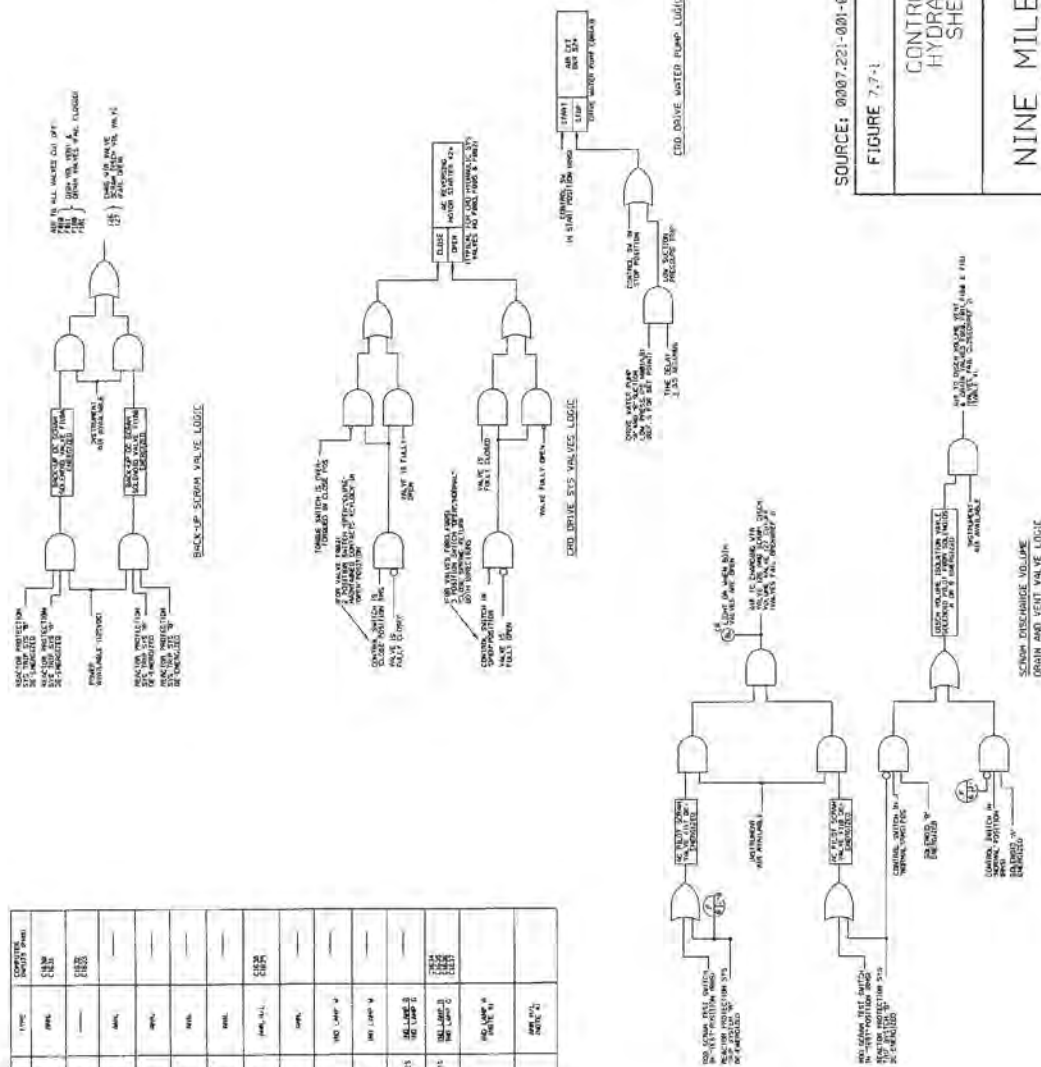
USAR REVISION 15

OCTOBER 2002

TABLE 4

[illegible]

ALGORITHM FOR ESTABLISHING TENSION



SOURCE: 0007.221-001-076 REV. B

FIGURE 7.7-1

CONTROL ROD DRIVE
HYDRAULIC SYSTEM
SHEET 6 OF 7

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

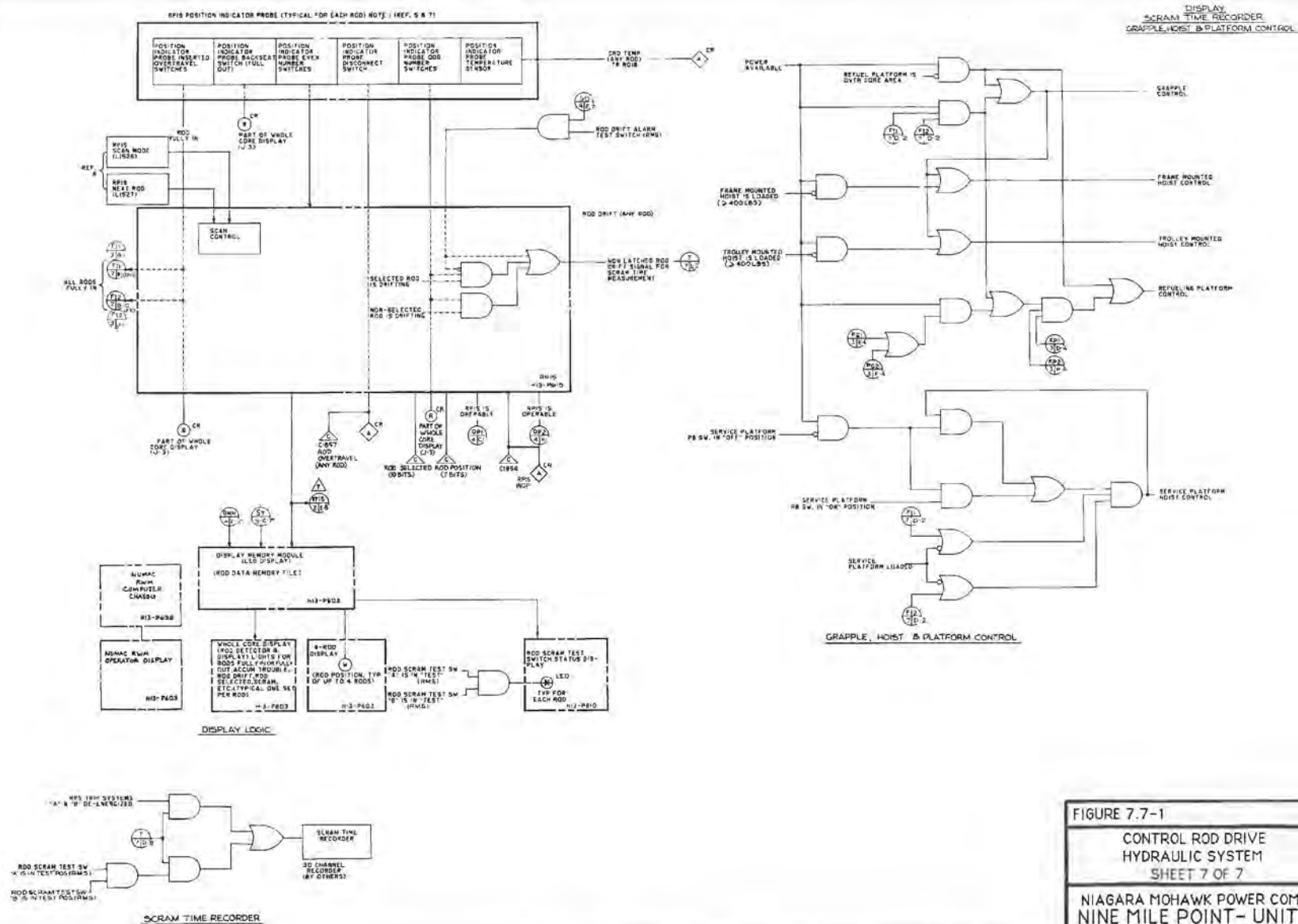
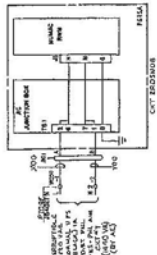
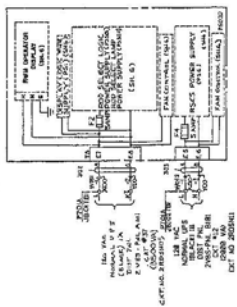
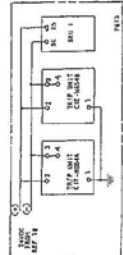
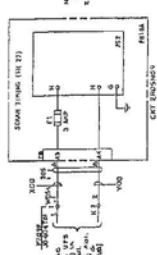
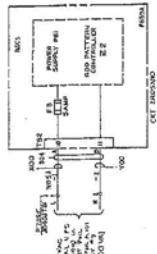
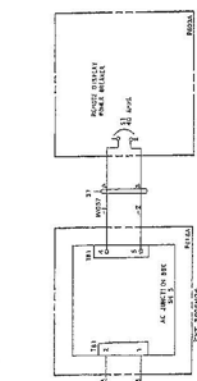
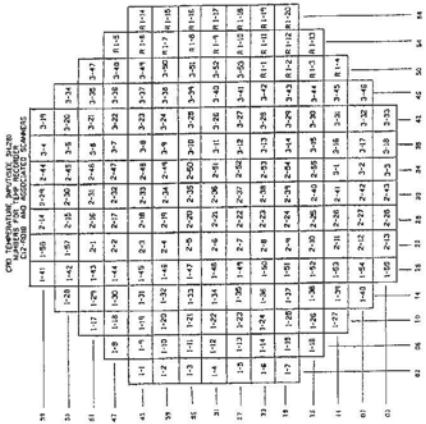
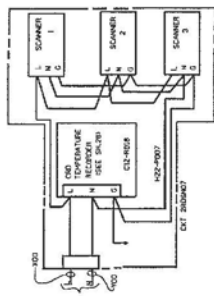







FIGURE 7.7-1
CONTROL ROD DRIVE
HYDRAULIC SYSTEM
SHEET 7 OF 7
NIAGARA MOHAWK POWER COMPANY
NINE MILE POINT- UNIT 2
UPDATED SAFETY ANALYSIS REPORT

UNIT	MESSAGE TYPE
1	FOR: TOLSON, WELLS, MOHR & MEYER, JAMES
2	FROM: SAC, NEW YORK (100-158743)
3	TO: DIRECTOR, FBI (100-440610)
4	FROM: SAC, NEW YORK (100-158743)
5	TO: DIRECTOR, FBI (100-440610)
6	FROM: SAC, NEW YORK (100-158743)
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99	TO: DIRECTOR, FBI (100-440610)
100	FROM: SAC, NEW YORK (100-158743)



LEGEND:

	PATCH NUMBER
	ZONE
	SHEET NUMBER
	PATCH CIRCLE (LAST PATCH RING)

 ZONE INDICATED PAGE 13

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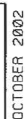
[illegible]

SOURCE: 0007.221-001-012 REV.07

FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 1 OF 35

NINE MILE POINT-UNIT 2 UPDATED SAFETY ANALYSIS REPORT



[illegible]


	46	LOCAL	ACQISE	TECHN	--	--	DIV VOL. LEVEL	DIV/COMPTR	800 STP 1	SHD	---	TERM	UN CAB	COMPTX
RECEIVE	411	PA59	--	--	145-26	J1	P1	DATA FORMING	REC/PCDS	800 STP 1	P2	J42	145-35	CUTOUT PAB
	412	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	413	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	414	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	415	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	416	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	417	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	418	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	419	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	420	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	421	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	422	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	423	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
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	428	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
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RECEIVE	441	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
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RECEIVE	444	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	445	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	446	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	447	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	448	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	449	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	450	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	451	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	452	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	453	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	454	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	455	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	456	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	457	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	458	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	459	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	460	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	461	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	462	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	463	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	464	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	465	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	466	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	467	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	468	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	469	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	470	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	471	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	472	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	473	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	474	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	475	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	476	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	477	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	478	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	479	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	480	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	481	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	482	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	483	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	484	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	485	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	486	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	487	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	488	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	489	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	490	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	491	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	492	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	493	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	494	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	495	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	496	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	497	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
RECEIVE	498	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	499	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB
	500	PA59	DMH	TRW	--	J1	P1	"POWER"	REC/DMH	800 TRW 1	P2	J42	145-35	CUTOUT PAB

CABLE TERMINATION

- NOTES (FOR CABLES DIAG.)
1. ALL CABLES TO BE INSTALLED PER RECOMMENDED WIRE PROTECTORS.
 2. AMPHENOL "40" SERIES MAY BE SUBSTITUTED.
EXAMPLE: MS100A-20-100 = 69-020-100-100
MS100A-15-15 = 69-015-15-15
 3. INTERNAL PANEL WIRING (FROM REF ONLY).
 4. LOCAL WIRING (FOR REF ONLY).
 5. ONE CABLE FOR 4-30 SIGNAL CABLE XX-YY

AUSDEVIRTYLOS

DMA	= DISPLAY MEMORY MODULE
RSM	= ROD SELECT MODULE
AND	= ANDGATE
TDRH	= WIRE TERMINATION AND CONNECTION
ADM	= ADDRESS DECODE
ISRL	= ISOLATOR
HCU	= HYDRAULIC CONTROL UNIT
TVAR	= TVMAG COORDINATES PLINE = UASRAN/R RECEIPT = SWAZER/U
BDS	= ROD DRIVE CONTROL SYSTEM
CMP/HF	= PLANT PROCESS COMPUTER
SIM/JC	= BRANCH JUNCTION MODULE



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OPERATOR

STAB	= STABILIZER
ACCU	= ACCUMULATOR
SEL'n	= SELECTED
STAT	= STATUS
ACT	= ACTIVE
RHS	= ROD POSITION INFORMATION SYSTEM
SPCGR	= TRANSDUCER
R/N	= ROD/RODIN NUMBER
JCT	= JUNCTION
DIS	= DISPLAY
CRD	= CONTROL ROD DRIVE
P.S.	= POWER SUPPLY
PMU	= PNEUMATIC
RCS	= ROD SEQUENCE CONTROL SYSTEM
RPC	= ROD PATTERN CONTROLLER
RDC	= ROD DETECTION CIRCUITRY DISPLAY
R/D	= ROD AND DETECTOR DISPLAY

TABLE 2	
CABLE TIVU	

ITEM NO.	DESCRIPTION	MEASUREMENT
1	PREPARED CABLE ASSEMBLY, SEE DRAWING ATTACHED IN PARTS-LISTING FOR DETAILS.	
2	QUANTITY	
3	STP-SHIELDED TWISTED PAIR.	
4	COC-COAXIAL TRANSMISSION LINE.	
5	TRN-TWOPAIR TRANSMISSION LINE.	
6	MAXIMUM PERMISSIBLE IDENTIFIED	
7	CONNECTIONS WITHIN 5' OF EITHER END SHALL BE IDENTIFIED, BUT SHALL NOT BE USED.	
8	NO. OF CONDUCTORS INCLUDING SHIELDS	
9	IES-MULTIPLE CONDUCTOR CABLE WITH SHIELDING.	
10	INDIVIDUAL INSULATED WIRE.	
11	MAXIMUM PERMISSIBLE IDENTIFIED	

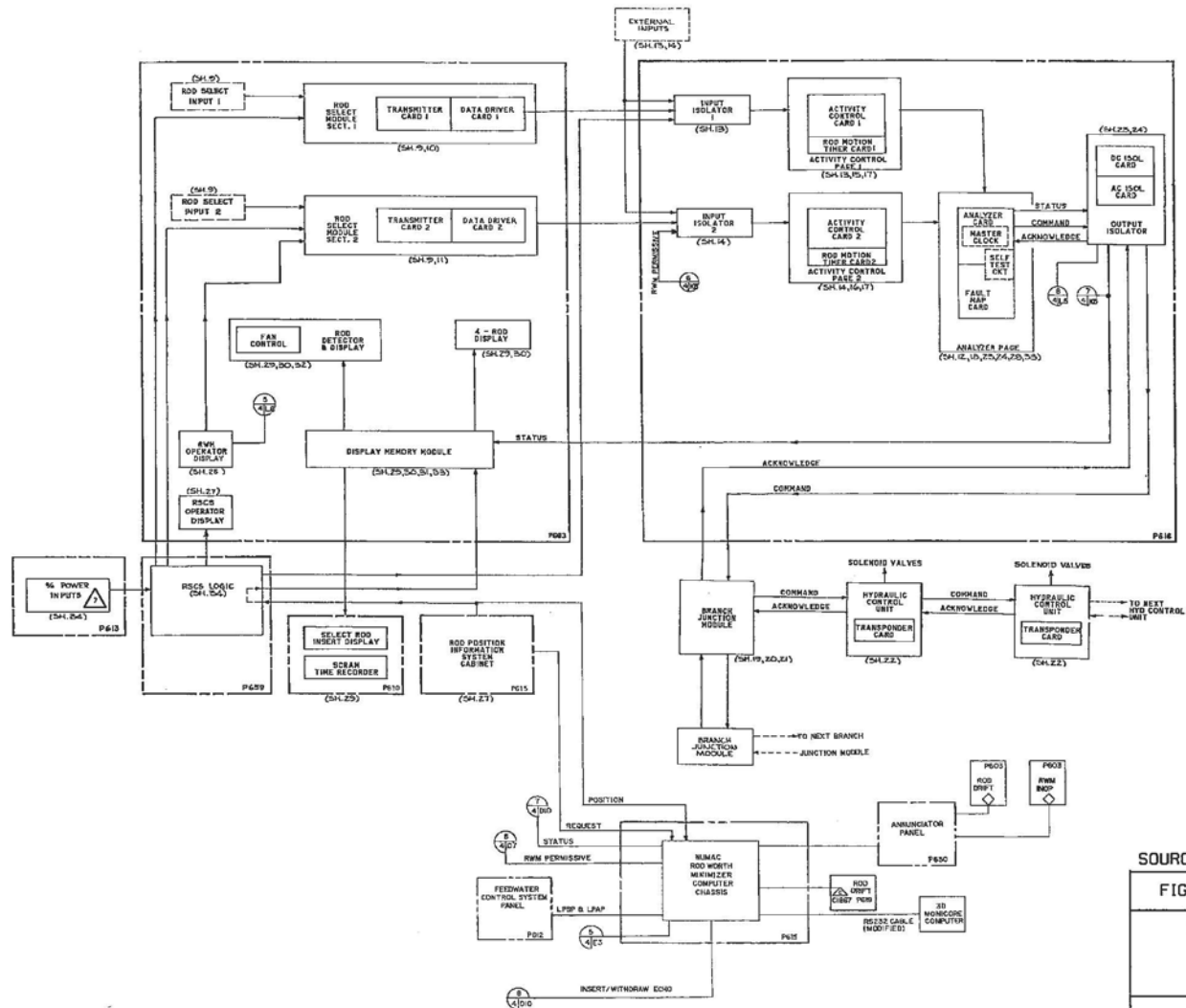
SOURCE: 0007.221-001-014 REV.02

FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 3 OF 35

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

SYSTEM BLOCK DIAGRAM



LINE CODES: NONE THIS SHEET

SOURCE: 0007.221-001-015 REV.03

FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 4 OF 35

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

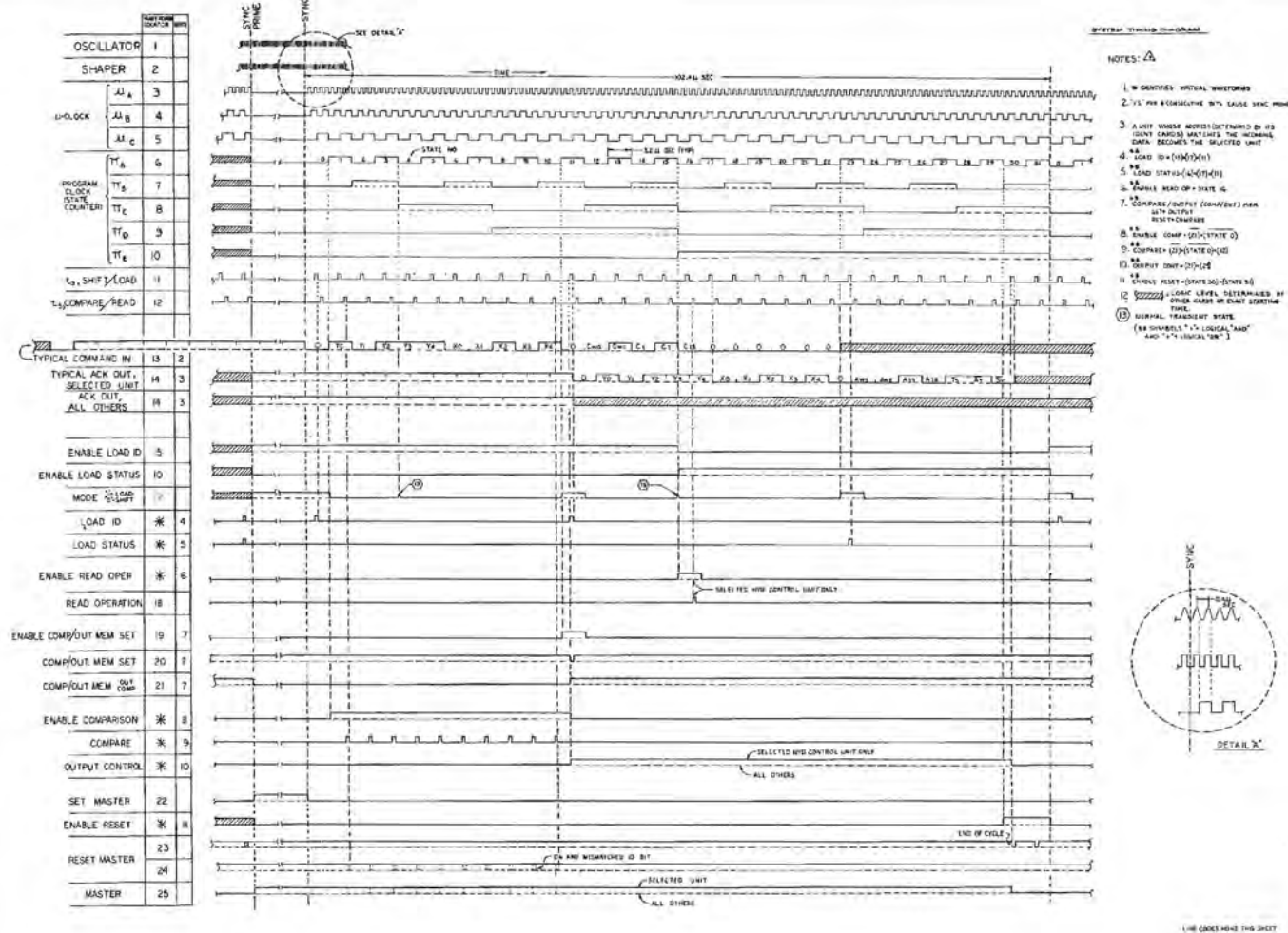


FIGURE 7.7-2

REACTOR MANUAL CONTROL SYSTEM
SHEET 7 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FROM		SYMBOL	INPUTS
			DEFINITION
OPERATOR CONTROLS	REQUESTS	R1	ROD INSERTION IS REQUESTED
		R2	ROD WITHDRAWAL IS REQUESTED
		R3	EMERGENCY ROD INSERTION IS REQUESTED
		R4	ROD OVERCURE ROD WITHDRAWAL IS REQUESTED
		R5	CRD HYDRAULIC STABILIZER SOLINOID "A" VALVES ARE SELECTED. $S = S1, S2$
MODE SELECTION	FUNCTIONS	M1	REACTOR IS IN THE RUN MODE, INPUT 1
		M2	REACTOR IS IN THE REFUEL MODE, INPUT 1
		M3	REACTOR IS IN THE REFUEL MODE, INPUT 2
		M4	REACTOR IS IN THE STARTUP MODE, INPUT 1
		M5	REACTOR IS IN THE STARTUP MODE, INPUT 2
NEUTRON MONITORING SYSTEM	STATUS	N1	NHS STARTUP RANGE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 1
		N2	NHS STARTUP RANGE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 2
		N3	THE STARTUP RANGE EQUIPMENT USUALLY CONSISTS OF THE SRM, RM, APRM AND SRM IN INERT CIRCUIT, AND THE FLOW UNIT COMPASSATOR, UPSHALE AND DOWNSHALE.
		N4	NHS POWER RANGE UPSHALE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 1
		N5	NHS POWER RANGE UPSHALE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 2
		N6	APPROX UPSCALE OF INP/PPM LOW COUNT, AND DOWN UPSHALE OF INP/PPM
		N7	NHS POWER RANGE DOWNSHALE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 1
		N8	NHS POWER RANGE DOWNSHALE EQUIPMENT IS IN THE ROD WITHDRAWAL PERMITTED STATE, INPUT 2
		N9	DOWN UPSHALE OF INP/PPM
		N10	DOWN UPSHALE OF INP/PPM
NEUTRON STARTUP	STATUS	S1	ROD IS INJECTED, INPUT 1
		S2	ROD IS INJECTED, INPUT 2
APIS	STATUS	OP	APIS IS OPERATIVE
		PS	ALL RODS ARE FULL-IN, INPUT 1
SIS VOLUME STATUS	STATUS	V1	SCRAM DISCHARGE-VOLUME LEVEL IS HIGH, INPUT 1
		V2	SCRAM DISCHARGE-VOLUME LEVEL IS HIGH, INPUT 2
SCRAM DISCHARGE	STATUS	V3	SCRAM DISCHARGE-VOLUME HIGH LEVEL IS BYPASSED, INPUT 1
		V4	SCRAM DISCHARGE-VOLUME HIGH LEVEL IS BYPASSED, INPUT 2
SERVICE PLATFORM	STATUS	P1	SERVICE PLATFORM JIB-CRANE HOIST LOAD IS GREATER THAN 4000 LBS FUEL BUNDLE IS PICKED UP - INPUT 1
		P2	SERVICE PLATFORM JIB-CRANE HOIST LOAD IS GREATER THAN 4000 LBS FUEL BUNDLE IS PICKED UP - INPUT 2
FRAME HOIST	STATUS	F1	FRAME HOIST IS FUEL LOADED OR TRILLEY HOIST IS FUEL LOADED OR CRAMPEL IS FUEL LOADED - INPUT 1
		F2	FRAME HOIST IS FUEL LOADED OR TRILLEY HOIST IS FUEL LOADED OR CRAMPEL IS FUEL LOADED - INPUT 2
REFUEL PLATFORM	STATUS	R1	REFUEL PLATFORM IS OVER THE CORE - INPUT 1
		R2	REFUEL PLATFORM IS OVER THE CORE - INPUT 2
RUN	STATUS	C1	RSCD WILL PERMIT ROD WITHDRAWAL
		C2	RSCD WILL PERMIT ROD WITHDRAWAL
STEAM FLOW	STATUS	CF1	STEAM FLOW IS ABOVE ALARM POINT
		CF2	STEAM FLOW IS ABOVE ALARM POINT

TO		SYMBOL	INTERMEDIATE VARIABLES
			DEFINITION & EQUATION
INTERNAL CONTROL SIGNALS	FUNCTIONS	I1	INSERT CYCLE ADVANCE $I1 = T1 \cdot I1 \cdot I1$
		I2	WITHDRAW CYCLE ADVANCE $I2 = T2 \cdot I2 \cdot I2$
		I3	CONTINUOUS INSERT CONTROL $I3 = T3 \cdot I3 \cdot I3$
		I4	ROD IN MOTION, I/O CLOCKS ACTIVATED $I4 = T4 \cdot I4 \cdot I4$
		I5	ACTIVATE OUT-CLOCK $I5 = T5 \cdot I5 \cdot I5$
		I6	OUT-CLOCK ACTIVE $I6 = T6 \cdot I6 \cdot I6$
		I7	ACTIVATE IN-CLOCK $I7 = T7 \cdot I7 \cdot I7$
		I8	IN-CLOCK ACTIVE $I8 = T8 \cdot I8 \cdot I8$
		I9	NO ROD IS SELECTED
		I10	ROD INSERT IS PERMITTED
EXTERNAL CONTROL SIGNALS	FUNCTIONS	E1	ROD WITHDRAWAL IS PERMITTED
		E2	ROD WITHDRAWAL IS PERMITTED

TO		SYMBOL	OUTPUT
			MEANING (STATUS OR COMMAND) AND DEFINING EQUATION
DISPLAYS	FUNCTIONS	D1	ROD WITHDRAWAL IS PERMITTED $D1 = W1 \cdot W1$
		D2	A ROD IS BEING CONTINUOUSLY WITHDRAWN (NOTCH OVERCURE) $D2 = T2 \cdot I2 \cdot I2$
		D3	A ROD IS BEING INSERTED, $D3 = T3 \cdot I3 \cdot I3$
		D4	A ROD IS BEING WITHDRAWN, $D4 = T4 \cdot I4 \cdot I4$
		D5	A ROD IS SETTLING, $D5 = T5 \cdot I5 \cdot I5$
		D6	REFUEL MODE ROD SELECTION IS PERMITTED, $D6 = T6 \cdot I6 \cdot I6$
		D7	SEE OPERATOR STATUS SELECTION
		D8	ROD WITHDRAWAL BLOCK $D8 = T8 \cdot I8 \cdot I8$
		D9	OPER "A" INSERT STABILIZER VALVE, $D9 = T9 \cdot I9 \cdot I9$
		D10	OPER "A" WITHDRAW STABILIZER VALVE, $D10 = T10 \cdot I10 \cdot I10$
OPERATOR STATUS SELECTION	FUNCTIONS	O1	OPER "B" INSERT STABILIZER VALVE, $O1 = T11 \cdot I11 \cdot I11$
		O2	OPER "B" WITHDRAW STABILIZER VALVE, $O2 = T12 \cdot I12 \cdot I12$
		O3	A ROD IS BEING DRIVEN, $O3 = T13 \cdot I13 \cdot I13$
		O4	THE REACTOR IS IN THE REFUEL MODE AND NOT MORE THAN ONE ROD IS WITHDRAWN, $O4 = T14 \cdot I14 \cdot I14$
		O5	(SEE OUTPUT TO ANNUNCIATOR)
		O6	REFUEL MODE ROD WITHDRAWAL IS PERMITTED, $O6 = T15 \cdot I15 \cdot I15$
		O7	(SEE OUTPUT TO DISPLAY)
		O8	SEE OUTPUT TO DISPLAY
		O9	ROD INSERT IS PERMITTED, $O9 = T16 \cdot I16 \cdot I16$
		O10	ROD IS INOPERATIVE, $O10 = T17 \cdot I17 \cdot I17$
ANNUNCIATOR	FUNCTIONS	A1	ROD IS INOPERATIVE, $A1 = T18 \cdot I18 \cdot I18$
		A2	PROGRAM IS INOPERATIVE, $A2 = T19 \cdot I19 \cdot I19$
		A3	COMPUTER ERROR, $A3 = T20 \cdot I20 \cdot I20$
		A4	COMPUTER ERROR, $A4 = T21 \cdot I21 \cdot I21$
		A5	COMPUTER ERROR, $A5 = T22 \cdot I22 \cdot I22$
		A6	COMPUTER ERROR, $A6 = T23 \cdot I23 \cdot I23$
		A7	COMPUTER ERROR, $A7 = T24 \cdot I24 \cdot I24$
		A8	COMPUTER ERROR, $A8 = T25 \cdot I25 \cdot I25$
		A9	COMPUTER ERROR, $A9 = T26 \cdot I26 \cdot I26$
		A10	COMPUTER ERROR, $A10 = T27 \cdot I27 \cdot I27$

SYSTEM VARIABLES AND DEFINITIONS

LEGEND:
* - THESE VARIABLES ARE DEFINED ON CRD PCD DWG. NO. 7011356, SHEET 1.

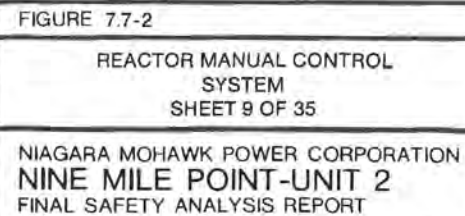
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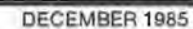
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FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 8 OF 35

NINE MILE POINT-UNIT 2
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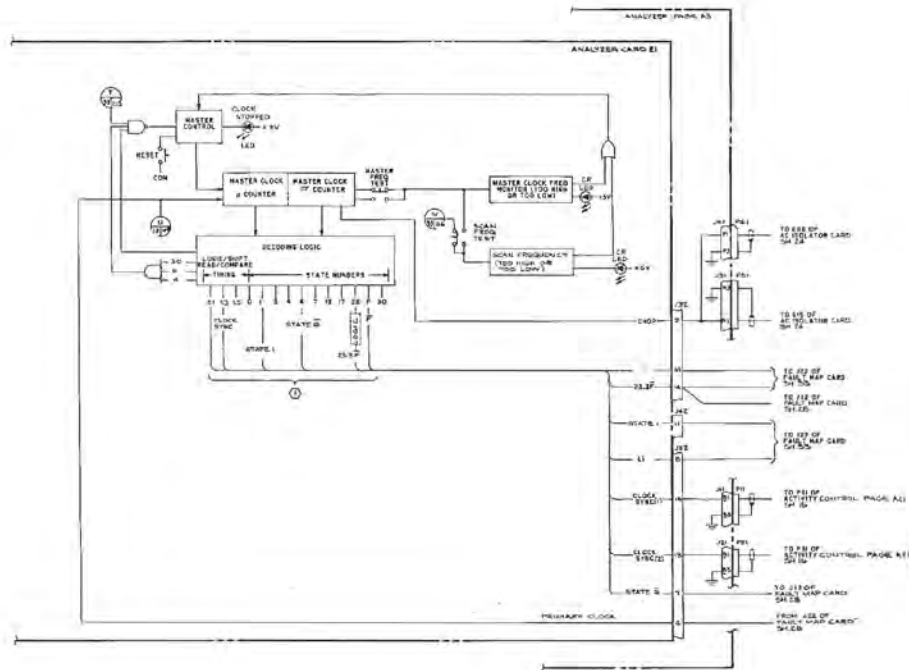






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NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NOTES

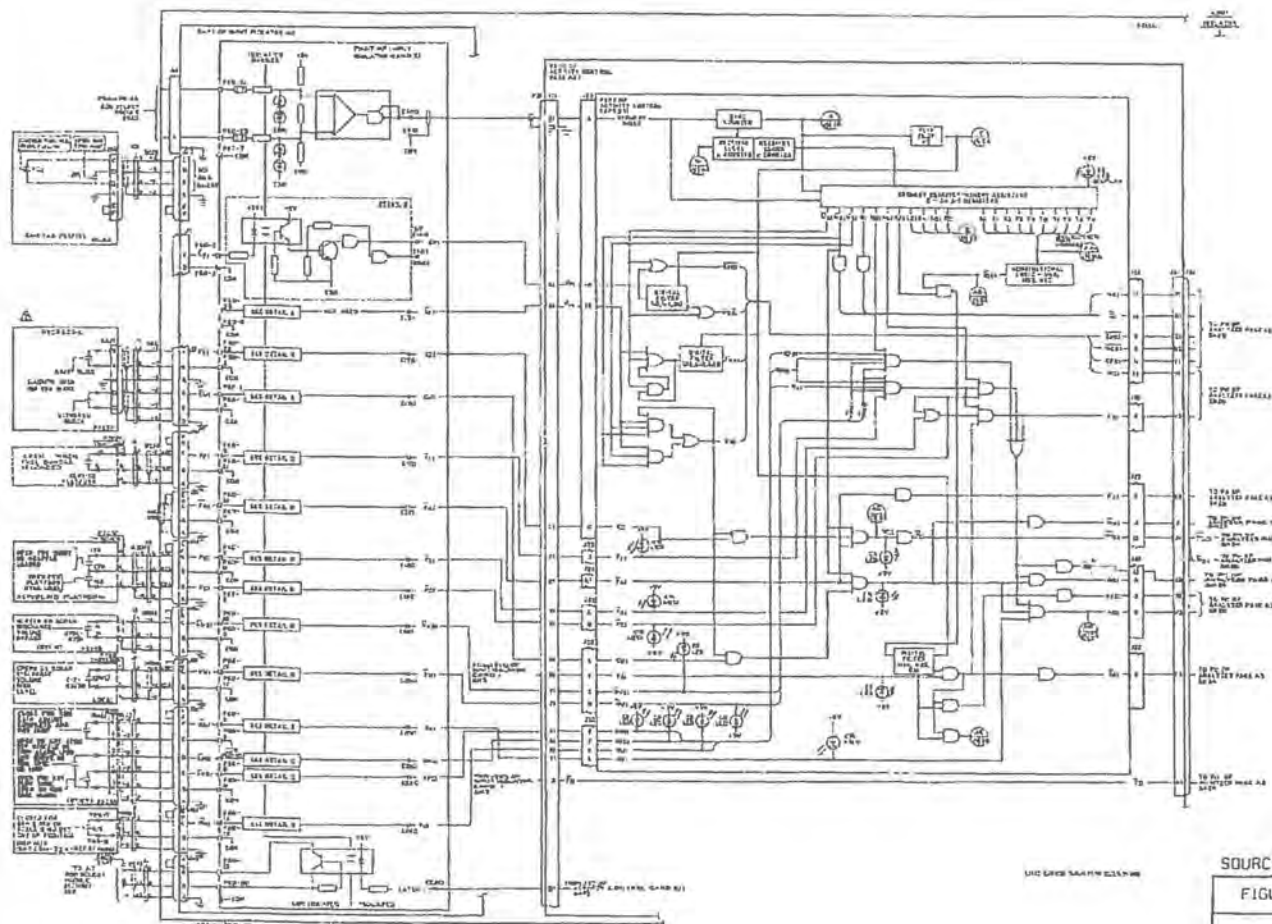
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THROUGHOUT THE ANALYSIS PAGE

LIME DOES NOT DO THIS SHEET

FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 12 OF 35

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NINE MILE POINT-UNIT 2
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SOURCE: 0007.221-001-024 REV.05

FIGURE 7.7-2

REACTOR MANUAL CONTROL SYSTEM
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REACTOR MANUAL CONTROL
SYSTEM
SHEET 17 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

ANNOUNCEMENT 23

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ANALYZER CARD
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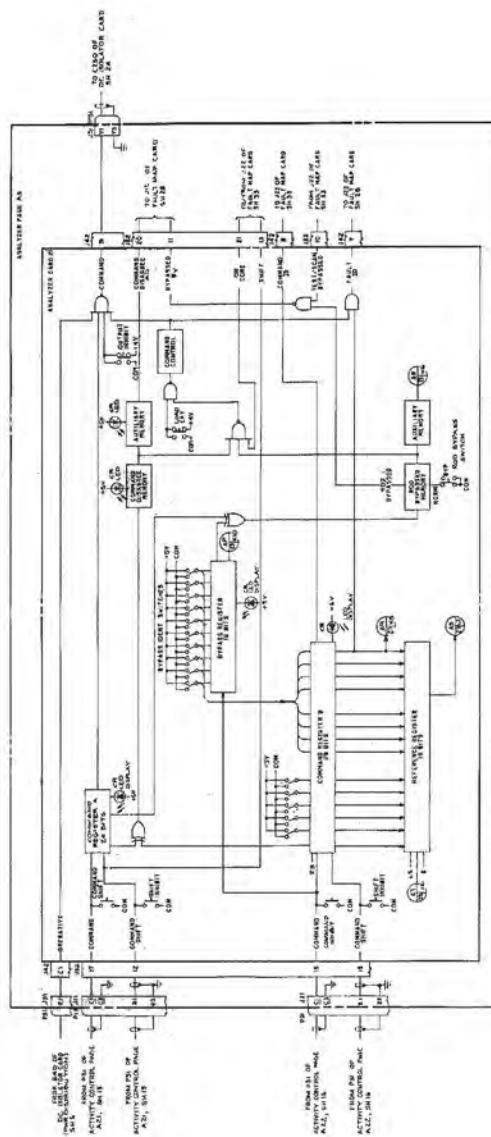


FIGURE 7.7-2

REACTOR MANUAL CONTROL
 SYSTEM
 SHEET 18 OF 35

NIAGARA MOHAWK POWER CORPORATION
 NIAGARA FALLS, NEW YORK
 FINAL SAFETY ANALYSIS REPORT

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REACTOR MANUAL CONTROL SYSTEM

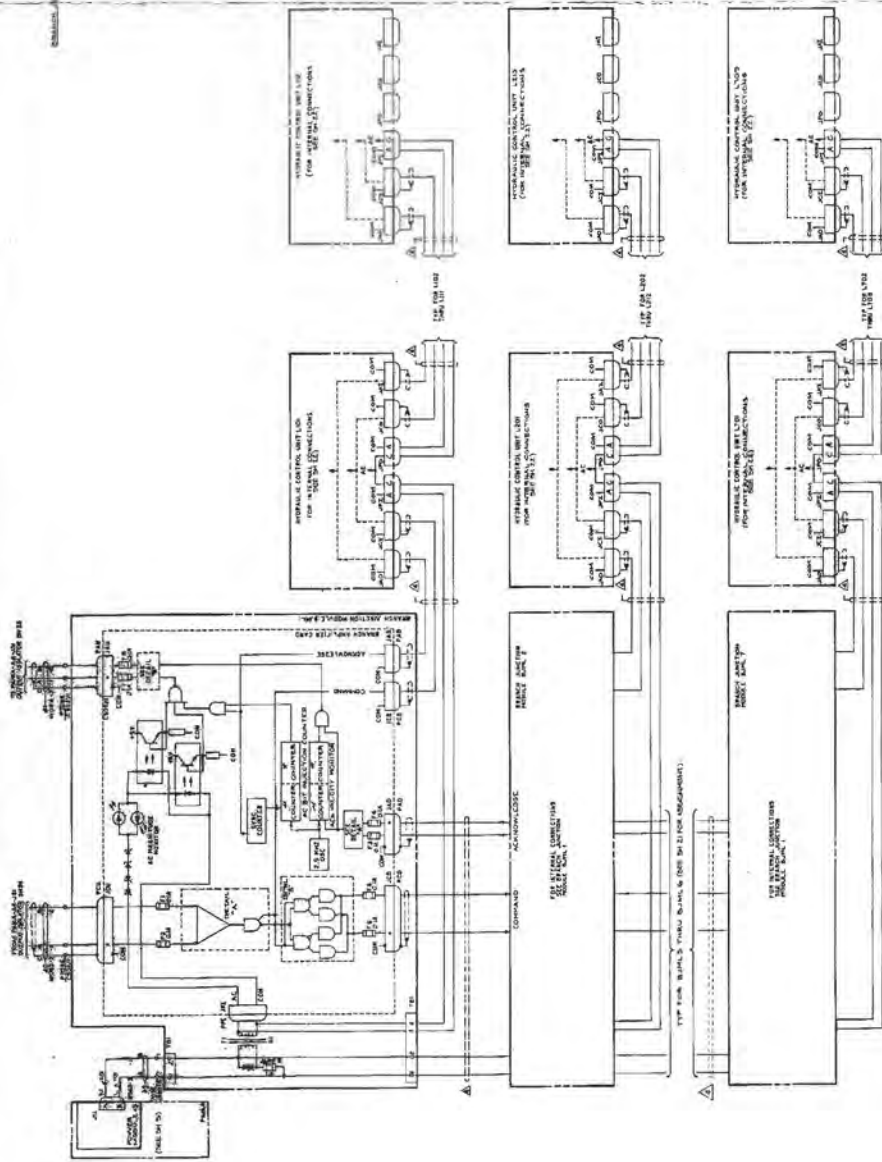


FIGURE 7.7-2

REACTOR MANUAL CONTROL SYSTEM

REACTOR MANUAL CONTROL SYSTEM
SHEET 19 OF 35

NIAGARA MOHAWK POWER CORPORATION
MINE MILE POINT-UNIT 2
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REASON ACTION UNRELIABLE

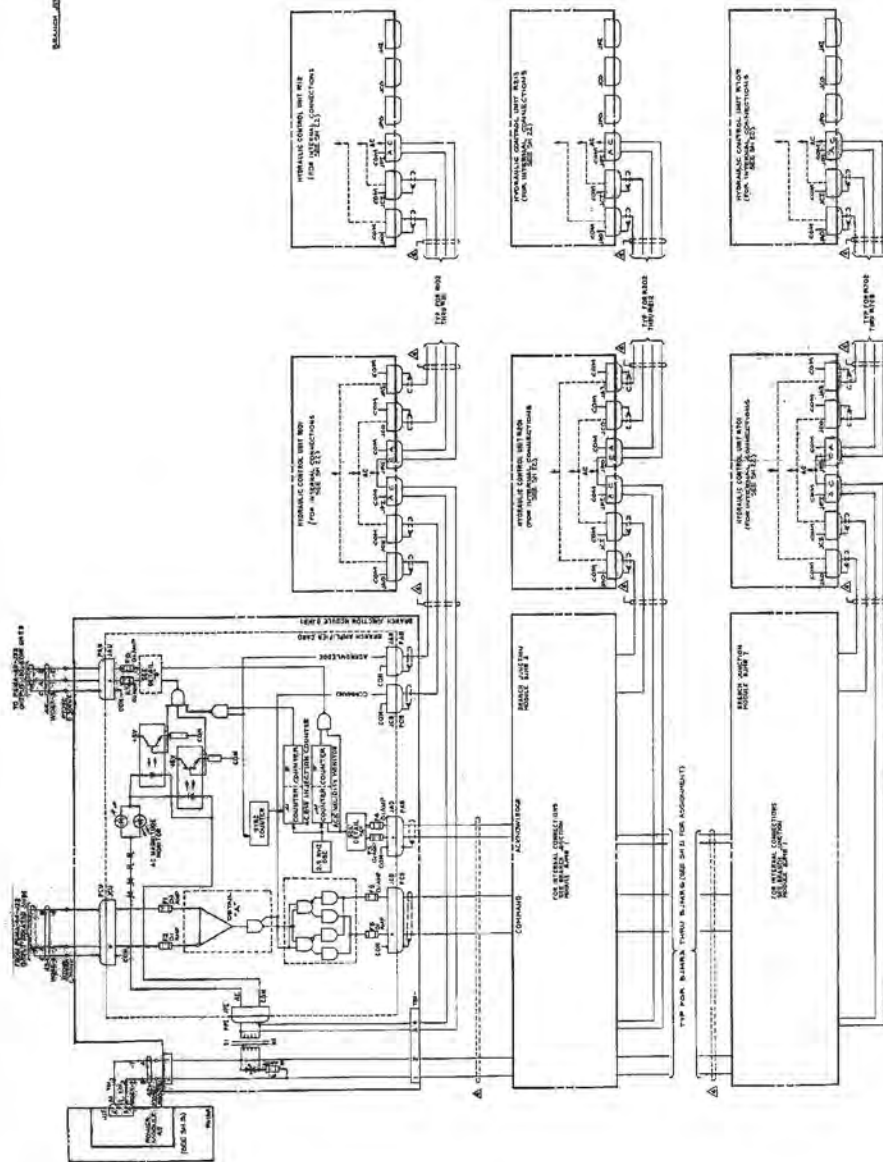


FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 20 OF 35

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NINE MILE POINT-UNIT 2
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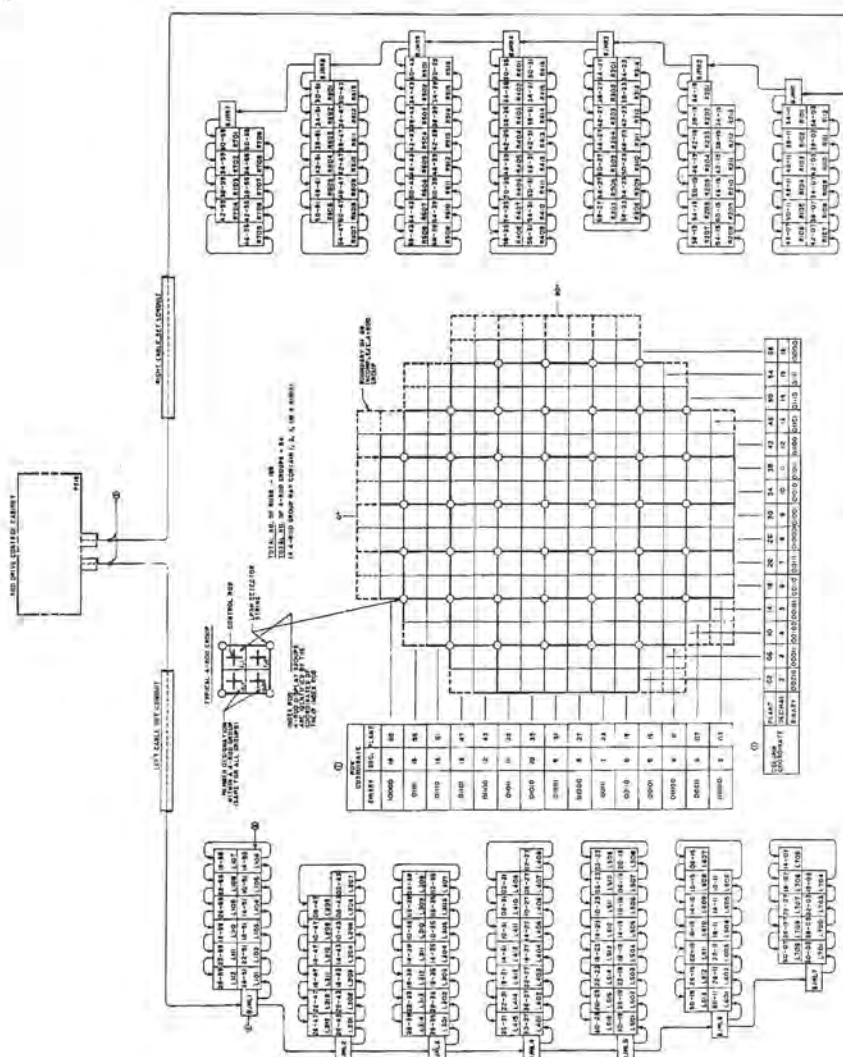


FIGURE 7.7-2

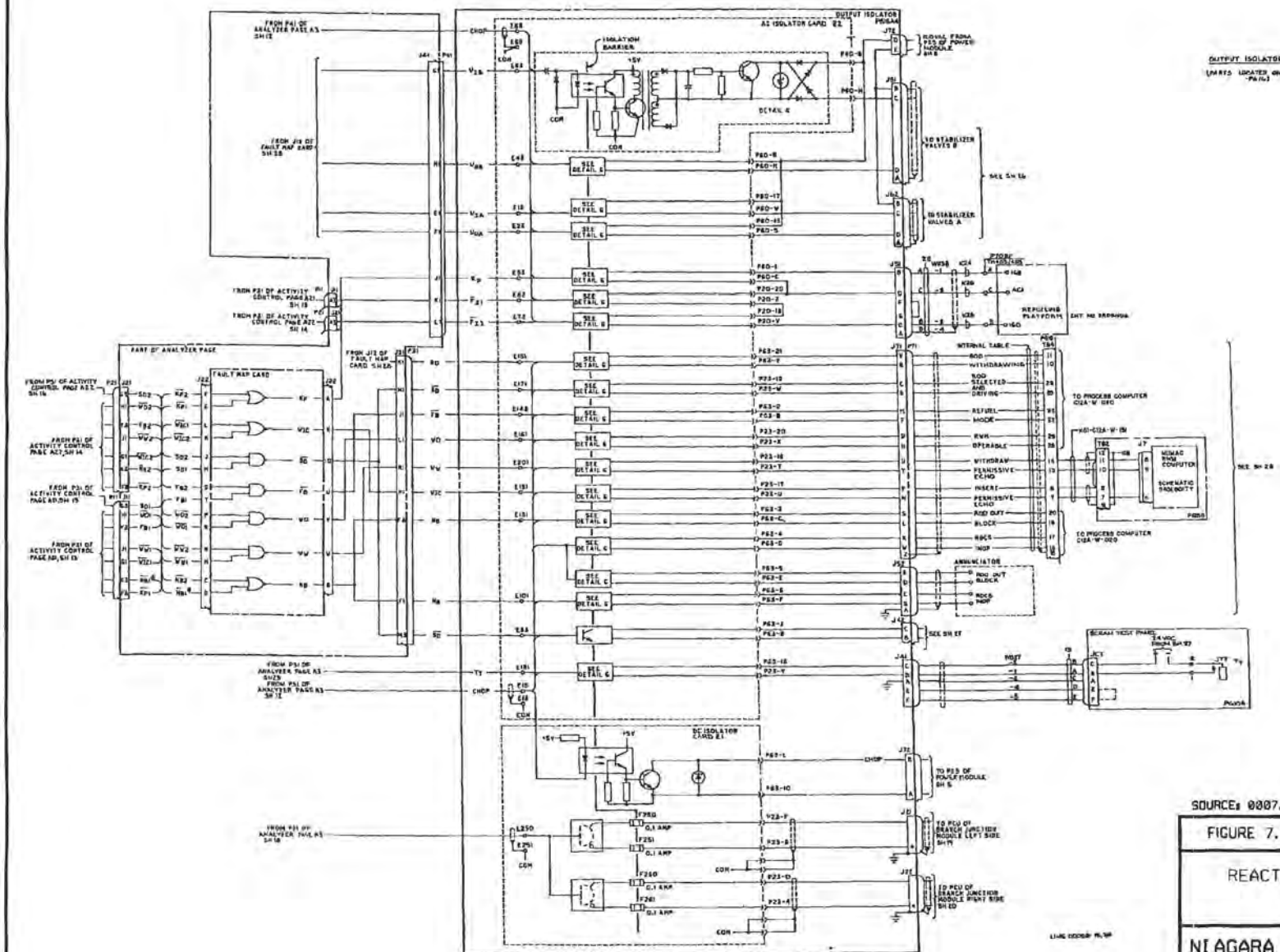
REACTOR MANUAL CONTROL
SYSTEM

SHEET 21 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
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SOURCE: 0007.221-001-035

FIGURE 7.7-2

REACTOR MANUAL CONTROL SYSTEM
SHEET 24 OF 35

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NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

THIS FIGURE HAS
BEEN DELETED

FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 25 OF 35

NIAGARA MOHAWK POWER CORP.
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

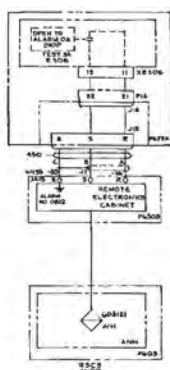


FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 27 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



MAY 1997

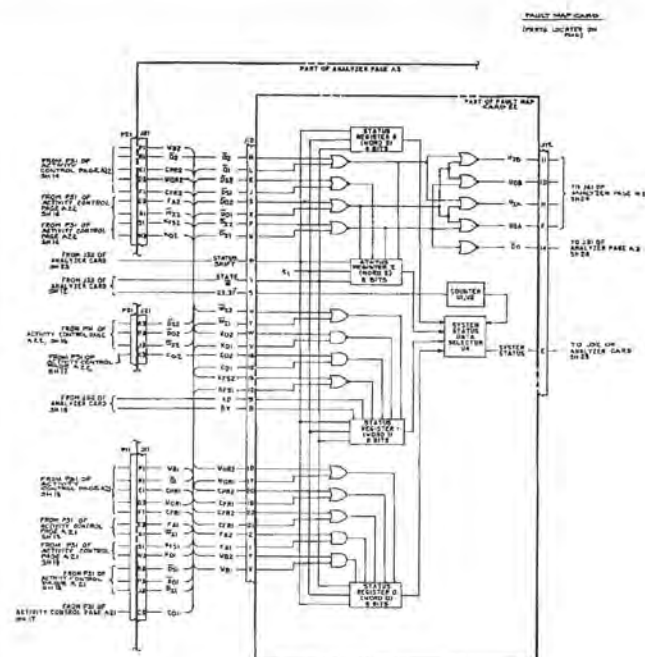
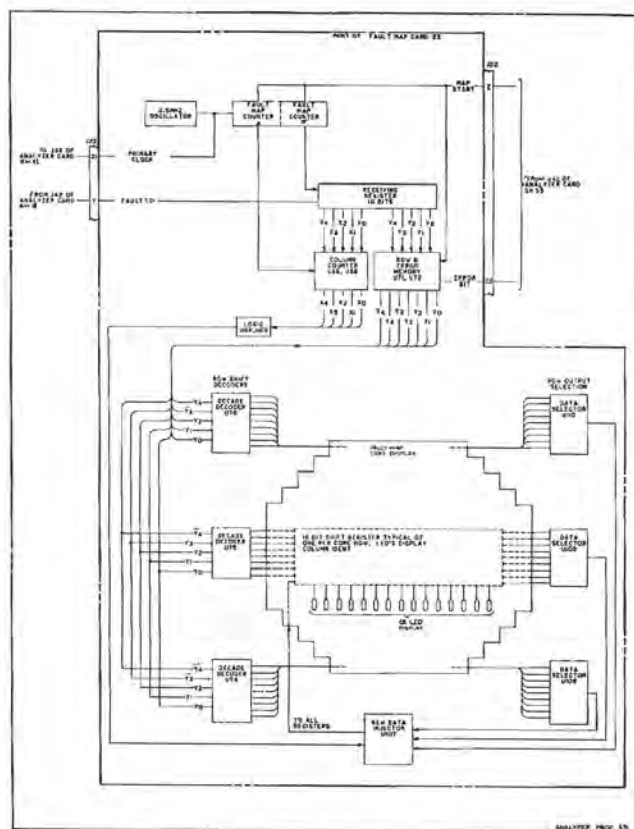


FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 29 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

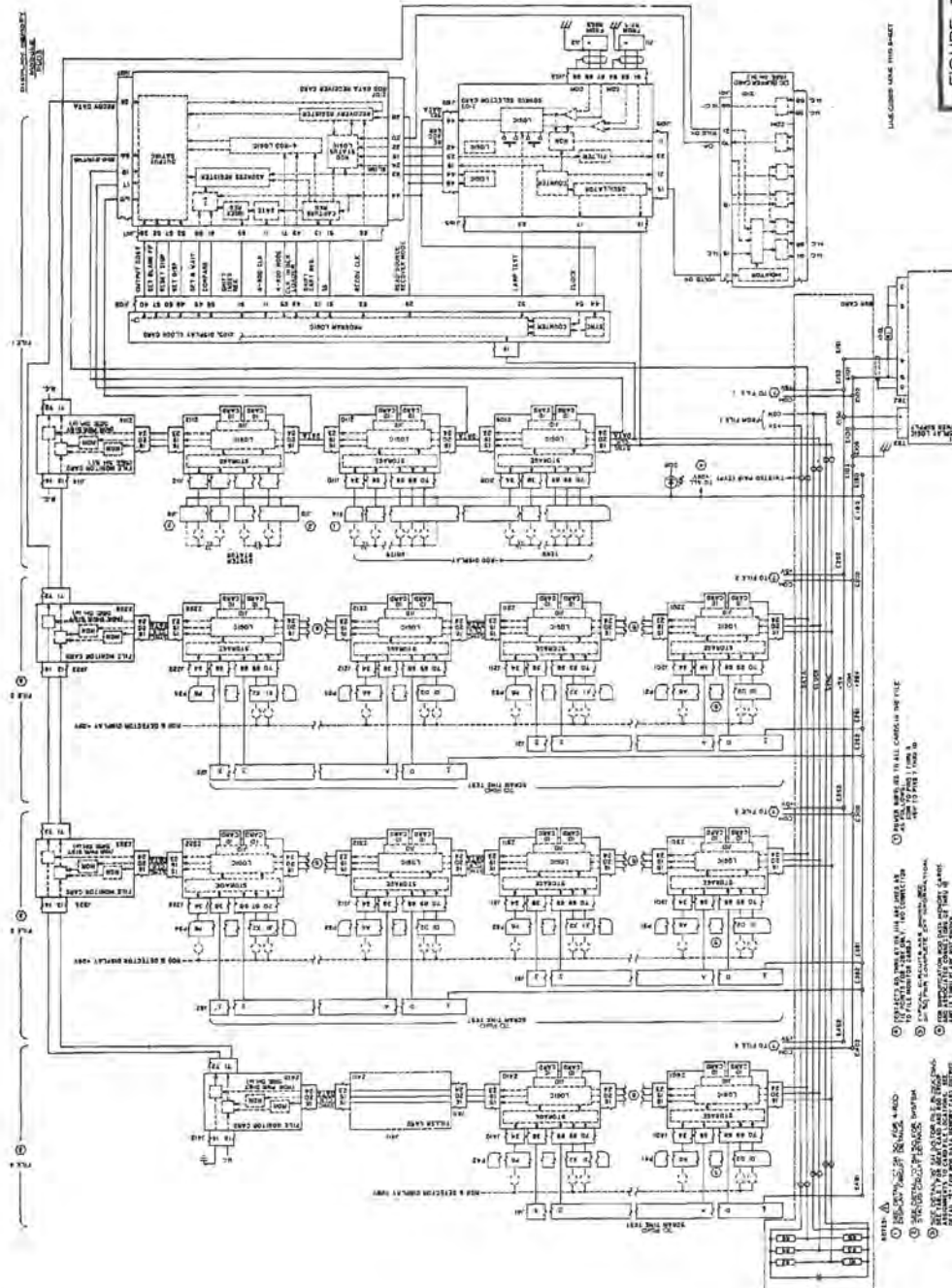


FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 30 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

AMENDMENT 23

DECEMBER 1985

USAR REVISION-16



REACTOR MANUAL CONTROL
SYSTEM
SHEET 33 OF 35

USAR REVISION 8

NOVEMBER 1995

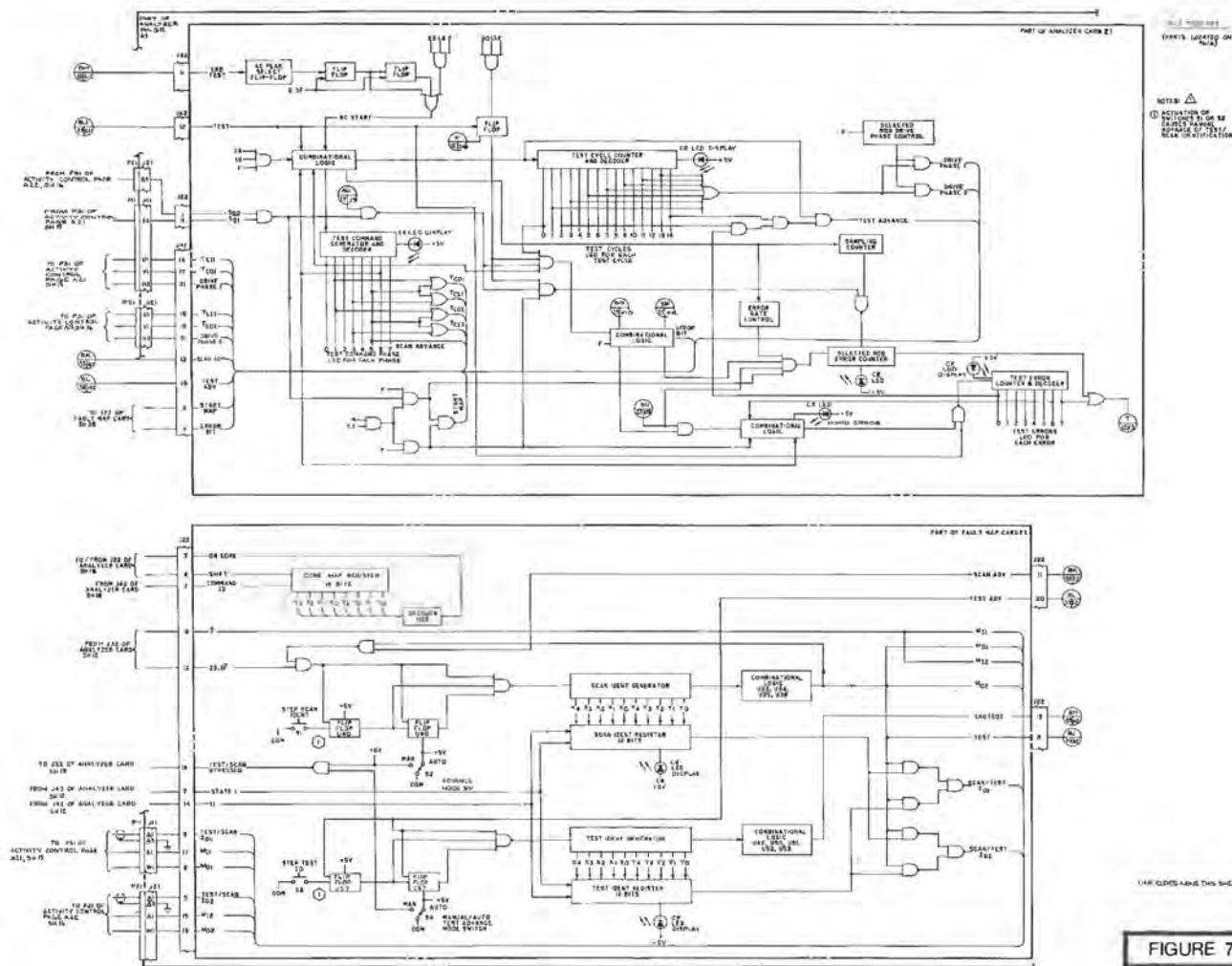
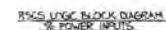
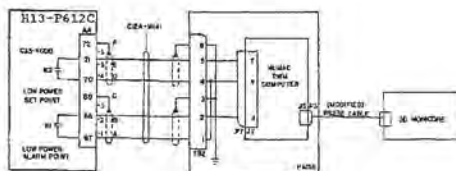


FIGURE 7.7-2

REACTOR MANUAL CONTROL
SYSTEM
SHEET 34 OF 35

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LIVE ONLINE WEB-CAST

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

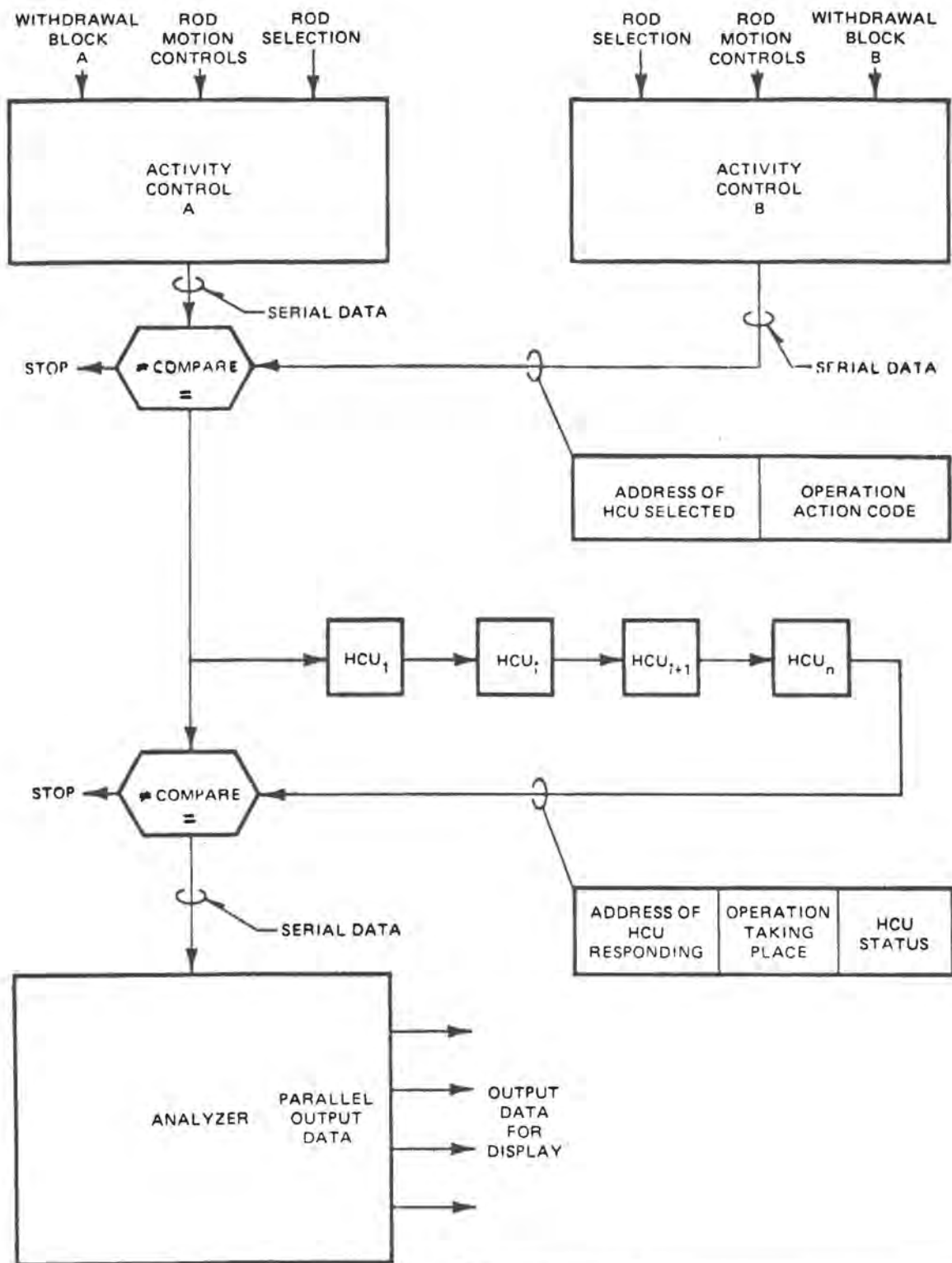


FIGURE 7.7-3

REACTOR MANUAL CONTROL SYSTEM
OPERATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

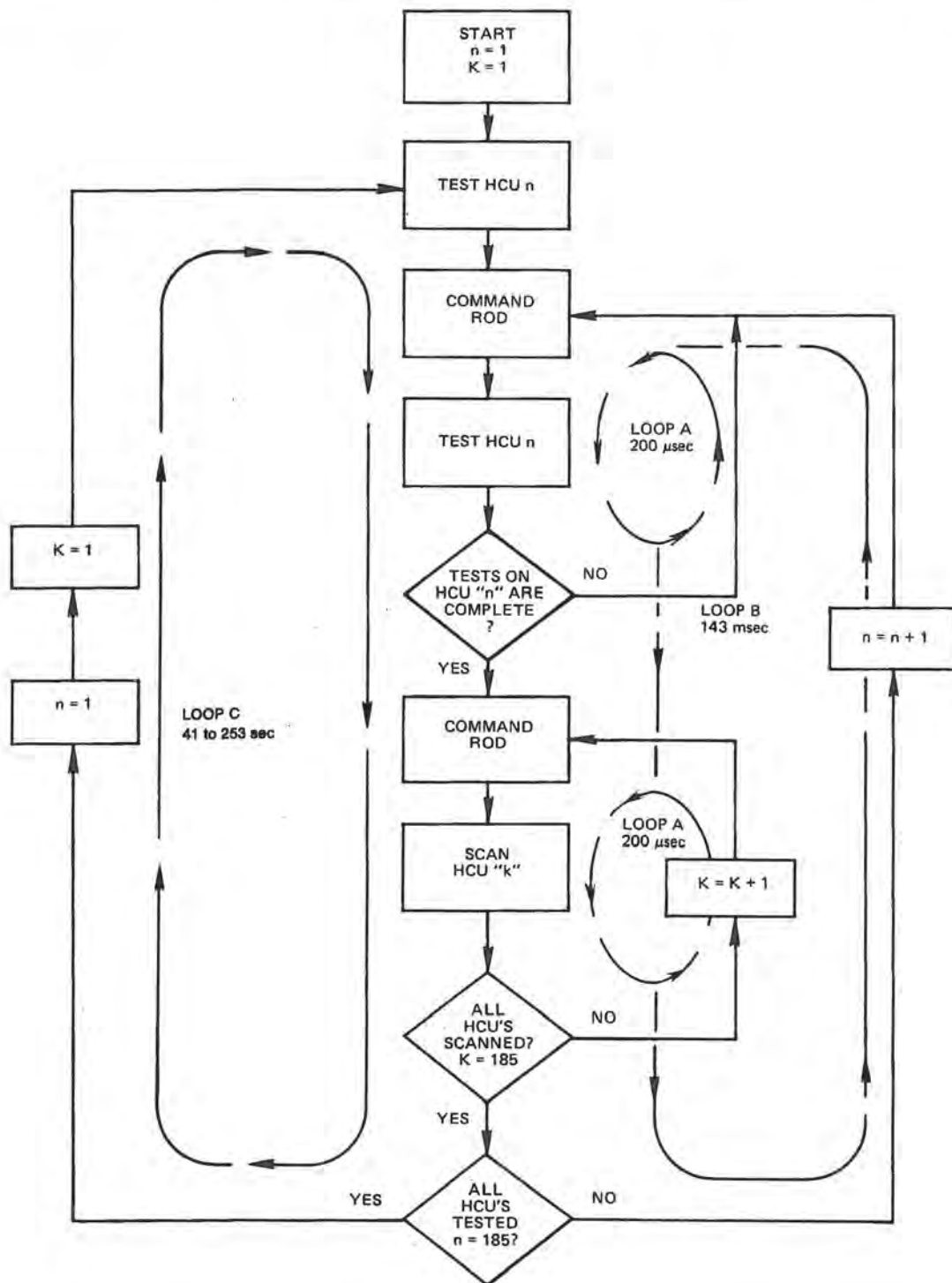


FIGURE 7.7-4

REACTOR MANUAL CONTROL SELF-TEST
PROVISIONS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

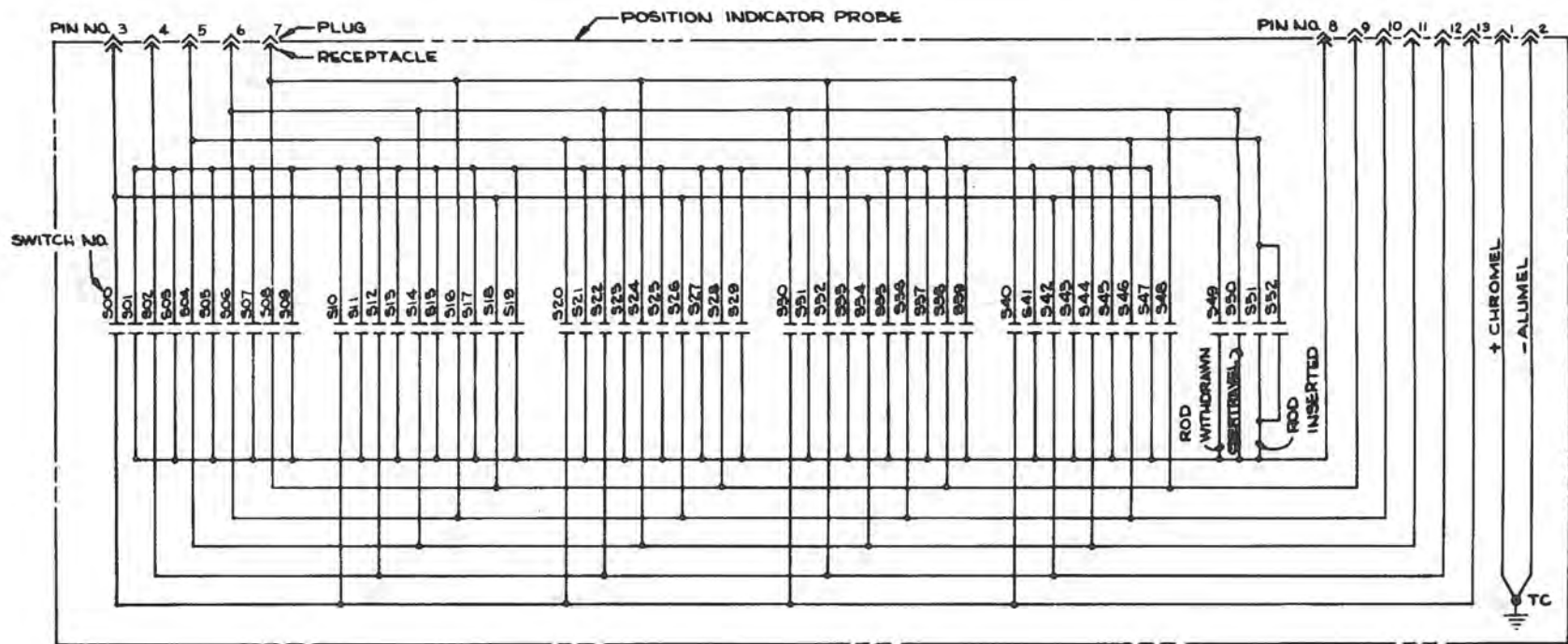
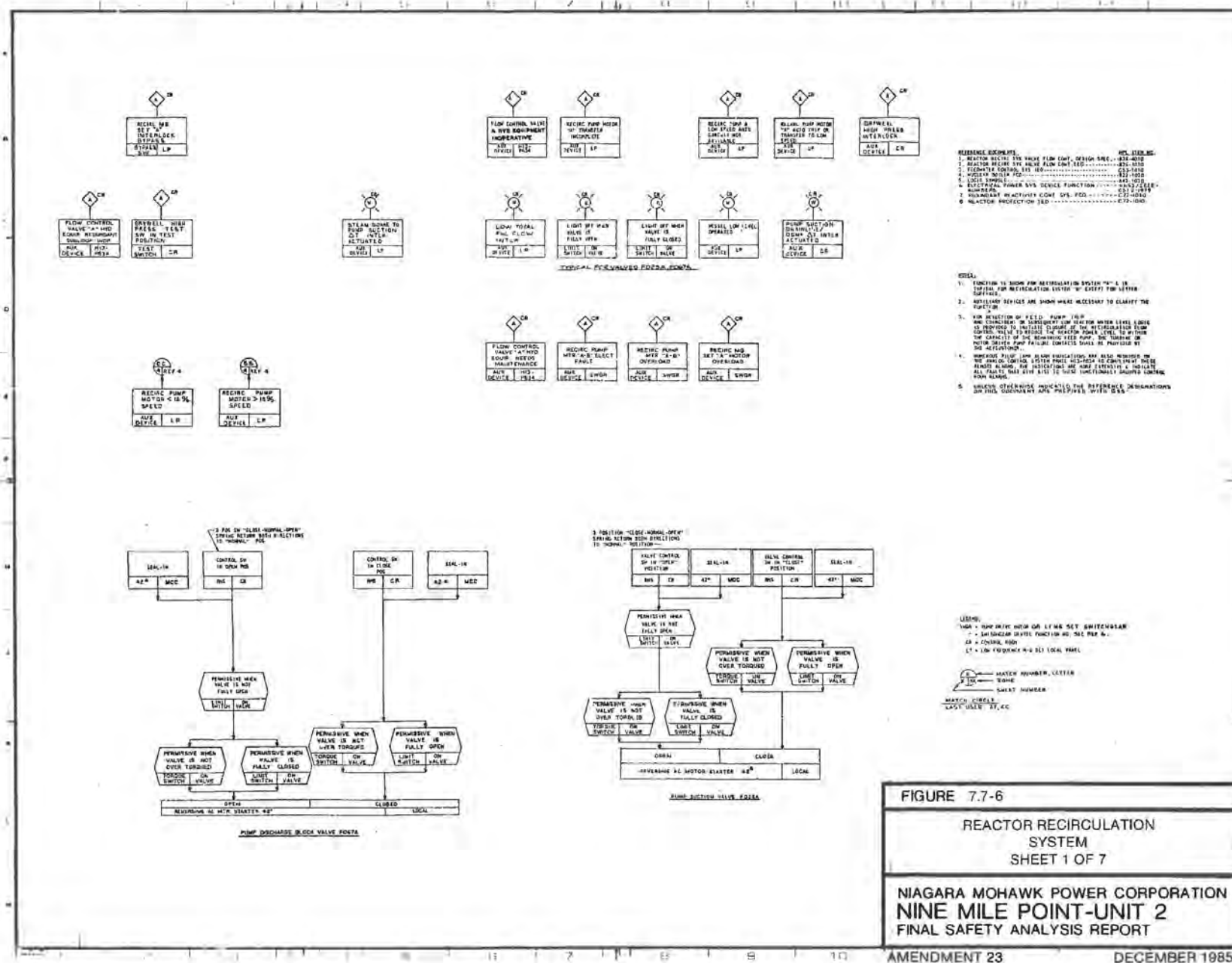
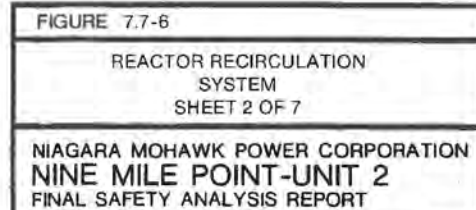


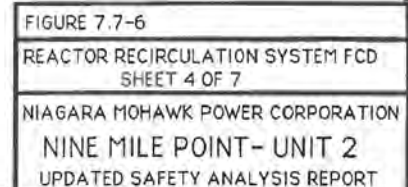
FIGURE 7.7-5

ELEVEN-WIRE POSITION PROBE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
 FINAL SAFETY ANALYSIS REPORT







TRIP OR TRANSFER PUMP FROM HIGH SPEED TO LOW SPEED

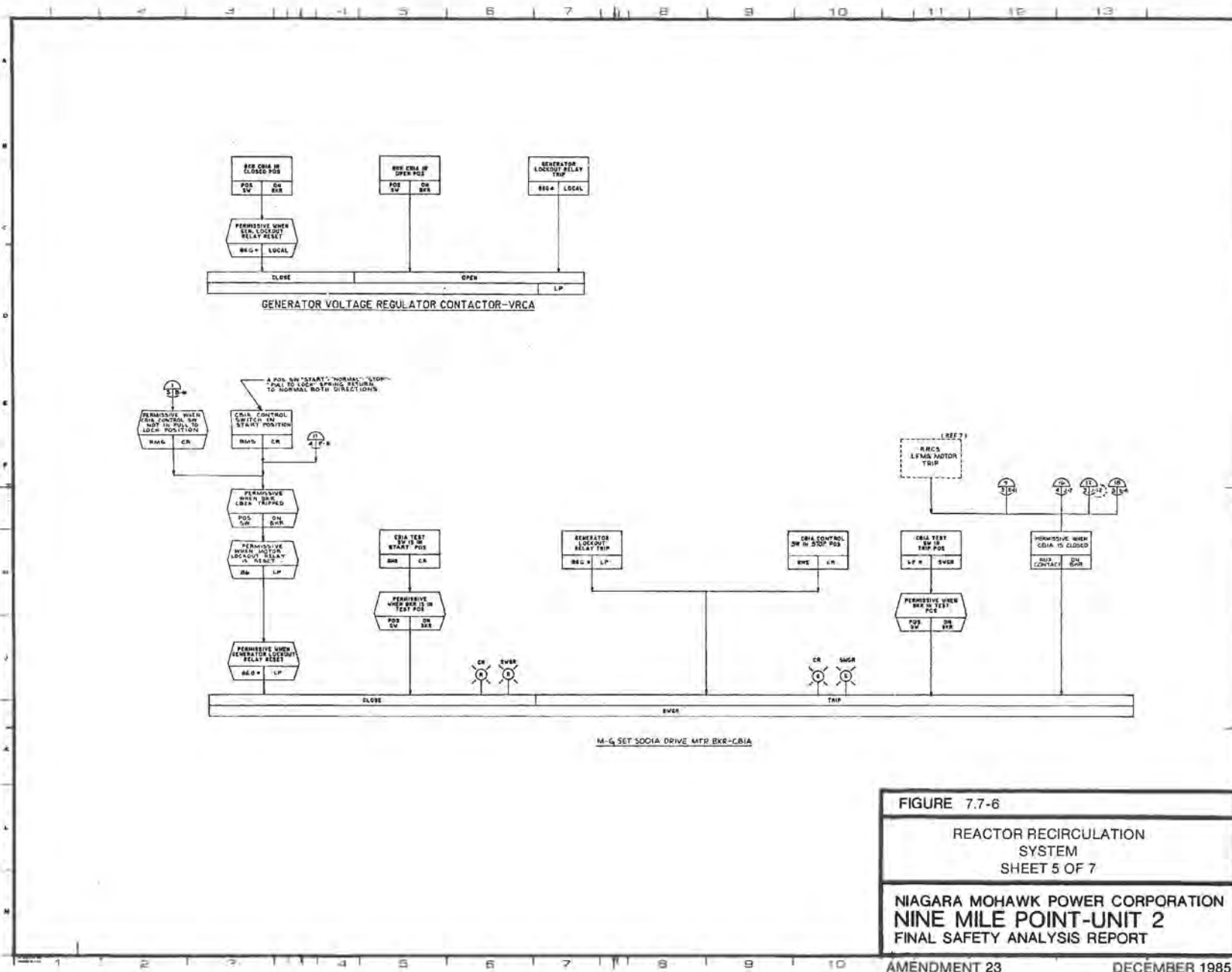


FIGURE 7.7-6

REACTOR RECIRCULATION
SYSTEM
SHEET 5 OF 7

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

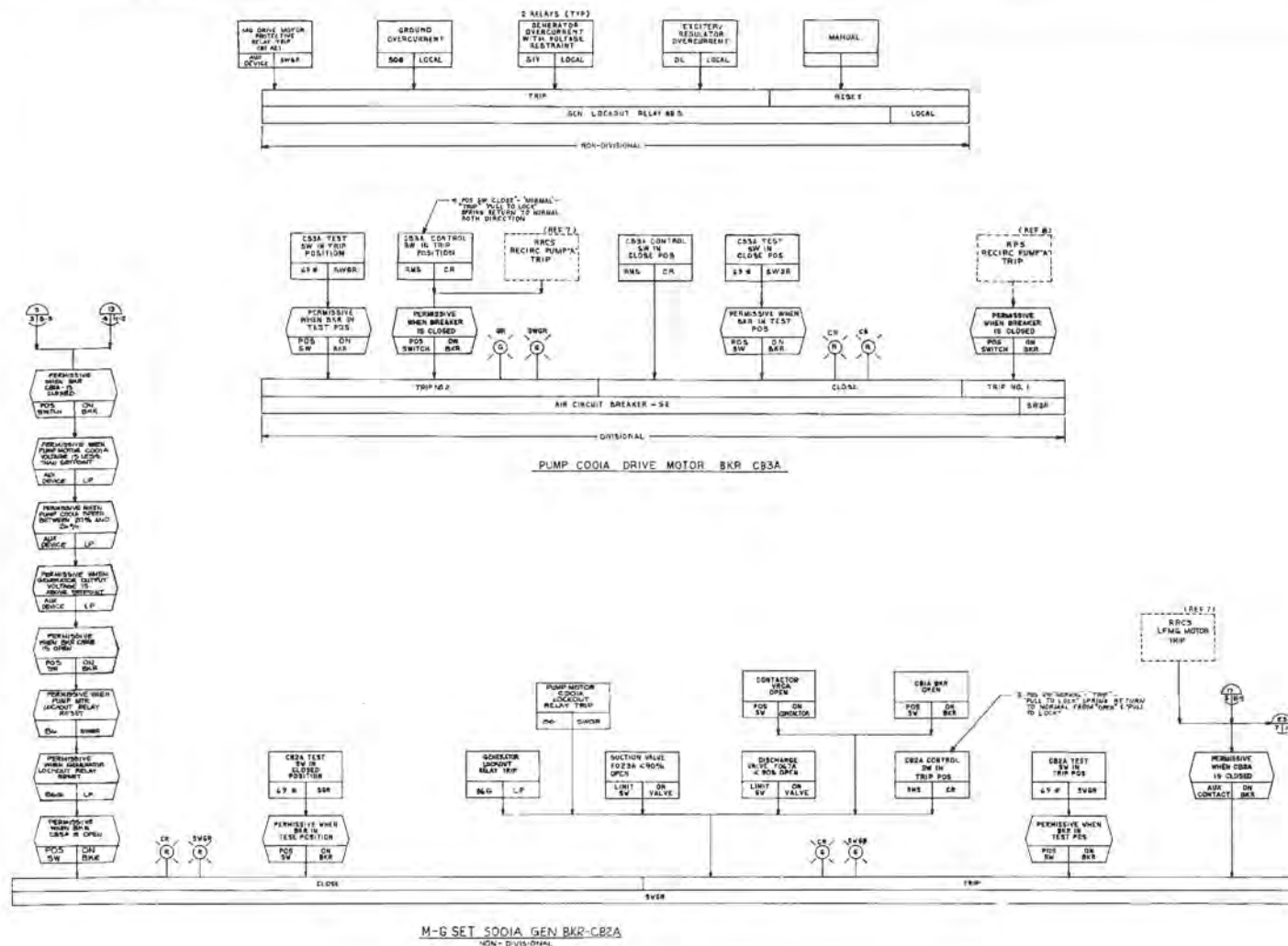


FIGURE 7.7-6
REACTOR RECIRCULATION SYSTEM FCD
SHEET 6 OF 7
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT- UNIT 2
UPDATED SAFETY ANALYSIS REPORT

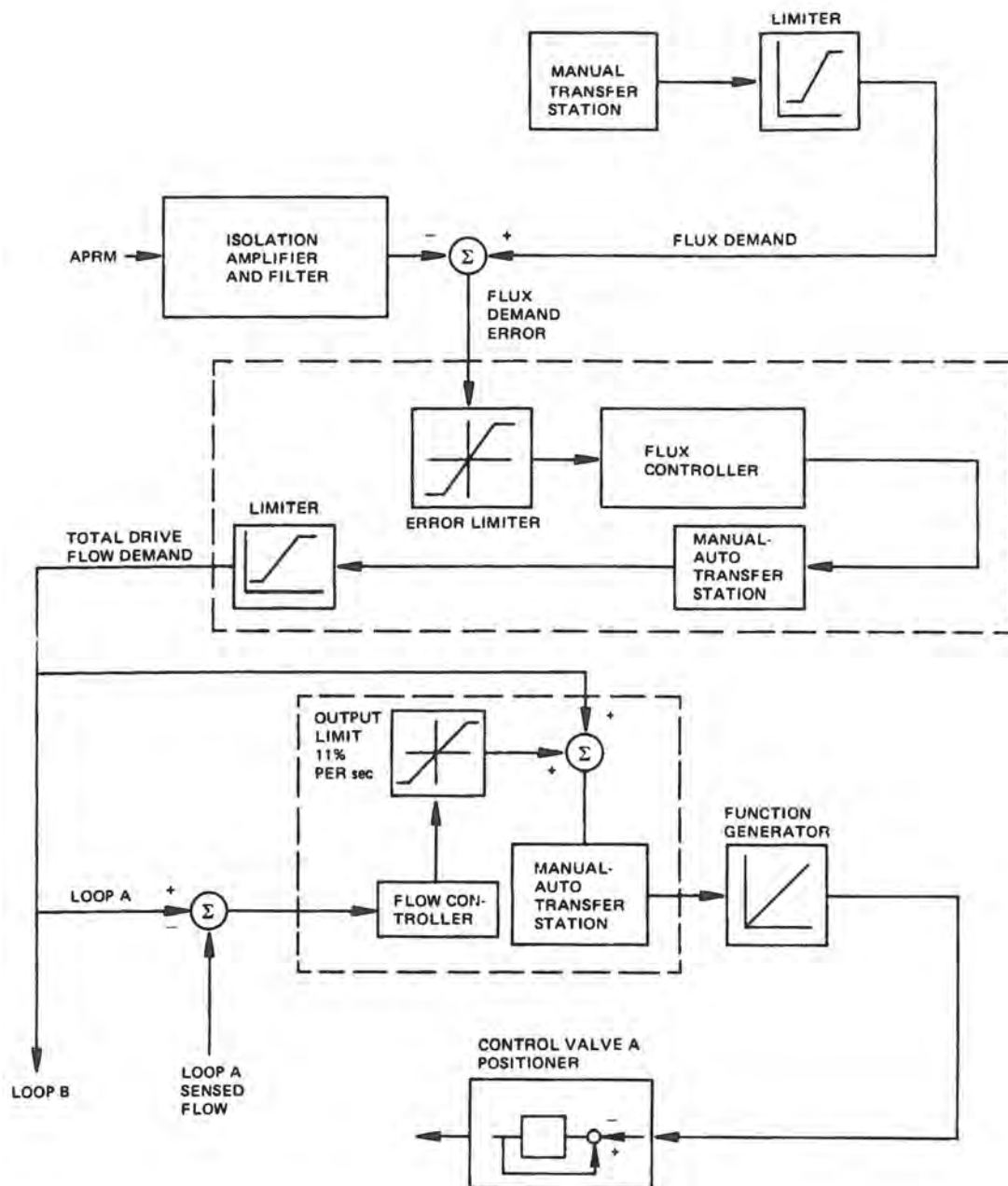


FIGURE 7.7-7

FLOW CONTROL SYSTEM
BLOCK DIAGRAM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT- UNIT 2
UPDATED SAFETY ANALYSIS REPORT

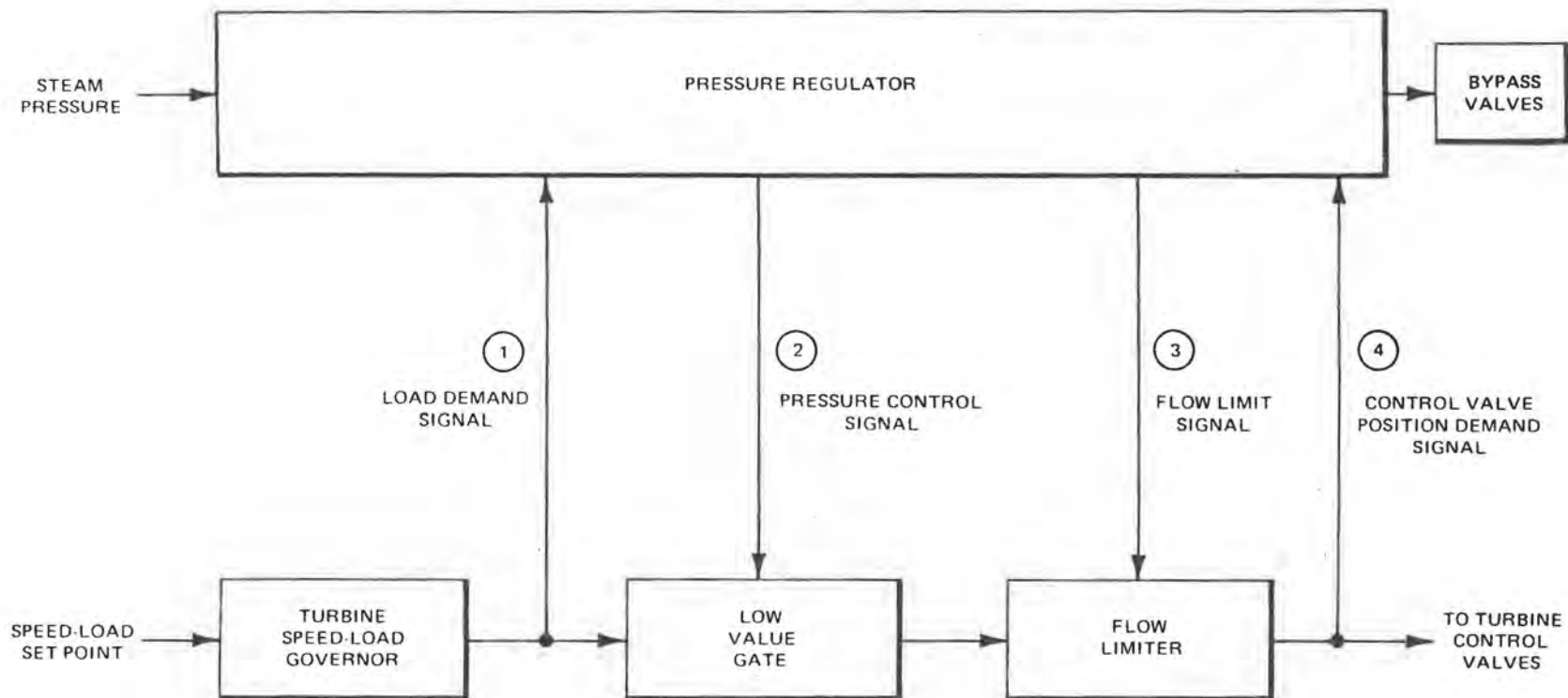


FIGURE 7.7-9

SIMPLIFIED DIAGRAM
PRESSURE CONTROL SYSTEM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

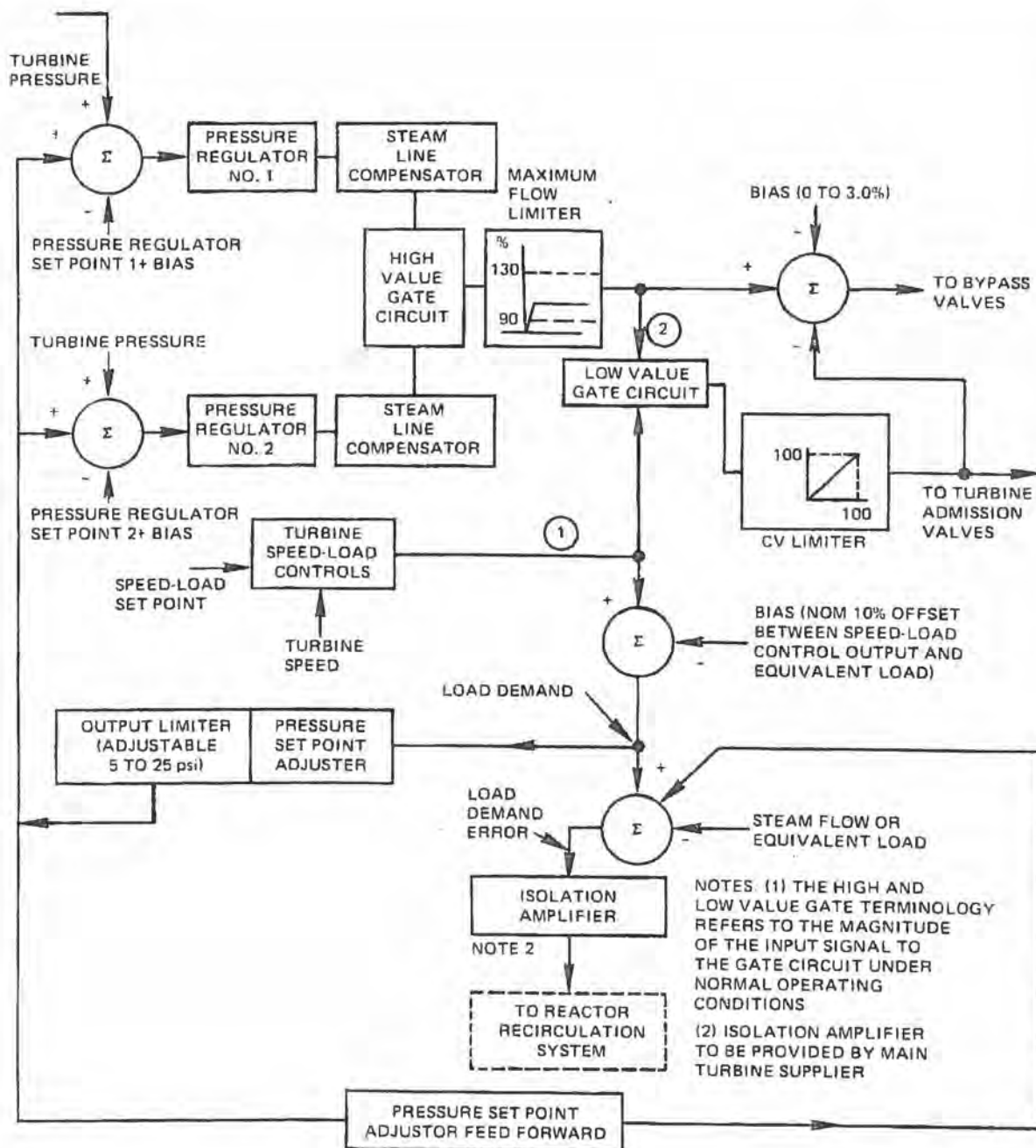
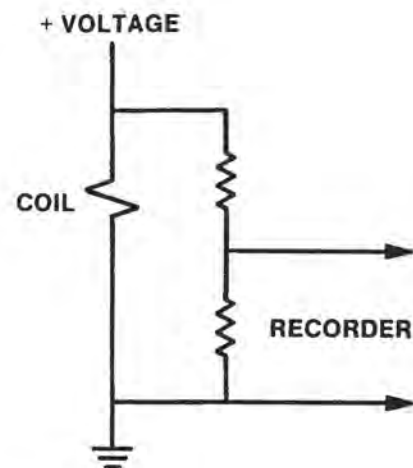
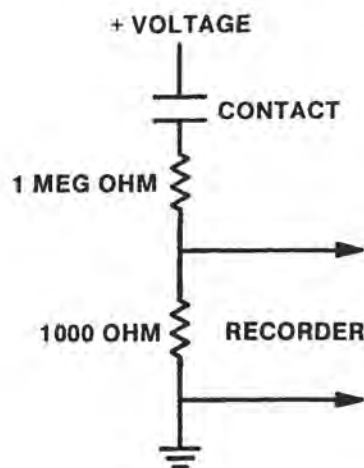


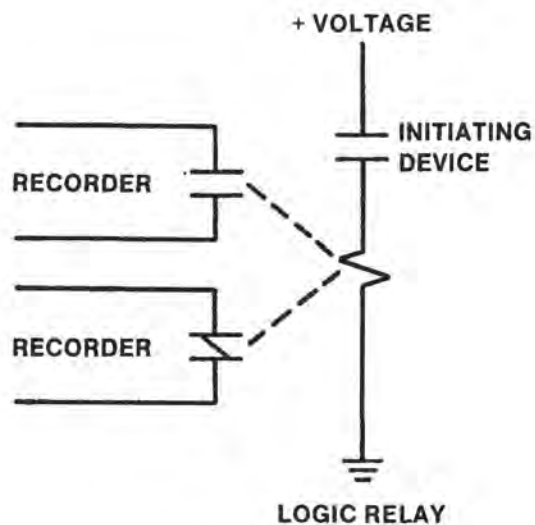
FIGURE 7.7-10

SIMPLIFIED DIAGRAM
TURBINE PRESSURE AND SPEED-LOAD
CONTROL REQUIREMENTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT- UNIT 2
UPDATED SAFETY ANALYSIS REPORT



TYPICAL RECORDER CONNECTIONS

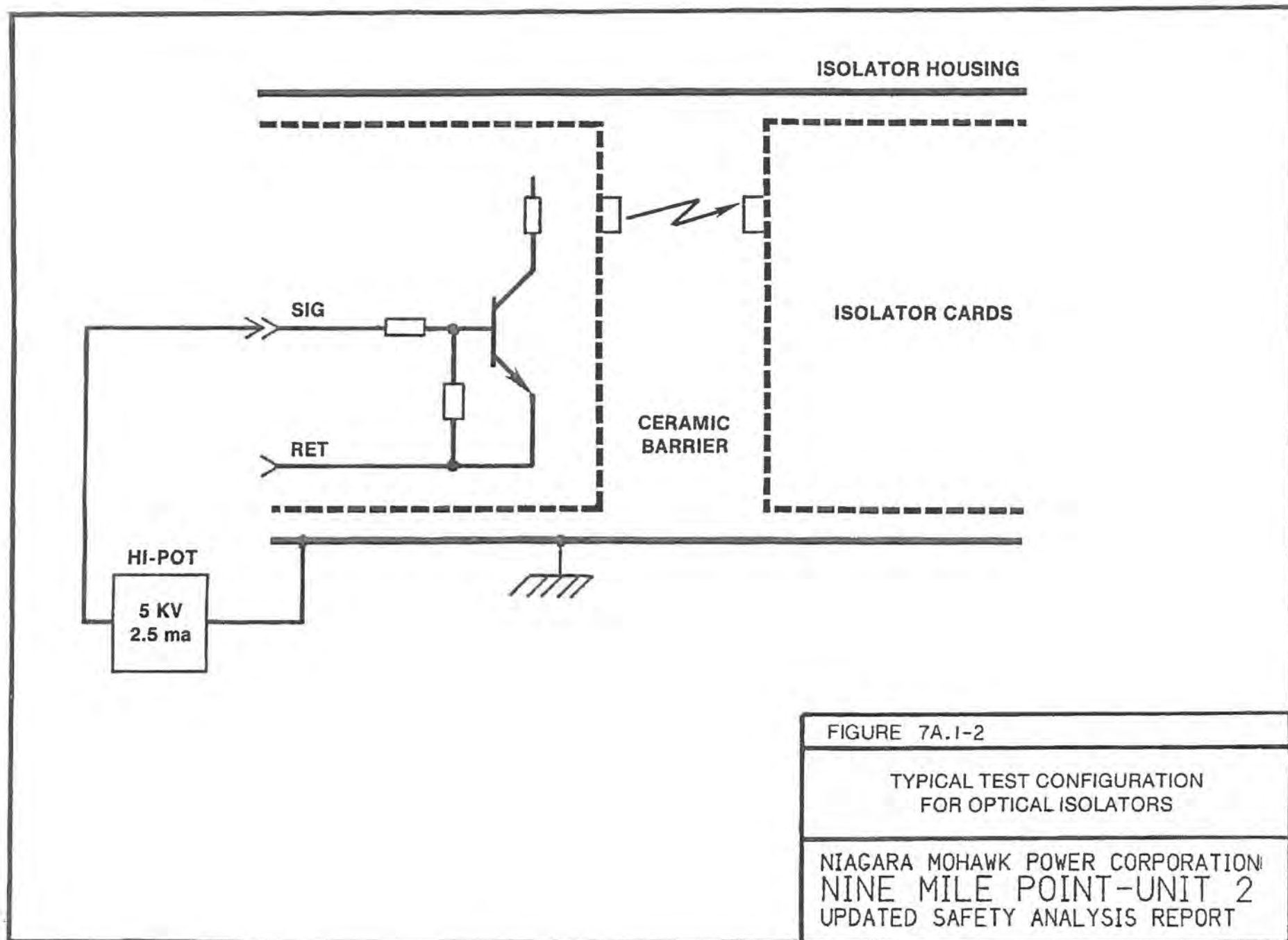


TYPICAL TEST SET-UP

FIGURE 7A.1-1

TYPICAL RECORDER CONNECTIONS
AND TEST SET UP

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



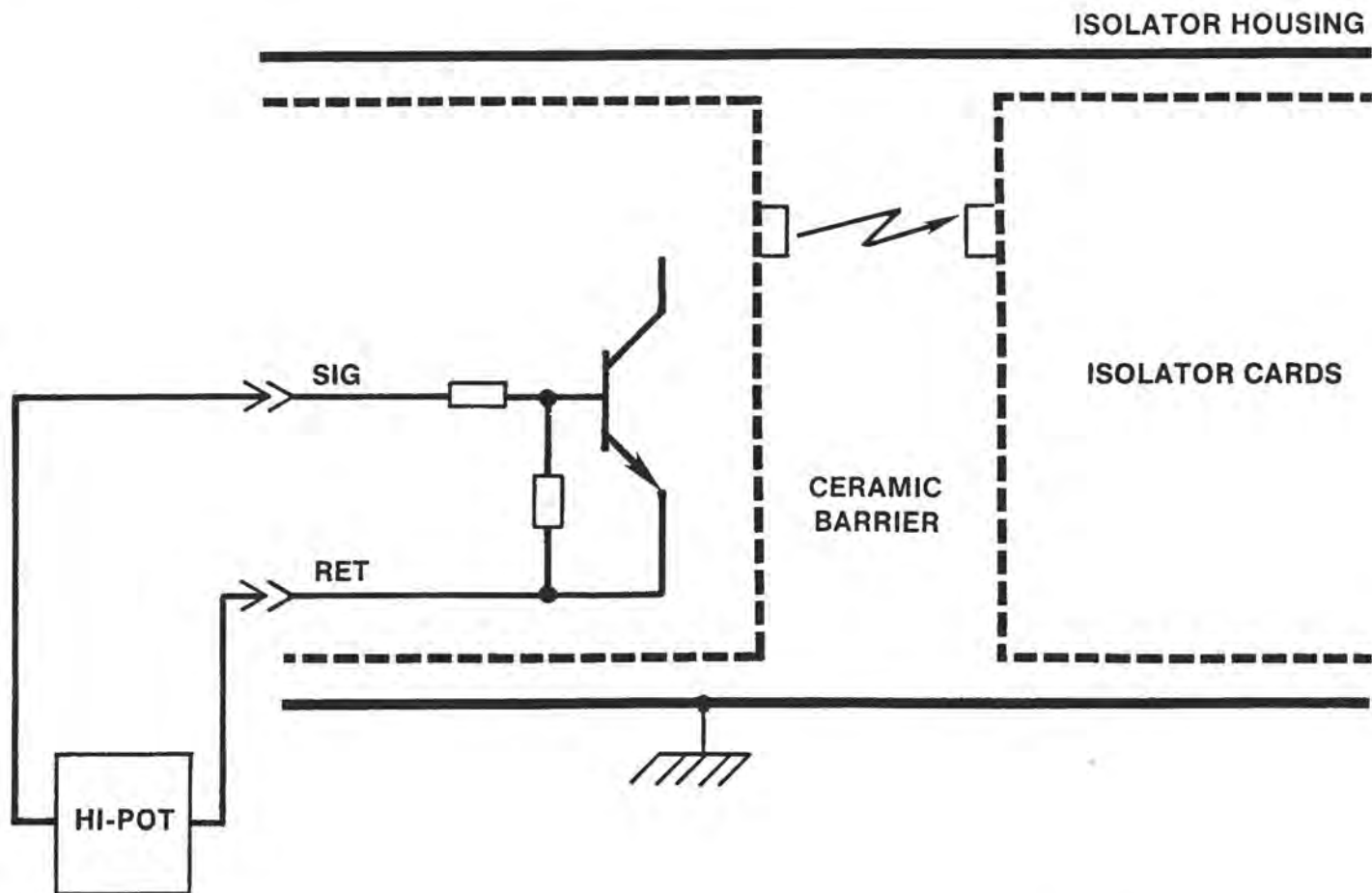


FIGURE 7A.1-3

TYPICAL TEST CONFIGURATION
FOR OPTICAL ISOLATORS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

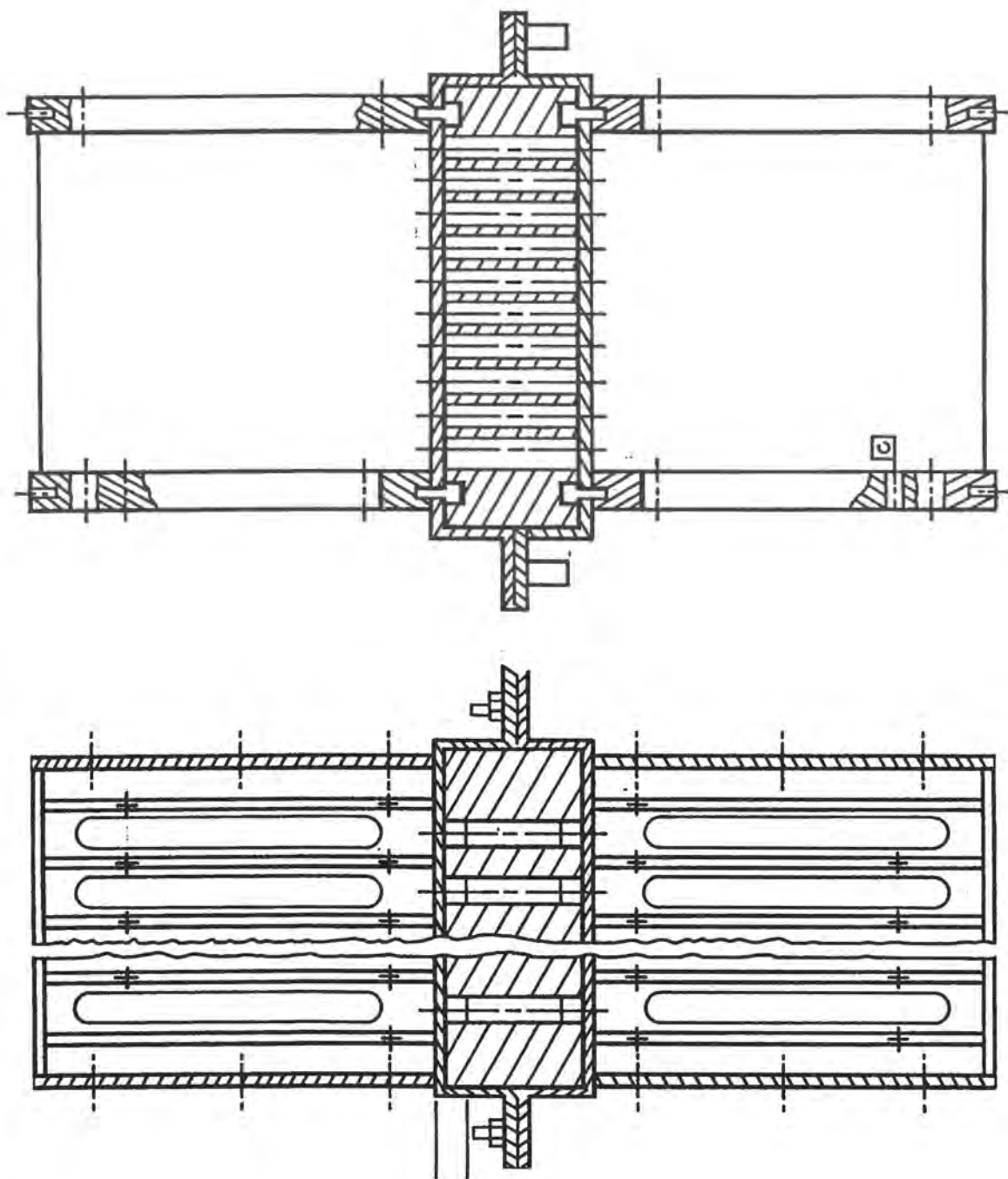


FIGURE 7A.1-4

ISOLATOR ASSEMBLY
(BOLTED)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

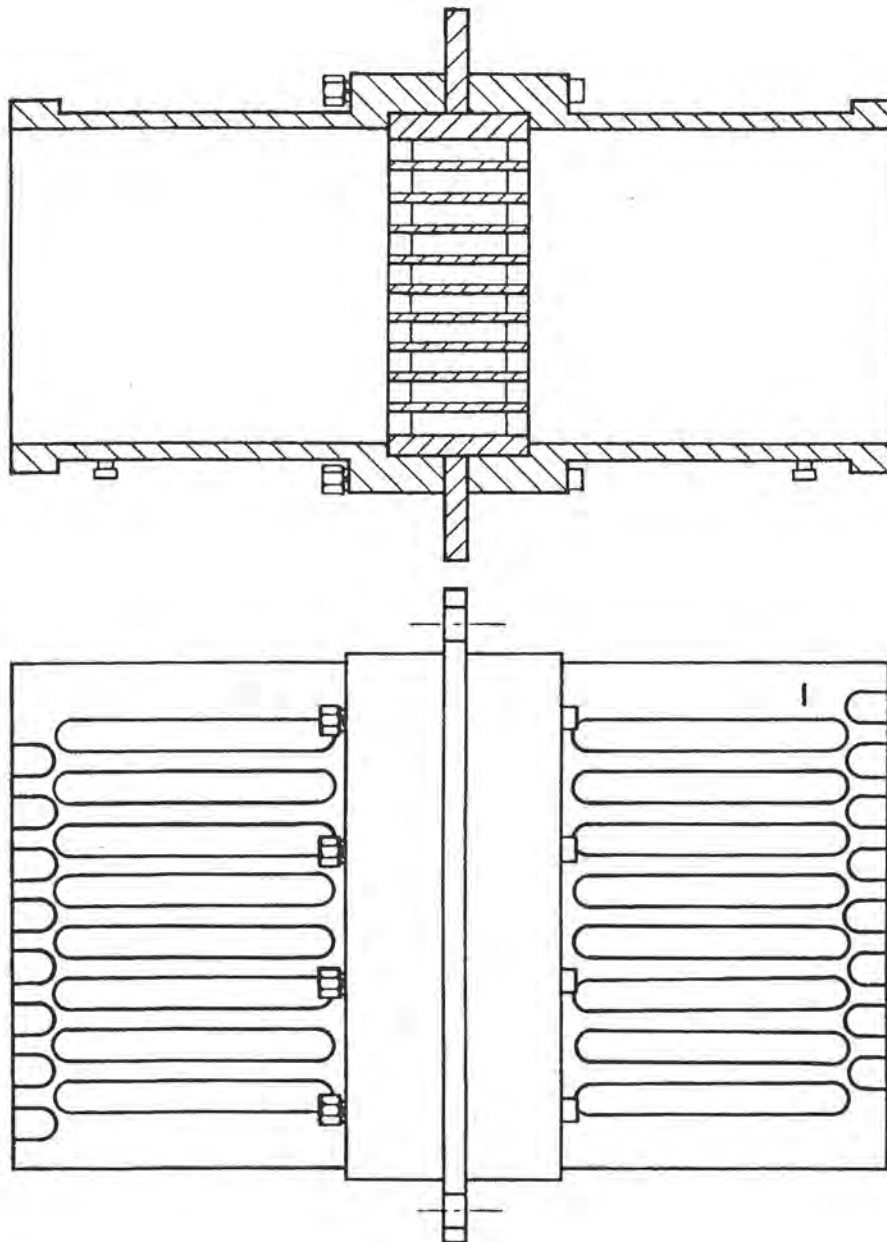
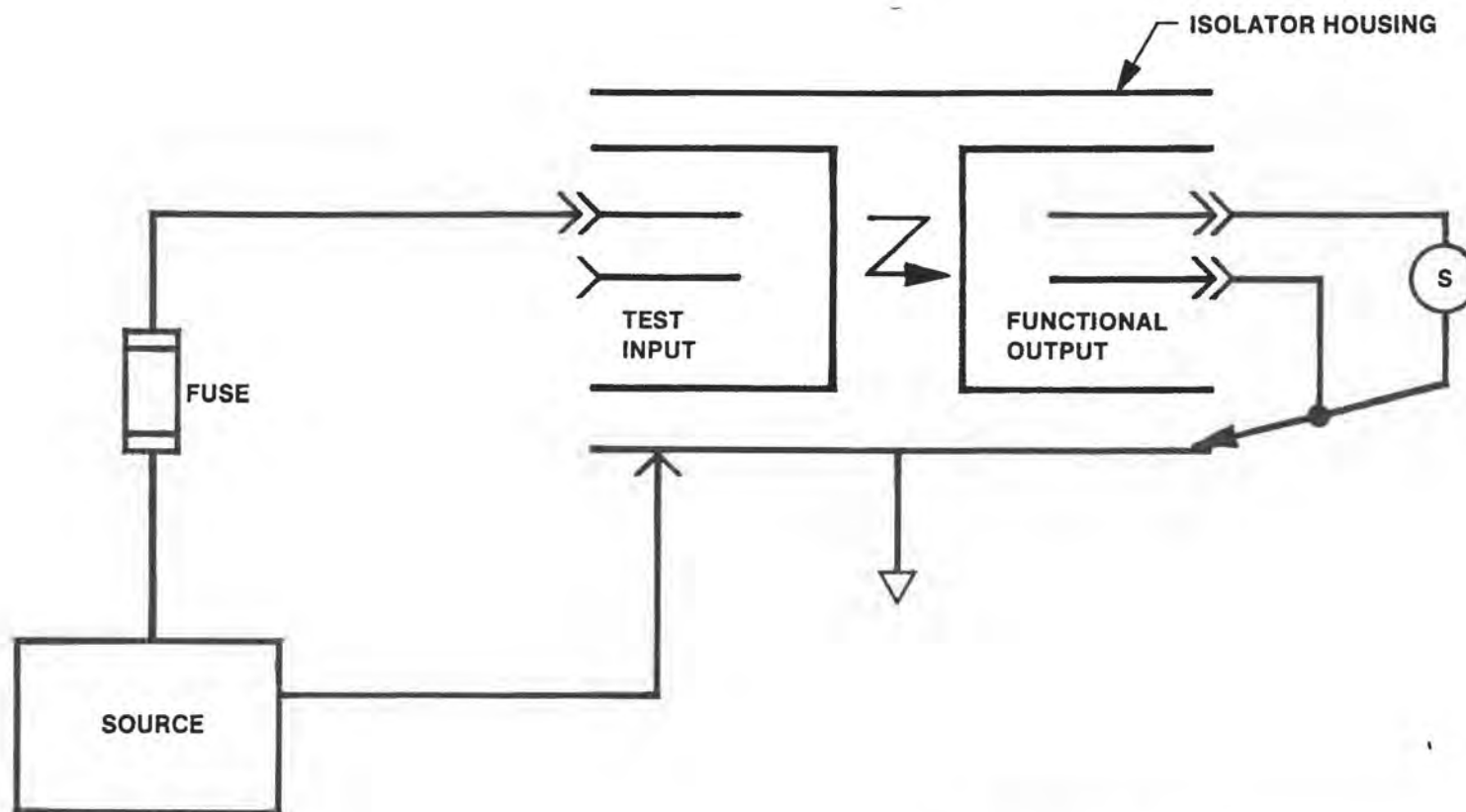


FIGURE 7A.1-5

ISOLATOR ASSEMBLY (CASTING)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

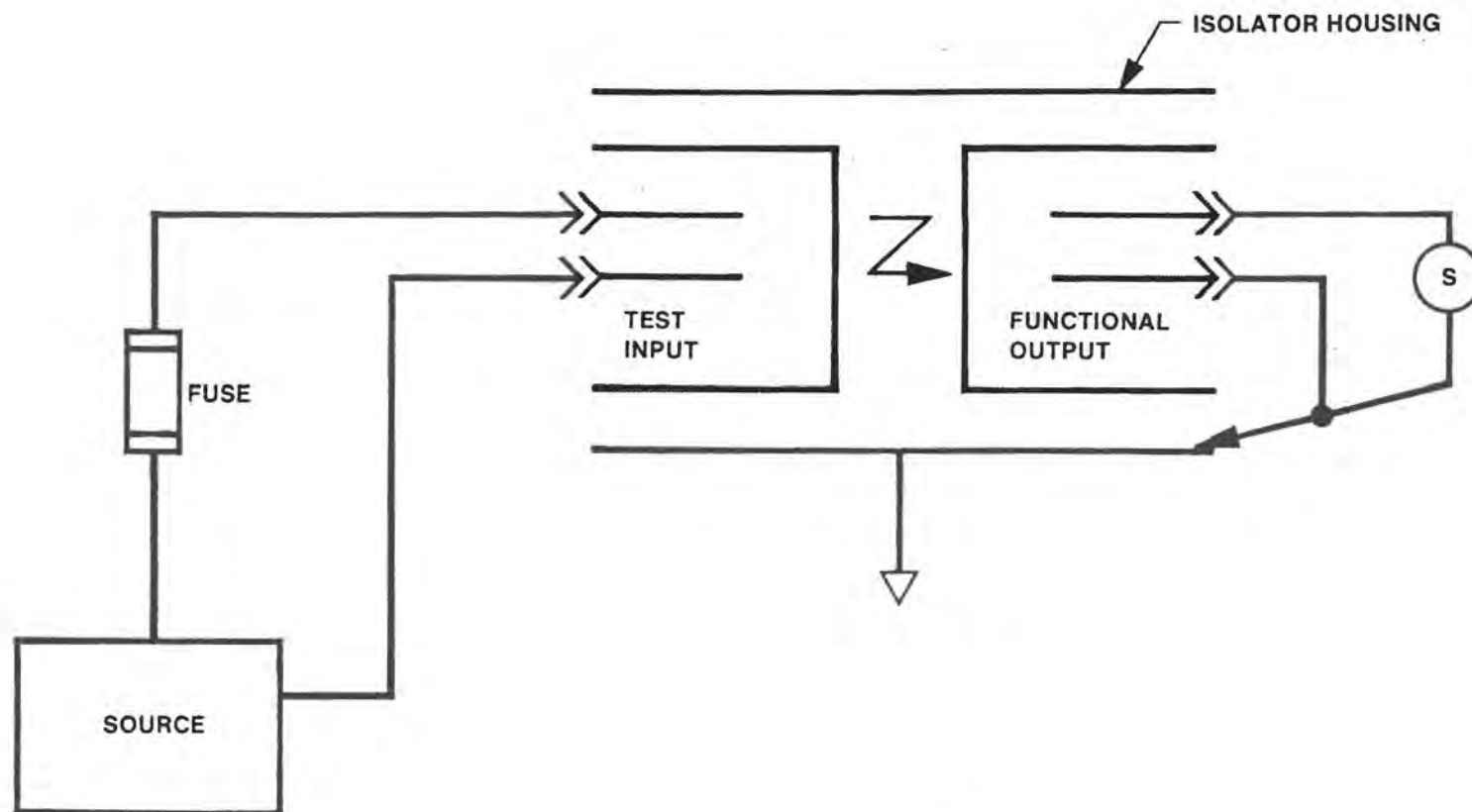


(S) = STORAGE OSCILLOSCOPE

FIGURE 7A.1-6

TYPICAL CONFIGURATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



(S) = STORAGE OSCILLOSCOPE

FIGURE 7A.1-7

TYPICAL CONFIGURATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

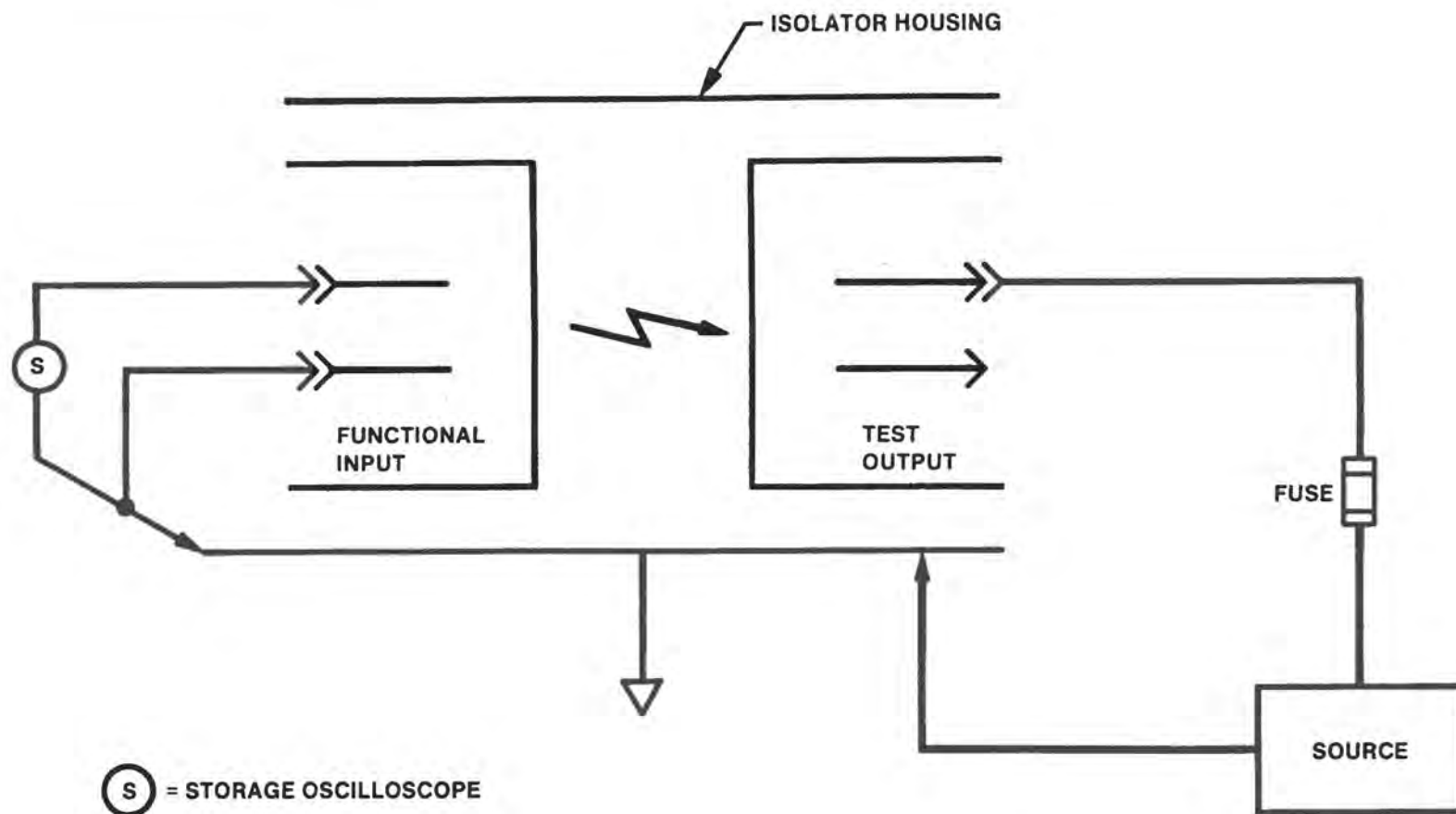


FIGURE 7A.1-8

TYPICAL CONFIGURATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

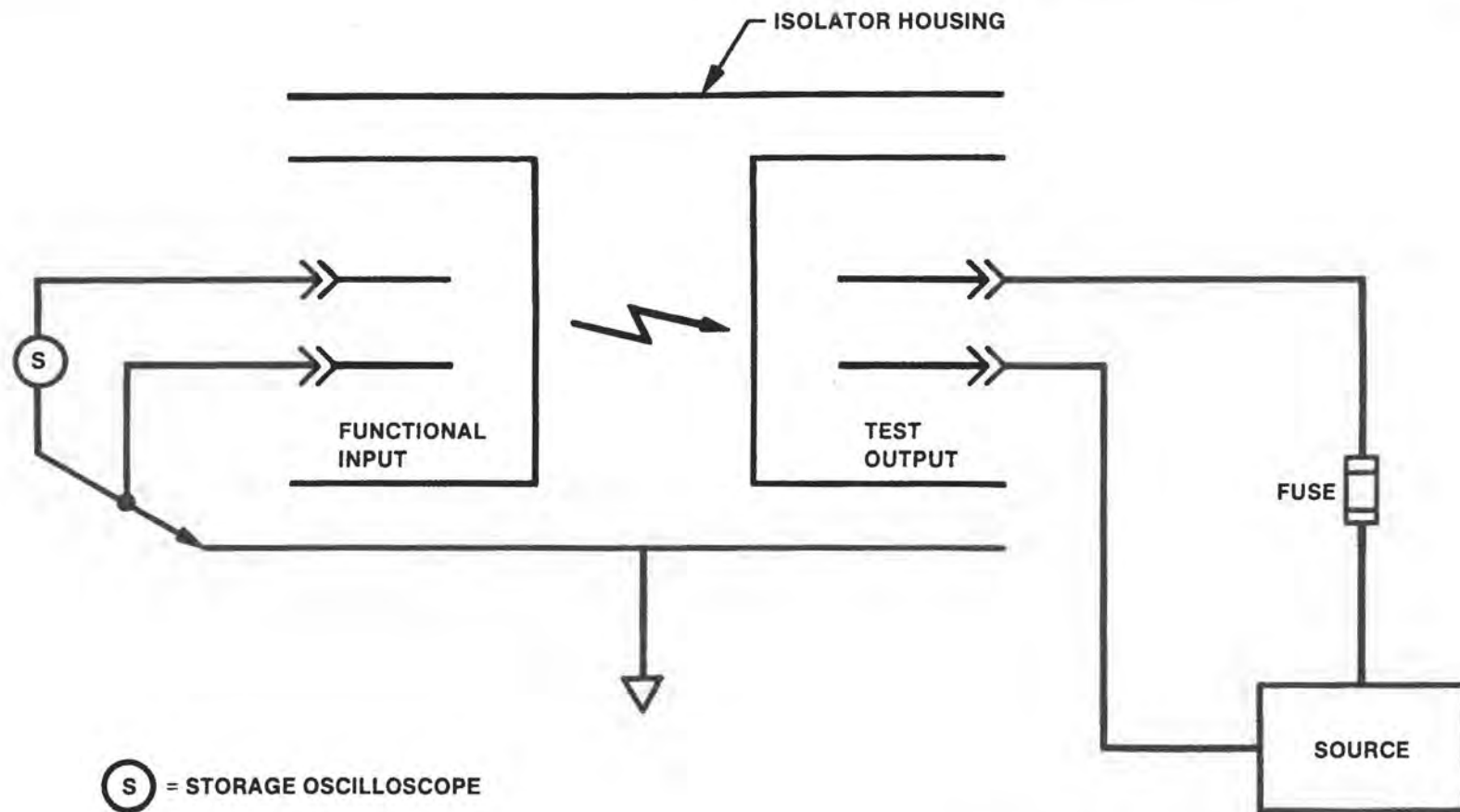
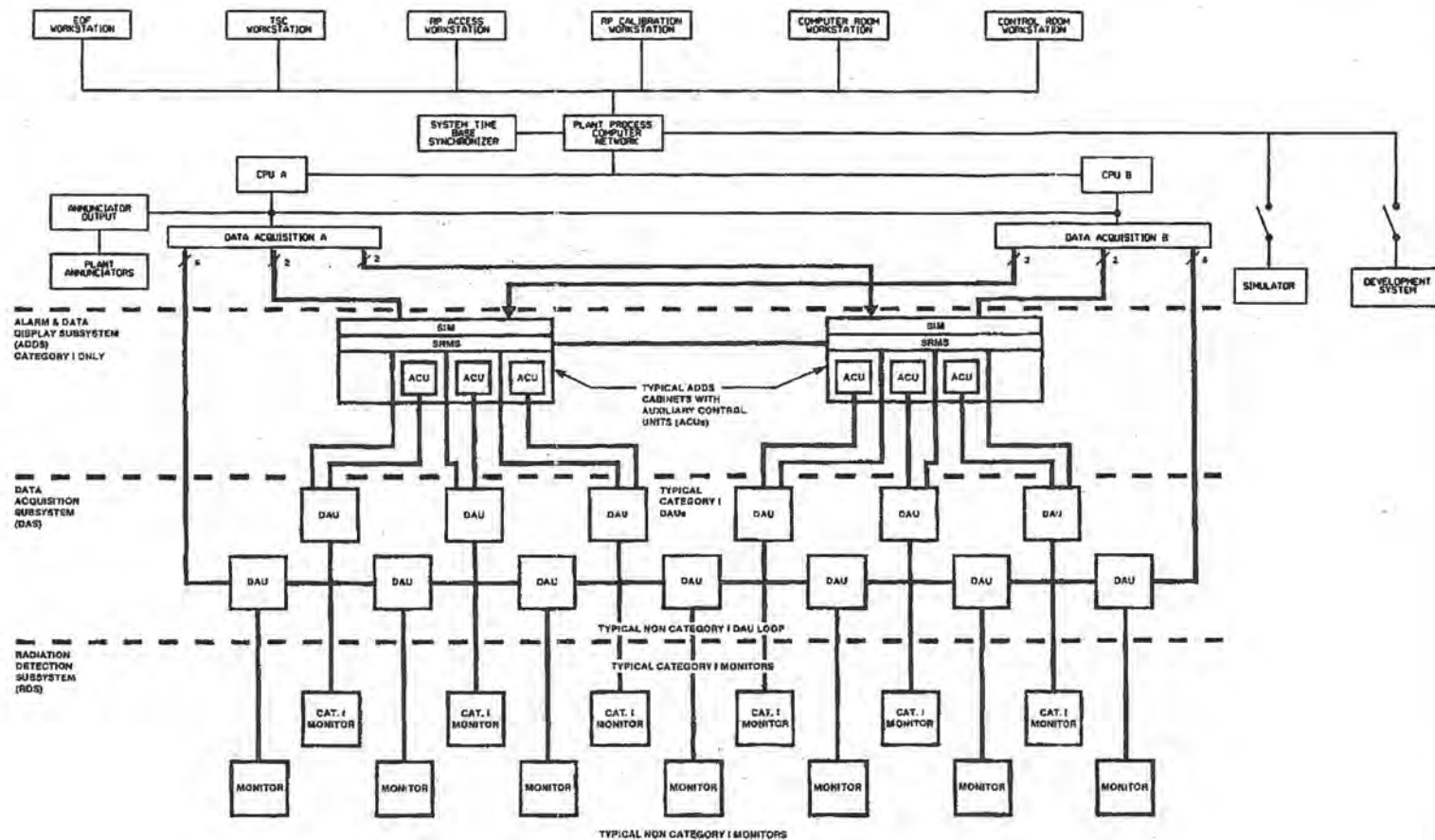


FIGURE 7A.1-9

TYPICAL CONFIGURATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT



SOURCE:

FIGURE 7A.6-1

DIGITAL RADIATION MONITORING DATA
ACQUISITION SYSTEM

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 16

OCTOBER 2004