

ABWR SSAR

Amendment 20 - Page change instruction

The following pages (11x17 fold out drawings) have been changed, please make the specified changes in your SSAR. Pages are listed as page pairs (front & back). Bold page numbers represent a page that has been changed by Amendment 20

REMOVE PAGE No.	ADD PAGE No.	REMOVE PAGE No.	ADD PAGE No.
CHAPTER 1		5.4-59,60	*5.4-59,60
1.7-6,7	*1.7-6,7	5.4-61,62	*5.4-61,62
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CHAPTER 4		6.3-25,26	*6.3-25,25.1
4.6-24,25	*4.6-24,25	Add	*6.3-26
Add	*4.6-25.1	6.3-33,34	*6.3-33,34
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CHAPTER 5		6.5-13	*6.5-13,13.1
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5.4-47,47.1	*5.4-47,47.1	9.2-38	*9.2-37,38
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5.4-52.1	*5.4-52.1	9.2-41	*9.2-41,41.1
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1.2-12	20	1.2-31	16	1.3-16	1	1.7-9	6
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3.1-v	1	3.1-32	1	3.2-20	20	3.4-2.1	18
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3.6-5.1	17	3.7-ii	18	3.7-26	9	3.7-64	1
3.6-6	7	3.7-iii	1	3.7-27	7	3.7-65	1
3.6-7	1	3.7-iv	1	3.7-28	1	3.7-66	1
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3.6-11	1	3.7-viii	1	3.7-32	1	3.8-111	1
3.6-12	7	3.7-ix	16	3.7-33	1	3.8-iv	1
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3.6-18	1	3.7-5	1	3.7-36	1	3.8-x	1
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3.6-24	1	3.7-10	1	3.7-42	1	3.8-6	7
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3.6-31	7	3.7-18	1	3.7-51	1	3.8-15	1
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3.8-34	3	3.9-4	11	3.9-36	3	3.9-58.12	14
3.8-35	3	3.9-5	3	3.9-36a	10	3.9-58.13	14
3.8-36	1	3.9-6	11	3.9-37	13	3.9-58.14	14
3.8-37	1	3.9-7	3	3.9-38	1	3.9-58.15	20
3.8-38	1	3.9-8	3	3.9-39	11	3.9-58.16	20
3.8-39	1	3.9-9	11	3.9-40	11	3.9-58.17	14
3.8-40	1	3.9-10	1	3.9-41	1	3.9-58.18	14
3.8-41	1	3.9-11	12	3.9-42	7	3.9-58.19	14
3.8-42	1	3.9-11a	3	3.9-43	7	3.9-58.20	14
3.8-43	1	3.9-12	7	3.9-44	17	3.9-58.21	14
3.8-44	1	3.9-13	7	3.9-44.1	20	3.9-58.22	14
3.8-45	1	3.9-14	1	3.9-44.2	20	3.9-58.23	14
3.8-46	1	3.9-15	2	3.9-45	20	3.9-58.24	14
3.8-47	1	3.9-16	7	3.9-45.1	16	3.9-58.25	14
3.8-48	1	3.9-17	11	3.9-46	1	3.9-58.26	14
3.8-49	1	3.9-17.1	8	3.9-47	1	3.9-58.27	14
3.8-50	1	3.9-18	16	3.9-48	1	3.9-58.28	14
3.8-51	1	3.9-18.1	11	3.9-49	9	3.9-58.29	14
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3.9-58.32	14	3A.3-3	16	3A.8-1	16	3AA-4	1
3.9-59	14	3A.3-4	1	3A.8-2	7	3AA-5	1
3.9-60	1	3A.3-5	1	3A.8-2.1	16	3AA-6	1
3.9-61	1	3A.3-6	7	3A.8-3	1	3AA-7	1
3.9-62	1	3A.3-7	1	3A.8-4	1	3AA-8	1
3.9-63	1	3A.3-8	1	3A.8-5	1	3AA-9	1
3.9-64	11	3A.3-9	10	3A.8-6	1	3AA-10	1
3.10-11	1	3A.3-10	1	3A.8-7	1	3AA-11	1
3.10-111	6	3A.3-11	1	3A.8-8	1	3AA-12	1
3.10-14	9	3A.3-12	1	3A.8-9	1	3B COVER	
3.10-1	1	3A.4-11	1	3A.8-10	1	3B-11	6
3.10-2	1	3A.4-1	1	3A.8-11	1	3B-111	6
3.10-3	1	3A.4-2	1	3A.8-12	1	3B.1-11	6
3.10-4	7	3A.4-3	1	3A.8-13	1	3B.1-1	6
3.10-5	7	3A.4-4	1	3A.8-14	1	3B.2-11	7
3.10-6	1	3A.4-5	1	3A.8-15	1	3B.2-1	6
3.10-7	1	3A.4-6	1	3A.8-16	1	3B.3-11	7
3.10-8	7	3A.4-7	1	3A.8-17	1	3B.3-1	6
3.10-9	1	3A.4-8	1	3A.8-18	1	3B.4-11	6
3.10-10	1	3A.4-9	1	3A.8-19	1	3B.4-111	8
3.11-11	14	3A.4-10	1	3A.8-20	1	3B.4-11v	8
3.11-1	17	3A.5-11	1	3A.8-21	1	3B.4-1	6
3.11-1.1	17	3A.5-1	1	3A.8-22	1	3B.5-11	6
3.11-2	17	3A.5-2	1	3A.8-23	1	3B.5-1	6
3.11-3	17	3A.5-3	1	3A.8-24	1	3B.6-1	6
3A COVER		3A.5-4	1	3A.8-25	1	3B.7-1	6
3A.11	1	3A.5-5	1	3A.8-26	16	3C COVER	
3A.111	1	3A.5-6	1	3A.8-27	16	3C-11	1
3A.1-1	9	3A.6-11	1	3A.8-28	16	3C-1	1
3A.1-2	1	3A.6-1	1	3A.8-29	16	3C.2-1	1
3A.2-11	1	3A.6-1	1	3A.8-30	16	3C.3-1	1
3A.2-1	1	3A.6-1	1	3A.9-1	1	3D COVER	
3A.2-2	1	3A.6-1	1	3A.10-1	1		
3A.2-3	1	3A.7-11	1	3A.11	1		
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3D-1-1	1	3E-2-17	1	3F-2-1	7	3G-2-17	4
3D-2-11	1	3E-2-18	1	3F-2-2	7	3G-2-18	4
3D-2-1	1	3E-2-19	1	3F-2-3	7	3G-2-19	4
3D-3-1	1	3E-2-20	1	3F-2-4	1	3G-2-20	4
3D-4-11	1	3E-2-21	1	3F-2-5	1	3G-2-21	4
3D-4-1	1	3E-2-22	1	3F-3-11	1	3G-2-22	4
3D-5-11	1	3E-2-23	1	3F-3-1	7	3G-2-23	4
3D-5-1	1	3E-3-11	1	3F-3-2	7	3G-2-24	4
3D-6-11	1	3E-3-1	1	3F-3-3	1	3G-2-25	4
3D-6-1	1	3E-3-2	1	3F-3-4	1	3G-2-26	4
3D-7-11	1	3E-3-3	1	3G COVER		3G-2-27	4
3D-7-1	1	3E-3-4	8	3G-11	17	3G-2-28	4
3D-7-2	1	3E-3-5	1	3G-1-11	4	3G-2-29	4
3E COVER		3E-3-6	1	3G-1-1	4	3G-2-30	4
3E-11	1	3E-3-7	1	3G-1-2	4	3G-2-31	4
3E-1-1	1	3E-3-8	1	3G-1-3	4	3G-2-32	4
3E-2-11	1	3E-3-9	1	3G-1-4	4	3G-2-33	4
3E-2-111	1	3E-4-11	1	3G-2-11	4	3G-2-34	4
3E-2-1	1	3E-4-111	1	3G-2-111	4	3G-3-11	4
3E-2-2	7	3E-4-1	1	3G-2-1v	4	3G-3-1	4
3E-2-3	1	3E-4-2	1	3G-2-1	4	3G-3-2	6
3E-2-4	7	3E-4-3	1	3G-2-2	4	3G-3-3	4
3E-2-5	20	3E-4-4	20	3G-2-3	4	3G-3-4	6
3E-2-6	20	3E-4-5	1	3G-2-4	4	3G-3-5	4
3E-2-7	1	3E-4-6	1	3G-2-5	4	3G-3-6	4
3E-2-8	1	3E-4-7	1	3G-2-6	4	3G-4-11	4
3E-2-9	1	3E-4-8	1	3G-2-7	4	3G-4-111	4
3E-2-10	1	3E-4-9	1	3G-2-8	4	3G-4-1	4
3E-2-11	1	3E-5-1	8	3G-2-9	4	3G-4-2	4
3E-2-12	1	3F COVER		3G-2-10	4	3G-4-3	11
3E-2-13	1	3F-11	1	3G-2-11	4	3G-4-4	4
3E-2-14	1	3F-1-1	8	3G-2-12	4	3G-4-5	4
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3G. 4-11	4	3H. 3-8	4	3H. 3-46	4
3G. 4-12	4	3H. 3-9	4	3H. 3-47	4
3G. 4-13	4	3H. 3-10	4	3H. 3-48	4
3G. 4-14	4	3H. 3-11	4	3H. 3-49	4
3G. 5-11	16	3H. 3-12	4	3H. 3-49.1	20
3G. 5-11.1	16	3H. 3-13	4	3H. 3-49.2	20
3G. 5-11v	16	3H. 3-14	4	3H. 3-49.3	20
3G. 5-1	17	3H. 3-15	4	3H. 3-49.4	20
3G. 5-2	16	3H. 3-16	4	3H. 3-50	6
3G. 5-3	16	3H. 3-17	4	3H. 3-51	6
3G. 5-4	16	3H. 3-18	4	3H. 3-52	6
3G. 5-5	16	3H. 3-19	4	3H. 3-53	6
3G. 5-6	16	3H. 3-20	4	3H. 3-54	6
3G. 5-7	16	3H. 3-21	4	3H. 3-54a	6
3G. 5-8	16	3H. 3-22	C	3H. 3-55	16
3G. 5-9	16	3H. 3-23	4	3H. 3-56	6
3G. 5-10	16	3H. 3-24	4	3H. 3-57	20
3G. 5-11	16	3H. 3-25	4	3H. 3-58	20
3G. 5-12	16	3H. 3-26	4	3H. 3-59	20
3G. 5-13	16	3H. 3-27	4	3H. 3-60	20
3G. 5-14	16	3H. 3-28	4	3H. 3-61	20
3G. 5-15	16	3H. 3-29	4	3H. 3-62	20
3H COVER		3H. 3-30	4	3H. 3-63	20
3H. 1-1	4	3H. 3-31	4	3H. 3-64	20
3H. 1-1.1	4	3H. 3-32	4	3H. 4-1	20
3H. 1-1	4	3H. 3-33	4	3I COVER	
3H. 1-2	4	3H. 3-34	4	3I-11	14
3H. 2-1	4	3H. 3-35	4	3I. 1-1	14
3H. 3-11	18	3H. 3-36	4	3I. 2-11	14
3H. 3-11.1	20	3H. 3-37	4	3I. 2-1	14
3H. 3-1	20	3H. 3-38	4	3I. 3-11	17
3H. 3-2	4	3H. 3-39	4	3I. 3-11.1	17
3H. 3-3	1	3H. 3-40	4	3I. 3-1v	14
3H. 3-4	4	3H. 3-41	4	3I. 3-1 - 25	17
3H. 3-5	4	3H. 3-42	4		
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4 COVER		4.5-11	15	4.6-20	20	4A-	0
4-11	15	4.5-1	12	4A COVER		4A-30	0
4-111	16	4.5-2	8	4A-11	15	4A-31	0
4.1-11	0	4.5-3	7	4A-111	0	4A-32	0
4.1-111	15	4.5-4	2	4A-1v	0	4A-33	0
4.1-1	20	4.5-4.1	15	4A-v	0	4A-34	0
4.1-1.1	15	4.6-11	0	4A-v1	0	4A-35	0
4.1-2	18	4.6-111	15	4A-1	15	4A-36	0
4.1-3	0	4.6-1v	15	4A-2	0	4A-37	0
4.1-4	0	4.6-v	15	4A-3	0	4A-38	0
4.1-5	15	4.6-1	15	4A-4	0	4A-39	0
4.1-6	15	4.6-1a	3	4A-5	0	4A-40	0
4.1-7	0	4.6-2	12	4A-6	0	4A-41	0
4.2-11	15	4.6-3	12	4A-7	0	4A-42	0
4.2-1	15	4.6-4	12	4A-8	0	4A-43	0
4.2-2	15	4.6-5	10	4A-9	0	4A-44	0
4.3-11	15	4.6-5.1	10	4A-10	0	4A-45	0
4.3-111	15	4.6-6	12	4A-11	0	4A-46	0
4.3-1	15	4.6-6.1	10	4A-12	0	4B COVER	
4.3-2	15	4.6-7	0	4A-13	0	4B-11	10
4.3-3	15	4.6-8	12	4A-14	0	4B-1	20
4.3-4	15	4.6-9	15	4A-15	0	4B-2	15
4.3-5	15	4.6-10	15	4A-16	0	4B-3	15
4.4-11	15	4.6-11	15	4A-17	0	4B-4	15
4.4-111	15	4.6-12	15	4A-18	0	4B-5	15
4.4-1v	15	4.6-13	15	4A-19	0	4B-6	10
4.4-1	15	4.6-14	0	4A-20	0	4B-7	16
4.4-2	15	4.6-15	12	4A-21	0	4B-8	16
4.4-3	15	4.6-16	15	4A-22	0	4C COVER	
4.4-4	17	4.6-17	10	4A-23	0	4C-11	10
4.4-5	15	4.6-18	0	4A-24	0	4C-1	15
4.4-6	15	4.6-19	0	4A-25	0		
4.4-7	15	4.6-20	0	4A-26	0		
4.4-8	15	4.6-21	0	4A-27	0		
4.4-9	15	4.6-22	12	4A-28	0		
4.4-10	15	4.6-23	20				
4.4-11	15	4.6-24	20				
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		4.6-25.1	20				

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5. COVER		5.2-10	15	5.2-36.3	13	5.2-52	20
5.0-11	13	5.2-11	3	5.2-36.4	13	5.2-53	20
5.0-111	15	5.2-11a	11	5.2-36.5	13	5.3-11	11
5.1-11	15	5.2-12	16	5.2-36.6	13	5.3-111	11
5.1-1	2	5.2-13	15	5.2-36.7	13	5.3-1v	0
5.1-2	15	5.2-14	15	5.2-36.8	13	5.3-v	9
5.1-3	15	5.2-15	15	5.2-36.9	13	5.3-1	15
5.1-4	15	5.2-15.1	17	5.2-36.10	13	5.3-2	15
5.1-5	20	5.2-16	20	5.2-36.11	13	5.3-2.1	15
5.1-6	20	5.2-17	15	5.2-36.12	13	5.3-3	15
5.1-7	20	5.2-17.1	15	5.2-36.13	13	5.3-4	15
5.1-8	20	5.2-17.2	13	5.2-36.14	13	5.3-5	15
5.1-9	20	5.2-18	15	5.2-36.15	13	5.3-6	15
5.1-9.1	20	5.2-19	15	5.2-36.16	13	5.3-6.1	15
5.1-9.2	20	5.2-20	15	5.2-36.17	13	5.3-7	15
5.1-9.3	20	5.2-21	15	5.2-36.18	13	5.3-8	15
5.1-9.4	20	5.2-22	15	5.2-36.19	13	5.3-9	15
5.1-9.5	20	5.2-23	15	5.2-36.20	13	5.3-10	15
5.1-9.6	20	5.2-24	15	5.2-36.21	13	5.3-11	15
5.2-11	0	5.2-25	15	5.2-36.22	13	5.3-12	15
5.2-111	15	5.2-26	15	5.2-37	0	5.3-13	15
5.2-1v	15	5.2-27	20	5.2-38	15	5.3-14	15
5.2-v	13	5.2-28	15	5.2-39	0	5.4-11	20
5.2-v1	13	5.2-28.1	15	5.2-40	0	5.4-111	20
5.2-v1.1	13	5.2-29	18	5.2-41	15	5.4-1v	18
5.2-v11	20	5.2-29.1	20	5.2-42	15	5.4-v	17
5.2-v111	15	5.2-29.2	16	5.2-43	13	5.4-v1	20
5.2-1x	15	5.2-29.3	20	5.2-43.1	13	5.4-v11	15
5.2-1	15	5.2-30	15	5.2-43.2	13	5.4-1	15
5.2-2	15	5.2-31	15	5.2-44	20	5.4-2	15
5.2-3	15	5.2-32	20	5.2-45	20	5.4-3	15
5.2-3.1	15	5.2-32.1	15	5.2-46	20	5.4-4	15
5.2-4	15	5.2-33	19	5.2-47	20	5.4-5	15
5.2-5	15	5.2-34	15	5.2-48	20	5.4-5.1	15
5.2-6	15	5.2-35	15	5.2-49	20	5.4-6	15
5.2-7	15	5.2-36	15	5.2-50	20		
5.2-8	3	5.2-36.1	13	5.2-51	20		
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5.4-8	15	5.4-37	15	5A.2-1	13	SAB-19	13
5.4-9	15	5.4-38	15	5A.2-2	13	SAB-20	13
5.4-10	15	5.4-39	15	5A.2-3	13	SAB-21	13
5.4-10.1	20	5.4-40	15	5A.5-1	13	SAB-22	13
5.4-11	15	5.4-41	15	5A.2-4	13		
5.4-12	15	5.4-42	15	5A.3-1	13		
5.4-13	15	5.4-43	15	5A.4-1	13		
5.4-14	15	5.4-44	0	5A.4-2	13		
5.4-14.1	15	5.4-45	0	5AA-COVER			
5.4-15	15	5.4-46	0	5AA-1	13		
5.4-15.1	15	5.4-47	20	5AA-2	13		
5.4-16	15	5.4-47.1	20	5AA-3	13		
5.4-16.1	15	5.4-48	20	5AA-4	13		
5.4-17	15	5.4-49	15	5AA-5	13		
5.4-18	15	5.4-50	8	5AA-6	13		
5.4-18.1	17	5.4-51	20	5AA-7	13		
5.4-19	20	5.4-52	20	5AA-8	13		
5.4-19.1	17	5.4-52.1	20	5AA-9	13		
5.4-20	15	5.4-53	20	5AA-10	13		
5.4-21	15	5.4-54	20	SAB-COVER			
5.4-21.1	15	5.4-55	20	SAB-1	13		
5.4-22	15	5.4-56	20	SAB-2	13		
5.4-22.1	15	5.4-57	20	SAB-3	13		
5.4-23	15	5.4-58	20	SAB-4	13		
5.4-24	15	5.4-58.1	20	SAB-5	13		
5.4-25	18	5.4-58.2	20	SAB-6	13		
5.4-26	18	5.4-58.3	20	SAB-7	13		
5.4-27	18	5.4-59	20	SAB-8	13		
5.4-28	15	5.4-60	20	SAB-9	13		
5.4-29	7	5.4-61	20	SAB-10	13		
5.4-30	15	5.4-62	20	SAB-11	13		
5.4-31	15	5.4-62.1	20	SAB-12	13		
5.4-31.1	15	5.4-63	20	SAB-13	13		
5.4-32	15	5.4-64	20	SAB-14	13		
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6.2-11	0	6.2-24	9	6.2-49	2	6.2-50.36	17
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6.2-x1	11	6.2-33	17	6.2-50.7	17	6.2-50.46	17
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6.2-8	0	6.2-40	3	6.2-50.17	14	6.2-50.54	17
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6.2-52	0	6.2-90	20	6.3-20	13	6.3-50	2
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6.2-55	0	6.2-92	20	6.3-23	10	6.3-53	2
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6.2-58	0	6.3-11	7	6.3-24b	6	6.3-56	2
6.2-59	0	6.3-111	0	6.3-24c	6	6.3-57	2
6.2-60	0	6.3-1v	15	6.3-24d	6	6.3-58	2
6.2-61	0	6.3-1v	13	6.3-24e	6	6.3-59	2
6.2-62	0	6.3-1v1	13	6.3-24f	6	6.3-60	2
6.2-63	0	6.3-1v11	7	6.3-24g	6	6.3-61	2
6.2-64	0	6.3-1v111	7	6.3-25	20	6.3-62	2
6.2-65	0	6.3-1x	7	6.3-25.1	20	6.3-63	2
6.2-66	0	6.3-1x	7	6.3-26	13	6.3-64	2
6.2-67	0	6.3-1	2	6.3-27	13	6.3-65	2
6.2-68	0	6.3-2	2	6.3-28	13	6.3-66	2
6.2-69	0	6.3-3	2	6.3-29	13	6.3-67	2
6.2-70	0	6.3-4	14	6.3-30	2	6.3-68	2
6.2-71	0	6.3-5	7	6.3-31	0	6.3-69	2
6.2-72	0	6.3-6	13	6.3-32	0	6.3-70	2
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6.2-74	0	6.3-8	13	6.3-34	20	6.3-72	10
6.2-75	0	6.3-9	15	6.3-35	6	6.3-73	2
6.2-76	0	6.3-9.1	15	6.3-36	13	6.3-74	2
6.2-77	0	6.3-10	15	6.3-37	13	6.3-75	10
6.2-78	0	6.3-10.1	15	6.3-38	13	6.4-11	0
6.2-79	0	6.3-11	18	6.3-39	13	6.4-111	0
6.2-80	0	6.3-11.1	15	6.3-40	13	6.4-1	5
6.2-81	0	6.3-12	20	6.3-41	13	6.4-2	0
6.2-82	0	6.3-12.1	20	6.3-42	0	6.4-3	17
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6.2-86	0	6.3-16	18	6.3-46	2	6.4-6	0
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6.5-7	11	6.6-28	13	6.6-66	13		
6.5-8	11	6.6-29	13	6.6-67	13		
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6.5-10	11	6.6-31	13	6.6-69	13		
6.5-11	11	6.6-32	13	6.6-70	13		
6.5-12	11	6.6-33	13	6.7-11	13		
6.5-13	20	6.6-34	13	6.7-1	16		
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6.5-13.2	20	6.6-36	13	6.7-3	0		
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7.1-111	2	7.2-1v	5	7.3-2	2	7.3-31	11
7.1-1v	4	7.2-1	5	7.3-3	9	7.3-32	11
7.1-v	2	7.2-2	5	7.3-4	2	7.3-33	6
7.1-v1	2	7.2-3	5	7.3-5	20	7.3-34	9
7.1-v11	2	7.2-4	5	7.3-5.1	20	7.3-34.1	9
7.1-v111	2	7.2-5	5	7.3-6	20	7.3-35	2
7.1-1	10	7.2-6	5	7.3-7	20	7.3-36	2
7.1-2	9	7.2-7	5	7.3-8	9	7.3-37	2
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7.1-5	11	7.2-11	5	7.3-12	9	7.3-39b	4
7.1-5a	11	7.2-12	20	7.3-13	2	7.3-40	2
7.1-6	20	7.2-13	5	7.3-14	2	7.3-41	2
7.1-6.1	14	7.2-14	5	7.3-15	2	7.3-42	2
7.1-7	11	7.2-15	5	7.3-16	2	7.3-43	2
7.1-8	9	7.2-16	5	7.3-17	2	7.3-44	2
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7.3-70	2	7.3-108	2	7.4-1	20	7.5-1	5
7.3-71	2	7.3-109	2	7.4-1.1	10	7.6-11	5
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7.6-27	20	7.6-61	2	7.7-14	2	7.7-40	2
7.6-28	20	7.6-62	2	7.7-15	2	7.7-41	2
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7.6-30	20	7.6-64	20	7.7-17.1	20	7.7-43	2
7.6-31	20	7.6-65	20	7.7-17.2	20	7.7-44	2
7.6-32	20	7.6-66	20	7.7-18	3	7.7-45	2
7.6-33	20	7.6-67	20	7.7-18a	3	7.7-46	2
7.6-34	20	7.6-68	20	7.7-19	2	7.7-47	2
7.6-35	20	7.6-69	20	7.7-20	2	7.7-48	2
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8.3-11v	2	8.3-27	10
8.3-v	10	8.3-28	10
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15-111	2	15.1-9	15	15.2-13	15	15.3-3	17
15-1v	2	15.1-10	15	15.2-14	15	15.3-4	0
15-v	15	15.1-11	10	15.2-15	15	15.3-5	0
15.0-11	15	15.1-12	15	15.2-16	15	15.3-6	0
15.0-111	15	15.1-13	15	15.2-17	16	15.3-7	0
15.0-1	15	15.1-14	0	15.2-18	15	15.3-8	15
15.0-1.1	15	15.1-15	0	15.2-19	15	15.3-9	0
15.0-2	15	15.1-16	15	15.2-20	15	15.3-10	15
15.0-2.1	15	15.1-17	15	15.2-21	15	15.3-11	15
15.0-3	15	15.1-18	15	15.2-22	15	15.3-12	15
15.0-4	15	15.1-19	15	15.2-23	2	15.3-13	15
15.0-5	15	15.2-11	0	15.2-24	0	15.3-14	15
15.0-6	15	15.2-111	0	15.2-25	15	15.4-11	0
15.0-7	15	15.2-1v	0	15.2-26	15	15.4-111	0
15.0-8	15	15.2-1v	0	15.2-27	15	15.4-1v	0
15.0-9	15	15.2-1v1	16	15.2-28	15	15.4-1v	2
15.0-10	17	15.2-1v11	9	15.2-29	15	15.4-1v1	2
15.0-11	15	15.2-1v111	15	15.2-30	15	15.4-1v11	2
15.0-12	0	15.2-1x	15	15.2-31	15	15.4-1	7
15.0-13	15	15.2-1x	0	15.2-32	15	15.4-2	2
15.0-14	15	15.2-1x1	15	15.2-33	15	15.4-3	15
15.1-11	0	15.2-1x11	16	15.2-34	15	15.4-4	15
15.1-111	0	15.2-1	15	15.2-35	15	15.4-5	17
15.1-1v	0	15.2-1.1	15	15.2-36	15	15.4-6	17
15.1-1v	0	15.2-2	15	15.2-37	15	15.4-7	0
15.1-1v1	15	15.2-2.1	15	15.2-38	15	15.4-8	2
15.1-1v11	18	15.2-3	15	15.2-39	15	15.4-9	2
15.1-1	15	15.2-3.1	15	15.2-40	15	15.4-10	2
15.1-2	15	15.2-4	15	15.2-41	15	15.4-11	2
15.1-3	15	15.2-5	16	15.2-42	0	15.4-12	2
15.1-3.1	15	15.2-6	15	15.3-11	0	15.4-13	2
15.1-4	15	15.2-7	15	15.3-111	0	15.4-14	2
15.1-5	15	15.2-8	15	15.3-1v	0	15.4-15	15
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15.4-21	2	15.6-19	8	15.7-21	17	15A.4-5	0
15.4-22	2	15.6-20	8	15.7-22	0	15A.5-11	0
15.4-23	15	15.6-21	8	15.8-11	0	15A.5-1	0
15.4-24	15	15.6-22	8	15.3-1	15	15A.6-11	0
15.4-25	2	15.6-23	8	15A COVER		15A.6-111	17
15.5-11	2	15.6-24	2	15A-11	0	15A.6-1v	0
15.5-111	2	15.6-25	17	15A-111	0	15A.6-v	0
15.6-1	17	15.6-26	0	15A-1v	0	15A.6-v1	0
15.5-2	0	15.6-27	17	15A.1-11	0	15A.6-v11	0
15.5-3	2	15.6-28	0	15A.1-11	0	15A.6-v111	0
15.5-4	2	15.6-29	8	15A.1-1	17	15A.6-1x	0
15.6-11	0	15.6-29.1	8	15A.2-11	0	15A.6-1	0
15.6-111	0	15.6-30	8	15A.2-111	0	15A.6-2	0
15.6-1v	8	15.7-11	9	15A.2-1	0	15A.6-3	0
15.6-v	0	15.7-111	17	15A.2-2	7	15A.6-4	0
15.6-v1	17	15.7-1v	17	15A.2-3	0	15A.6-5	17
15.6-v11	8	15.7-v	17	15A.2-4	0	15A.6-6	0
15.6-1	17	15.7-1	17	15A.2-5	0	15A.6-7	17
15.6-2	17	15.7-1.1	17	15A.2-6	17	15A.6-8	17
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15.6-8	2	15.7-9	17	15A.3-3	0	15A.6-13	17
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15.6-12	17	15.7-13	17	15A.3-7	7	15A.6-17	2
15.6-13	17	15.7-14	12	15A.4-11	0	15A.6-18	0
15.6-14	2	15.7-15	17	15A.4-1	0	15A.6-19	0
15.6-15	17	15.7-16	17	15A.4-2	0	15A.6-19.1	17
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15A.6-24	17	15A.6-63	0	15B.3-11	6	15E-11	15
15A.6-25	0	15A.6-64	0	15B.3-1 - 5	16	15E.1-1	15
15A.6-26	0	15A.6-65	0	15B.4-11	6	15E.2-11	15
15A.6-27	2	15A.6-66	0	15B.4-1 - 4	20	15E.2-1	15
15A.6-28	2	15A.6-67	0	15C COVER		15E.2-2	15
15A.6-29	0	15A.6-68	0	15C-11	15	15E.3-11	15
15A.6-30	0	15A.6-69	0	15C.1-1	15	15E.3-1	15
15A.6-31	0	15A.6-70	0	15C.2-11	15	15E.3-2	15
15A.6-32	0	15A.6-71	0	15C.2-1	15	15E.3-3	15
15A.6-33	0	15A.6-72	17	15C.2-2 - 5	15	15E.3-4	15
15A.6-34	0	15A.6-73	17	15C.3-1	15	15E.4-1	15
15A.6-35	0	15A.6-74	17	15C.4-1	15	15E.5-11	15
15A.6-36	0	15A.6-75	17	15C.5-11	15	15E.5-1	15
15A.6-37	0	15A.6-76	17	15C.5-1	15	15E.5-2	15
15A.6-38	0	15A.6-77	17	15C.5-2	15	15E.5-3	15
15A.6-39	0	15A.6-78	0	15C.5-3	15	15E.5-4	15
15A.6-40	0	15A.6-79	0	15C.5-4	15	15E.5-5	15
15A.6-41	17	15A.6-80	0	15C.5-5	15	15E.5-6	15
15A.6-42	0	15A.6-81	0	15C.5-6	15	15E.5-7	15
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15A.6-44	0	15A.6-83	2	15C.5-8	15	15E.5-9	15
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15A.6-49	2	15A.6-88	2	15D.2-1	15	15E.5-14	15
15A.6-50	0	15A.6-89	7	15D.2-2	15	15E.5-15	15
15A.6-51	0	15A.6-90	7	15D.3-11	15	15E.5-16	15
15A.6-52	17	15A.6-91	7	15D.3-1	15	15E.5-17	15
15A.6-53	17	15A.7-11	0	15D.3-2	15	15E.5-18	15
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15A.6-55	0	15A.8-11	0			15E.7-1	15
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16-1v	9	16.4-11	9	16.7-6	9	16.9-16	9
16-v	9	16.4-1	9	16.7-7	9	16.9-17	9
16.1-11	9	16.4-2	9	16.7-8	9	16.9-18	9
16.1-1	9	16.4-3	9	16.7-9	9	16.9-19	9
16.1-2		16.4-4	9	16.7-10	9	16.9-20	9
16.1-3		16.4-5	9	16.7-11	9	16.9-21	9
16.1-4	9	16.4-6	9	16.7-12	9	16.9-22	9
16.1-5	9	16.4-7	9	16.7-13	9	16.9-23	9
16.1-6	9	16.4-8	9	16.7-14	9	16.9-24	9
16.1-7	9	16.4-9	9	16.7-15	9	16.9-25	9
16.1-8	9	16.4-10	9	16.8-11	9	16.9-26	9
16.1-9	9	16.4-11	9	16.8-1	9	16.9-27	9
16.1-10	9	16.4-12	9	16.8-2	9	16.9-28	9
16.1-11	9	16.4-13	9	16.8-3	9	16.9-29	9
16.1-12	9	16.4-14	9	16.8-4	9	16.9-30	17
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16.1-14	9	16.4-16	9	16.8-6	9	16.9-32	9
16.1-15	9	16.4-17	9	16.8-7	9	16.9-33	9
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16.1-18	9	16.4-20	9	16.8-10	9	16.9-36	9
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16.1-20	9	16.4-22	9	16.9-11	20	16.9-38	9
16.1-21	9	16.4-23	9	16.9-1	9	16.9-39	9
16.1-22	9	16.5-11	9	16.9-2	9	16.9-40	9
16.1-23	9	16.5-1	9	16.9-3	9	16.9-41	9
16.1-24	9	16.5-2	9	16.9-4	9	16.9-42	9
16.1-25	9	16.5-3	9	16.9-5	9	16.10-11	9
16.1-26	9	16.6-1	9	16.9-6	9	16.10-1	9
16.2-1	9	16.7-11	9	16.9-7	9	16.10-2	9
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16-iii	9	16.3-5	9	16.7-5	9	16.9-15	9
16-iv	9	16.4-11	9	16.7-6	9	16.9-16	9
16-v	9	16.4-1	9	16.7-7	9	16.9-17	9
16.1-11	9	16.4-2	9	16.7-8	9	16.9-18	9
16.1-1	9	16.4-3	9	16.7-9	9	16.9-19	9
16.1-2	9	16.4-4	9	16.7-10	9	16.9-20	9
16.1-3	9	16.4-5	9	16.7-11	9	16.9-21	9
16.1-4	9	16.4-6	9	16.7-12	9	16.9-22	9
16.1-5	9	16.4-7	9	16.7-13	9	16.9-23	9
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16.1-8	9	16.4-10	9	16.8-11	9	16.9-26	9
16.1-9	9	16.4-11	9	16.8-1	9	16.9-27	9
16.1-10	9	16.4-12	9	16.8-2	9	16.9-28	9
16.1-11	9	16.4-13	9	16.8-3	9	16.9-29	9
16.1-12	9	16.4-14	9	16.8-4	9	16.9-30	17
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16.1-14	9	16.4-16	9	16.8-6	9	16.9-32	9
16.1-15	9	16.4-17	9	16.8-7	9	16.9-33	9
16.1-16	9	16.4-18	9	16.8-8	9	16.9-34	9
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15-1v	2	15.1-10	15	15.2-14	15	15.3-4	0
15-v	15	15.1-11	10	15.2-15	15	15.3-5	0
15.0-11	15	15.1-12	15	15.2-16	15	15.3-6	0
15.0-111	15	15.1-13	15	15.2-17	16	15.3-7	0
15.0-1	15	15.1-14	0	15.2-18	15	15.3-8	15
15.0-1.1	15	15.1-15	0	15.2-19	15	15	0
15.0-2	15	15.1-16	15	15.2-20	15	15.3-9	15
15.0-2.1	15	15.1-17	15	15.2-21	15	15.3-10	15
15.0-3	15	15.1-18	15	15.2-22	15	15.3-11	15
15.0-4	15	15.1-19	15	15.2-23	2	15.3-12	15
15.0-5	15	15.2-11	0	15.2-24	15	15.3-13	15
15.0-6	15	15.2-111	0	15.2-25	15	15.3-14	15
15.0-7	15	15.2-1v	0	15.2-26	15	15.4-11	0
15.0-8	15	15.2-v	0	15.2-27	15	15.4-111	0
15.0-9	15	15.2-v1	15	15.2-28	15	15.4-iv	0
15.0-10	17	15.2-v11	9	15.2-29	15	15.4-v	2
15.0-11	15	15.2-v111	5	15.2-30	15	15.4-v1	2
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15.0-13	15	15.2-x	0	15.2-32	15	15.4-2	2
15.0-14	15	15.2-x1	15	15.2-33	15	15.4-3	15
15.1-11	0	15.2-x11	16	15.2-34	15	15.4-4	15
15.1-111	0	15.2-1	15	15.2-35	15	15.4-5	17
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15.1-v	0	15.2-2	15	15.2-37	15	15.4-7	0
15.1-v1	15	15.2-2.1	15	15.2-38	15	15.4-8	2
15.1-v11	18	15.2-3	15	15.2-39	15	15.4-9	2
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15.1-3.1	15	15.2-6	15	15.3-11	0	15.4-13	2
15.1-4	15	15.2-7	15	15.3-111	0	15.4-14	2
15.1-5	15	15.2-8	15	15.3-1v	0	15.4-15	15
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15.4-21	2	15.6-19	8	15.7-21	17	15A.4-5	0
15.4-22	2	15.6-20	8	15.7-22	0	15A.5-11	0
15.4-23	15	15.6-21	8	15.8-11	0	15A.5-1	0
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20.3-72d	3	20.3-93a	3	20.3-123	3	20.3-146	4
20.3-72e	3	20.3-93.1	3	20.3-124	3	20.3-147	4
20.3-72f	3	20.3-94	3	20.3-125	3	20.3-148	4
20.3-72g	3	20.3-95	3	20.3-125a	7	20.3-149	4
20.3-72h	3	20.3-96	3	20.3-125b	7	20.3-150	7
20.3-72i	7	20.3-97	3	20.3-126	11	20.3-150.1	7
20.3-72j	7	20.3-98	3	20.3-126.1	11	20.3-151	7
20.3-72k	7	20.3-99	3	20.3-127	3	20.3-152	4
20.3-72l	7	20.3-100	20	20.3-128	15	20.3-153	8
20.3-72m	7	20.3-101	8	20.3-128.1	11	20.3-153.1	11
20.3-72n	7	20.3-102	3	20.3-129	13	20.3-153.2	8
20.3-73	3	20.3-103	3	20.3-130	11	20.3-154	8
20.3-74	3	20.3-104	3	20.3-130.1	11	20.3-155	4
20.3-75	3	20.3-105	3	20.3-131	3	20.3-156	4
20.3-76	9	20.3-106	5	20.3-132	3	20.3-157	4
20.3-77	9	20.3-107	15	20.3-133	11	20.3-158	7
20.3-78	3	20.3-108	15	20.3-133.1	11	20.3-159	7
20.3-79	3	20.3-109	20	20.3-134	11	20.3-160	4
20.3-80	3	20.3-109.1	15	20.3-134.1	11	20.3-161	12
20.3-81	7	20.3-110	20	20.3-135	3	20.3-162	8
20.3-81.1	7	20.3-110.1	15			20.3-162.1	8
20.3-82	7	20.3-110.2	15			20.3-163	4
20.3-82.1	17	20.3-111	15				

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Standard Plant

CHAPTER 20 PAGE STATUS (Continued)

PAGE	AMEND	PAGE	AMEND	PAGE	AMEND	PAGE	AMEND
20.3-164	7	20.3-197	8	20.3-232	9	20.3-253.17	10
20.3-164.1	8	20.3-198	14	20.3-233	11	20.3-253.18	10
20.3-165	7	20.3-199	9	20.3-233.1	11	20.3-253.19	10
20.3-166	7	20.3-200	7	20.3-234	9	20.3-253.20	10
20.3-167	7	20.3-201	17	20.3-235	9	20.3-253.21	10
20.3-168	7	20.3-202	7	20.3-236	9	20.3-253.22	10
20.3-169	7	20.3-203	7	20.3-237	9	20.3-253.23	10
20.3-170	7	20.3-204	7	20.3-238	9	20.3-253.24	10
20.3-171	7	20.3-205	7	20.3-239	9	20.3-253.25	10
20.3-172	7	20.3-206	16	20.3-240	9	20.3-253.26	10
20.3-173	7	20.3-206.1	9	20.3-241	20	20.3-253.27	10
20.3-174	16	20.3-207	9	20.3-241.1	20	20.3-253.28	10
20.3-174.1	16	20.3-208	9	20.3-242	9	20.3-253.29	10
20.3-175	9	20.3-209	9	20.3-243	9	20.3-253.30	10
20.3-175.1	9	20.3-210	9	20.3-244	9	20.3-253.31	10
20.3-176	7	20.3-211	9	20.3-245	9	20.3-253.32	10
20.3-177	20	20.3-212	9	20.3-246	9	20.3-253.33	10
20.3-178	7	20.3-213	11	20.3-247	9	20.3-253.34	10
20.3-179	7	20.3-214	11	20.3-248	9	20.3-253.35	10
20.3-180	7	20.3-214.1	11	20.3-249	14	20.3-254	9
20.3-181	7	20.3-215	9	20.3-250	9	20.3-255-290.1	15
20.3-182	7	20.3-216	9	20.3-251	9	20.3-291	11
20.3-183	7	20.3-217	9	20.3-252	9	20.3-292	11
20.3-184	7	20.3-218	9	20.3-253	10	20.3-293	11
20.3-185	7	20.3-219	9	20.3-253.1	10	20.3-294	11
20.3-186	7	20.3-220	9	20.3-253.2	10	20.3-295	11
20.3-187	7	20.3-221	9	20.3-253.3	10	20.3-296	11
20.3-188	7	20.3-222	9	20.3-253.4	10	20.3-297	11
20.3-189	10	20.3-223	9	20.3-253.5	10	20.3-298	11
20.3-190	7	20.3-224	9	20.3-253.6	10	20.3-297	11
20.3-191	7	20.3-225	9	20.3-253.7	10	20.3-298	11
20.3-192	10	20.3-226	9	20.3-253.8	10	20.3-299	14
20.3-193	7	20.3-227	9	20.3-253.9	10	20.3-300	14
20.3-194	10	20.3-228	9	20.3-253.10	10	20.3-301	11
20.3-195	10	20.3-229	9	20.3-253.11	10	20.3-302	11
20.3-195.1	10	20.3-230	14	20.3-253.12	18	20.3-303	11
20.3-196	10	20.3-231	9	20.3-253.13	10	20.3-304	11
20.3-196.1	10			20.3-253.14	10	20.3-305	11
				20.3-253.15	10	20.3-306	11
				20.3-253.16	10		

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Standard Plant

CHAPTER 20 PAGE STATUS (Continued)

PAGE	AMEND	PAGE	AMEND	PAGE	AMEND	PAGE	AMEND
20.3-307	11	20.3-351.18	16	20.3-354.28	16	20B-1	10
20.3-308	11	20.3-351.19	18	20.3-354.29	16	20B-2	11
20.3-309	11	20.3-351.20	16	20.3-354.30	16	20B-3	11
20.3-310	11	20.3-351.21	16	20.3-354.30	16	20B-4	11
20.3-311	11	20.3-351.22	16	20.3-355-386	17	20B-5	11
20.3-312	11	20.3-351.23	16	20.3-387	20	20B-6	11
20.3-313	11	20.3-351.28	19	20.3-388	17	20B-7	11
20.3-314	11	20.3-352	16	20.3-389	17	20B-8	11
20.3-315	11	20.3-353	16	20.3-390	17	20B-9	11
20.3-316	11	20.3-354	16	20.3-391	18	20B-10	11
20.3-317	11	20.3-354.1	16	20.3-392	18	20B-11	11
20.3-318	11	20.3-354.2	16	20.3-393	20	20B-12	11
20.3-319	11	20.3-354.3	16	20.3-394	17	20B-13	11
20.3-320-349	15	20.3-354.4	16	20.3-395	17	20B-14	11
20.3-350 -		20.3-354.5	16	20.3-396	17	20B-15	11
350.16	16	20.3-354.6	16	20.3-397	17	20B-16	11
20.3-350.19	16	20.3-354.7	16	20.3-398	17	20B-17	11
20.3-351	20	20.3-354.8	16	20.3-399	17	20B-18	11
20.3-351.1 -		20.3-354.9	16	20.3-400	17	20B-19	11
351.27	18	20.3-354.10	16	20.3-401	17	20B-20	11
20.3-351.2	16	20.3-354.11	16	20.3-402	17	20B-21	11
20.3-351.3	16	20.3-354.12	16	20.3-403	17	20B-22	11
20.3-351.4	16	20.3-354.13	16	20.3-404	17	20B-23	11
20.3-351.5	16	20.3-354.14	16	20.3-405	17	20B-24	11
20.3-351.6	16	20.3-354.15	16	20.3-406	17	20B-25	11
20.3-351.7	16	20.3-354.16	16	20.3-407	17	20B-26	11
20.3-351.8	16	20.3-354.17	16	20.3-408	17	20B-27	11
20.3-351.9	16	20.3-354.18	16	20.4-1	17	20B-28	11
20.3-351.10	16	20.3-354.19	16	20A COVER		20B-29	11
20.3-351.11	16	20.3-354.20	16	20A-11	14	20B-30	11
20.3-351.12	16	20.3-354.21	18	20A-1	3	20B-31	11
20.3-351.13	16	20.3-354.22	16	20A-2	3	20B-32	11
20.3-351.14	16	20.3-354.23	16	20A-3	3	20B-33	11
20.3-351.15	16	20.3-354.24	16	20A-4	3	20B-34	11
20.3-351.16	16	20.3-354.25	16	20A-5	3	20B-35	11
20.3-351.17	16	20.3-354.26	16	20B COVER		20B-36	11
		20.3-354.27	16			20B-37	11

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Standard Plant

CHAPTER 20
PAGE STATUS (Continued)

<u>PAGE</u>	<u>AMEND</u>
20B-38	11
20B-39	11
20B-40	11
20B-41	11
20B-42	11
20B-43	11
20B-44	11
20B-45	11
20B-46	15
20B-47	15

W U Q H W

VALVES AND VALVE ACTUATORS
(SEE NOTE 8)

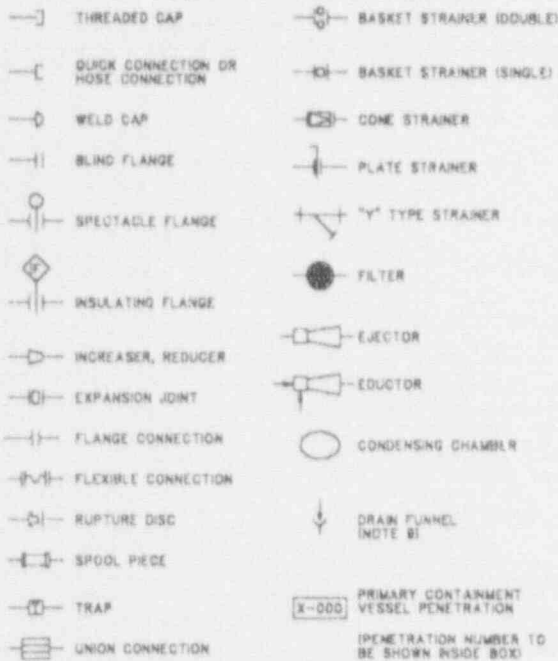
K		GATE VALVE		SAFETY OR RELIEF VALVE		NOTE 5
		GLOBE VALVE OR ANTICAVITATION VALVE		SAUNDERS TYPE VALVE		SOLENOID (NOTE 5)
J		GLOBE STOP CHECK VALVE		GLAND LEAK OFF		MANUAL (NOTE 5)
		SWING CHECK VALVE		GLAND SEAL WATER		DIAPHRAGM (NOTE 5)
		LIFT CHECK VALVE		BELLOWS SEAL		FLOAT (NOTE 5)
		TESTABLE CHECK VALVE		EXTRACT STEAM CHECK VALVE		CONTROL (NOTE 5)
I		EXCESS FLOW CHECK VALVE		* SUPPLIED WITH ASSOCIATED EQUIPMENT		CONTROL (NOTE 5)
		BUTTERFLY VALVE		MOTOR OPERATED (NOTE 3)		CONTROL (NOTE 5)
		PLUG OR BALL VALVE		HYDRAULIC OPERATED PISTON (NOTE 3)		CONTROL (NOTE 5)
		NEEDLE VALVE		AIR OPERATED PISTON (NOTE 3)		CONTROL (NOTE 5)
		VACUUM BREAKER		NITROGEN OPERATED (NOTE 3)		CONTROL (NOTE 5)
H		THREE WAY VALVE				CONTROL (NOTE 5)
		THREE WAY VALVE NEXT PORT OF OPENING				CONTROL (NOTE 5)
		THREE WAY VALVE NEXT PORT OF CLOSURE				CONTROL (NOTE 5)
		EXPLOSIVE VALVE				CONTROL (NOTE 5)
G		FOUR WAY VALVE				CONTROL (NOTE 5)
		ANGLE VALVE				CONTROL (NOTE 5)
F		ANGLE STOP CHECK VALVE				CONTROL (NOTE 5)

INSTRUMENTS
(SEE NOTE 7)

E		LOCALLY MOUNTED INSTRUMENT		FLOW ELEMENT (ORIFICE TYPE)		BREAKDOWN
		LOCAL PANEL OR RACK MOUNTED INSTRUMENT		FLOW ELEMENT (VENTURI AND FLOW NOZZLE TYPE)		SAMPLE
D		MAIN CONTROL ROOM INSTRUMENT		SIGHT GLASS		SAMPLE
		LOCALLY MOUNTED TRANSMITTER		IN-LINE FLOW INDICATOR		SAMPLE
		LOCAL PANEL OR RACK MOUNTED TRANSMITTER		FLOW METER (POSITIVE DISPLACEMENT)		SAMPLE
C		ANNUNCIATOR HH=HIGH HIGH LL=LOW LOW NOTE 8		RESTRICTING ORIFICE		SAMPLE
		PLANT COMPUTER INPUT SIGNAL				SAMPLE
B		INDICATION LIGHT O - OPEN C - CLOSED R - RED G - GREEN				SAMPLE
A		SOFTWARE FUNCTION				SAMPLE

Handwritten notes and markings on the left side of the page, including a large 'A' and some illegible text.

SPECIALITIES



XW	MLW	SYSTEM
SS	CS	MATERIAL
15	14	14
01g	01g	01g
80	88	88
°C	°C	°C
381(A)	401(B)	401(B)
A4	A4	A4

MAXIMUM OPERATING PRESSURE
MAXIMUM OPERATING TEMPERATURE
DESIGN/QUALITY CLASS (CONSTRUCTION PERMIT BASE (DESIGN BASE)) NOTE 11
CLASS (CONSTRUCTION PERMIT BASE (DESIGN BASE)) NOTE 11
(EXAMPLE)

NOTES:

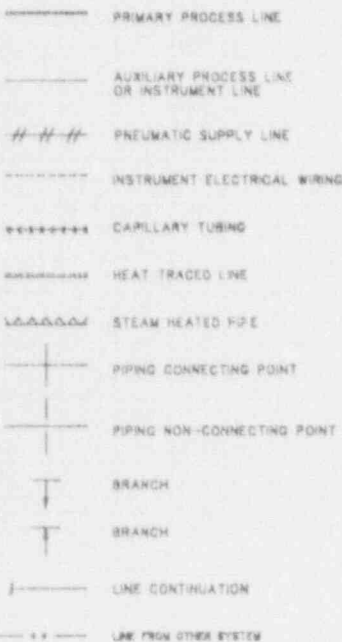
1. SYMBOLS DEFINED IN THIS DOCUMENT SHALL BE USED IN ALL P&ID'S.
2. ANY SYMBOL NOT DEFINED IN THE DOCUMENT IF USED, SHALL BE DESCRIBED NEXT TO THE SYMBOL IN THE P&ID OR A NOTE TO EXPLAIN THE SYMBOL SHALL BE ADDED IN THE P&ID.
3. SYMBOL SHOWS ACTUATOR ON A GATE VALVE FOR DEMONSTRATION PURPOSES ONLY. FOR APPLICATION OF THE ACTUATOR TO OTHER VALVE TYPES, REPLACE THE GATE VALVE SYMBOL WITH THE APPROPRIATE VALVE SYMBOL.
4. VALVE SYMBOL IN P&ID SHALL BE SHOWN IN ITS NORMAL CONDITION. FOR EXAMPLE NORMALLY OPEN IS REPRESENTED BY <math>D < /math> AND NORMALLY CLOSED IS REPRESENTED BY <math>N < /math>.
5. VALVE NUMBER TO WHICH THE ACTUATOR BELONGS.
6. VALVE IDENTIFICATION AREA ON THE VALVE SYMBOL SHALL BE AS SHOWN.
7. LOCATION OF "PANEL NUMBER" FOR INSTRUMENTS IS ABOVE SYMBOL. POINT IDENTIFICATION (PID) NUMBER FOR COMPUTER INPUT IS BELOW SYMBOL. H/L DESCRIPTION FOR ANNUNCIATOR AND "O/C", "R/O" FOR INDICATION LIGHT IS AS INDICATED.
8. ANNUNCIATOR SETPOINT FOR THIRD OR MORE LOW OR HIGH ALARM SHALL BE SHOWN WITH A DIGIT AND AN ALPHABETICAL LETTER. EXAMPLE: "LOW LOW LOW=3L", "HIGH HIGH HIGH=4H".
9. LOCATION OF "DRAIN DIVISION OR NUMBER" SHALL BE AT THE LOWER SIDE OF THE SYMBOL.
10. (A) PIPING IDENTIFICATION SHALL FOLLOW THE FORMAT AS SHOWN.
(B) IN THIS FORMAT, PIPE SCHEDULE, MATERIAL SPECIFICATION AND PROCESS FLUID MAY BE SUMMARIZED IN A NOTE ON P&ID AND MAY BE OMITTED FROM THE IDENTIFICATION. FOR EXAMPLE - WHEN THE PIPE SCHEDULE IS SUMMARIZED IN NOTE, THE FORMAT MAY BE SHORTENED TO 100A-F0W-02-CS-W.
(C) SYSTEM ACRONYM (MPL NUMBER) SHALL BE PER TABLE 3.2-1.
(D) NUMBERING SHALL BE DONE USING THE FLOW DIRECTION NUMBERING. SAME AS EQUIPMENT NUMBERING DESCRIBED IN TABLE 1.7-3. SEE TABLE 1.7-5 FOR PIPE NUMBERING AND NUMBER SERIES ASSIGNED TO DIFFERENT CATEGORIES OF PIPE.
(E) PIPE NUMBER SHALL CHANGE AT BOUNDARY SYMBOL. (SEE SPECIALITIES ITEMS IN THIS DRAWING) IF WHERE ANY OF THE PARAMETERS SHOWN AT THE BOUNDARY SYMBOL CHANGE.

NOTES CONTINUED ON SHEET 2

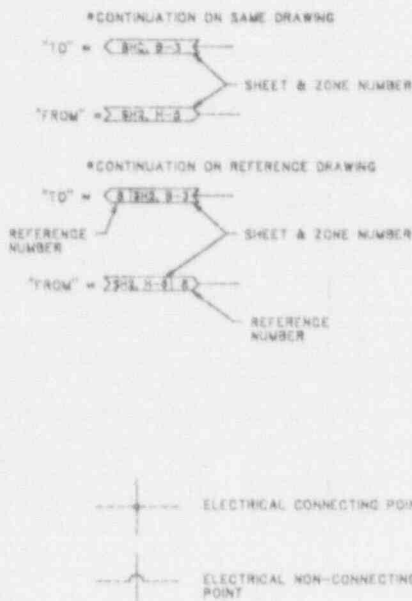
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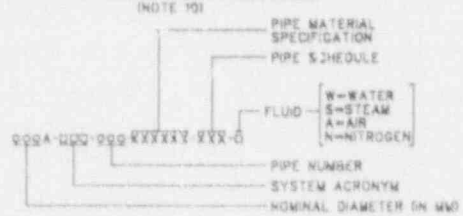
PIPING AND INSTRUMENT
ELECTRICAL LINE



LINE CONTINUATION SYMBOLS



PIPING IDENTIFICATION



EXAMPLE: 100A-F0W-02-CS-386 W

NPL 92-092-22

92-092-22

Figure 1.7-1 PIPING AND INSTRUMENTATION DIAGRAM SYMBOLS (Sheet 1 of 2)

K
J
I
H
G
F
E
D
C
B
A

TABLE 1. INSTRUMENT LEGENDS

MEASURED VARIABLE	FUNCTION									
	AMPLIFIER	CONTROLLER	FUNCTION GENERATOR	PRIMARY ELEMENT	INDICATOR	INDICATING CONTROLLER	INDICATING RECORDER	INDICATING SWITCH	INTEGRATOR	
	AM	C	F	E	I	IC	R	IS	Q	
CONCENTRATION	DN			ONE	ONI					
CASING ELONGATION	SR			SXE	SXI					S
DENSITY	D	DC		DE	DI			DIS		D
DEW POINT	DW			DWE	DWI					D
DIFFERENTIAL ELONGATION	DX	DXAM		DXE	DXI					D
DIFFERENTIAL FLOW	DF				DFI			DFIS		D
DIFFERENTIAL PRESSURE	DP	DPC		DPI				DPIS		D
DIFFERENTIAL TEMPERATURE	DT	DTC		DTI				DTIS		D
ECCENTRICITY	E	EAM		EE	EI					E
ELECTRICAL CONDUCTIVITY	C			CE	CI			CIS		C
ELECTRICAL CURRENT	A				AI					A
ELECTRICAL FREQUENCY	HZ				HZI					H
ELECTRICAL POWER	W				WI					W
ELECTRICAL POTENTIAL	V				VI					V
FLOW	F	FC	FF	FE	FI	FIC	FR	FIS	FO	F
HYDROGEN	H2			H2E	H2I		H2R	H2IS		H
HUMIDITY	M			ME	MI					M
HYDROGEN ION DENSITY	PH	PHAM	PHC	PHE	PHI					PH
LEVEL	L		LC	LE	LI			LIS		L
NEUTRON FLUX	N	NAM	NC	NE	NI				NQ	N
OXYGEN	O2	O2C		O2E	O2I		O2R	O2IS		O
PRESSURE	P	PC		PE	PI			PIS		P
POSITION	PO	POC		POE	POI			POIS		P
RADIATION	R			RE	RI			RIS	RO	R
REDUCTION OXIDATION POTENTIAL DIFF	RO			ROE					ROQ	R
SPEED OR ROTATION FREQUENCY	S	SAM	SC	SE	SI					S
SIGNAL MONITOR	OS									OS
TEMPERATURE	T	TC		TE	TI			TIS		T
TIME	TM	TMC			TMI			TMIS	TMQ	T
TORQUE	TD			TDE						T
TURBIDITY	TU			TUE	TUI					T
VIBRATION	VB	VBC		VBE	VBI			VBIS		V
VIBRATION PHASE ANGLE	PA			PAE	PAI					P
VOLT-AMPERE REACTIVE POWER HOUR	QH				QHI					Q
VOLT-AMPERE REACTIVE POWER	Q				QI					Q
WATT-HOUR	WH				WHI					W
WEIGHT	WF	WFC		WFE	WFI					W

	RECORDED SWITCH	SAMPLER	SOFT CLASS	SWITCH	TEST POINT	TRANSMITTER	TELEMEETER
I	RS	SM	C	S	X	T	TL
R				SXS		SXT	
R	DRS			DS	DX	DT	
IR				DWS		DWT	
IR				DXS		DXT	
R	D'RS			DFS		DFT	
IR	DPRS			DPS	DPX	DPT	
R	DTRS			DTS		DTT	
R						ET	
R		CSM		CS	CA	CT	
R						AT	ATL
R						H2T	H2TL
R						WT	WTL
R						VT	VTL
R	FRS			FG	FS	FX	FT
IR	H2RS	H2SM		H2S		H2T	
R						MT	
IR		PHSM				PHX	
R	LRS			LQ	LS	LX	LT
R						NX	NT
IR	D2RS			D2S			
R	PRS			PS	PX	PT	
R	PORS			POS		POT	
R	RRS	RSM		RS	RX	RT	
IR				ROS		ROT	
R				SS		ST	
R				OSS			
R	TRS			TQ	TX	TT	
R	TURS						
IR				TOS		TOT	
R				TUS		TUT	
R				VBS		VBT	
R						PAT	
R						OHT	OHTL
R						OT	OTL
R						WHT	WHTL
R				WYS			

ABBREVIATIONS

MATERIALS
CS - CARBON STEEL
SS - STAINLESS STEEL

SERVICE SUPPLY SOURCES
A/S - AIR SUPPLY
E/S - ELECTRICAL POWER SUPPLY
N₂/S - NITROGEN SUPPLY

FAILURE CONDITION
FAI - FAIL AS-IS
FO - OPEN ON AIR OR ELECTRICAL FAILURE
FC - CLOSE ON AIR OR ELECTRICAL FAILURE

VALVE CONDITION
LO - LOCKED OPEN
LC - LOCKED CLOSED
NO - NORMALLY OPEN
NC - NORMALLY CLOSED
NE - NORMALLY ENERGIZED
ND - NORMALLY DE-ENERGIZED

MISCELLANEOUS
AC - ALTERNATING CURRENT
DC - DIRECT CURRENT

DRAINS
LOW - LOW CONDUCTIVITY WASTE
HCW - HIGH CONDUCTIVITY WASTE
SD - STORM DRAIN
NSD - NON-RADIOACTIVE STORM DRAIN
HSD - HOT SHOWER DRAIN

CONTROL VALVES
FCV - FLOW CONTROL VALVE
PCV - PRESSURE CONTROL VALVE
LCV - LEVEL CONTROL VALVE
TCV - TEMPERATURE CONTROL VALVE

NOTES (CONT)

TL DESIGN AND SAFETY CLASSIFICATION CORRELATION

BOUNDARY SYMBOL	DESIGN QUALITY CLASS		SAFETY QUALITY DESIGNATION	
	DESIGN CLASS	QUALITY CLASS	DESIGNATION	GROUP
1	A	A	SC-1	A
2	B	B	SC-2	B
3	A	B	SC-2	B
4	A	C	SC-2	B
		D	SC-3 OR NNS	C
		F	NNS	C
5	B	D	SC-2	B
6	D	F	NNS	C
		G	-	-
7	F	D	-	-
		F	-	-
		G	-	-

SEISMIC DESIGN CLASSIFICATION CORRELATION

BOUNDARY SYMBOL	SEISMIC CLASS	SEISMIC CATEGORY
A*	A	I
A	A	I
B*	B	I OR NSC
C	C	NSC

NNS - NON NUCLEAR SAFETY
NSC - NON SEISMIC CATEGORY I

* SEISMIC CLASS B STRUCTURES, SYSTEMS OR COMPONENTS REQUIRED TO PREVENT THE RELEASE OF RADIOACTIVE MATERIAL FOLLOWING A DESIGN BASIS ACCIDENT ARE SEISMIC CATEGORY I. ALL OTHER SEISMIC CLASS B ITEMS ARE NSC. S₁ AND S₂ ARE RESPECTIVELY DESIGN EARTHQUAKE MAXIMUM AND EXTREME LOADS.

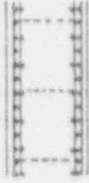


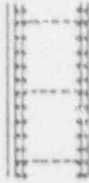



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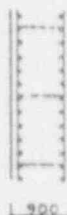

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Figure 1.7-1 PIPING AND INSTRUMENTATION DIAGRAM SYMBOLS (Sheet 2 of 2)

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TP12300	1200	900
		
	1200	900
	$0.32 @ 200 + 0.29 @ 400$ $0.32 @ 200 + 0.29 @ 400$	$0.35 @ 200$ $0.35 @ 200$
TP 4800	1200	
		
	1200	
	$0.35 @ 200 + 0.35 @ 400$ $0.35 @ 200 + 0.35 @ 400$	
TP -L700	1300	800
		
	1300	800
	$0.35 @ 200 + 0.35 @ 200$ $0.35 @ 200 + 0.35 @ 200$	$0.29 @ 200$ $0.29 @ 200$
TP -B,200	1500	1200
		
	1500	1200
	$0.35 @ 200 + 0.35 @ 200$ $0.35 @ 200 + 0.35 @ 200$	$0.29 @ 200 + 0.29 @ 400$ $0.29 @ 200 + 0.29 @ 400$

		300		
	TP35,200			
		└─ 300		
		D16 @ 200		
		D16 @ 200		
		600	300	
	TP21,700			
		└─ 600	└─ 300	
		D22 @ 200	D16 @ 200	
		D22 @ 200	D16 @ 200	
		900	500	
	TP22,500			
		└─ 900	└─ 500	
		D29 @ 200	D22 @ 200	
		D38 @ 200	D22 @ 200	
		800	1200	900
	TF18,100			
		└─ 800	└─ 900	└─ 800
		D32 @ 29 @ 200	D32 @ 200	D29 @ 300
		D32 @ 29 @ 200	D38 @ 200	D29 @ 200

92-049-11

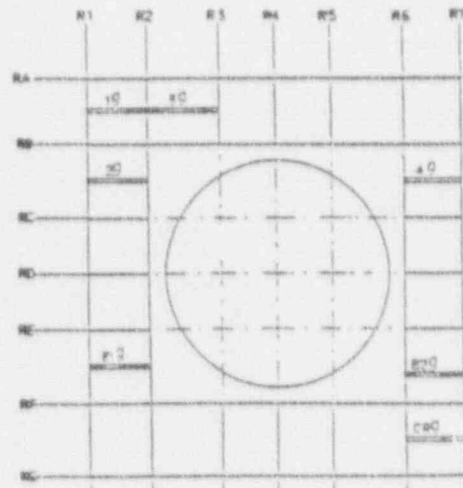
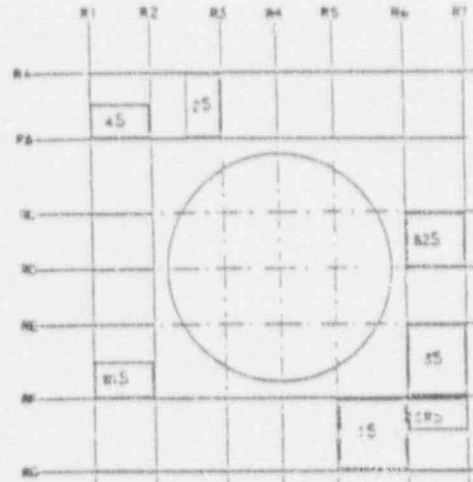
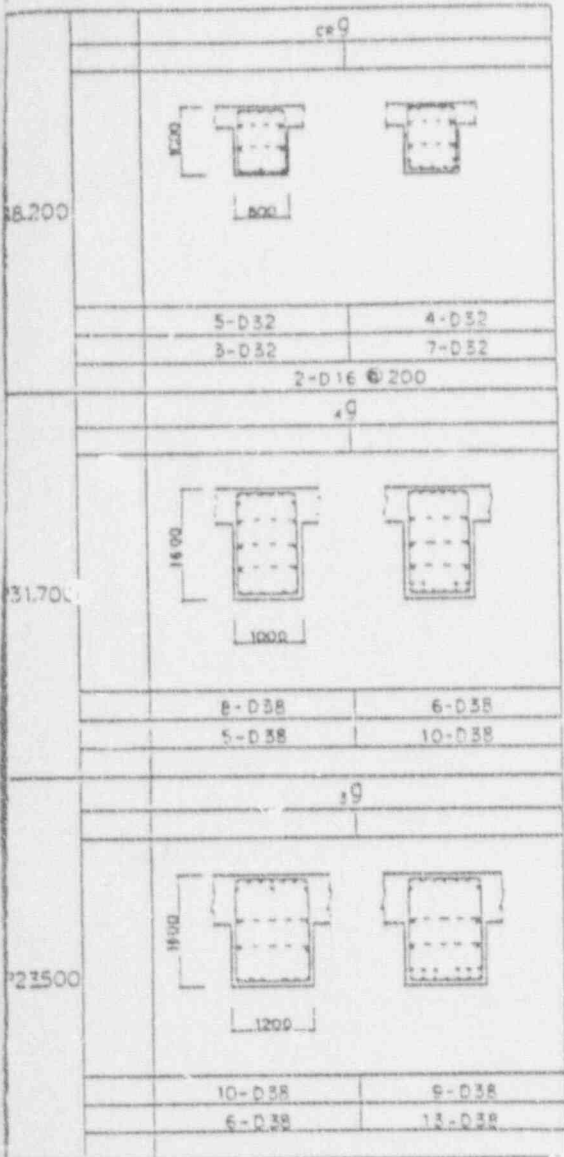
Figure 3H.3-8 LIST OF SEISMIC WALL SECTIONS

List of Slab Section

Slab ID	Thickness	Width	Reinforcement (Top)	Reinforcement (Bottom)
TP38.200	45	500	D13 @200	D13 @200
			D13 @200	D13 @200
TP31.700	45	500	D16 @200	D16 @200
			D16 @200	D16 @200
TP23500	35	800	D19 @200	D19 @200
			D19 @200	D19 @200
TP18.100	25	800	D19 @200	D19 @200
			D19 @200	D19 @200
TP12.300	15	1200	D29 @200	D29 @200
			D29 @200	D29 @200
TP4.800	45	500	D19 @200	D19 @200
			D19 @200	D19 @200
TP-1.700	25	900	D19 @200	D19 @200
			D19 @200	D19 @200

List of Sub-Beam Section

Sub-Beam ID	Width	Height	Reinforcement (Top)	Reinforcement (Bottom)
TP18.100	1200	1800	9-D38	6-D38
			6-D38	10-D38
TP12.300	1300	1800	9-D38	6-D38
			6-D38	9-D38
TP4.800	1500	1800	9-D38	6-D38
			6-D38	9-D38
TP-1.700	750	1500	6-D38	4-D38
			4-D38	6-D38



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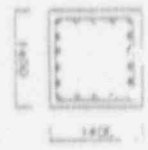


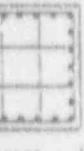
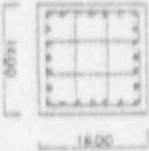
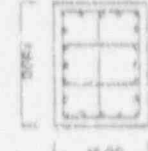

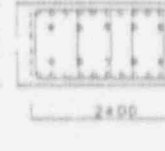

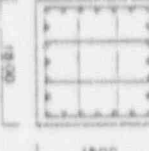
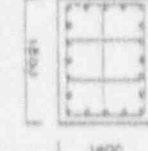
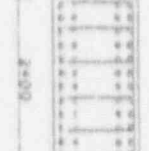


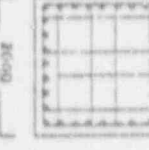
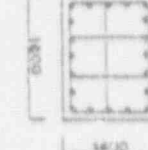
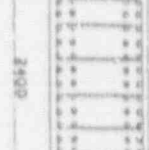
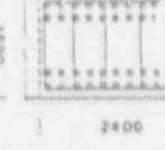
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Figure 3H.3-9 LIST OF SLAB AND SUB-BEAM SECTIONS

TP
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SI

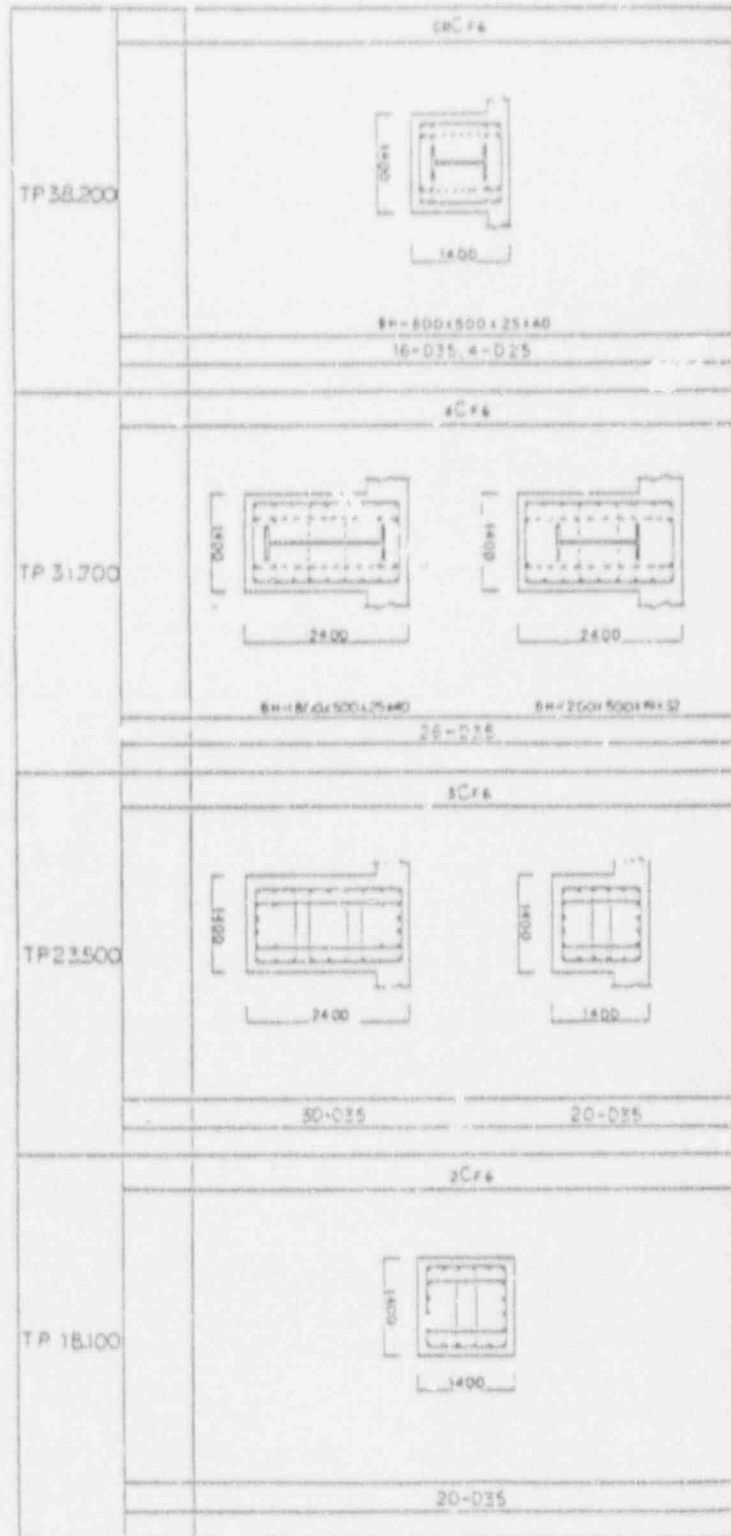
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1C#6 	1C#6 1C#6 	P 	1C#7 	1C#4 
7-D35 4-D16 @ 150		18-D35	22-D35	14-D35 8-D29
81C#6 	81C#6 	81P 	81C#7 	81C#4 
24-D32 4-D16 @ 150	24-D35 4-D16 @ 150	20-D32 4-D16 @ 150	36-D24	28-D25
82C#6 	82C#6 	82P 	82C#7 	82C#4 
32-D38 6-D16 @ 200	24-D38 4-D16 @ 150	20-D38 4-D16 @ 150	48-D25	48-D35
83C#6 	83C#6 	83P 	83C#7 	83C#4 
36-D38 6-D16 @ 200	32-D38 6-D16 @ 200	20-D38 4-D16 @ 150	48-D35	48-D35

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Figure 3H.3-10 LIST OF COLUMN SECTIONS (1 of 2)



	1C04		2C04
	BH=400+500+25+40 16-D35, 4-D25		H=400+400+15+21 14-D25
4C07	4C04		4C04
H=400+500+11+8 1-D25	H=1800+500+25+40 26-D25	H=1200+500+11+12 20-D25	H=400+400+15+21 16-D25
2C07	2C04		
16-D35	30-D25	20-D25	
2C07	2C04		
18-D35	20-D35		

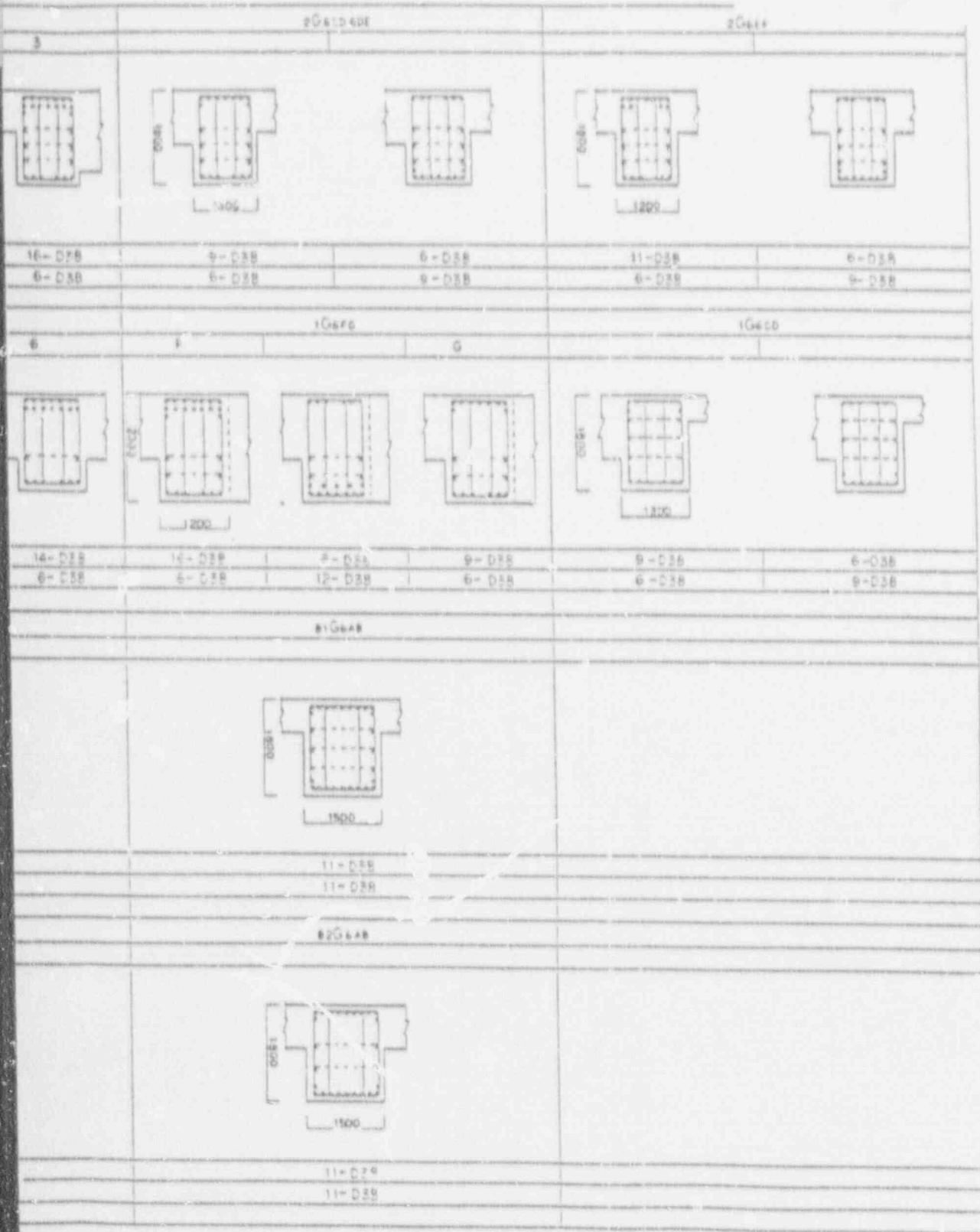
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Figure 3H.3-10 LIST OF COLUMN SECTIONS (2 of 2)

TP 18.100	2G+56 48C		2G+28	
			2	
	10 - D38	6 - D38	9 - D38	6 - D38
6 - D38	9 - D38	6 - D38	9 - D38	
TP 12.300	1G+12		1G+56	
			5	
	8 - D38	6 - D38	12 - D38	6 - D38
6 - D38	6 - D38	6 - D38	12 - D38	
TP 4.800	81G+12		81G+80C	
			81G+12	
	11 - D38	7 - D38		
7 - D38	11 - D38			
TP-1.700	82G+12		82G+80C	
			82G+12	
	11 - D38	7 - D38		
7 - D38	11 - D38			

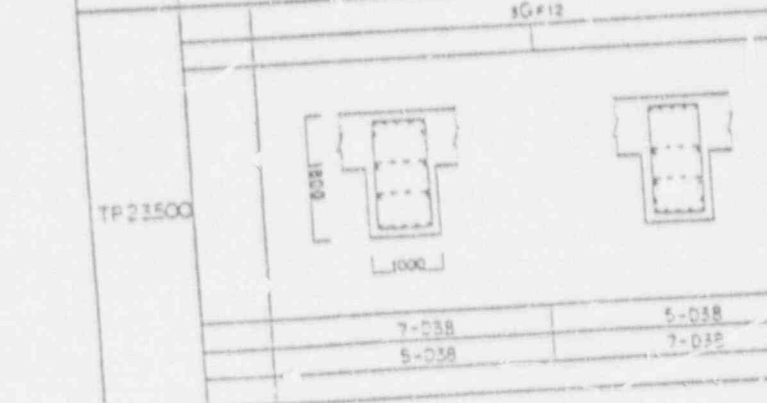
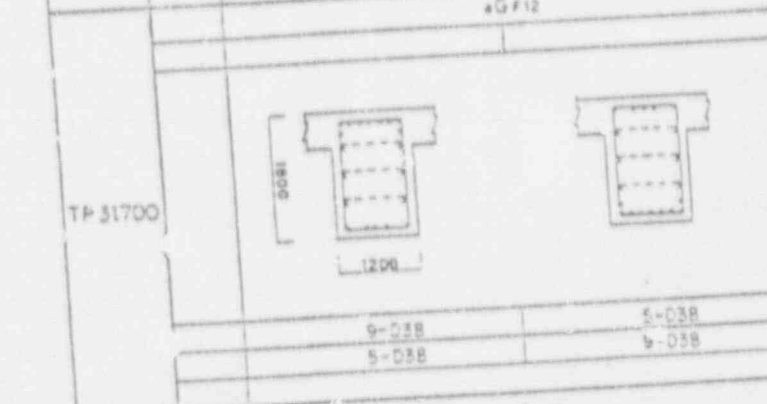
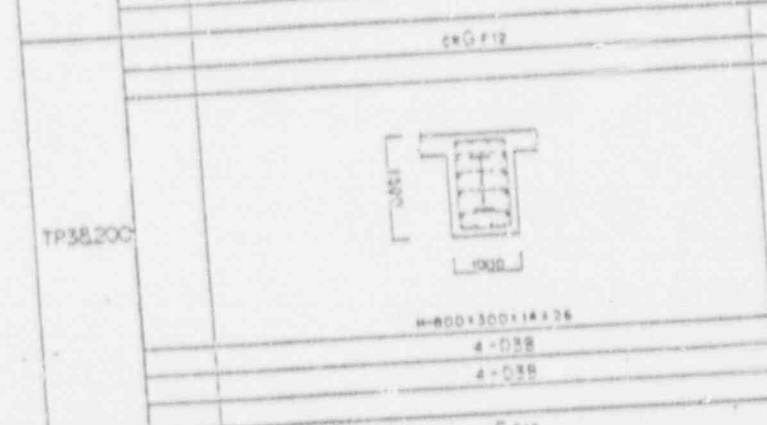
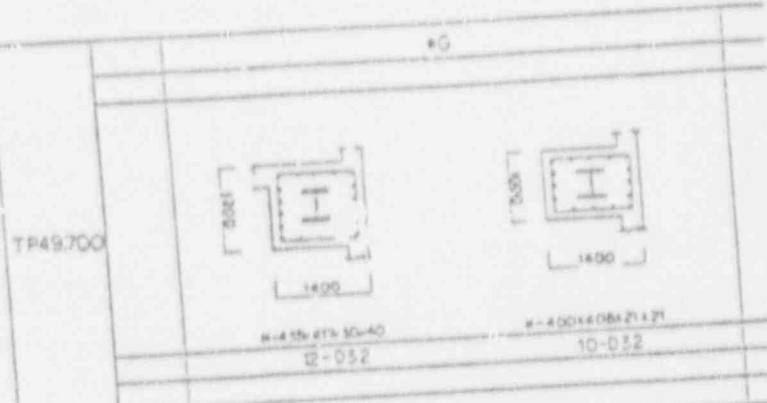


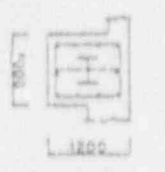
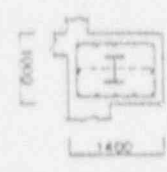
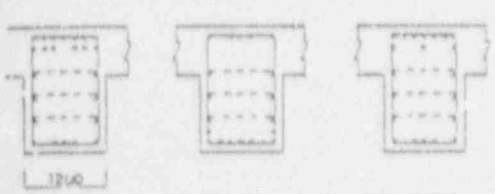
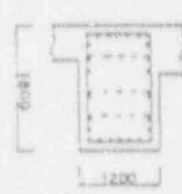
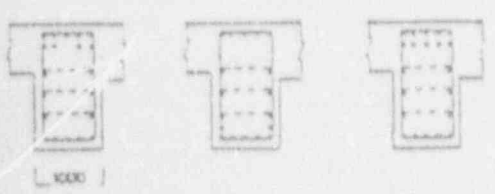
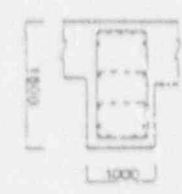
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Figure 3H.3-11 LIST OF BEAM SECTIONS (1 of 2)



CRG023		CRG2AB	
			
H=190x300x10x16		H=190x300x10x16	
4-D38		5-D38	
4-D38		5-D38	
4G123		4G6AB	
2	3		
			
13-D38	9-D38	10-D38	9-D38
5-D38	9-D38	5-D38	9-D38
5G123		5G6AB	
2	3		
			
9-D38	5-D38	10-D38	7-D38
5-D38	7-D38	5-D38	7-D38

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Figure 3H.3-11 LIST OF BEAM SECTIONS (2 of 2)

List of Steel Column Section

5-1-200, 5-1-50

		C 1	
TP 49 700	}		
TP 35 200			
SH50A1 a: FE-40 b: WE-25 JOINT: FLG1 FLG2 WEB			
TP 35 200	}		
TP 31 700			
SH50A1 1a) FE-22 b) WE-19 c) FE-40 d) WE-25 E - 40-600-1300 4-M45 Z-1575			
		C 2	C 3
TP 49 700	}		
TP 35 200			
SH50A1 H - 400+400+13+21			
TP 35 200	}	TP 49 700 - TP 35 200	
TP 31 700			
SH50A1 H - 400+400+13+21 H - 440+300+11+18 E - 25 + 500 + 500 E - 25 + 400 + 540 4-M30 Z - 1050 4-M30 Z - 1050			

of Steel Beam Section

5-1:20

	S01		S02		S03		S04		S05	
	(S450A)		(S450A)		(S450A)		(S450A)		(S450A)	
	H-450x417x30x40		H-400x400x21x21		H-390x300x10x16		H-300x300x14x26		H-300x300x10x15	
FLG	5E-22x420	20-M24	5E-16x450	12-M24	5E-12x300	8-M24	5E-16x300	14-M24	5E-9x300	8-M24
	25Es-25x170		25Es-15x170		25Es-16x110		25Es-25x110		25Es-16x110	
WEB	25Es-22	20-M24	25Es-16	12-M24	25Es-6	8-M24	25Es-9	12-M24	25Es-6	8-M24

of Steel Sub-Beam Section

5-1:20

	B1		B2	
	(S5411)		(S5411)	
	H-390x300x10x16		H-244x175x7x11	
WEB	25Es-9	6-M22	25Es-6	4-M22
	I-120.16" x 500.15" (S5411)		I-120.16" x 300.15" (S5411)	

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Figure 3H.3-12 LIST OF STRUCTURAL STEEL SECTIONS (1 of 2)

List of Roof Truss

S-1:100

	FLG	JOINT		WEB	S.S		
		1	2				
TU	H-278*417*30*40	5B-22	23B1-28	28-M22	23B1-28	18-M22	1.021015
T1	H-278*417*30*40	5B-22	23B1-28	28-M22	23B1-28	18-M22	
O1	H-400*400*21*21	5B-16	23B1-16	16-M22	23B1-16	12-M22	
O2	H-350*200*9*14	5B-9	23B1-9	9-M22	23B1-9	6-M22	1.5541
V	C-300*100*10*16						5541

List of Roof Brace

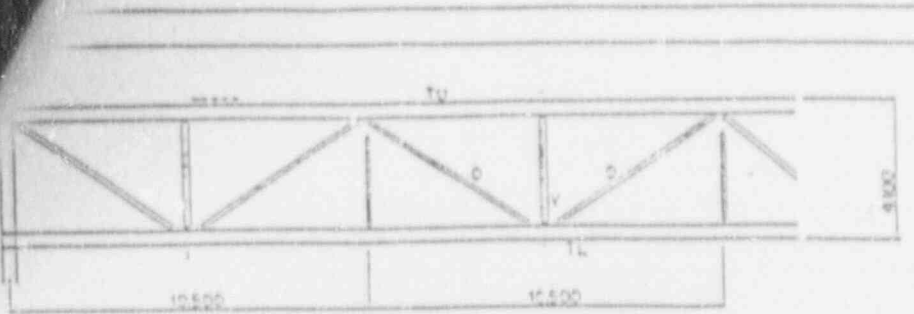
S-1:20

	H01	H02	H03	H04
	2L-400*150*10*6	2L-400*130*10*6	2L-400*130*10*6	L-300*100*10*16
Gk	0B-32 20-M24	0B-22 24-M24	0B-16 20-M24	0E-16 16-M24
	E-224750 4-M22	E-224750 3-M22	E-224750 3-M22	

List of Roof Slab

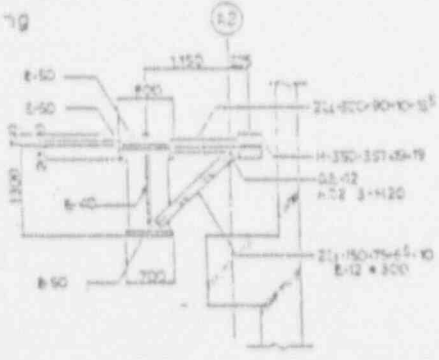
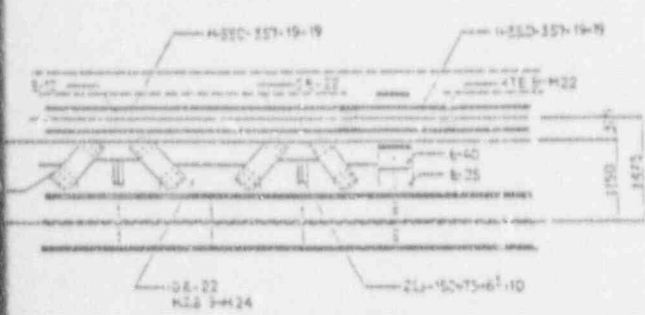
S-1:10

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MEMBER	TOP CHORD				WEB	BRACE
	FLG	WTB	WTB	WTB		
H-304-300-11-18	6-12	2-3-16	2-M22	2-3-16	6-M22	1-1/2" x 1/4"
H-304-300-11-18	6-12	2-3-16	2-M22	2-3-16	6-M22	1-1/2" x 1/4"
2L-90-90-7				6-12	4-M22	1-1/2" x 1/4"
2L-200-90-8-10.5				6-12	6-M22	1-1/2" x 1/4"

Scale: 5/16 Crane Girder Detailed Drawing



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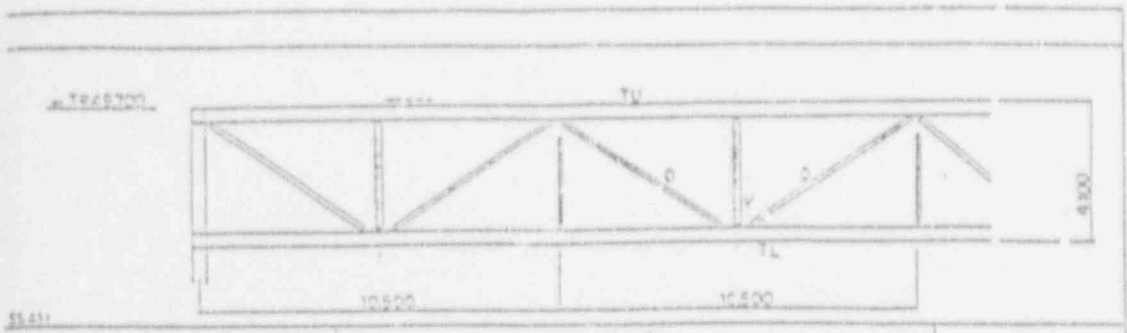
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Figure 3H 12 LIST OF STRUCTURAL STEEL SECTIONS (2 of 2)

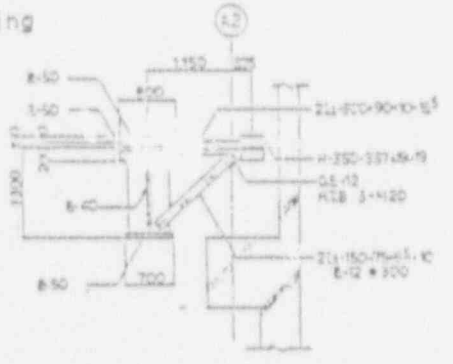
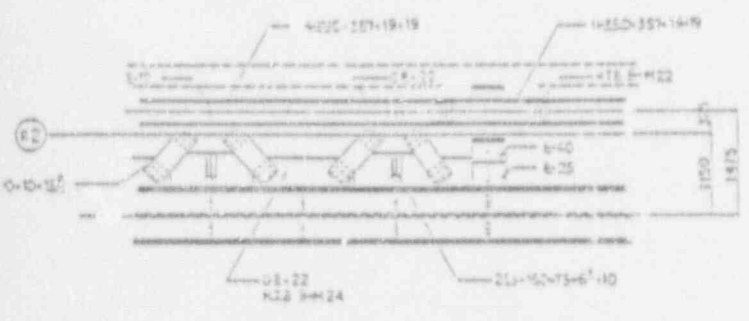
of Roof Joint Beam

5-1-100



		JOINT				END	
		FLG		WLG		END	
H-294-200-11-18	2-2-12	2-2-16	2-M22	2-2-16	2-M22	2-2-16	2-M22
H-294-200-11-18	2-2-12	2-2-16	2-M22	2-2-16	2-M22	2-2-16	2-M22
2Ls-90-90-7				2-2-12	2-M22	2-2-16	2-M22
2Ls-200-90-8-15				2-2-12	2-M22	2-2-16	2-M22

5-1-50 Crane Girder Detailed Drawing



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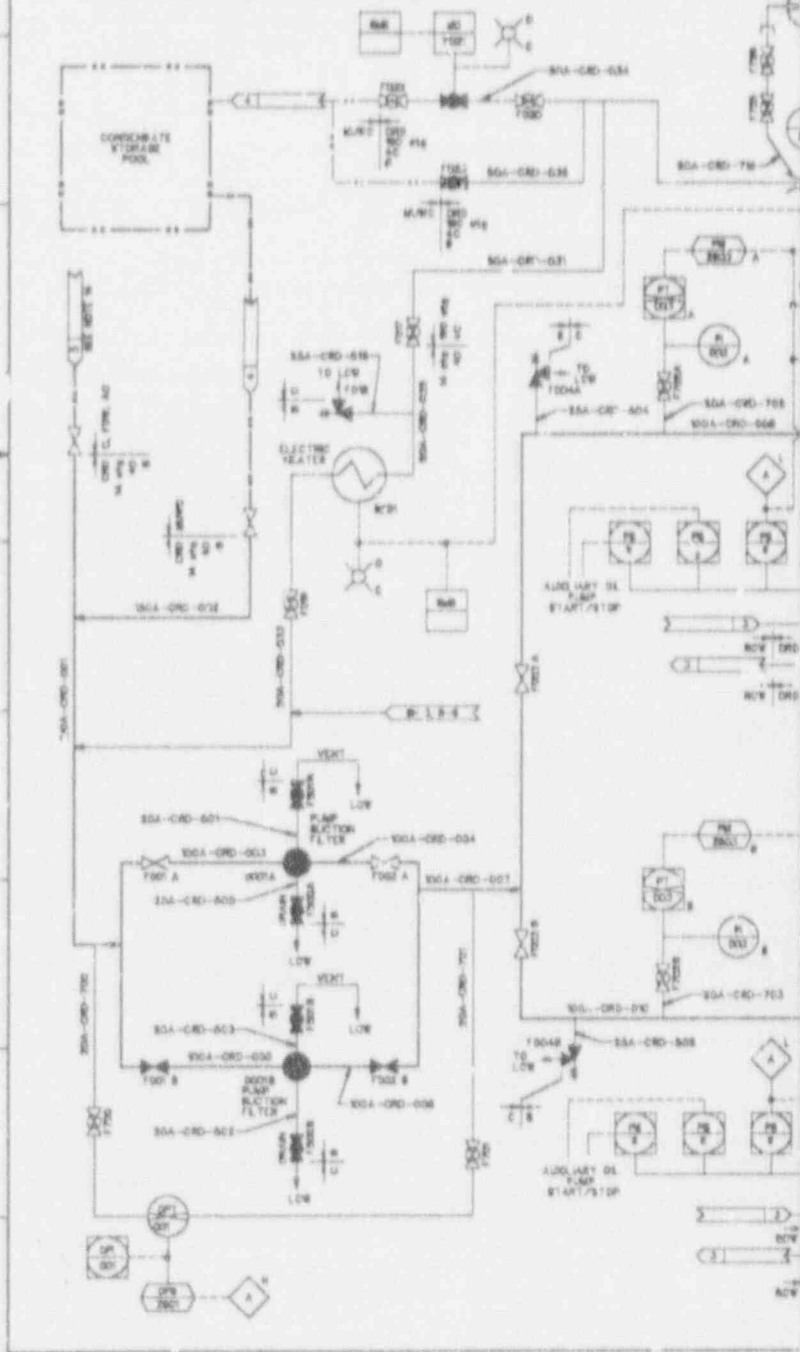
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Figure 3H.3-12 LIST OF STRUCTURAL STEEL SECTIONS (2 of 2)

NOTES

- 1. THE PIPING DIAGRAM SHALL PROVIDE INSTRUMENT VALVES AND INSTRUMENT POINTS IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROCESS AND TRUMENT SPECIFICATION AT-2030.
- 2. THE DRG SYSTEM HOUS ARE ARRANGED IN FOUR SCRAM GROUPS LOCATED IN TWO MECHANICAL ZONES OF THE REACTOR BUILDING. EACH MECHANICAL ZONE CONTAINS TWO SCRAM SYSTEMS. EACH TWO SCRAM GROUP SERVICES ONE QUARTANT OF THE REACTOR CORE.
- 3. PROVIDE DRAIN VALVES AT ALL SYSTEM LOW POINTS.
- 4. PROVIDE VENT VALVES AT ALL SYSTEM HIGH POINTS.
- 5. EXCEPT AT POINTS OF CONNECTION WITH THE REACTOR VENDOR SUPPLIED EQUIPMENT OR PIPING, THE IN-NO DEGREE SHALL BE IN ACCORDANCE WITH THE SYSTEM DESIGN SPECIFICATION AND PROCESS SCHEMATIC.
- 6. THIS DOCUMENT PROVIDES A FUNCTIONAL DEFINITION OF THE REQUIRED SYSTEM LEVEL, MODES, INSTRUMENT AND CONTROL REQUIREMENTS. IT DOES NOT ADDRESS DETAILS OF THE METHODS BY WHICH SIGNALS FROM THESE COMPONENTS WILL BE PROVIDED FOR PROCESSING AND ACTION BY THE P-ARM ELECTRIC LOGGING SYSTEM OR BY ANY OTHER SIGNALING SYSTEMS.
- 7. DRG SYSTEMS AND AIR LINES SHALL BE OF A NON-CORROSIVE MATERIAL.
- 8. MULTIPLE SERVICES CONNECTED TO BUNDLES AS SHOWN IN PUMP-OUT POINT DIAGRAM OF DRG-1000. THE PRESSURE DROP CONTROL (PDC) DEVICE IS 1/2" A 1/4" NPT AT PUMP SHUT-OUT CONDITION. THIS COMPONENT SHALL BE FOR THE QUANTITIES OF SERVICE.
- 9. PIPING QUALITY CLASS EXTENDS TO CONNECTIONS WITH HELD. NO DIAGRAM IS SHOWN FOR RECONNECTION ONLY FOR QUALITY CLASS OF THE HELD SET GROUP CLASSIFICATION SCHEMATIC 171-0230.
- 10. FILLING CONNECTIONS SHALL BE PROVIDED FOR CLEANING OF THE EQUIPMENT FOR CLEANING OF THE EQUIPMENT. CLEANING OF ALL PUMPS IS ACCORDANT WITH CLEANING OF PUMPS AND EQUIPMENT, AT-10-1.
- 11. APPROPRIATE ELECTRICAL ISOLATION SHALL BE PROVIDED FOR NON-OPERATION AND ATTACHMENT TO THE ESSENTIAL REACTOR TOP SIGNAL BUS.
- 12. CONTINUOUS FLOW TO THE REACTOR SAMPLE FILTER/DRG MESSAGES SHALL BE 2 LITER.
- 13. A PORTABLE NITROGEN CHARGING SYSTEM TO MEET THE REQUIREMENTS OF THE HOUS AND COMPONENTS IS ACCORDANT WITH 1 AND SHALL HAVE THE APPROPRIATE SAFETY VALVES AND PRESSURE RELIEF VALVES SHALL BE PROVIDED AT THE CHARGING STATION. THIS SHALL PREVENT OVERCHARGING.
- 14. STORAGE OF GAS SYSTEM WATER SHALL BE CONSIDERED. THERMOSTATS AND OVERHEAT SYSTEM DATA COMPENSATION STORAGE AND SOURCE OF CONDENSATE FROM HEAT EXCHANGERS OF GAS SYSTEM WATER SHALL BE PROVIDED FOR WATER MIX CONTROL AND DRIFT SYSTEMS.
- 15. PROVIDER FOR CONTAINMENT ISOLATION TO CORRECT LOCKING REQUIREMENTS.

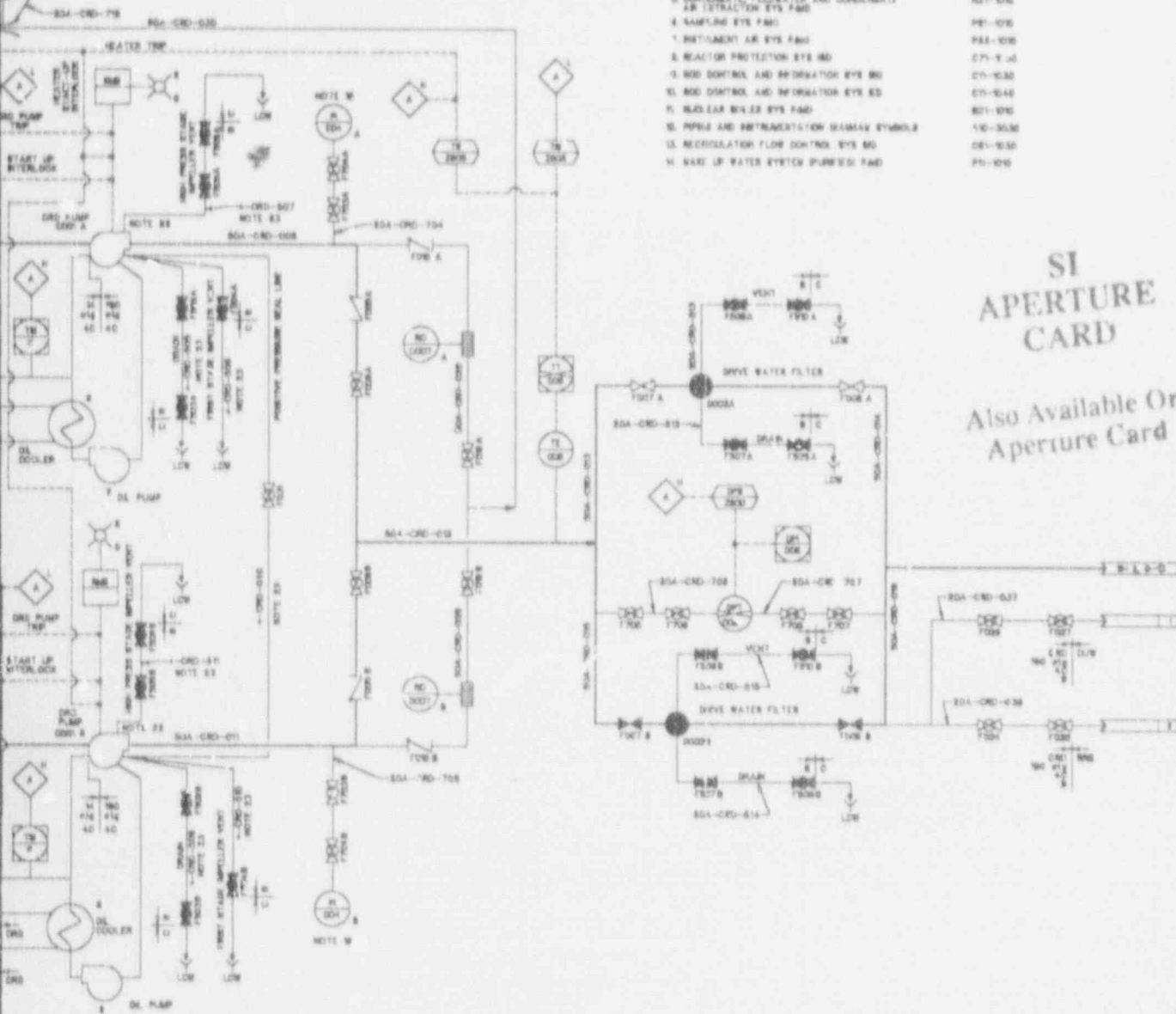


- BE IN ACCORDANCE WITH
AND EQUIPMENT A TO-100L
PROCESSED ON THE REACTION
IN SPECIFIC TUBES
BE PROVIDED BETWEEN
AND P1-016
AND P1-016
PLATES SHALL BE
SHALL BE PROVIDED
SHALL BE PROVIDED
PROVIDES GAMES AND
BE INSTALLED
SYSTEM REGULATORY
SYSTEM REGULATORY
NORMALITY FROM THE
AIR EXTRACTOR
THE ALTERNATE
BE NOT IN OPERATOR
AND QUALITY OF
SPEC. STD-400L
BE IN ACCORDANCE WITH
- RELIEVE INDICATOR SHALL BE LOCATED ON A STRAIGHT PIPE SECTION UPSTREAM FROM PUMP OUTLET.
 - ALL EXCESSIVE SIGNIFIERS ARE PREFIXED BY TWO UNLESS OTHERWISE INDICATED.
 - FLANGED PUMPS TO BE USED.
 - THESE VALVES MUST BE OPEN FOR RAPID HYDRAULIC ROD INSERTION (ISOLATE).
 - FOR BASIC CATEGORY OF RELEVANT PUMP COMPONENTS, SEE REFERENCE IS.
 - EXETER DESIGN CONDITIONS:
 - DESIGN PRESSURE - SEE BOUNDARY SYMBOLS
 - DESIGN TEMPERATURE = 80 °C
 - DESIGN MATERIAL - SEE TABLE 1
 - DESIGN WEIGHT NUMBER - SEE TABLE 1
 - MTI AND SA CLASS - SEE BOUNDARY SYMBOLS
 - DESIGN CATEGORY - SEE BOUNDARY SYMBOLS
 - FLUID - SEE TABLE 1
 - PIPING INTERFACES WITH THE DRG PUMP, INCLUDING SECTION, BRANCHES, VENT DRUMS AND POSITIVE PRESSURE REAL LINES SHALL BE IDENTIFIED BY THE PUMP SUPPLIER. FLOW DIRECTION OF THE REACTION AND BRANCHES PIPING SHALL BE PROVIDED AS REQUIRED.
 - PIPE SIZES SHALL BE SPECIFIED BY THE PUMP SUPPLIER.
 - EACH BRANCH PIPING AND SHALL BE ASSIGNED A LEFT/RIGHT HAND SIDE CORRELATION TO THE SAME LOCATION OF THE ASSOCIATED PIPING.
 - THE PIPING SYMBOLS SHALL DETERMINE THE LOCATION OF THE LEAK DETECTION FOR THE CONNECTION WITH THE PIPING. PIPE SIZES AND SCHEDULE SHALL BE IDENTIFIED BY THE DESIGNER AT THE TUBED FLANGE.
 - EACH LEAK DETECTION GROUP SHALL BE ARRANGED TO MONITOR THE LEAKAGE FROM ALL PIPING WITHIN THE ASSOCIATED COMPARTMENT AND IT IS FURTHER FOR GROUPS AND IS TO BE MONITORED FOR GROUPS OF THE RELEVANT AND/OR LEAK DETECTION SHALL BE MADE BY THE PIPING IDENTIFICATION CORRELATION SHALL BE MADE BY THE IDENTIFIED ARRANGEMENT.

- A FLOW METER SHALL BE PROVIDED IN EACH FLOW LEAK DETECTION GROUP TO MEASURE WITH A TWO LEAKAGE FLOW THE GROUP FLOW METER MAY BE EITHER AN ELECTRICAL TYPE OR MECHANICAL TYPE LOOP WITH HEADOUT TO THE PROCESS COMPUTER AND EITHER OR BE A MECHANICAL COUNTER TYPE FLOW METER. THE MECHANICAL COUNTER TYPE FLOW METER SHALL HAVE A HEADOUT INDICATOR THAT IS INTERNAL TO THE INSTRUMENT.
- A DESIGN TO PROVIDE CONTINUOUS MONITORING AND MEASUREMENT OF FLOW LEAKAGE DURING START UP/SHUTDOWN AND DURING LEAK DETECTION. FLOW METER SHALL BE PROVIDED WITH THE GROUP FLOW METER AND THE MECHANICAL COUNTER TYPE FLOW METER SHALL MEASURE THE DOWNWARD TOTAL LEAKAGE FLOW FROM ALL FLOW LEAK DETECTION GROUPS AND PROVIDE HEADOUT TO THE OPERATOR AND THE PROCESS COMPUTER. ALTERNATELY THE DOWNWARD LEAK DETECTION FLOW METER IS NOT REQUIRED IF ELECTRICAL TYPE GROUP FLOW METER ARE USED. IN THIS CASE, THE GROUP FLOW SYSTEM SHALL PROVIDE THE LEAKAGE FLOW SIGNALS FOR EACH LEAK DETECTION GROUP ALTERNATELY TO THE PROCESS COMPUTER. THE FLOW CAP SHALL BE DESIGNED TO PROVIDE THE TOTAL DOWNWARD LEAKAGE FLOW.
- HOU ROOM ONE (NOTION TEST CONNECTIONS) AND LEAK IN CONNECTION WITH A PORTABLE TEST CART TO PROVIDE TEMPORARY UTILITY CONNECTION TO THE HOU FOR ONE (NOTION TEST).

REFERENCE DOCUMENTS

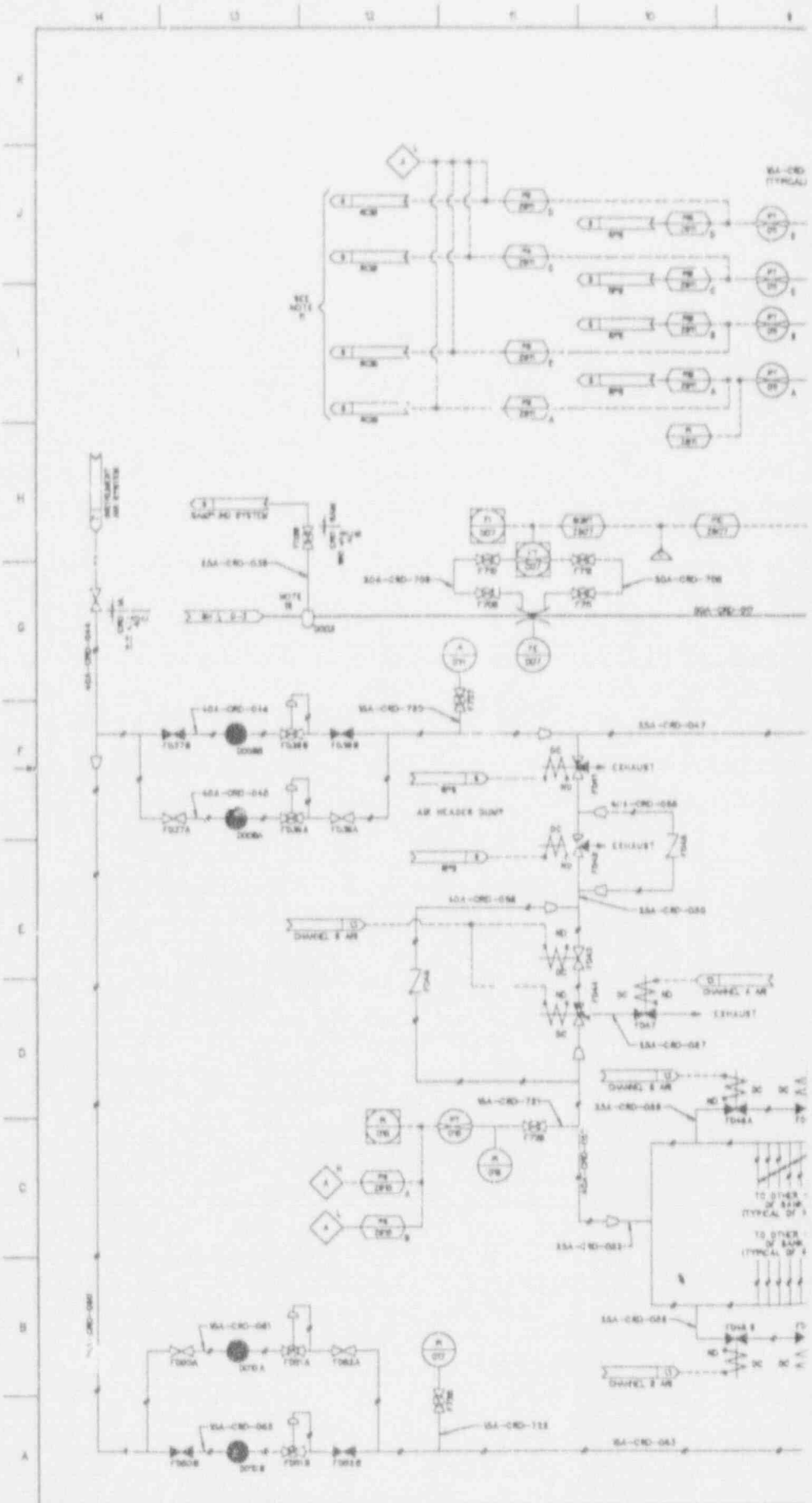
NO.	DESCRIPTION	REF. NO.
1	REACTOR WATER CLEANUP EYE PAD	831-010
2	REACTOR REGULATION EYE PAD	831-010
3	REACTOR BUILDUP COOLING WATER EYE PAD	801-010
4	WASTE WATER EYE DISCHARGE PAD	813-010
5	CONDENSATE, TREATED AND CONDENSATE AIR EXTRACTOR EYE PAD	801-010
6	SAMPLING EYE PAD	801-010
7	RESTRAINT AIR EYE PAD	842-010
8	REACTOR PROTECTION EYE PAD	875-010
9	ROD CONTROL AND INFORMATION EYE PAD	011-010
10	ROD CONTROL AND INFORMATION EYE PAD	011-010
11	NUCLEAR WALKER EYE PAD	801-010
12	PIPELINE AND INSTRUMENTATION MESSAGES SYMBOLS	110-010
13	REGULATOR FLOW CONTROL EYE PAD	081-010
14	WASTE LP WATER SYSTEM (PUMPED) PAD	811-010

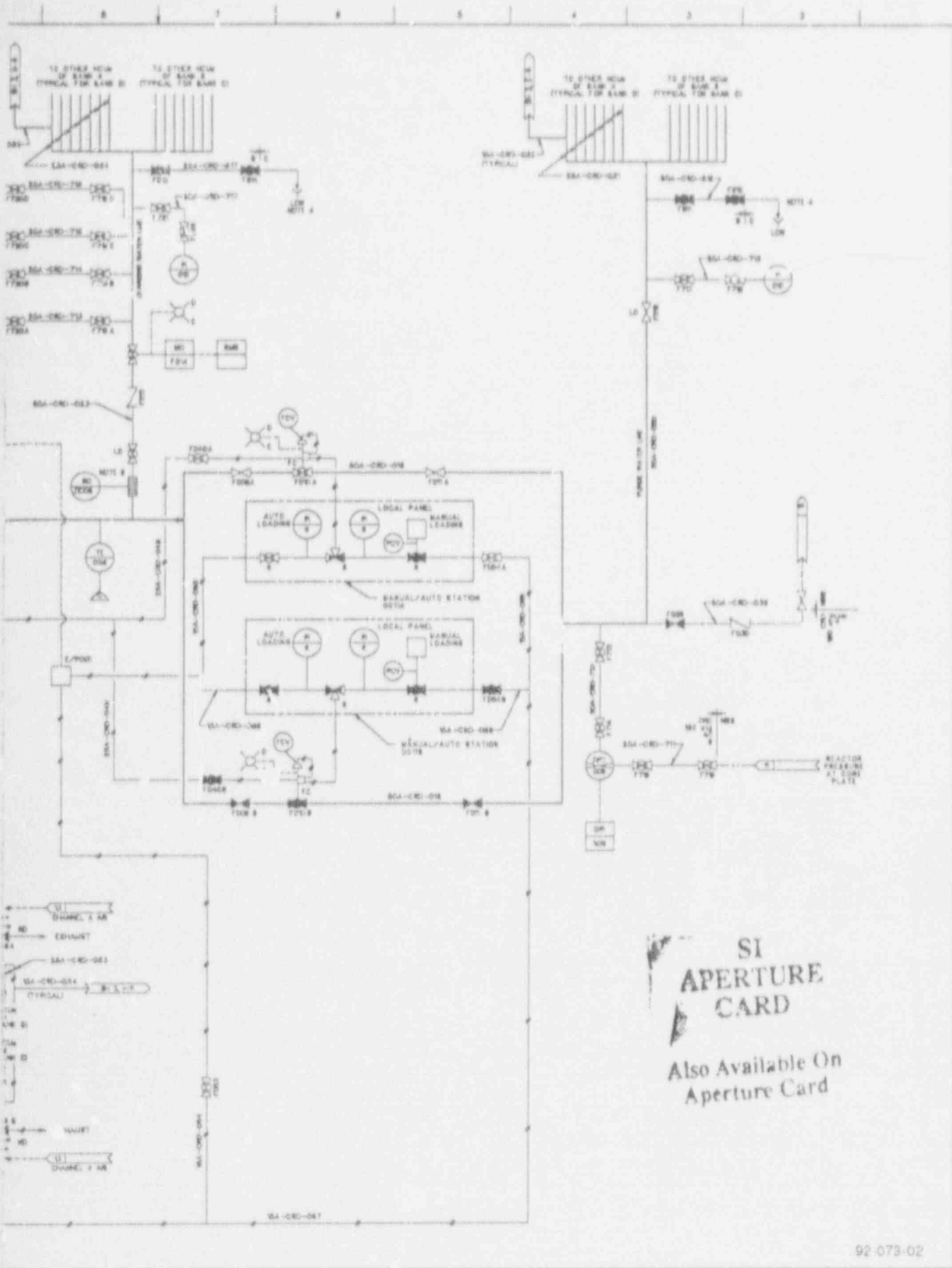


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Figure 4.6-8 CONTROL ROD DRIVE SYSTEM P&ID (Sheet 1 of 3)

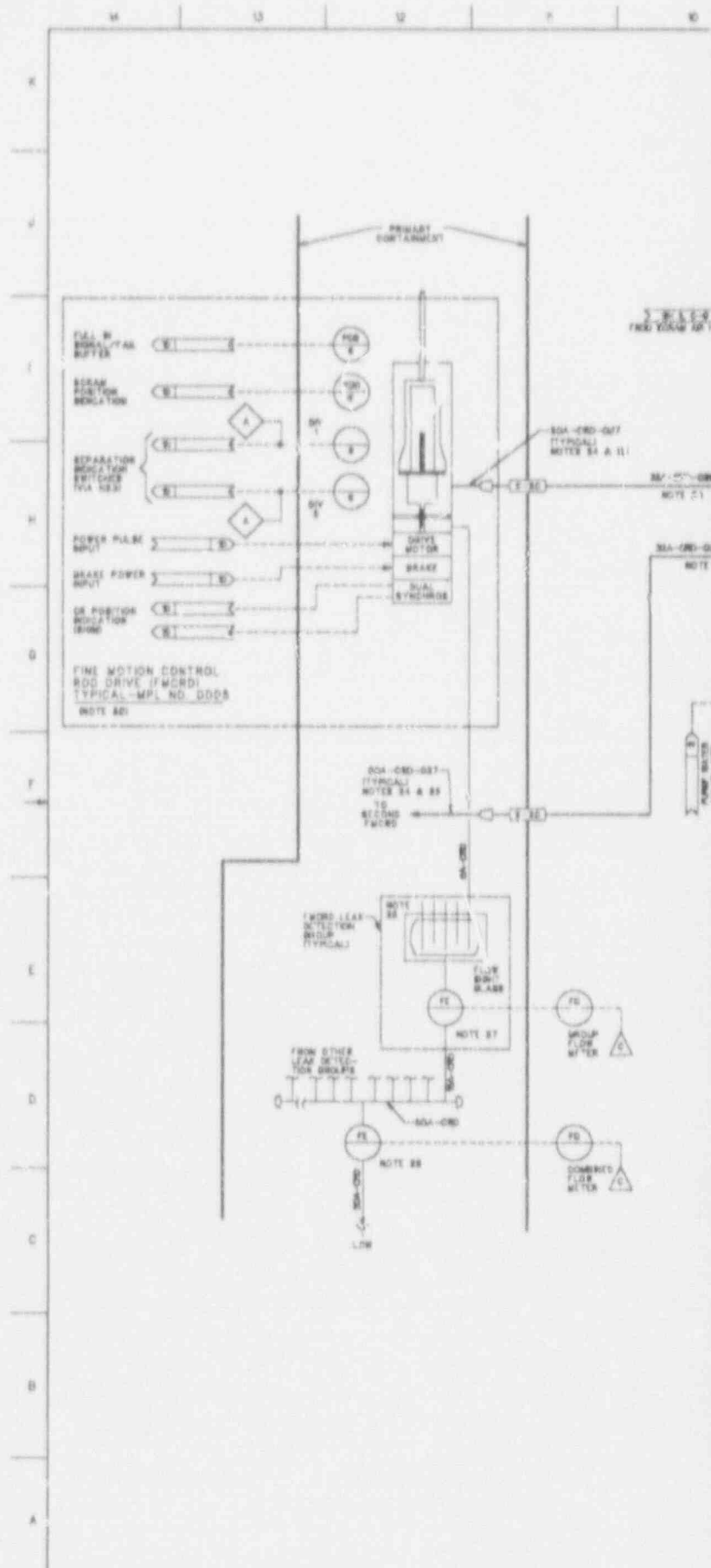
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Figure 4.6-8 CONTRL ROD DRIVE SYSTEM P&ID (Sheet 2 of 3)



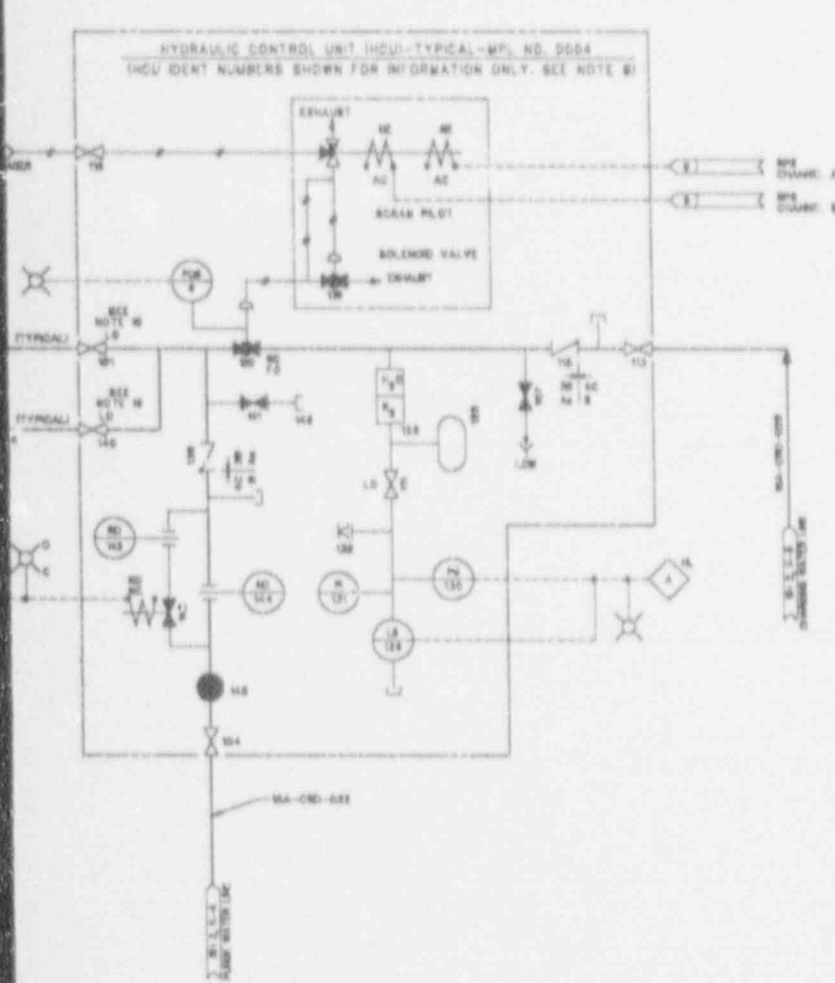
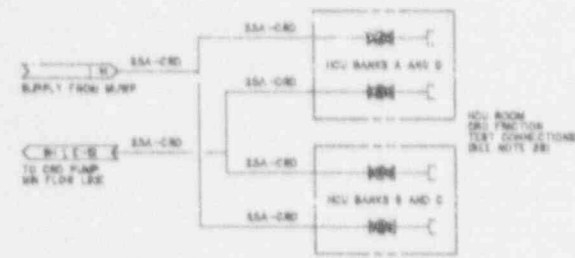


TABLE 1: PIPING SPECIFICATIONS

PIPE NO.	DIAMETER	MATERIAL	FLUID
001	400	SS	W
002	400	SS	W
003	400	SS	W
004	400	SS	W
005	400	SS	W
006	400	SS	W
007	400	SS	W
008	400	SS	W
009	400	SS	W
010	800	ST	W
011	400	SS	W
012	800	SS	W
013	800	SS	W
014	800	SS	W
015	800	SS	W
016	800	SS	W
017	800	SS	W
018	800	SS	W
019	800	SS	W
020	800	SS	W
021	800	SS	W
022	800	SS	W
023	800	SS	W
024	800	SS	W
025	800	SS	W
026	800	SS	W
027	800	SS	W
028	800	SS	W
029	800	SS	W
030	800	SS	W
031	800	SS	W
032	400	SS	W
033	400	SS	W
034	800	SS	W
035	800	SS	W
036	800	SS	W
037	800	SS	W
038	800	SS	W
039	800	SS	W
040	800	SS	W
041	800	SS	W
042	800	SS	W
043	800	SS	W
044	400	SS	A
045	400	SS	A
046	400	SS	A
047	400	SS	A
048	400	SS	A
049	400	SS	A
050	400	SS	A
051	400	SS	A
052	400	SS	A
053	400	SS	A
054	400	SS	A
055	400	SS	A
056	400	SS	A
057	400	SS	A
058	400	SS	A
059	400	SS	A
060	400	SS	A

TABLE 2: PIPING SPECIFICATIONS (CONT'D)

PIPE NO.	DIAMETER	MATERIAL	FLUID
061	400	SS	A
062	400	SS	A
063	400	SS	A
064	400	SS	A
065	400	SS	A
066	400	SS	A
067	400	SS	A
068	400	SS	A
069	400	SS	A
070	400	SS	A
071	400	SS	A
072	400	SS	A
073	400	SS	A
074	400	SS	A
075	400	SS	A
076	400	SS	A
077	400	SS	A
078	400	SS	A
079	400	SS	A
080	400	SS	A
081	400	SS	A
082	400	SS	A
083	400	SS	A
084	400	SS	A
085	400	SS	A
086	400	SS	A
087	400	SS	A
088	400	SS	A
089	400	SS	A
090	400	SS	A
091	400	SS	A
092	400	SS	A
093	400	SS	A
094	400	SS	A
095	400	SS	A
096	400	SS	A
097	400	SS	A
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111	400	SS	A
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187	400	SS	A
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191	400	SS	A
192	400	SS	A
193	400	SS	A
194	400	SS	A
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197	400	SS	A
198	400	SS	A
199	400	SS	A
200	400	SS	A

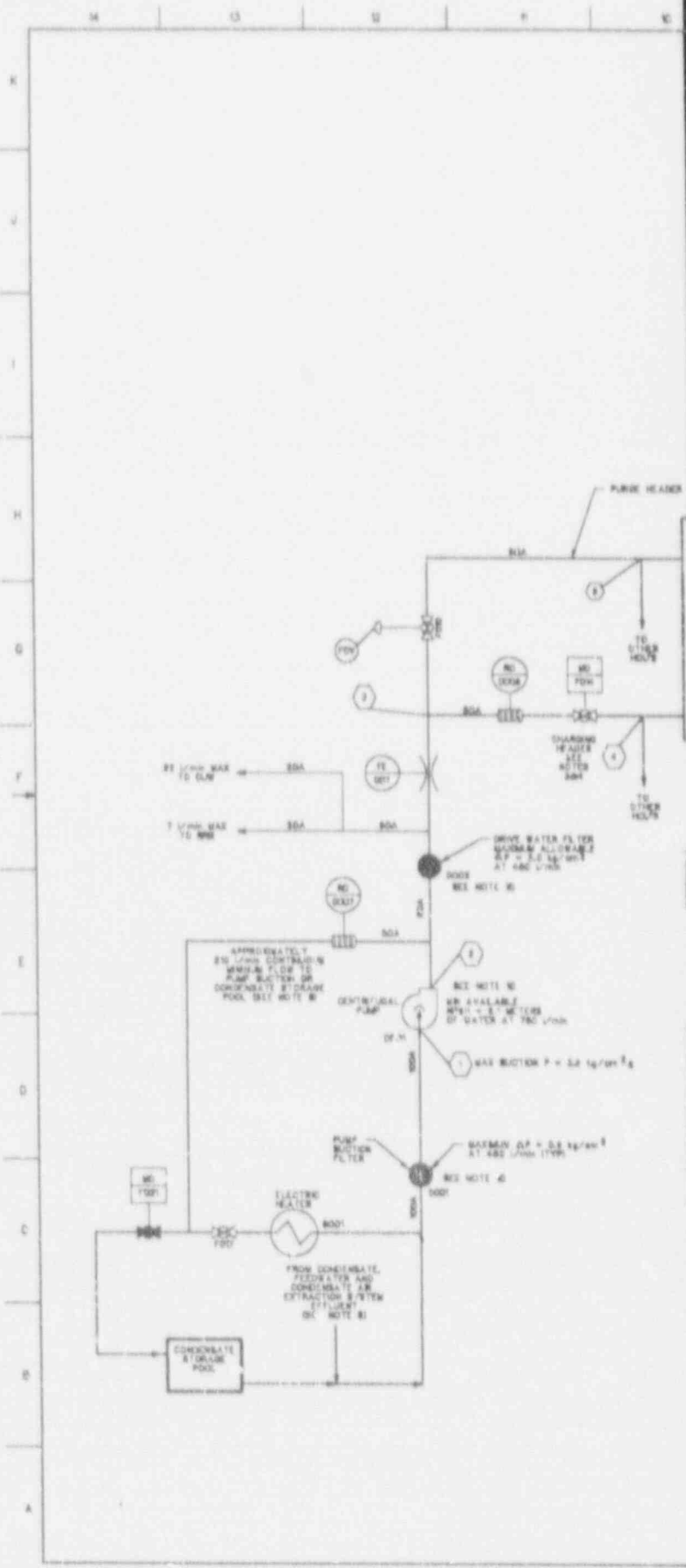


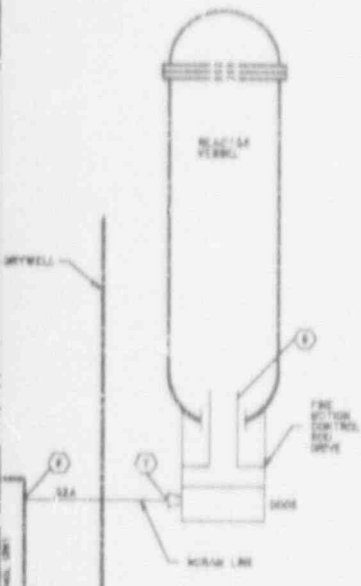
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Figure 4.6-8 CONTROL ROD DRIVE SYSTEM P&ID (Sheet 3 of 3)





MODE A NORMAL OPERATION - REEF PUMPED WATER HEADS (SEE NOTE 8 AND 9)

MODE	1	2	3	4	5	6	7	8
FLOW, L/min	0	0 ₁	0 ₂	0	0 ₃	1.7/1.2	0.7/1.2	0.7/1.2
PRESSURE, kg/cm ² g	0	10.0	10.0	0	10.0	10.0	10.0	10.0

CONDITIONS:

- 1. NORMAL DRIVE OPERATION
- 2. MAX/WAT PUMPED FLOW TO DRIVER
- 3. PRESSURE OF REACTOR AT 10.0 kg/cm²g MEASURED AT VERMIL BOTTOM

MODE B BORAX - REEF BORAX LINE

MODE	1	2	3	4	5	6	7	8
FLOW, L/min	0.30	0.30				172	172	172
PRESSURE, kg/cm ² g						7.1	7.1	7.1

CONDITIONS:

- 1. DRIVER BORAXING
- 2. FLOWS BASED ON ROD VELOCITY OF 34.0 in/sec
- 3. PRESSURE OF REACTOR AT 10.0 kg/cm²g MEASURED AT VERMIL BOTTOM

MODE C BORAX COMPLETED - REEF THE PUMP EXHAUST LINE

MODE	1	2	3	4	5	6	7	8
FLOW, L/min	750	750	0.31	0.31	0			
PRESSURE, kg/cm ² g	10.0	10.0	10.0	10.0	0			

CONDITIONS:

- 1. BORAXING OF DRIVER COMPLETED
- 2. MAXIMUM ROD SUPPLY PUMP FLOW
- 3. PRESSURE OF REACTOR AT 10.0 kg/cm²g

TABLE 1 REEF PRESSURE/TOP LACTURE

MODE	1	2	3	4	5	6	7	8
PRESSURE, kg/cm ² g	14.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
TEMP °C	66	66	66	66	66	66	66	101

TABLE 2 SYSTEM FLOW RATES (L/min) MODE B

NUMBER OF DRIVES	0 ₁	0 ₂	0 ₃	0 ₄
000	363/308	363/308	144/144	144/144

VE CONDITIONS

ALVE ID	MODE A		MODE B	MODE C
	BYPASS THRU CIRC. TO NEXTOR BENT	FLOW TO DOWNCOMER STORAGE POOL		
010	0	0	0	0
014	0	0	0	0
017	0	0	0	0
021	0	0	0	0

COND: 0 - OPEN 1 - CLOSED

- NOTES:
1. REEF PRESSURE, TEMPERATURE AND LINE ROD PLS. BE INDICATED AT THE DETAILED DESIGN PHASE. ACTUAL LINE RODS OPERATING BY OPENING DOWNCOMER SHALL MEET THE PROCEEDING DATA OPERABLE REQUIREMENTS.
 2. THE TERM 0₃ IS DEFINED AS THE REACTOR PRESSURE MEASURED AT THE VERMIL BOTTOM.
 3. PUMP MAXIMUM CAPACITY OF THE LOOP SHALL NOT BE EXCEEDED. DRIVER RELATED THE PRESSURE AT THE DRIVER LINE ROD SHALL BE GREATER THAN A TOTAL OF ALL LINES WILL LEAK THROUGH ALL THE DRIVER DRIVES. $PR = 0.3 \text{ kg/cm}^2 \text{g}$ LEAKAGE FLOW AT MODES 1 AND 2 IS EQUAL TO 0.3 OF THE NUMBER OF DRIVES.
 4. REEFINGING OFFICE, MODE B COMPOSED OF SEVERAL OFFICES CONNECTED IN SERIES. SEE REF. FOR THE QUANTITIES OF OFFICES. THE PRESSURE ONLY EACH OFFICE IS 17.2 kg/cm²g AT THE LOOP.
 5. LINE FROM THE DOWNCOMER FEEDBACK AND DOWNCOMER AN EXTRACTOR SYSTEMS SHALL BE ABLE TO MAINTAIN A FLOW RATE APPROXIMATELY THREE NORMAL MODE A AND SYSTEM FLOW RATE. LAMP LINE FLOW WILL BE DIVERTED TO DOWNCOMER STORAGE POOL. (SEE REF. WILL PROVIDE AS A TEMPORARY SOURCE OF WATER FOR THE LOOP SYSTEM IF SYSTEM NOT BE NOT AVAILABLE).
 6. EXACT MEANS FOR/SAT CONDITIONS.
 7. SEE TABLE 2 FOR MAXIMUM AND MINIMUM VALUES OF 0₁, 0₂, 0₃ AND 0₄ NORMAL PUMP FLOW AT 0₁ AND 0₂ IS 400 L/min BASED ON NORMAL FLOW FLOW OF 10 L/min AT LOCATION 6, 7 AND 8.
 8. LINE LOADS ARE FOR THE BORAX LINE ONLY. TOTAL DOWNCOMER LOADS FOR THE LOOP AND BORAX LINE ARE 17.2 kg/cm²g NORMAL AND 17.2 kg/cm²g EXHAUST.
 9. ACTUAL FLOW WILL BE DETERMINED DURING THE DETAILED DESIGN PHASE.
 10. TYPICAL OF BOTH LOOPS ONLY ONE LOOP SHOWN.

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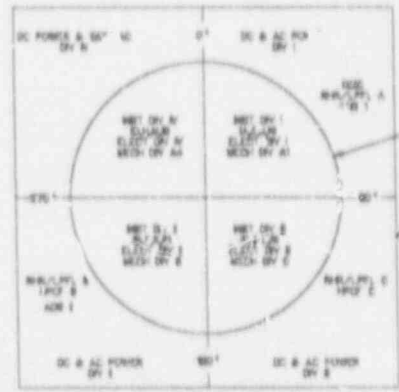
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Figure 4.6-9 CONTROL ROD DRIVE SYSTEM PROCESS DIAGRAM

M U S T C

K
J
I
H
G
F
E
D
C
B
A

- NOTES
- 1. ENCLOSURE TO BE USED FOR ALL WORK ON THIS DRAWING.
- 2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS.
- 3. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS.
- 4. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS.
- 5. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS.
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- 20. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS.



DEFINITION OF THE REACTOR SYSTEM INSTRUMENTS TO MEET SPECIAL REQUIREMENTS. BELIEFS ASSOCIATED INSTRUMENT BELIEFS AND COLOR LOCATION

INSTRUMENT AND COMPONENTS ARE TYPICAL FOR STANDARD AND HAVE THE SAME PART NUMBER EXCEPT LISTED.

THE DOCUMENT IS FOR THE USE OF THE BUYER. THE SAFETY RELATED VALUES APPLY.

BASED ON THE DRAWING AND APPROXIMATE POINTS OF CONNECTION WITH THE SUPPLIER. A REVIEW OF THE POINTS OF CONNECTION SHALL BE MADE BY THE BUYER AND THE SUPPLIER. ALL PARTS SHALL BE APPROVED BY THE BUYER FOR CONFORMANCE WITH THE REQUIREMENTS OF THE SUPPLIER AND THE BUYER. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

VALUES FROM THIS DRAWING SHALL BE PROVIDED IF A VALUE IS NOT PROVIDED BY THE SUPPLIER. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

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FOR INSTRUMENT LINE ISOLATION SHALL BE PROVIDED BY THE BUYER. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

NO OPERATING AND ALL VALUES ARE AS SHOWN EXCEPT AS NOTED.

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OPERATING PROCEDURE AND TEMPERATURE POINTS OF THE BUYER SHALL BE PROVIDED BY THE BUYER. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

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21. WATER LEVEL INSTRUMENTS FOR VAPOR CHAMBERS ARE CALIBRATED AS SHOWN. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

A. FUEL RODS THE INSTRUMENTS ARE CALIBRATED FOR SATURATED STEAM AND STEAM CONDENSATE AT 2 MPa AND 2 MPa. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

B. VAPOR CHAMBERS THE INSTRUMENTS ARE CALIBRATED FOR VAPOR AND STEAM AT 2 MPa AND 2 MPa. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

C. VAPOR CHAMBERS THE INSTRUMENTS ARE CALIBRATED FOR VAPOR AND STEAM AT 2 MPa AND 2 MPa. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

D. VAPOR CHAMBERS THE INSTRUMENTS ARE CALIBRATED FOR VAPOR AND STEAM AT 2 MPa AND 2 MPa. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

22. THE TEMPERATURE ELEMENTS ARE CALIBRATED AS SHOWN. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

23. UNLESS OTHERWISE INDICATED ALL INSTRUMENTS ARE PROVIDED BY THE BUYER. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

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36. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

37. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

38. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES. THE BUYER SHALL BE RESPONSIBLE FOR THE SAFETY RELATED VALUES.

REFERENCE DOCUMENT UNDER THE FOLLOWING DESIGNATION ARE TO BE USED IN CONNECTION WITH THIS DRAWING.

NO.	DESCRIPTION	REF. NO.
1.	WATER QUALITY REQUIREMENTS	AT-0040
2.	REACTOR PRESSURE VESSEL SYSTEMS	01-0000
3.	NUCLEAR BOILER SYSTEMS	01-0000
4.	NUCLEAR BOILER SYSTEMS	01-0000
5.	NUCLEAR BOILER SYSTEMS	01-0000
6.	NOT USED	---
7.	NOT USED	---
8.	NOT USED	---
9.	CONTROL ROD DRIVE SYSTEMS	02-0000
10.	REACTOR REGULATOR SYSTEMS	02-0000
11.	FEEDWATER CONTROL SYSTEMS	02-0000
12.	FEEDWATER CONTROL SYSTEMS	02-0000
13.	REACTOR PROTECTION SYSTEMS	02-0000
14.	REACTOR PROTECTION SYSTEMS	02-0000
15.	REACTOR PROTECTION SYSTEMS	02-0000
16.	REACTOR PROTECTION SYSTEMS	02-0000
17.	REACTOR PROTECTION SYSTEMS	02-0000
18.	REACTOR PROTECTION SYSTEMS	02-0000
19.	REACTOR PROTECTION SYSTEMS	02-0000
20.	REACTOR PROTECTION SYSTEMS	02-0000
21.	REACTOR PROTECTION SYSTEMS	02-0000
22.	REACTOR PROTECTION SYSTEMS	02-0000
23.	REACTOR PROTECTION SYSTEMS	02-0000
24.	REACTOR PROTECTION SYSTEMS	02-0000
25.	REACTOR PROTECTION SYSTEMS	02-0000
26.	REACTOR PROTECTION SYSTEMS	02-0000
27.	REACTOR PROTECTION SYSTEMS	02-0000
28.	REACTOR PROTECTION SYSTEMS	02-0000
29.	REACTOR PROTECTION SYSTEMS	02-0000
30.	REACTOR PROTECTION SYSTEMS	02-0000
31.	REACTOR PROTECTION SYSTEMS	02-0000
32.	REACTOR PROTECTION SYSTEMS	02-0000
33.	REACTOR PROTECTION SYSTEMS	02-0000
34.	REACTOR PROTECTION SYSTEMS	02-0000
35.	REACTOR PROTECTION SYSTEMS	02-0000
36.	REACTOR PROTECTION SYSTEMS	02-0000
37.	REACTOR PROTECTION SYSTEMS	02-0000
38.	REACTOR PROTECTION SYSTEMS	02-0000
39.	REACTOR PROTECTION SYSTEMS	02-0000
40.	REACTOR PROTECTION SYSTEMS	02-0000

NOTE: THIS COMPONENT IS PART OF AN ASSEMBLY SHOWN IN THE DRAWING AND IS NOT TO BE SHOWN IN THE DRAWING OF ITS INSTALLATION.

NO.	DESCRIPTION	REF. NO.
1.	NUCLEAR PART SYSTEMS	01-0000
2.	FEEDWATER CONTROL SYSTEMS	02-0000
3.	REACTOR PROTECTION SYSTEMS	02-0000
4.	REACTOR PROTECTION SYSTEMS	02-0000

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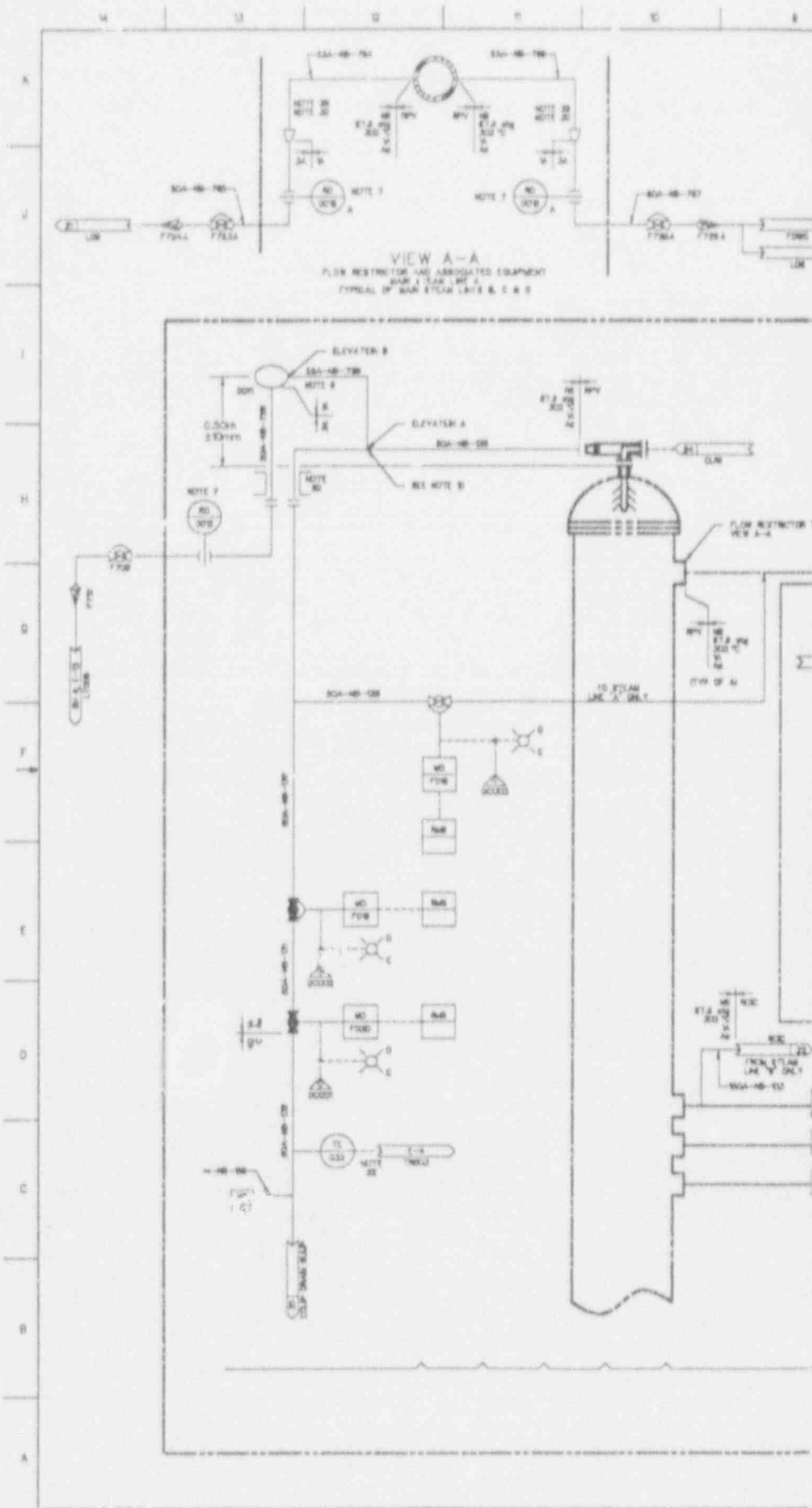
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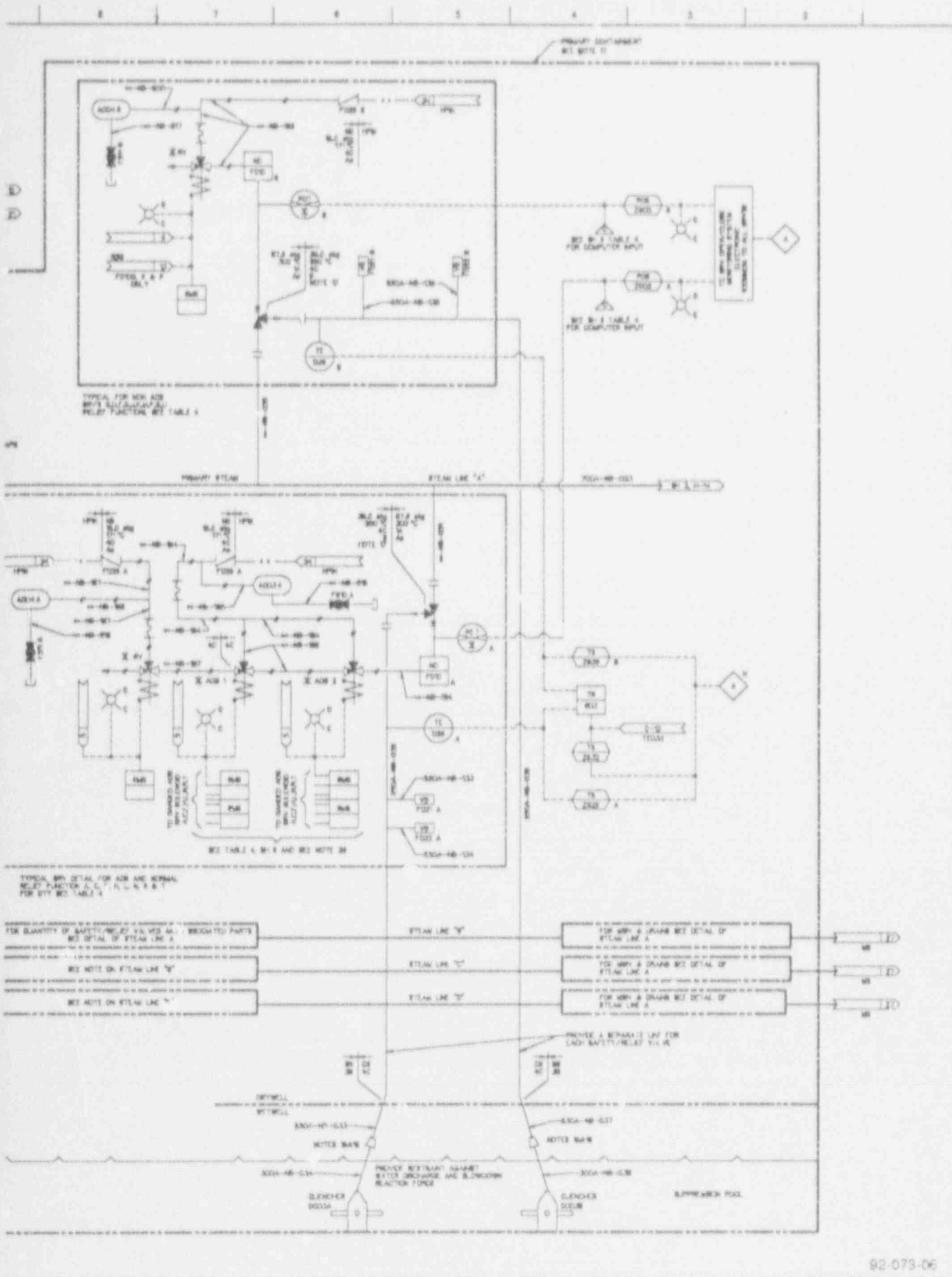
92-073-05

Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 1 of 11)

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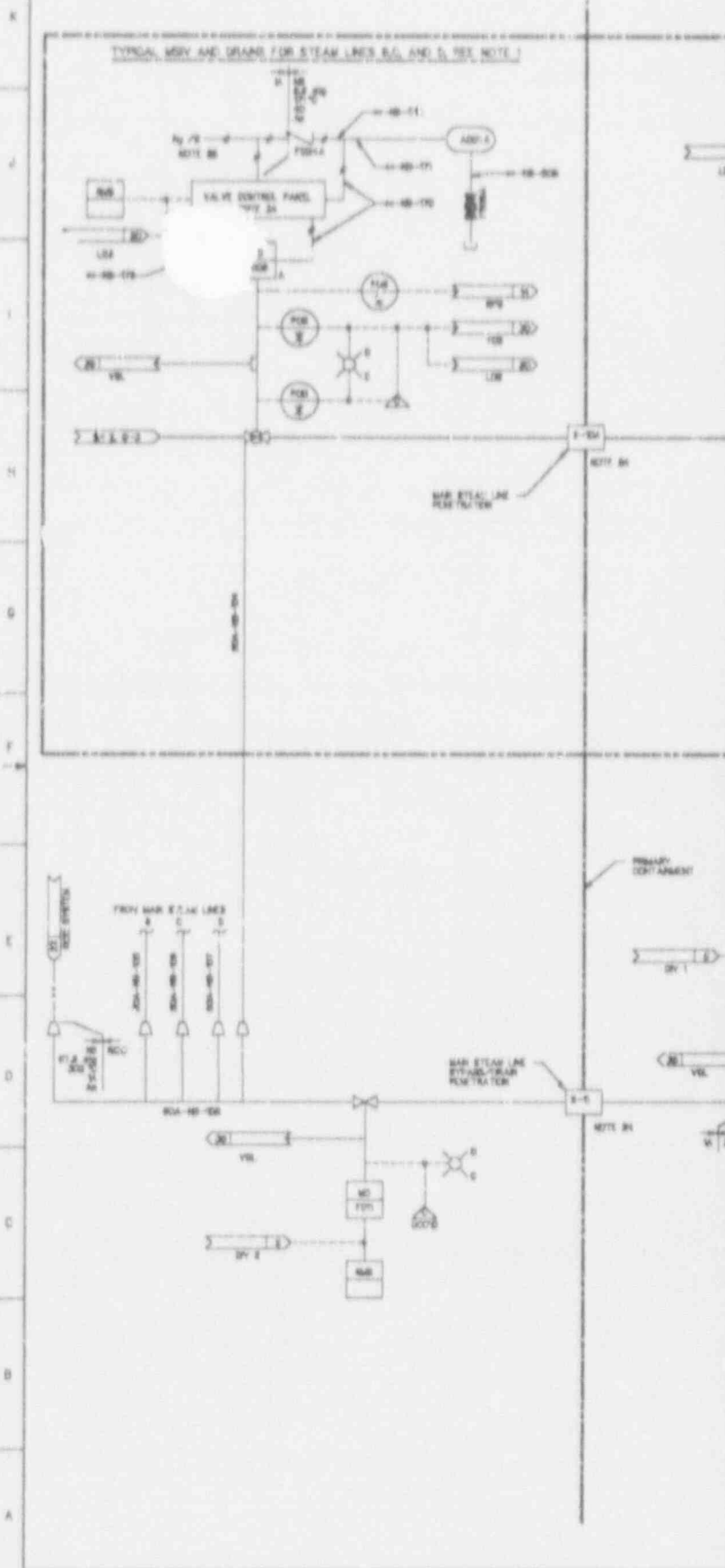


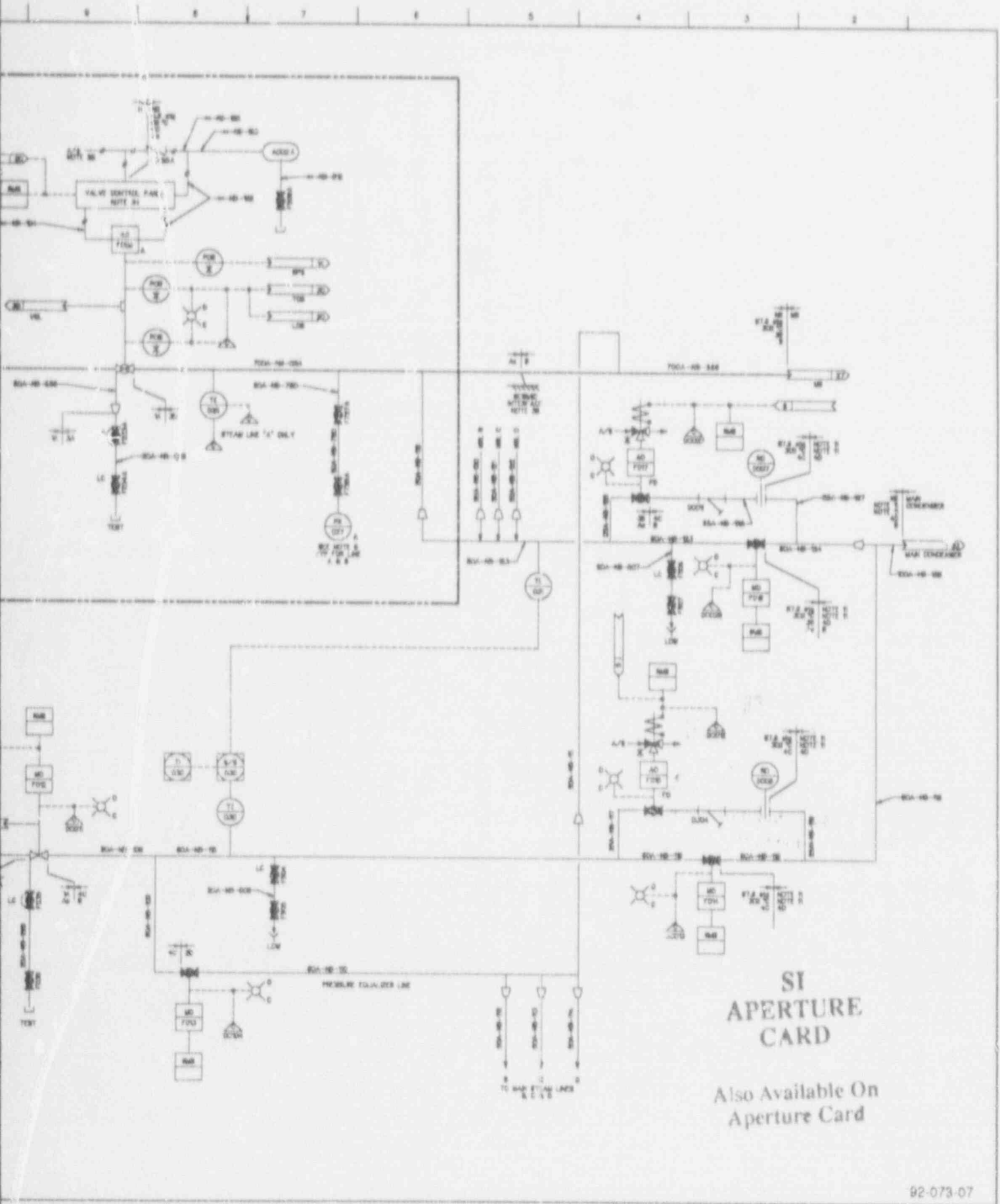
92-073-06

Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 2 of 11)

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W U V N E



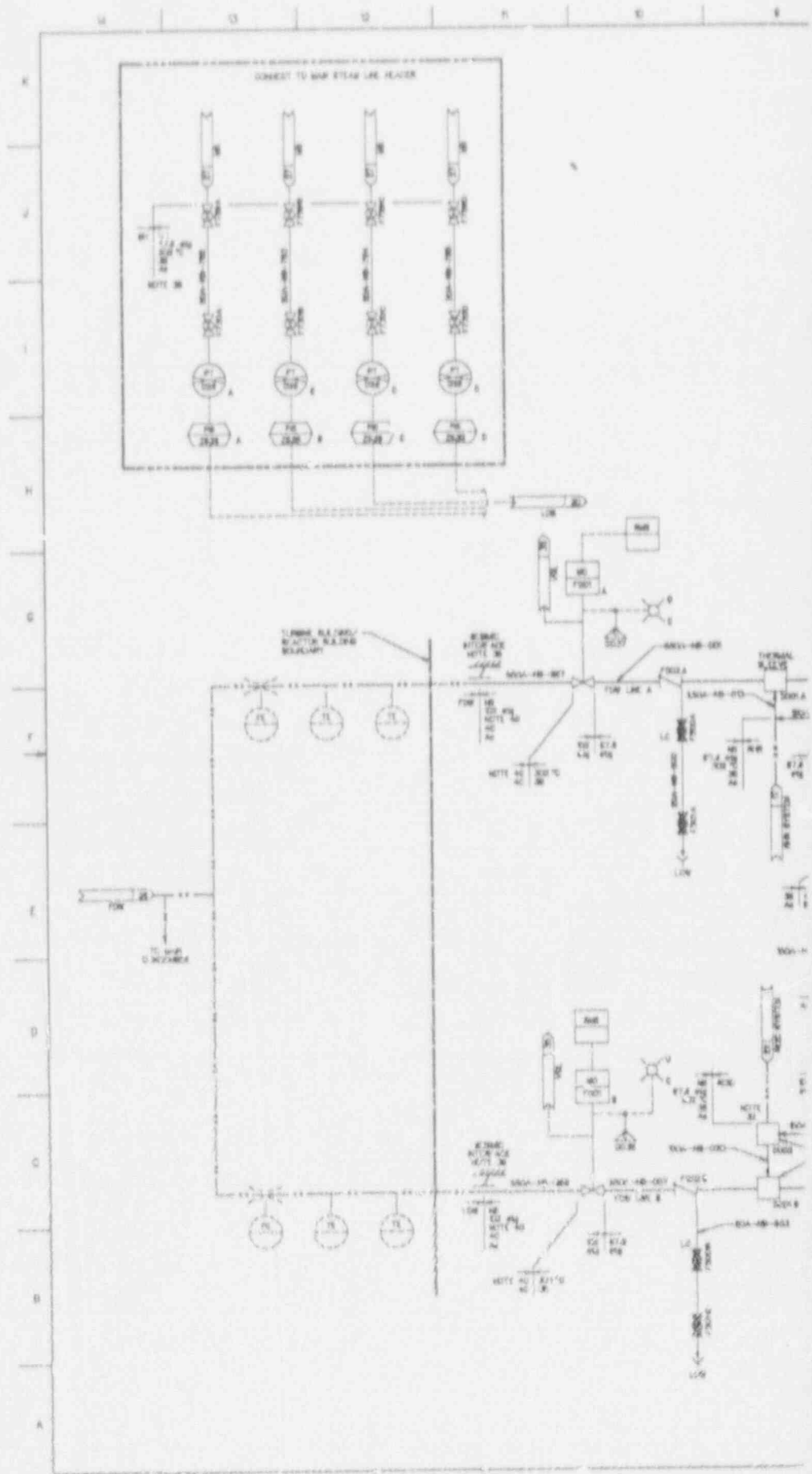


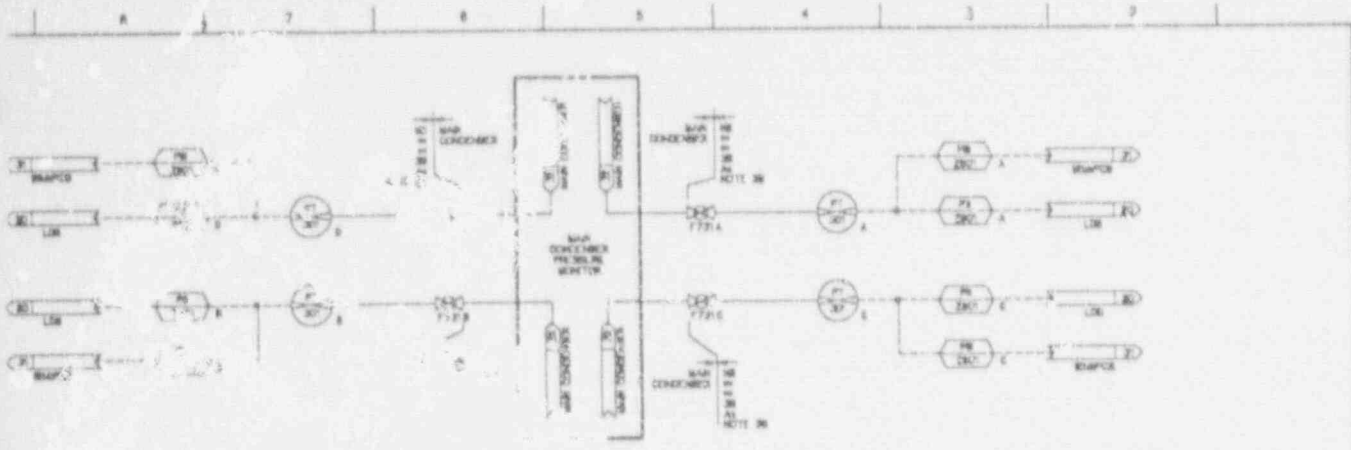
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Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 3 of 11)





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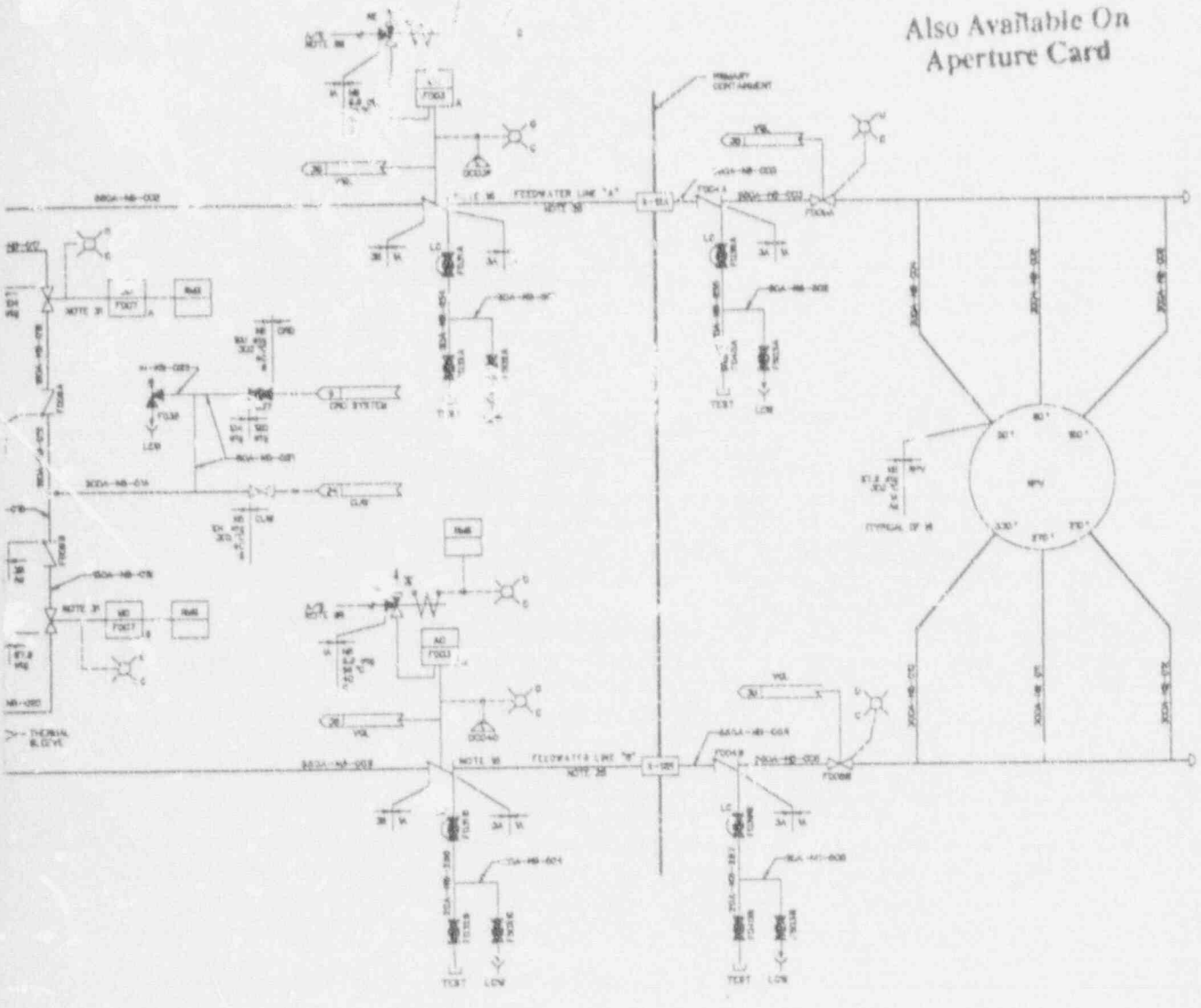
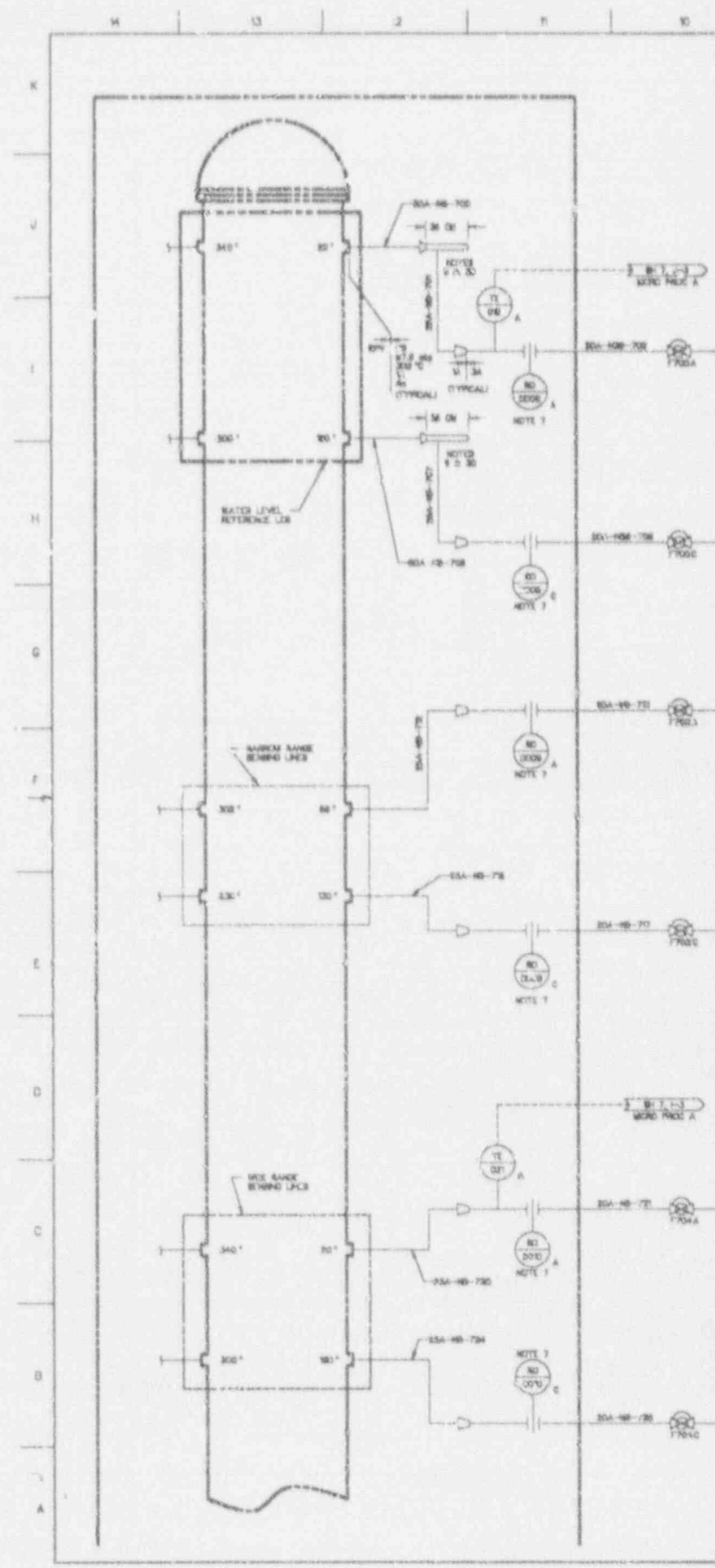
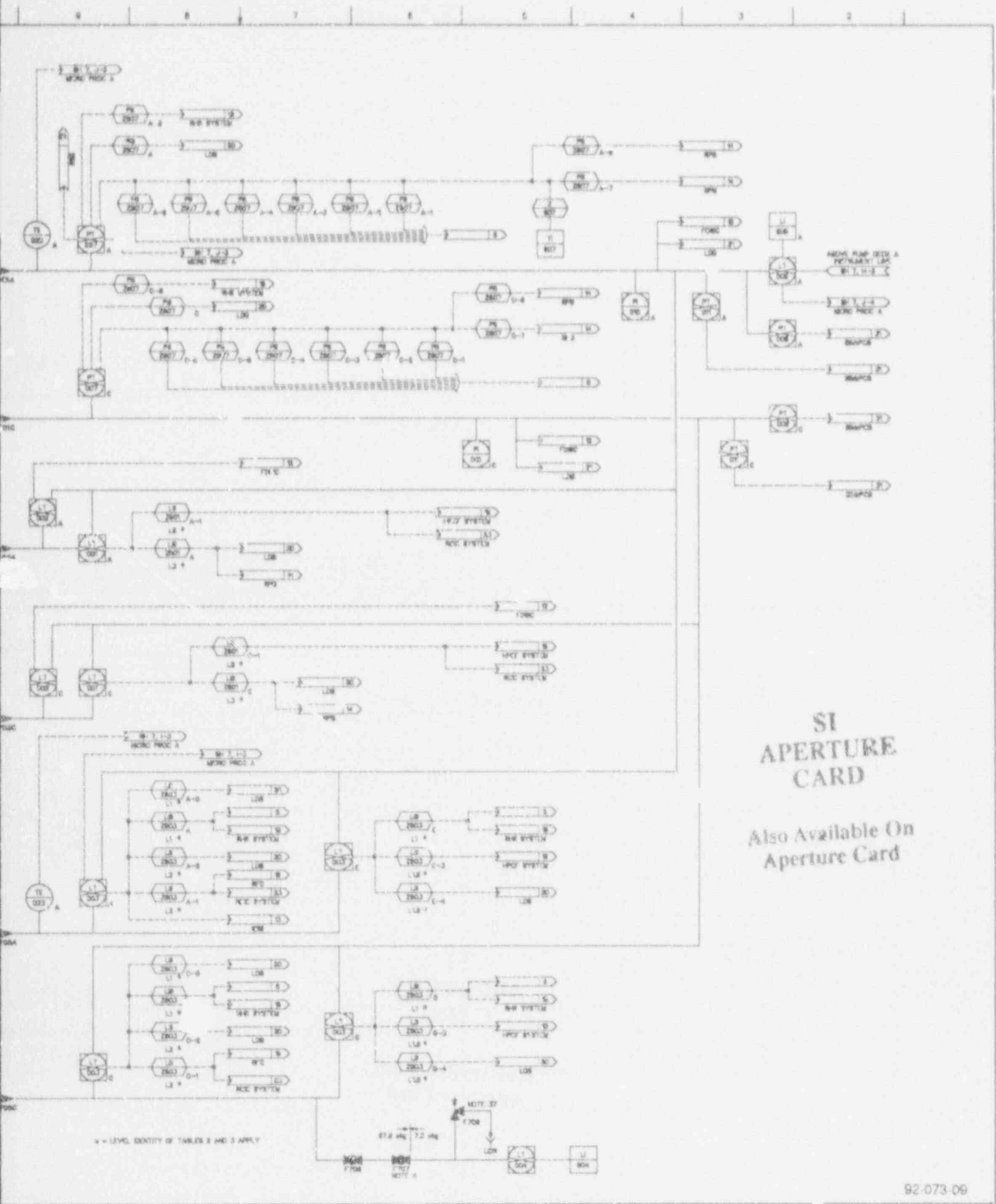


Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 4 of 11)

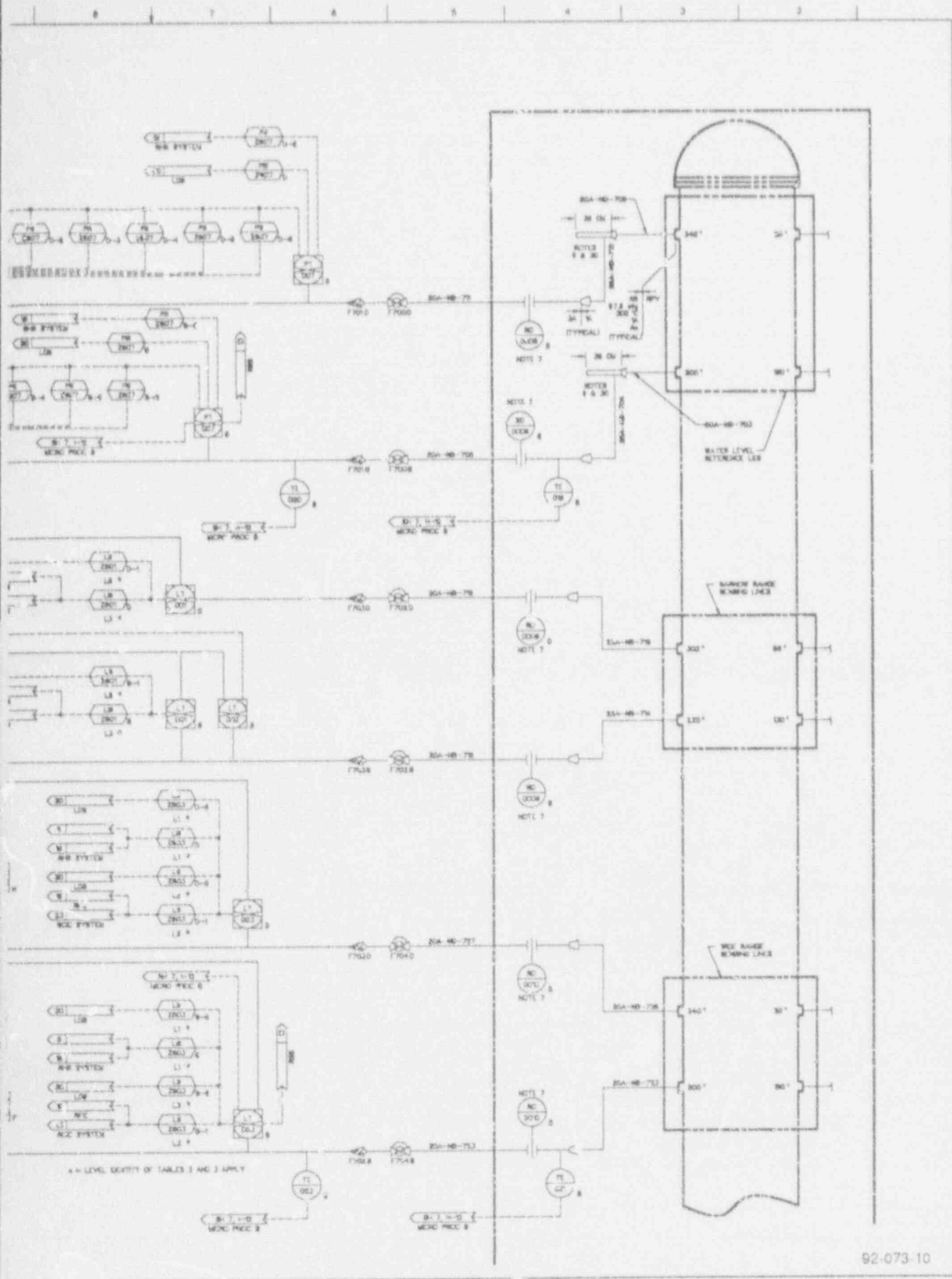


10/20/70



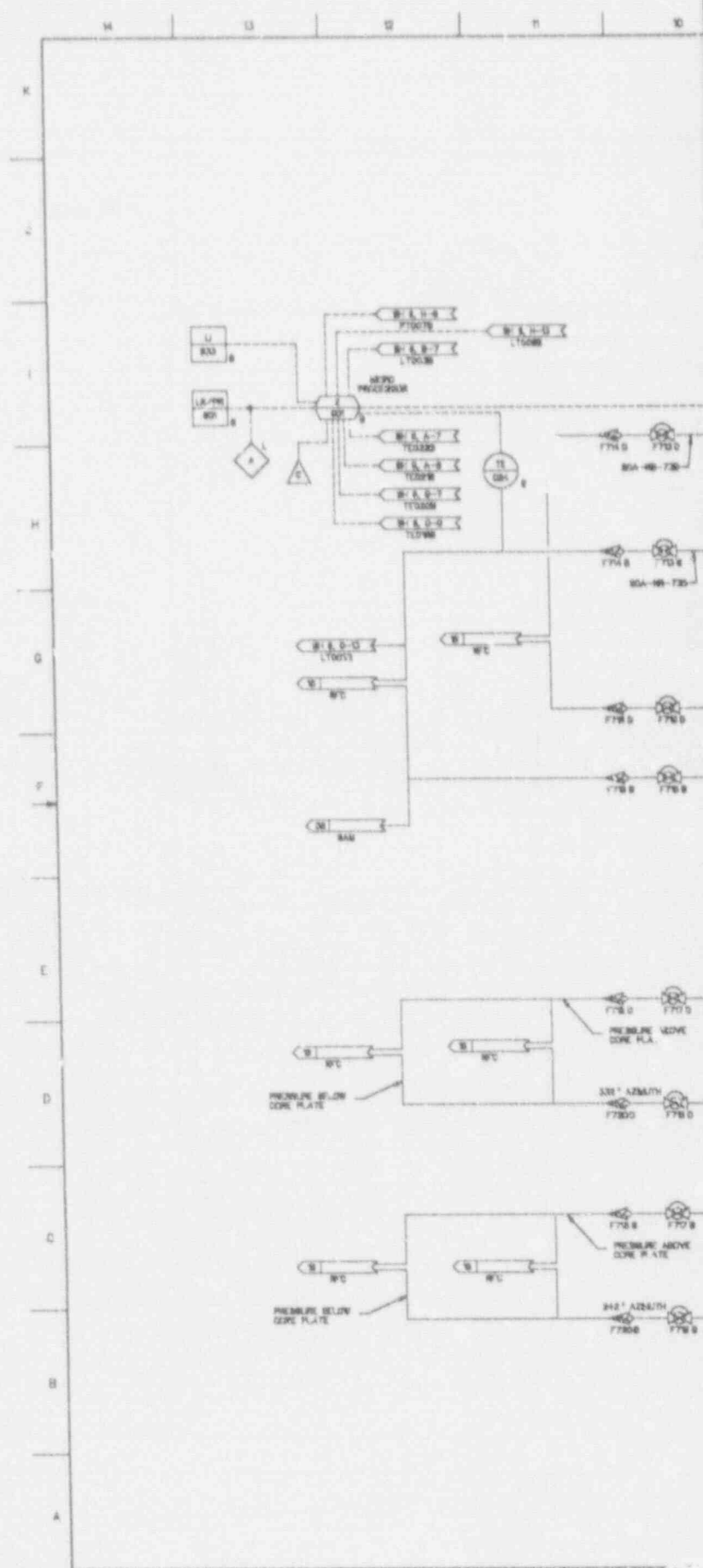
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Figure 5 1-3 NUCLEAR BOILER SYSTEM F&ID (Sheet 5 of 11)



92-073-10

Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 6 of 11)



401000 8020

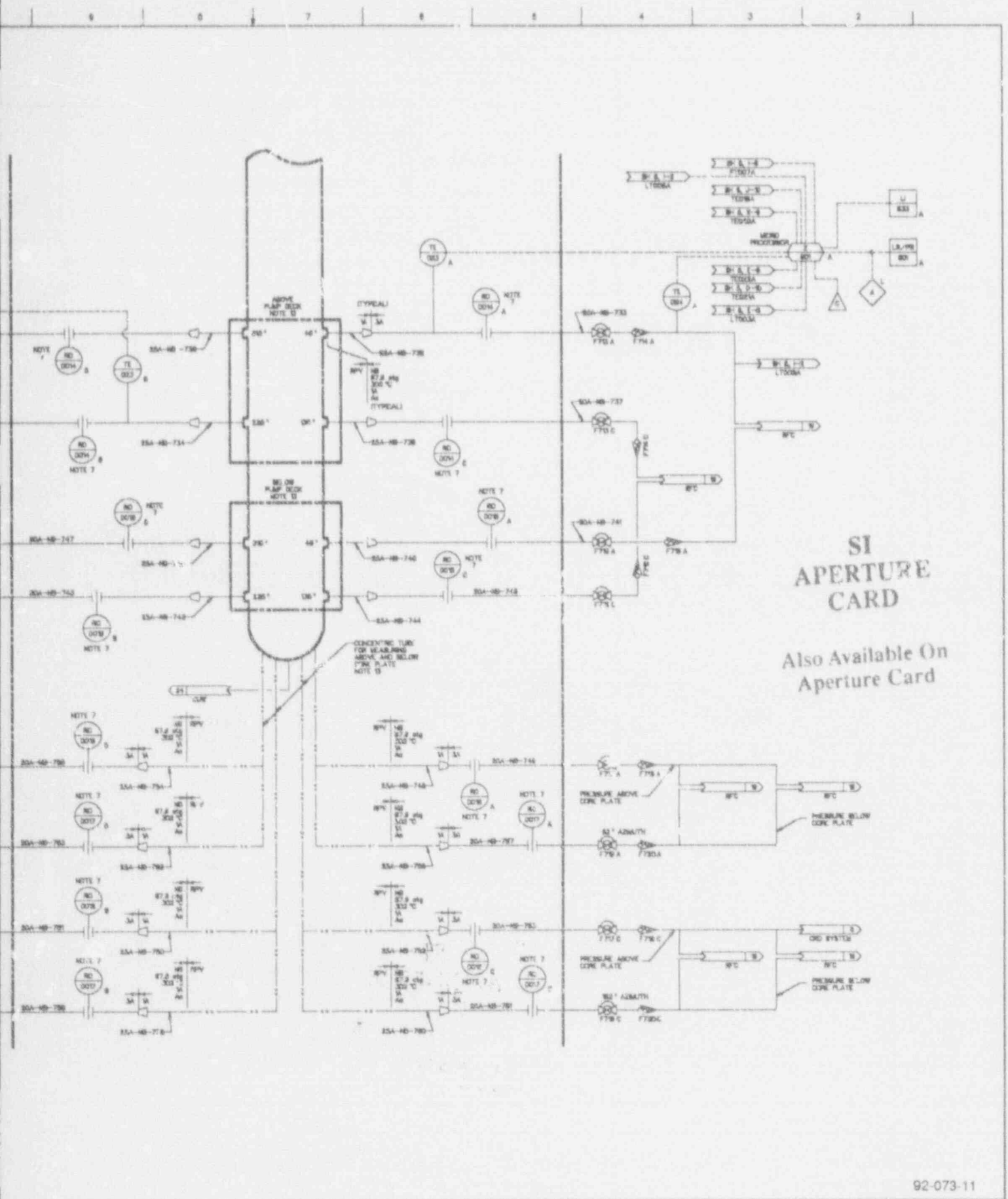


Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 7 of 11)

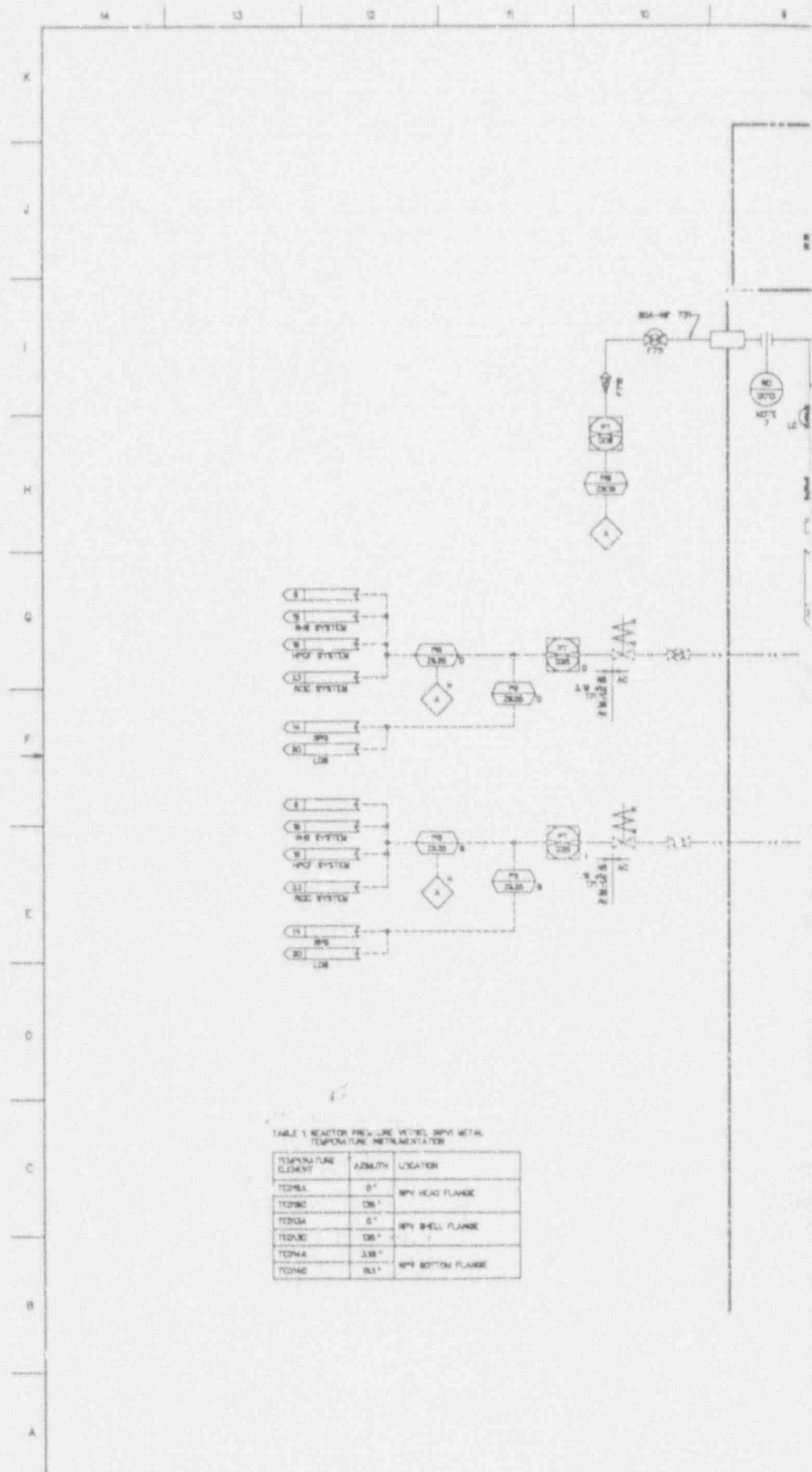


TABLE 1 REACTOR PRE-LINE VESSEL MW METAL TEMPERATURE INSTRUMENTATION

TEMPERATURE ELEMENT	AZIMUTH	LOCATION
TE208A	0°	MW HEAD FLANGE
TE208C	126°	MW HEAD FLANGE
TE208B	0°	MW SHELL FLANGE
TE208E	126°	MW SHELL FLANGE
TE208A	126°	MW BOTTOM FLANGE
TE208C	0°	MW BOTTOM FLANGE

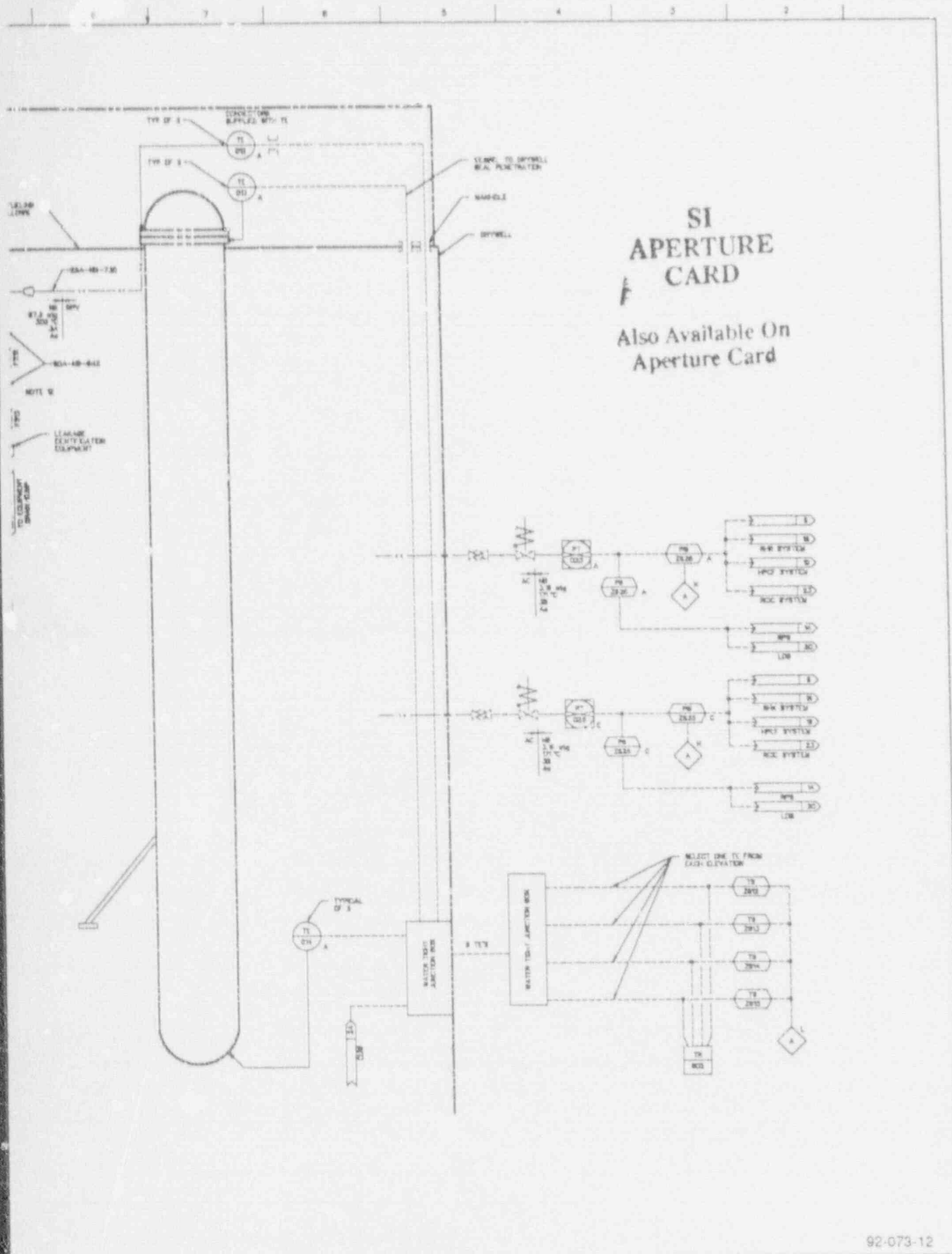


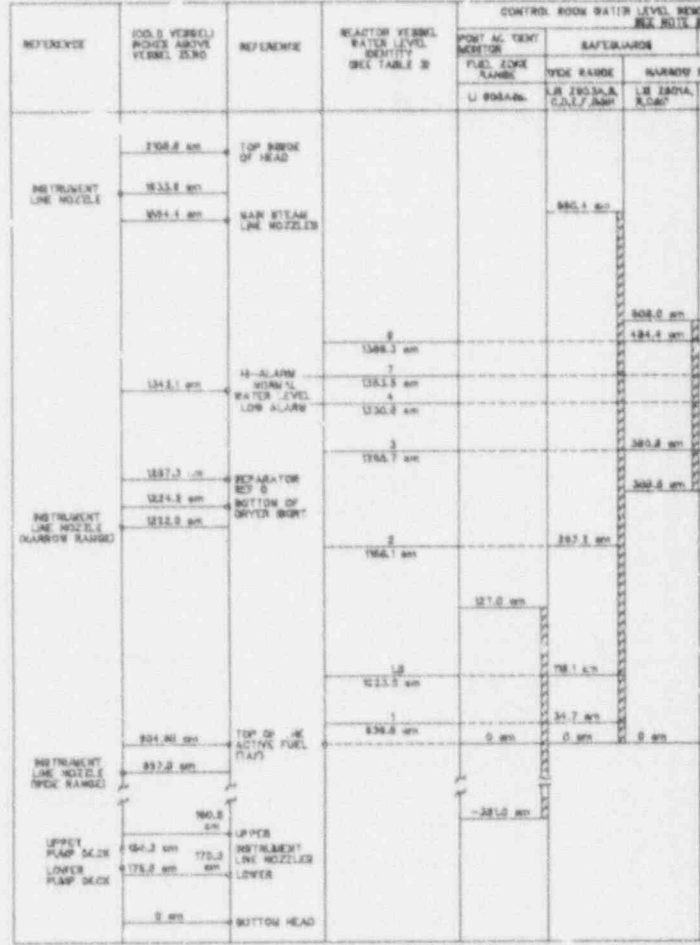
Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 8 of 11)

TABLE 4. BUFFER LETTER ASSIGNMENTS FOR SAFETY/RELIEF VALVES AND ASSOCIATED EQUIPMENT

SAFETY/RELIEF VALVE TYPE	7	2	5	6	8	9	1	3	4	10
TEMPERATURE ELEMENT THERM	F	J	M	Q	S	T	V	X	Y	Z
BOILER VALVE										
ADUMULATOR	F	J	M	Q	S	T	V	X	Y	Z
DIAPHRAGM VALVE	F	J	M	Q	S	T	V	X	Y	Z
SRV OPER CONTROL SYSTEM	F	J	M	Q	S	T	V	X	Y	Z
COMPUTER INPUT										
SPRING SET PRESSURE	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8
RELIEF SET PRESSURE	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2
RELIEF SET PRESSURE	76.9	77.3	75.0	76.0	76.0	76.0	76.7	76.7	76.7	76.7
RELIEF SET PRESSURE	75.4	75.1	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8
PT007A THRU D/P PB-2807A-4 THRU D-4	RS OF A,A,C,D									
PT007A THRU D/P PB-2807A-2 THRU D-2		RS OF A,A,C,D								
PT007A THRU D/P PB-2807-4 THRU D-4			RS OF A,A,C,D							
PT007A THRU D/P PB-2807A-3 THRU D-3								RS OF A,A,C,D		
PT007A THRU D/P PB-2807A-3 THRU D-3										
PT007- THRU D/P PB-2807A-1 THRU D-1										

* COMPUTER INPUTS FOR SRV POSITION SEE PERFORMANCE CHARACTERISTICS AND CONTROL SYSTEMS 09-409

TABLE 5. ELEVATION CORRELATION DIAGRAM



NO	NO.001	NO.002	NO.003	NO.004	NO.005	NO.006	NO.007	NO.008
1	66.8	69.8	69.8	69.8	69.8	69.8	69.8	69.8
2	73.1	73.1	73.1	73.1	73.1	73.1	73.1	73.1
3	74.2	74.2	74.2	74.2	74.2	74.2	74.2	74.2

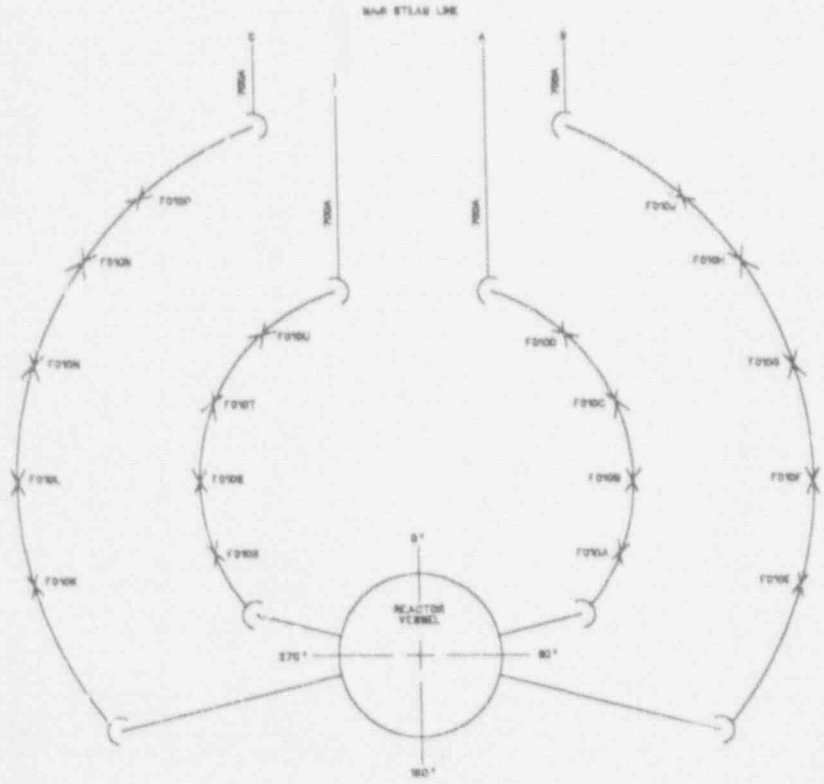


FIG. 2 SAFETY/RELIEF VALVE ORIENTATION AND STEAM PIPING LINE SIZES

TRIP AND TRIP LEVELS		
FEEDWATER	SHUTDOWN	REACTOR WELL
11 806	11 804	
1252.0 mm	1300.0 mm	
1300.0 mm	1350.0 mm	
1350.0 mm	1400.0 mm	
1400.0 mm	1450.0 mm	
1450.0 mm	1500.0 mm	
1500.0 mm	1550.0 mm	
1550.0 mm	1600.0 mm	
1600.0 mm	1650.0 mm	
1650.0 mm	1700.0 mm	

TABLE 3 WATER LEVEL TRIP FUNCTION

REACTOR VESSEL WATER LEVEL	DESCRIPTION OF TRIP	INITIATION PRECEDING TRIP SIGNAL	RANGE
6	TRIP RCC TURBINE	LS-280A-1 THRU D-1	NARROW RANGE
	TRIP HPCI INJECTION VALVES	LS-280A-1 THRU D-1	NARROW RANGE
	CLOSE SSB TURBINE STOP VALVES TRIP FEEDWATER PUMPS	SEE REFERENCE DOCUMENT 'B'	NARROW RANGE
7	HIGH LEVEL ALARM		NARROW RANGE
	LOW LEVEL ALARM WITH FLOW IN A STATE ON TRIP OF FEED PUMPS	SEE REFERENCE DOCUMENT 'B'	NARROW RANGE
8	LOW LEVEL ALARM	LS-280A THRU D	NARROW RANGE
	SHUTDOWN COOLANT ISOLATION VALVES	LS-280A THRU D	NARROW RANGE
	REACTOR CONTAINMENT BOLL VALVES LOW EXCEPT ON COOLING AND LOW BOLL VALVES AND MWP'S	LS-210A THRU D	NARROW RANGE
9	TRIP 4 OF 6SS PUMPS	SEE REFERENCE DOCUMENT 'B'	NARROW RANGE
	INITIATES MOC	LS-280A-1 THRU D-1	WIDE RANGE
7	TRIP REBORING & RNS PUMPS	LS-280A-1 THRU D-1	WIDE RANGE
	CLOSE CUR BOLL VALVES	LS-280A-4 THRU D-2	WIDE RANGE
10	INITIATES HPCI 6 & C	LS-280A-3 THRU H-3	WIDE RANGE
	CLOSE HCV'S & DR COOLING SYSTEM BOLL VALVES	LS-280A-4 THRU H-5	WIDE RANGE
11	INITIATES ADS WITH CONCOMITANT HIGH SPT-BELL PRESSURE	LS-280A THRU H	WIDE RANGE
	INITIATES RNS/LMFL MODE	LS-280A THRU H	WIDE RANGE

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Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 9 of 11)

STATION	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'	400'	425'	450'	475'	500'	525'	550'	575'	600'	625'	650'	675'	700'	725'	750'	775'	800'	825'	850'	875'	900'	925'	950'	975'	1000'
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STATION	1000'	975'	950'	925'	900'	875'	850'	825'	800'	775'	750'	725'	700'	675'	650'	625'	600'	575'	550'	525'	500'	475'	450'	425'	400'	375'	350'	325'	300'	275'	250'	225'	200'	175'	150'	125'	100'	75'	50'	25'	0'
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STATION	0'	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'	400'	425'	450'	475'	500'	525'	550'	575'	600'	625'	650'	675'	700'	725'	750'	775'	800'	825'	850'	875'	900'	925'	950'	975'	1000'
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STATION	1000'	975'	950'	925'	900'	875'	850'	825'	800'	775'	750'	725'	700'	675'	650'	625'	600'	575'	550'	525'	500'	475'	450'	425'	400'	375'	350'	325'	300'	275'	250'	225'	200'	175'	150'	125'	100'	75'	50'	25'	0'
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SECTION 5 (TYP.) SECTION 6 (TYP.) SECTION 7 (TYP.) SECTION 8 (TYP.) SECTION 9 (TYP.) SECTION 10 (TYP.) SECTION 11 (TYP.) SECTION 12 (TYP.) SECTION 13 (TYP.) SECTION 14 (TYP.) SECTION 15 (TYP.)

TABLE 4: PIPE SPECIFICATIONS (CONT'D)		TABLE 5: PIPE SPECIFICATIONS (CONT'D)			
MATERIAL	FLUID	PIPE SIZE	SCHEDULE	MATERIAL	FLUID
88	S	760	80	80	S
89	S	760	80	80	S
90	S	760	80	80	S
91	S	760	80	80	S
92	S	760	80	80	S
93	S	760	80	80	S
94	S	760	80	80	S
95	S	760	80	80	S
96	S	760	80	80	S
97	S	760	80	80	S
98	S	760	80	80	S
99	S	760	80	80	S
100	S	760	80	80	S
101	S	760	80	80	S
102	S	760	80	80	S
103	S	760	80	80	S
104	S	760	80	80	S
105	S	760	80	80	S
106	S	760	80	80	S
107	S	760	80	80	S
108	S	760	80	80	S
109	S	760	80	80	S
110	S	760	80	80	S
111	S	760	80	80	S
112	S	760	80	80	S
113	S	760	80	80	S
114	S	760	80	80	S
115	S	760	80	80	S
116	S	760	80	80	S
117	S	760	80	80	S
118	S	760	80	80	S
119	S	760	80	80	S
120	S	760	80	80	S
121	S	760	80	80	S
122	S	760	80	80	S
123	S	760	80	80	S
124	S	760	80	80	S
125	S	760	80	80	S
126	S	760	80	80	S
127	S	760	80	80	S
128	S	760	80	80	S
129	S	760	80	80	S
130	S	760	80	80	S
131	S	760	80	80	S
132	S	760	80	80	S
133	S	760	80	80	S
134	S	760	80	80	S
135	S	760	80	80	S
136	S	760	80	80	S
137	S	760	80	80	S
138	S	760	80	80	S
139	S	760	80	80	S
140	S	760	80	80	S
141	S	760	80	80	S
142	S	760	80	80	S
143	S	760	80	80	S
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145	S	760	80	80	S
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159	S	760	80	80	S
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174	S	760	80	80	S
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177	S	760	80	80	S
178	S	760	80	80	S
179	S	760	80	80	S
180	S	760	80	80	S
181	S	760	80	80	S
182	S	760	80	80	S
183	S	760	80	80	S
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185	S	760	80	80	S
186	S	760	80	80	S
187	S	760	80	80	S
188	S	760	80	80	S
189	S	760	80	80	S
190	S	760	80	80	S
191	S	760	80	80	S
192	S	760	80	80	S
193	S	760	80	80	S
194	S	760	80	80	S
195	S	760	80	80	S
196	S	760	80	80	S
197	S	760	80	80	S
198	S	760	80	80	S
199	S	760	80	80	S
200	S	760	80	80	S

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Figure 5.1-3 NUCLEAR BOILER SYSTEM P&ID (Sheet 10 of 11)

TABLE 6 PIPE NUMBERS FOR THE MAIN STEAM LINES

MAIN STEAM LINE	MPV TO THE OUTBOARD MPV	OUTBOARD MPV TO BURNER INFLOW FACE	BURNER INFLOW FACE TO MAIN STEAM SYSTEM	OUTBOARD MPV TIE-IN LINE	
				OUTBOARD MPV TO REDUCER	DOWNSTREAM REDUCER
A	700A-48-063	700C-48-034	700A-48-089	50A-48-238	50A-48-239
B	700A-48-065	700A-48-036	700A-48-070	13A-48-240	50A-48-241
C	700A-48-067	700A-48-038	700A-48-072	50A-48-242	50A-48-243
D	700A-48-069	700A-48-040	700A-48-074	50A-48-244	50A-48-245

TABLE 7 PIPE NUMBERS FOR THE SAFETY/RELIEF VALVE MPV DISCHARGE LINES

MPV	MPV DISCHARGE LINE				VALVE DISCHARGE LINE	
	MPV TO MPV SITES	MPV TO SUPERHEATER FLOOR	BOILER/FLOOR TO BLENDER	REDUCER TO BLENDER	UPSTREAM	DOWNSTREAM
700A	50A-48-027	500A-48-031	500A-48-033	500A-48-034	500A-48-035	500A-48-036
700B	50A-48-030	500A-48-036	500A-48-037	500A-48-038	500A-48-039	500A-48-040
700C	50A-48-033	500A-48-040	500A-48-041	500A-48-042	500A-48-043	500A-48-044
700D	50A-48-042	500A-48-044	500A-48-045	500A-48-046	500A-48-047	500A-48-048
700E	50A-48-047	500A-48-048	500A-48-049	500A-48-050	500A-48-051	500A-48-052
700F	50A-48-049	500A-48-051	500A-48-052	500A-48-053	500A-48-054	500A-48-055
700G	50A-48-050	500A-48-052	500A-48-053	500A-48-054	500A-48-055	500A-48-056
700H	50A-48-051	500A-48-053	500A-48-054	500A-48-055	500A-48-056	500A-48-057
700I	50A-48-052	500A-48-054	500A-48-055	500A-48-056	500A-48-057	500A-48-058
700J	50A-48-053	500A-48-055	500A-48-056	500A-48-057	500A-48-058	500A-48-059
700K	50A-48-054	500A-48-056	500A-48-057	500A-48-058	500A-48-059	500A-48-060
700L	50A-48-055	500A-48-057	500A-48-058	500A-48-059	500A-48-060	500A-48-061
700M	50A-48-056	500A-48-058	500A-48-059	500A-48-060	500A-48-061	500A-48-062
700N	50A-48-057	500A-48-059	500A-48-060	500A-48-061	500A-48-062	500A-48-063
700O	50A-48-058	500A-48-060	500A-48-061	500A-48-062	500A-48-063	500A-48-064
700P	50A-48-059	500A-48-061	500A-48-062	500A-48-063	500A-48-064	500A-48-065
700Q	50A-48-060	500A-48-062	500A-48-063	500A-48-064	500A-48-065	500A-48-066
700R	50A-48-061	500A-48-063	500A-48-064	500A-48-065	500A-48-066	500A-48-067
700S	50A-48-062	500A-48-064	500A-48-065	500A-48-066	500A-48-067	500A-48-068
700T	50A-48-063	500A-48-065	500A-48-066	500A-48-067	500A-48-068	500A-48-069
700U	50A-48-064	500A-48-066	500A-48-067	500A-48-068	500A-48-069	500A-48-070

TABLE 8 PIPE NUMBERS FOR THE MAIN STEAM ISOLATION VALVE MPV INLET/OUTLET LINES

MPV	OPENING CHECK VALVE TO MPV	OPENING FROM ACTUATOR/TOP	CLOSING VALVE CONTROL PANEL TO MPV	VECT LINE
700A	48-170	48-171	48-172	48-508
700B	48-173	48-174	48-175	48-509
700C	48-176	48-177	48-178	48-510
700D	48-179	48-180	48-181	48-511
700E	48-182	48-183	48-184	48-512
700F	48-185	48-186	48-187	48-513
700G	48-188	48-189	48-190	48-514
700H	48-191	48-192	48-193	48-515

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TABLE 5: PIPE NUMBERS FOR THE MAIN STEAM LINE INLET INSTRUMENT LINES

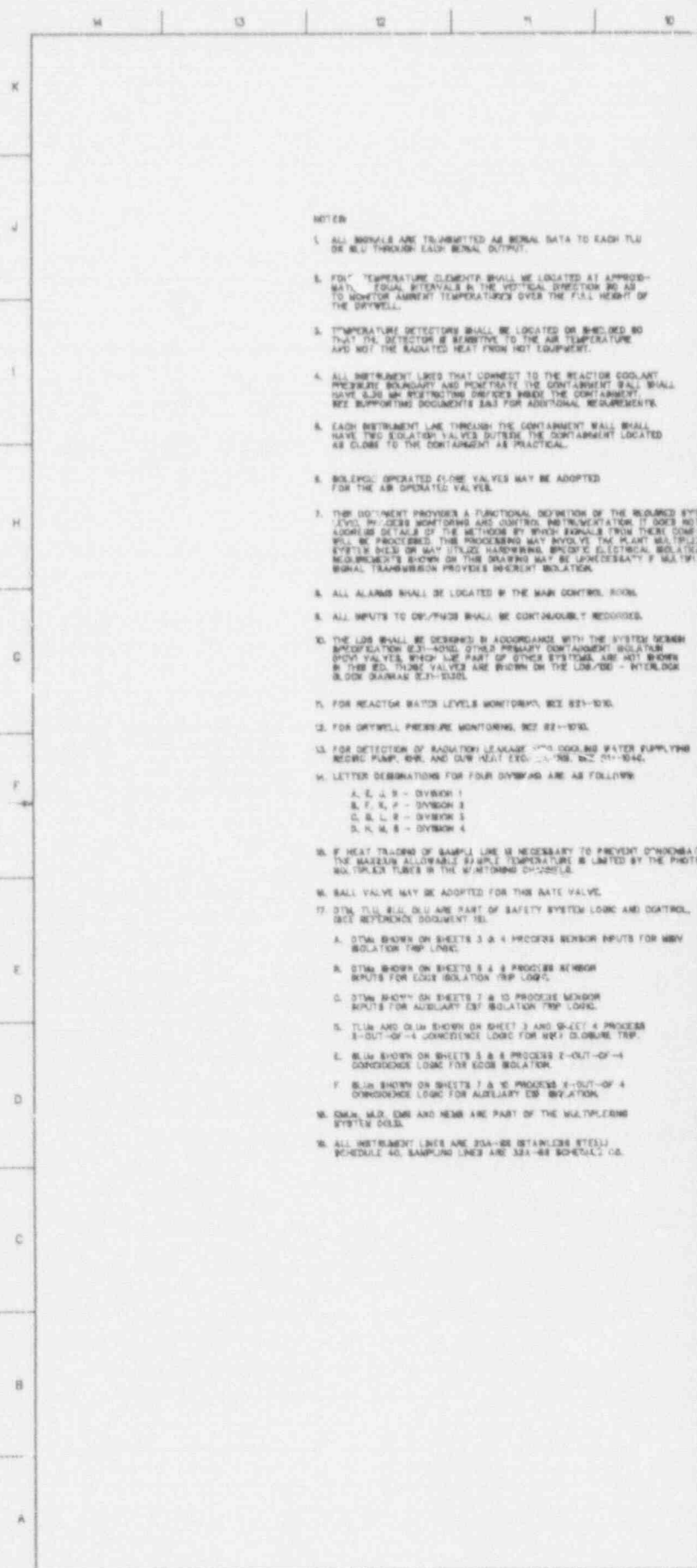
MAIN STEAM LINE	INLET INSTRUMENT LINES				600 PSI/500 DEG F
	INSTRUMENT LINE TO LINE		INSTRUMENT LINE TO LCB & FDRM		
	INLET TO PULSER	NEEDED TO EXCEED FLOW CHECK VALVE	INLET TO REDUCER	NEEDED TO EXCEED FLOW CHECK VALVE	
A	55A-48-764	55A-48-765	55A-48-766	55A-48-767	55A-48-768
B	55A-48-769	55A-48-770	55A-48-771	55A-48-772	55A-48-773
C	55A-48-774	55A-48-775	55A-48-776	55A-48-777	-
D	55A-48-778	55A-48-779	55A-48-780	55A-48-781	-

TABLE 6: PIPE NUMBERS FOR THE SAFETY/RELIEF VALVE BRANCH INSTRUMENT LINES

BRV	AIR INFLUENCE LINE				INSTRUMENT LINES FOR POWER-ACTUATED RELIEF		
	CHECK VALVE TO SWY "AIR P" TO BRV	BRANCH LINE FROM ACCUMULATOR	BRANCH LINE FROM SWY "AIR P" TO SWY "AIR P"	ACCUMULATOR VENT LINE	CHECK VALVE TO SWY "AIR P" FROM SWY "AIR P"	BRANCH LINE FROM ACCUMULATOR	ACCUMULATOR VENT LINE
F02A	55-48-284	55-48-285	55-48-286	55-48-287	55-48-288	55-48-289	55-48-290
F02B					55-48-291	55-48-292	55-48-293
F02C	55-48-294	55-48-295	55-48-296	55-48-297	55-48-298	55-48-299	55-48-300
F02D					55-48-301	55-48-302	55-48-303
F02E					55-48-304	55-48-305	55-48-306
F02F	55-48-307	55-48-308	55-48-309	55-48-310	55-48-311	55-48-312	55-48-313
F02G					55-48-314	55-48-315	55-48-316
F02H	55-48-317	55-48-318	55-48-319	55-48-320	55-48-321	55-48-322	55-48-323
F02I					55-48-324	55-48-325	55-48-326
F02J	55-48-327	55-48-328	55-48-329	55-48-330	55-48-331	55-48-332	55-48-333
F02K					55-48-334	55-48-335	55-48-336
F02L	55-48-337	55-48-338	55-48-339	55-48-340	55-48-341	55-48-342	55-48-343
F02M					55-48-344	55-48-345	55-48-346
F02N	55-48-347	55-48-348	55-48-349	55-48-350	55-48-351	55-48-352	55-48-353
F02O					55-48-354	55-48-355	55-48-356
F02P					55-48-357	55-48-358	55-48-359
F02Q	55-48-360	55-48-361	55-48-362	55-48-363	55-48-364	55-48-365	55-48-366
F02R					55-48-367	55-48-368	55-48-369
F02S	55-48-370	55-48-371	55-48-372	55-48-373	55-48-374	55-48-375	55-48-376
F02T					55-48-377	55-48-378	55-48-379
F02U					55-48-380	55-48-381	55-48-382

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NOTES

1. ALL SIGNALS ARE TRANSMITTED AS SERIAL DATA TO EACH TLU OR SSI THROUGH EACH SERIAL OUTPUT.
2. FDT² TEMPERATURE ELEMENTS SHALL BE LOCATED AT APPROXIMATELY EQUAL INTERVALS IN THE VERTICAL DIRECTION SO AS TO MONITOR AMBIENT TEMPERATURES OVER THE FULL HEIGHT OF THE DRYWELL.
3. TEMPERATURE DETECTORS SHALL BE LOCATED OR SHIELDED SO THAT THE DETECTOR IS SENSITIVE TO THE AIR TEMPERATURE AND NOT THE RADIATED HEAT FROM HOT EQUIPMENT.
4. ALL INSTRUMENT LINES THAT CONNECT TO THE REACTOR COOLANT PRESSURE BOUNDARY AND PENETRATE THE CONTAINMENT WALL SHALL HAVE SJSI AND EXTENSION DEVICES UNDER THE CONTAINMENT. SEE SUPPORTING DOCUMENTS 2&3 FOR ADDITIONAL REQUIREMENTS.
5. EACH INSTRUMENT LINE THROUGH THE CONTAINMENT WALL SHALL HAVE TWO ISOLATION VALVES INSURE THE CONTAINMENT LOCATED AS CLOSE TO THE CONTAINMENT AS PRACTICAL.
6. SOLID STATE OPERATED CLOSE VALVES MAY BE ADOPTED FOR THE AIR OPERATED VALVES.
7. THIS DOCUMENT PROVIDES A FUNCTIONAL DESCRIPTION OF THE REQUIRED SYSTEM LEVEL MONITORING AND CONTROL INSTRUMENTATION. IT DOES NOT ADDRESS DETAILS OF THE METHODS BY WHICH SIGNALS FROM THESE DEVICES WILL BE PROCESSED. THE PROCESSING MAY BE DONE IN THE PLANT SSI, TLU, SSI SYSTEMS OR MAY UTILIZE HARDWIRED SPECIFIC ELECTRICAL ISOLATION REQUIREMENTS SHOWN ON THE DRAWING. MAY BE UNNECESSARILY P. MULTIPLE SERIAL TRANSMISSION PROVIDES INCREASING ISOLATION.
8. ALL ALARMS SHALL BE LOCATED IN THE MAIN CONTROL ROOM.
9. ALL INPUTS TO DEVICES SHALL BE CONTINUOUSLY MONITORED.
10. THE LOG SHALL BE DESIGNED BY ACCORDANCE WITH THE SYSTEM DESIGN SPECIFICATION 0.11-400. OTHER PRIMARY CONTAINMENT ISOLATION POINT VALVES WHICH ARE PART OF OTHER SYSTEMS ARE NOT SHOWN IN THIS DD. THESE VALVES ARE SHOWN ON THE LOG/DB - WATERLOG BLOCK DIAGRAM 0.11-5100.
11. FOR REACTOR WATER LEVELS MONITORING, SEE 0.11-5100.
12. FOR DRYWELL PRESSURE MONITORING, SEE 0.11-5100.
13. FOR DETECTION OF RADIATION LEAKAGE FROM COOLING WATER SUPPLYING REACTOR PUMP, RWL AND DWR HEAT EXCHANGERS, SEE 0.11-5140.
14. LETTER DESIGNATIONS FOR FOUR DIVISIONS ARE AS FOLLOWS:
 - A. E. L. S - DIVISION 1
 - B. F. N. P - DIVISION 2
 - C. S. L. S - DIVISION 3
 - D. H. M. S - DIVISION 4
15. IF HEAT TOLERANCE OF SAMPLE LINE IS NECESSARY TO PREVENT DISTORTION OF THE SAMPLE ALLOWABLE SAMPLE TEMPERATURE IS LIMITED BY THE PHOTO MULTIPLEX TUBES IN THE MONITORING CHANNELS.
16. BALL VALVE MAY BE ADOPTED FOR THIS BATE VALVE.
 - A. DTN SHOWN ON SHEETS 3 & 4 PROCESS SENSOR INPUTS FOR MWI ISOLATION TRIP LOGIC.
 - B. DTN SHOWN ON SHEETS 5 & 6 PROCESS SENSOR INPUTS FOR LOGS ISOLATION TRIP LOGIC.
 - C. DTN SHOWN ON SHEETS 7 & 10 PROCESS SENSOR INPUTS FOR AUXILIARY EBT ISOLATION TRIP LOGIC.
 - D. TLU AND DLU SHOWN ON SHEET 3 AND SHEET 4 PROCESS 3-OUT-OF-4 CONCURRENCE LOGIC FOR MWI CLOSURE TRIP.
 - E. SLU SHOWN ON SHEETS 5 & 6 PROCESS 2-OUT-OF-4 CONCURRENCE LOGIC FOR EGS ISOLATION.
 - F. SLU SHOWN ON SHEETS 7 & 10 PROCESS 1-OUT-OF-4 CONCURRENCE LOGIC FOR AUXILIARY EBT ISOLATION.
17. DDM, HLD, DMS AND HEMS ARE PART OF THE MULTIPLEXING SYSTEMS LOGS.
18. ALL INSTRUMENT LINES ARE 304-SS STAINLESS STEEL. SCHEDULE 40. SAMPLING LINES ARE 324-SS SCHEDULE 40.

0.11-5100
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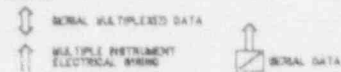
INSTRUMENTS

	WPI NO.
1. REACTOR CORE ISOLATION COOLING SYSTEM P&ID	081-1010
2. NUCLEAR BOILER SYSTEM P&ID	081-1010
3. REACTOR WATER CLEANUP SYSTEM P&ID	031-1010
4. SAMPLING SYSTEM P&ID	061-1010
5. PROCESS RADIATION MONITORING SYSTEM IED	051-1040
6. RADIOACTIVE SYSTEM P&ID	077-1010
7. INSTRUMENT AIR SYSTEM P&ID	068-1010
8. ESSENTIAL MULTIPLEXING SYSTEM BS	103-1030
9. LEAK DETECTION & ISOLATION SYSTEM BS	121-1030
10. REACTOR PROTECTION SYSTEM IED	171-1040
11. STANDBY LIQUID CONTROL SYSTEM BS	175-1030
12. SAFETY SYSTEM & LOGIC CONTROL BS	432-0200
13. PERFORMANCE MONITORING & CONTROL SYSTEM IED	091-1010
14. NEUTRON MONITORING SYSTEM IED	051-1010
15. SUPPLEMENTARY POOL CLEAN-UP SYSTEM P&ID	061-1010
16. REACTOR BUILDUP WATER CLEAN-UP SYSTEM P&ID	021-1010
17. HVAC NORMAL COOLING WATER SYSTEM P&ID	054-1010
18. STANDBY GAS TREATMENT SYSTEM P&ID	123-1010
19. ATMOSPHERIC CONTROL SYSTEM P&ID	121-1010
20. FLAMMABILITY CONTROL SYSTEM P&ID	140-1010
21. HEATING, VENTILATING & AIR CONDITIONING P&ID	141-1010

INSTRUMENT SUPPORT

	WPI NO.
1. P&ID AND INSTRUMENT DIAGRAM SYSTEMS	410-3030
2. PROCESS INSTRUMENTATION	415-3030
3. GROUP CLASSIFICATION & CONTAINMENT ISOLATION DATA	415-1030

LEGEND



ABBREVIATIONS

- MLU - MASTER LOGIC UNIT
- SLU - SLAVE LOGIC UNIT
- DMU - DIGITAL TRIP MODULE
- PMU - REMOTE MULTIPLEXING UNIT
- BSU - SAFETY SYSTEM LOGIC UNIT
- ESMS - ESSENTIAL MULTIPLEXING SYSTEM
- NEMS - NON-ESSENTIAL MULTIPLEXING SYSTEM

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WPI NO. 01-1010

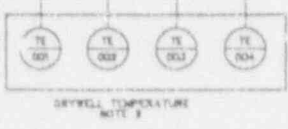
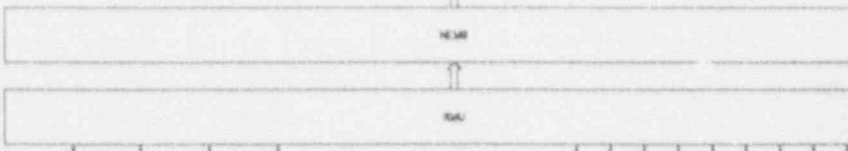
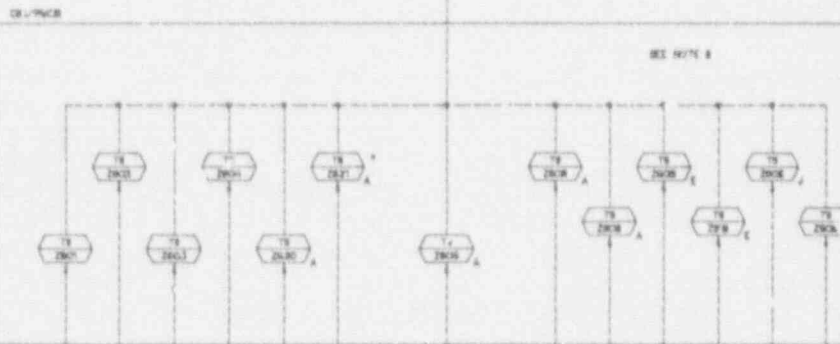
92-073-16

Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 1 of 10)

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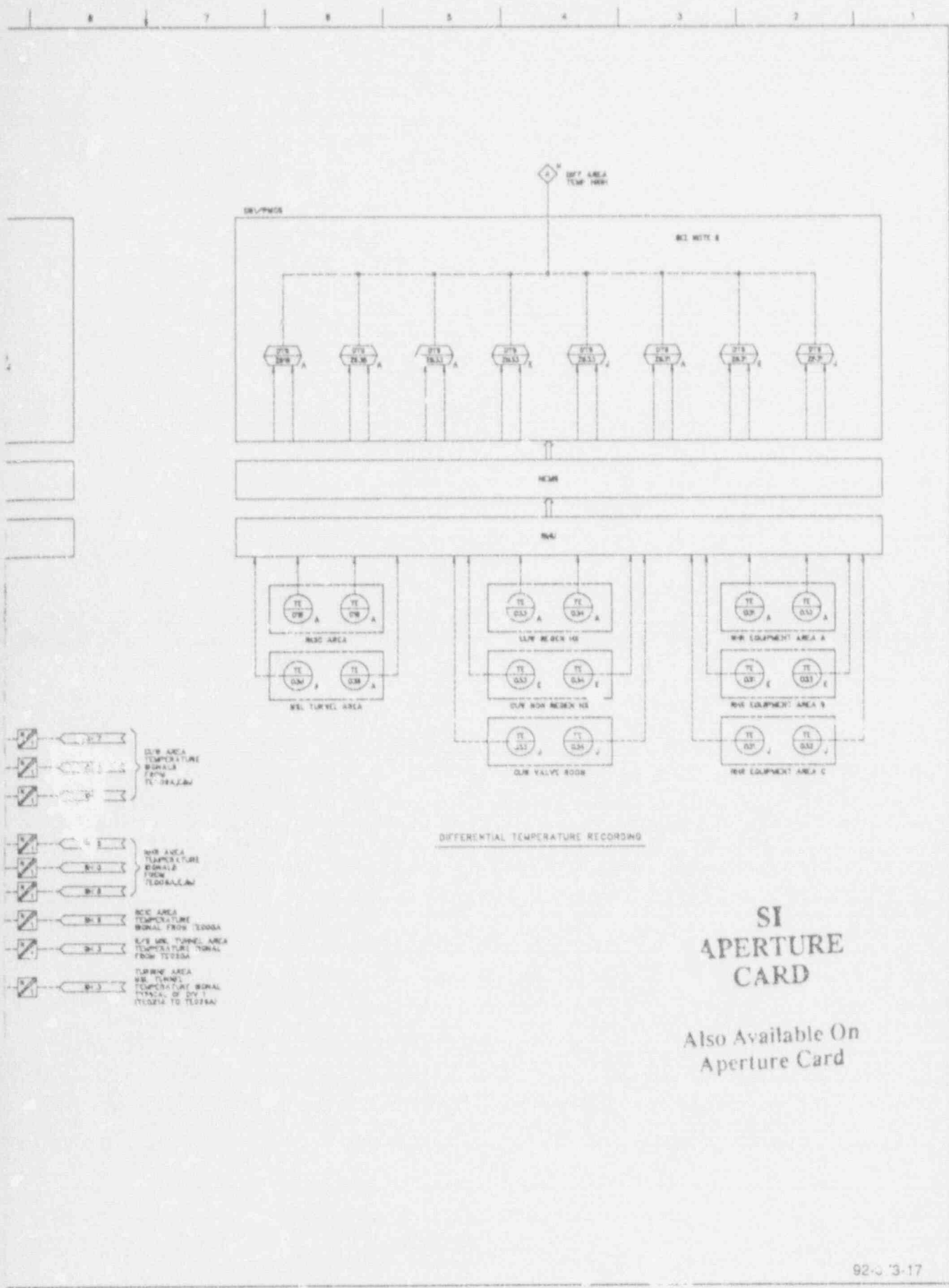
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* TYPICAL OF 8 THE 2K1 - 2K20



AMBIENT TEMPERATURE RECORDING



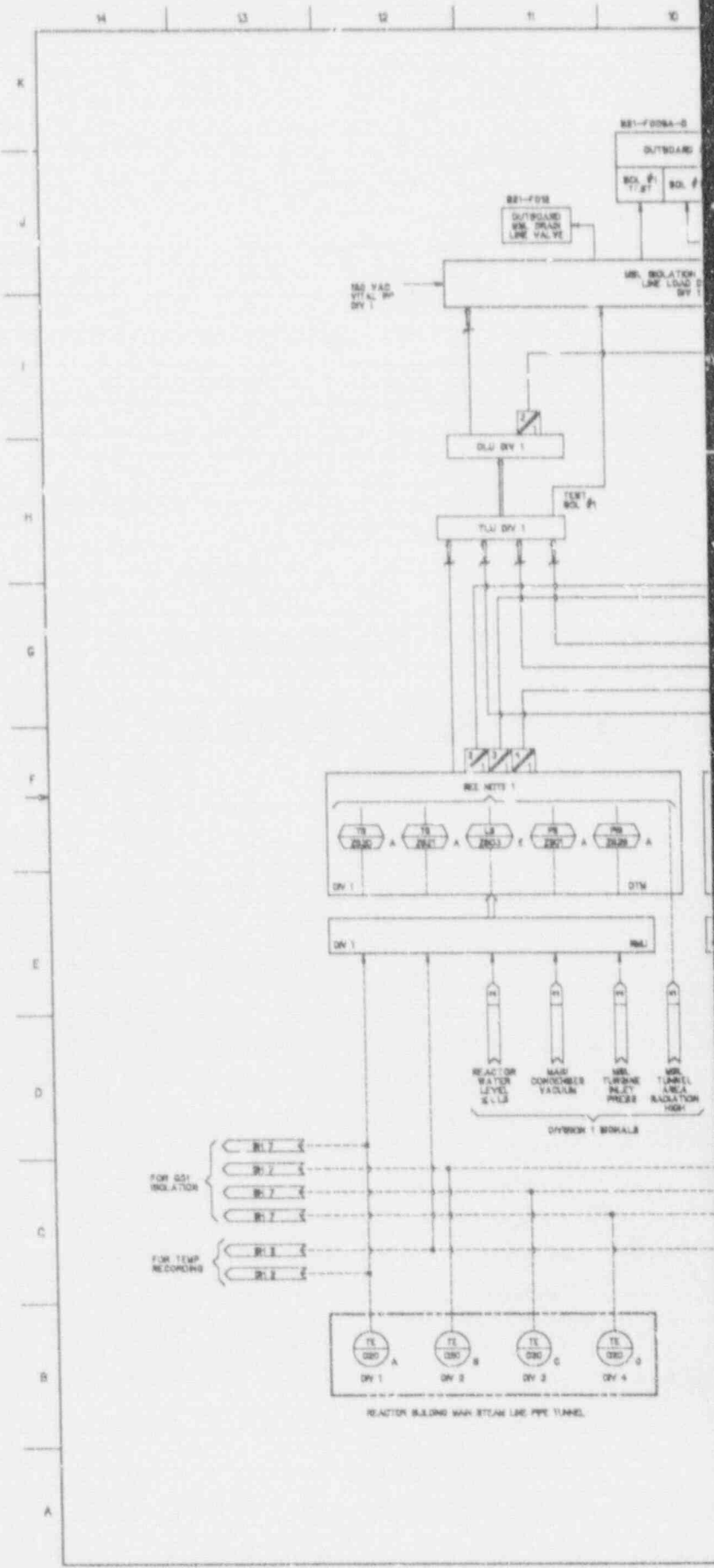
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- NSC AREA TEMPERATURE SIGNAL FROM TE 037, 038
- NSC AREA TEMPERATURE SIGNAL FROM TE 039, 040
- D/W VALVE ROOM TEMPERATURE SIGNAL FROM TE 041, 042
- D/W BOH RESEX NS TEMPERATURE SIGNAL FROM TE 043, 044
- D/W EQUIPMENT AREA TEMPERATURE SIGNAL FROM TE 045, 046, 047, 048, 049, 050

DIFFERENTIAL TEMPERATURE RECORDING

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Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 2 of 10)



Handwritten notes in the left margin:

SI 1 C

SI 2 C

SI 3 C

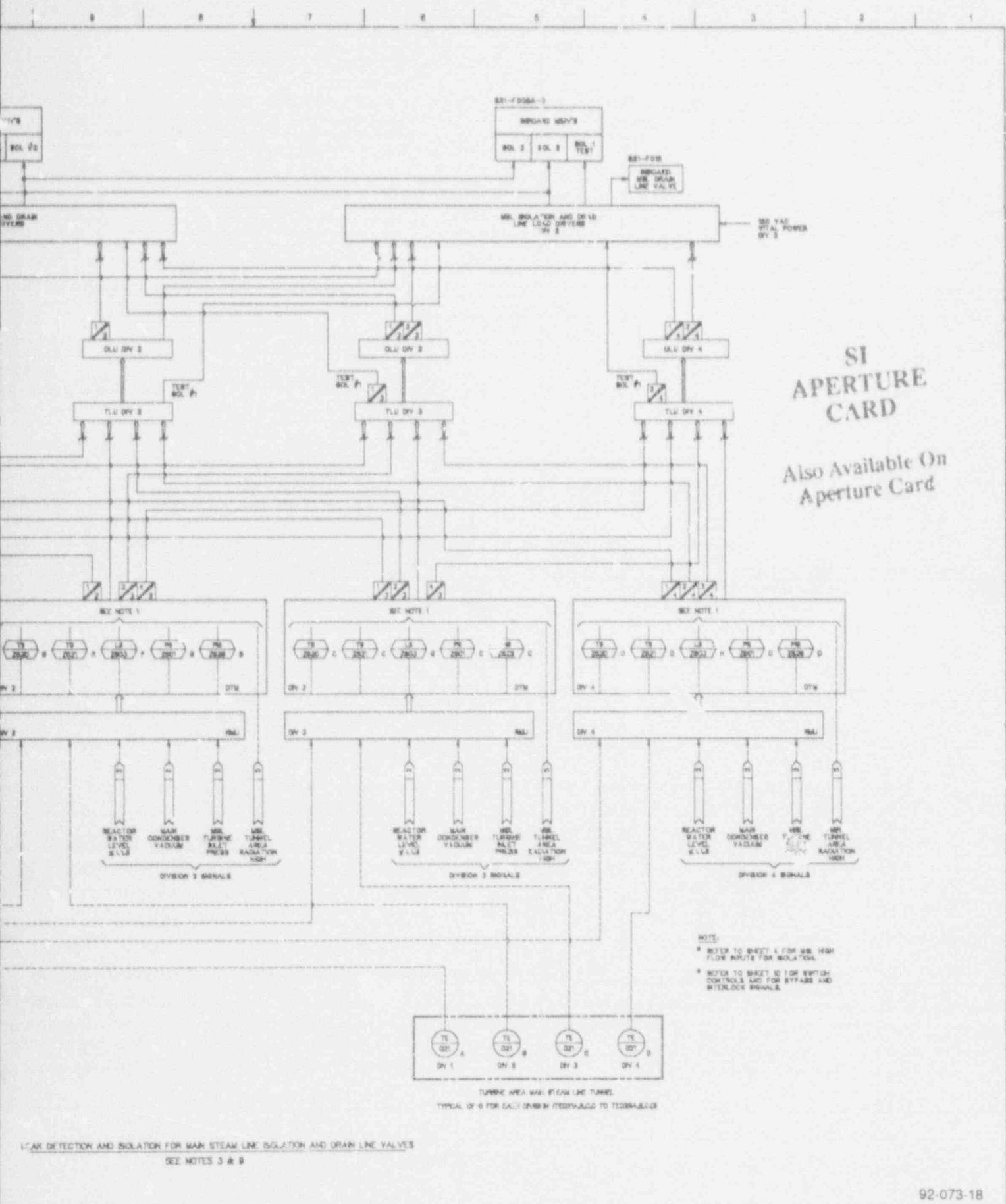
SI 4 C

TI 1 C

TI 2 C

TI 3 C

TI 4 C



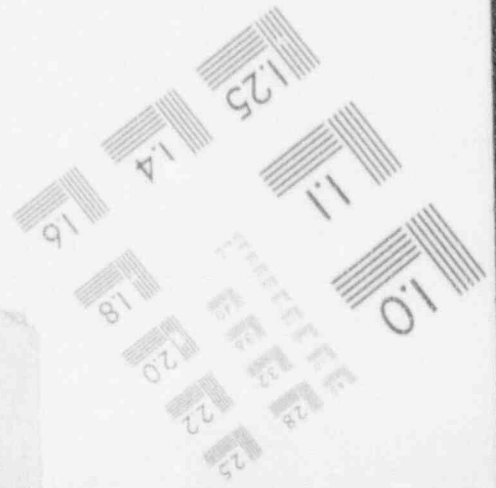
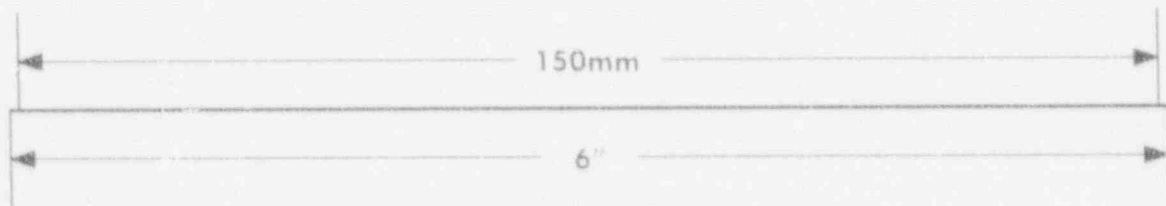
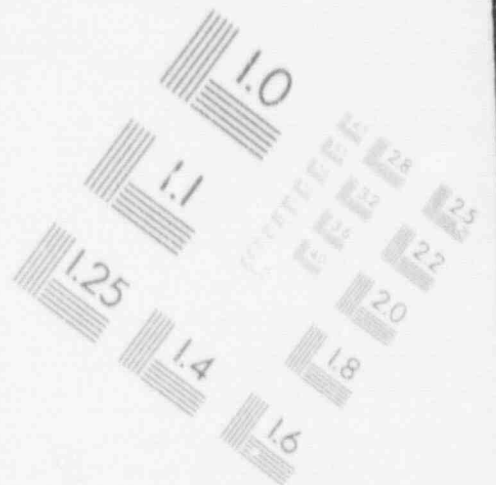
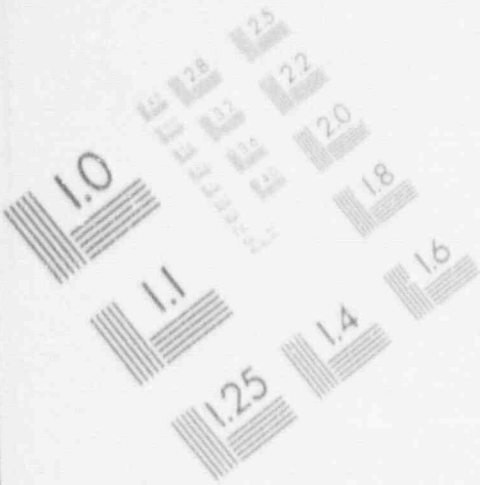
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LEAK DETECTION AND ISOLATION FOR MAIN STEAM LINE ISOLATION AND DRAIN LINE VALVES
SEE NOTES 3 & 9

Figure 5.2-8 L.I.E.A.K. DETECTION AND ISOLATION SYSTEM IED (Sheet 3 of 10)

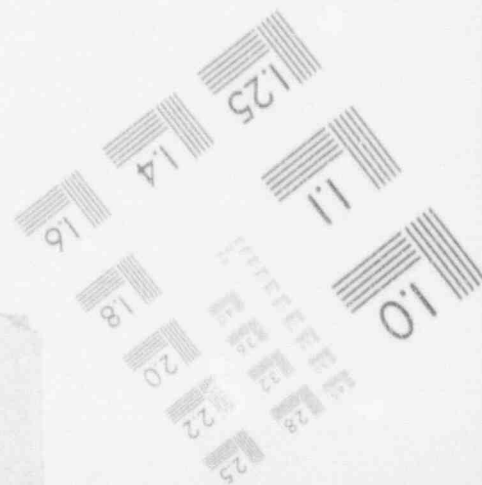
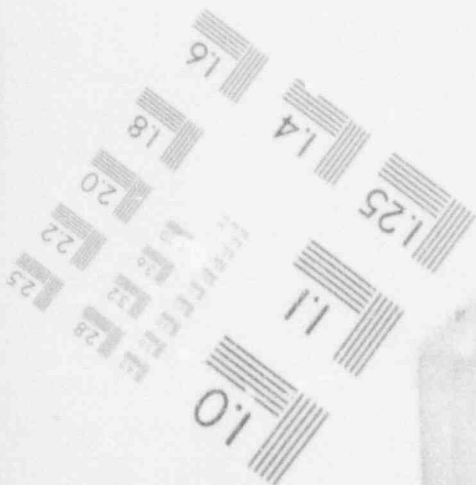
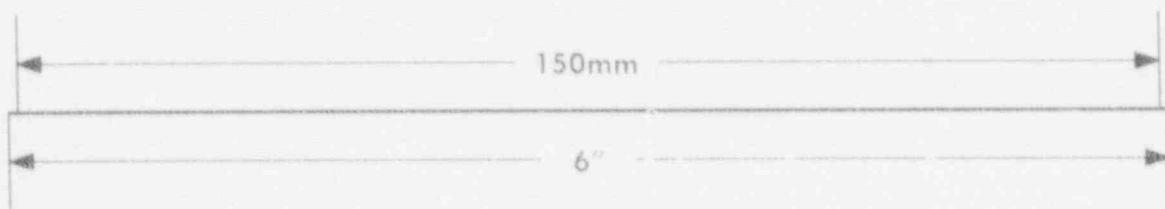
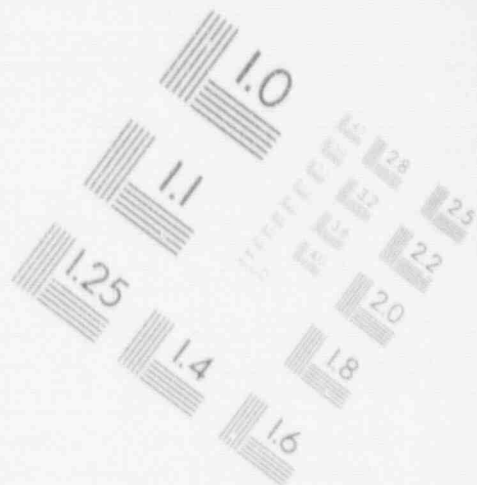
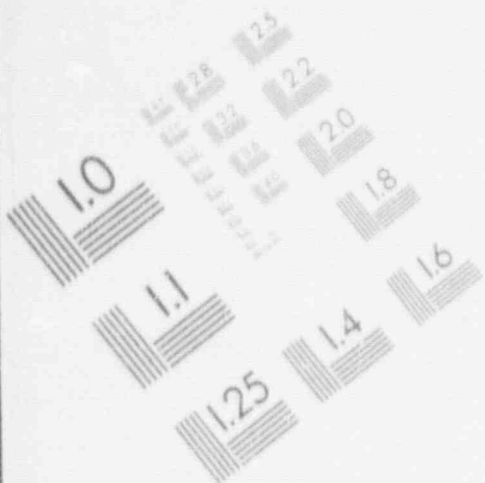
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IMAGE EVALUATION TEST TARGET (MT-3)



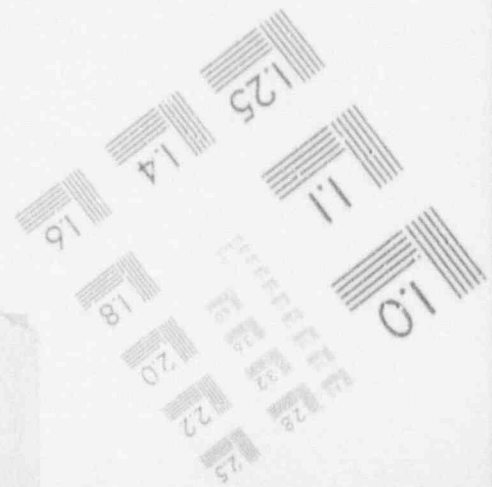
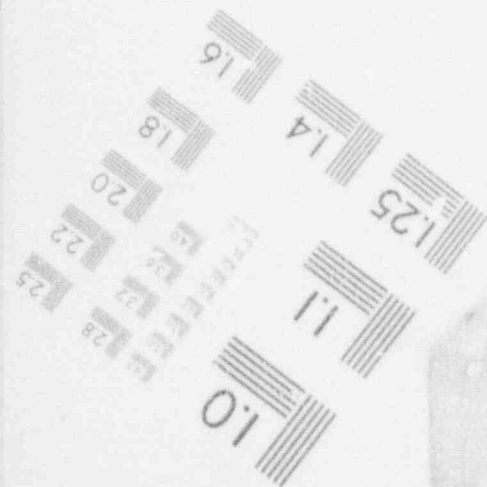
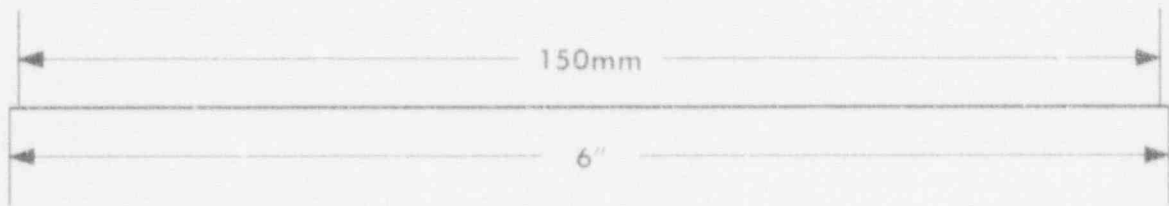
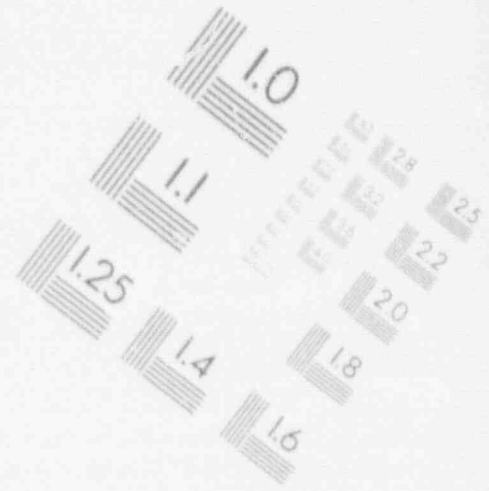
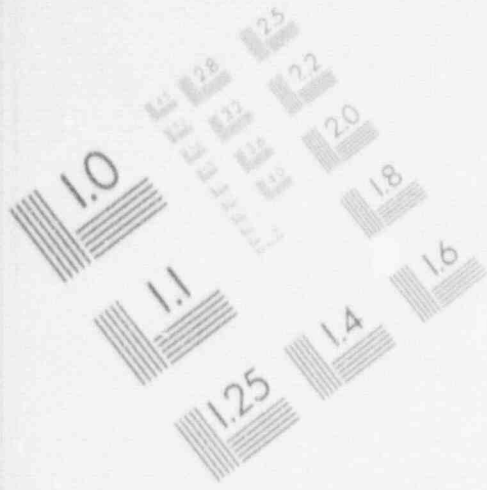
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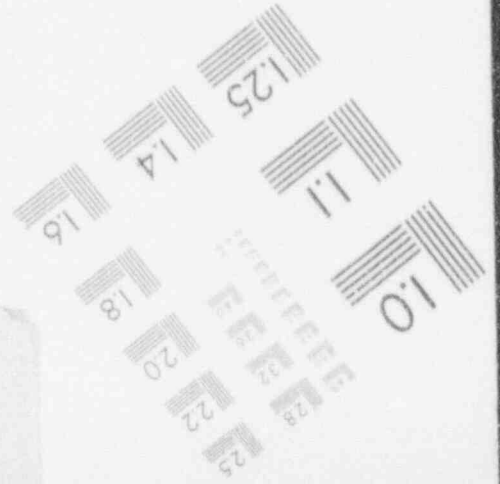
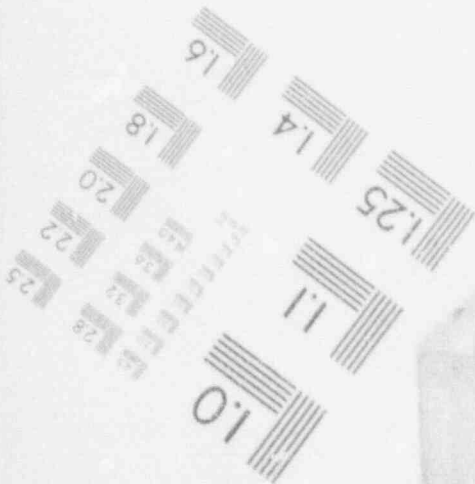
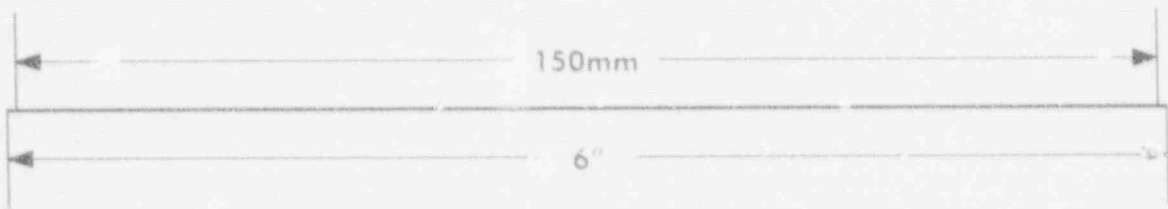
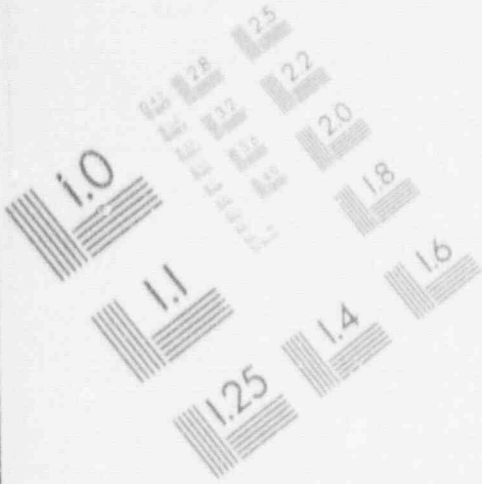
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IMAGE EVALUATION TEST TARGET (MT-3)



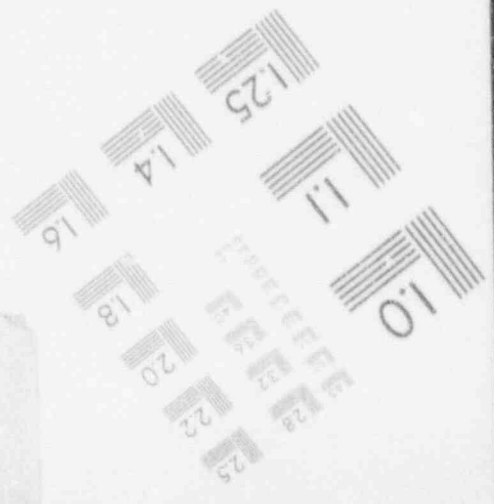
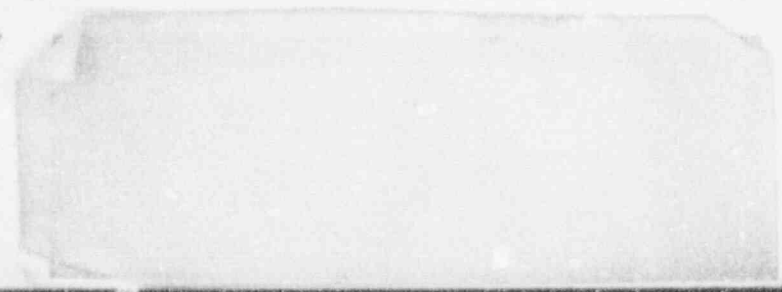
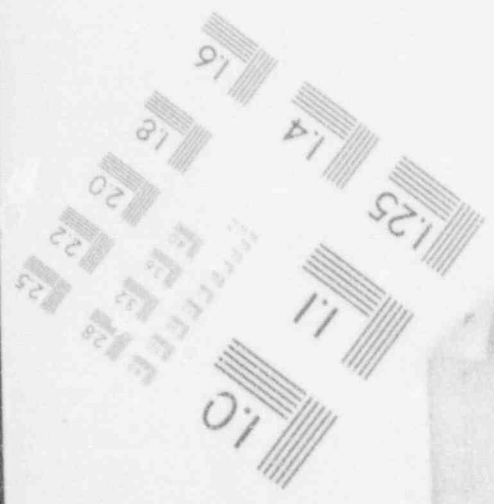
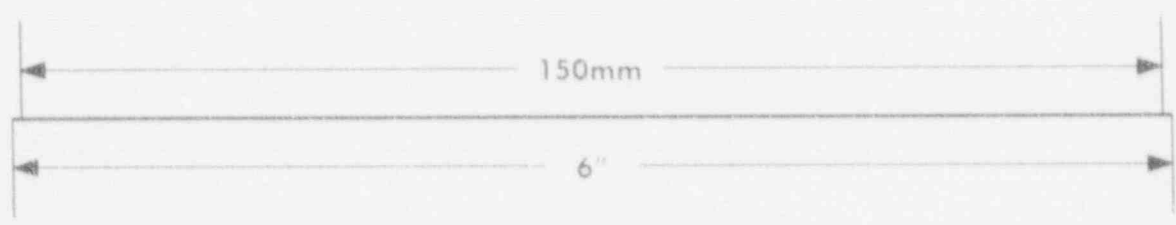
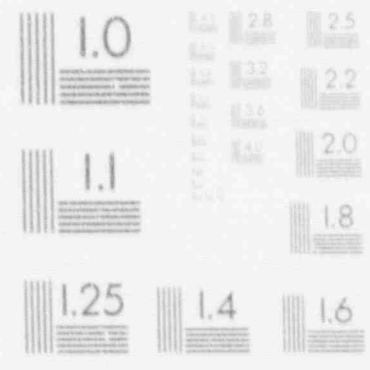
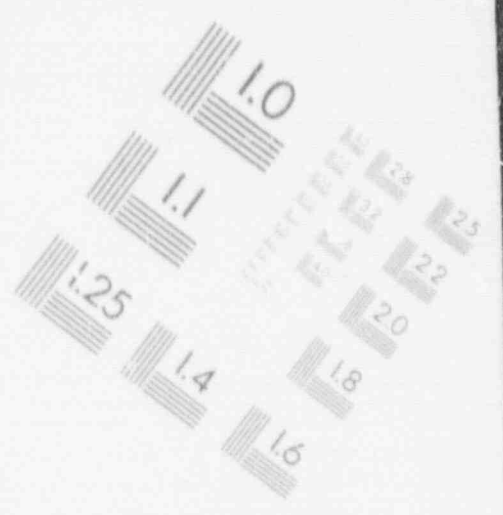
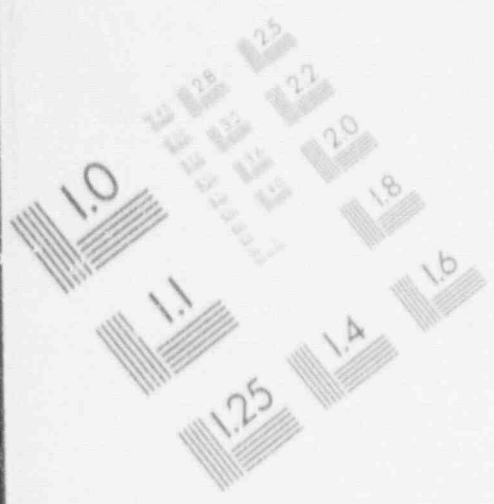
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IMAGE EVALUATION TEST TARGET (MT-3)



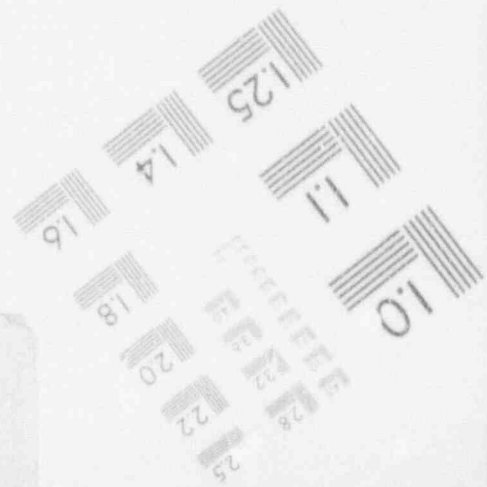
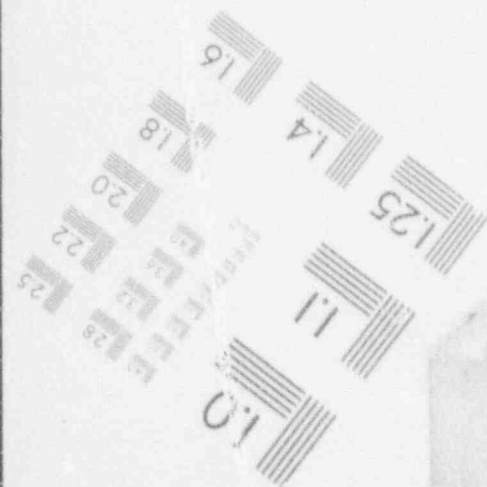
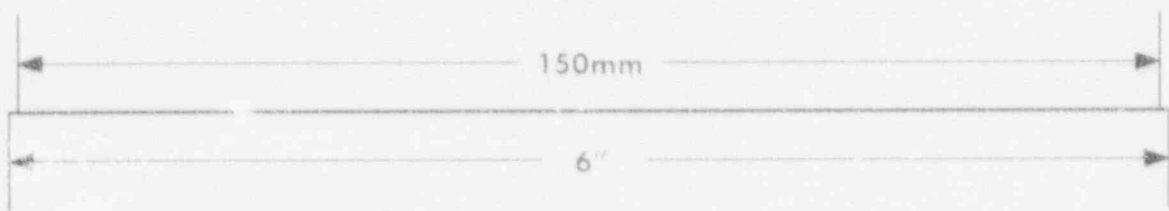
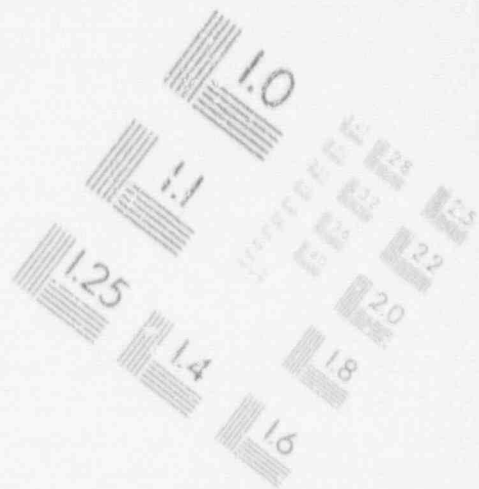
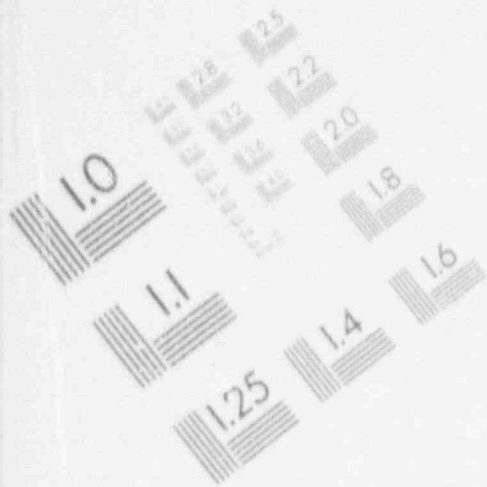
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IMAGE EVALUATION TEST TARGET (MT-3)



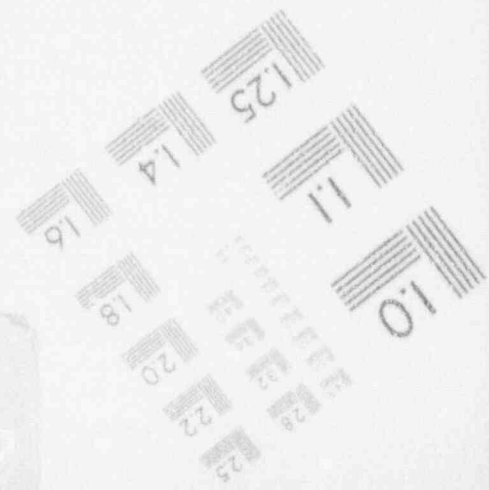
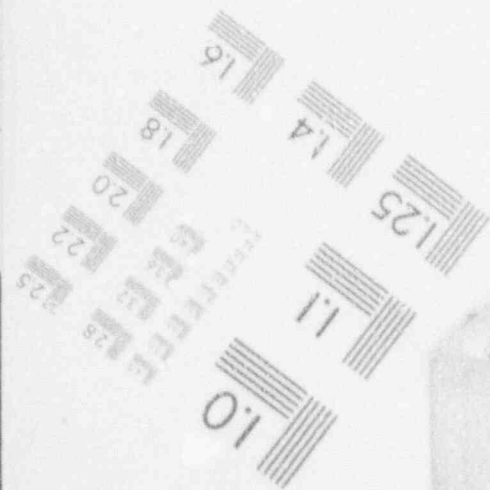
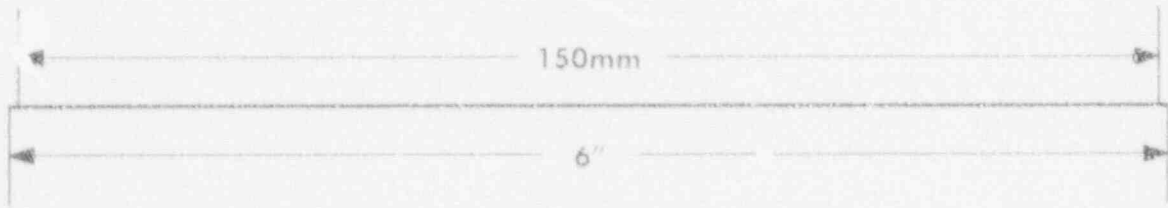
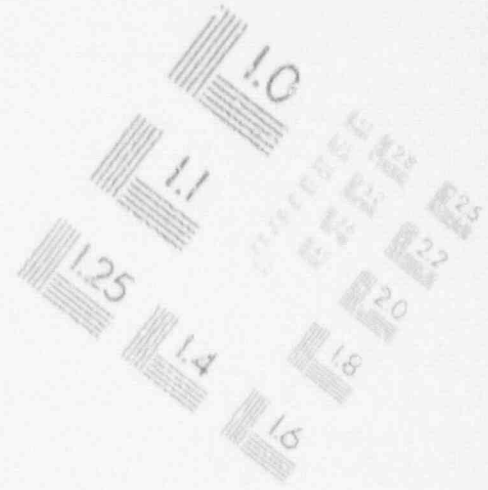
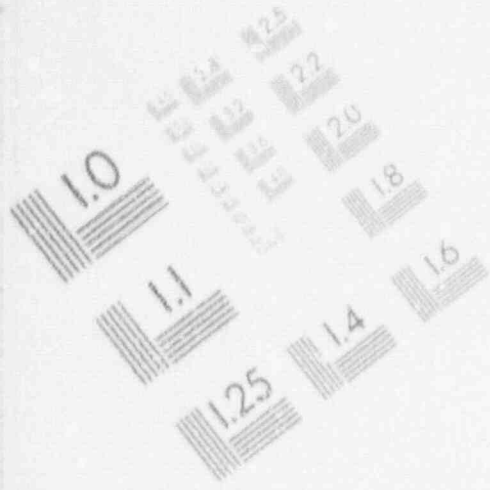
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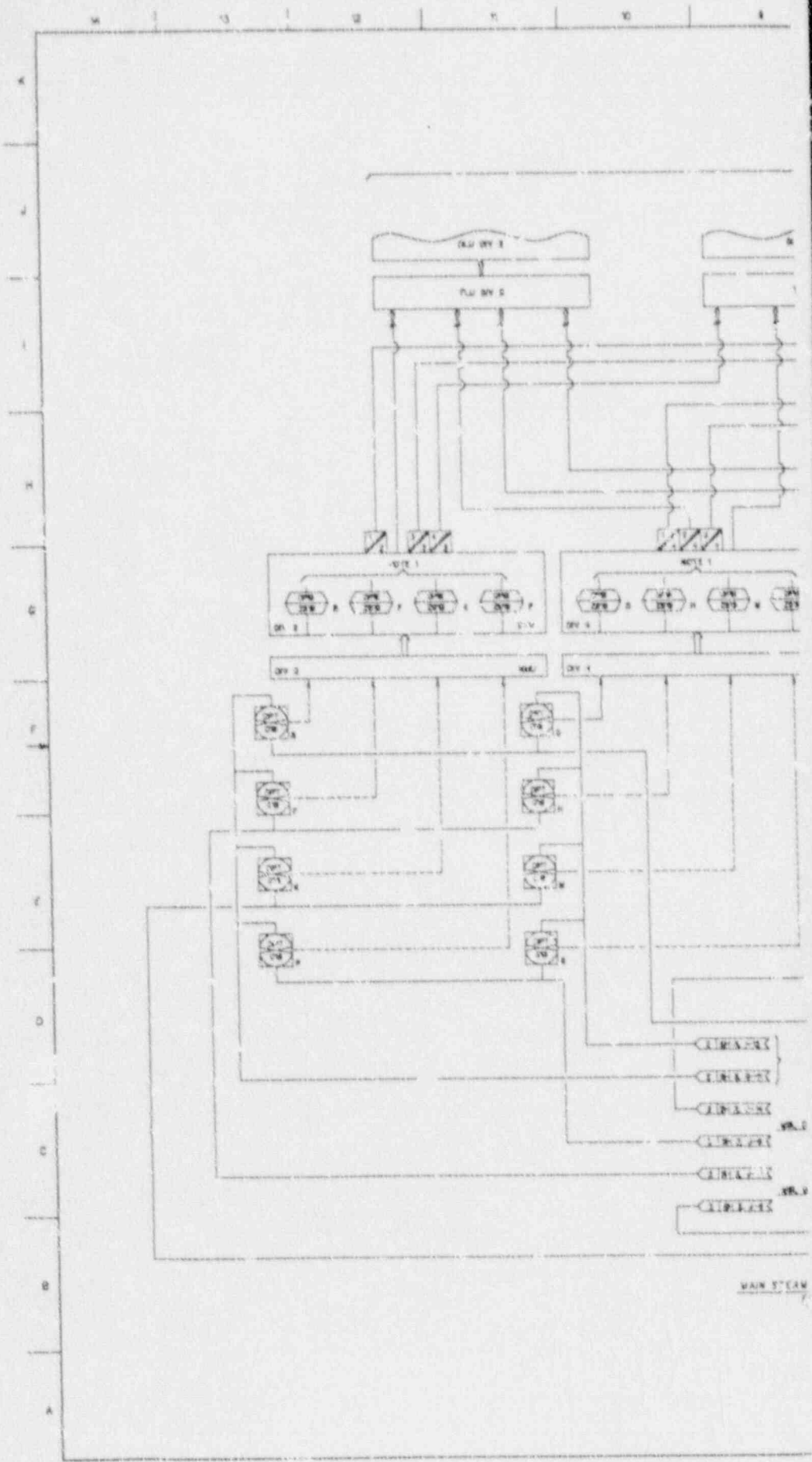
IMAGE EVALUATION TEST TARGET (MT-3)



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IMAGE EVALUATION TEST TARGET (MT-3)





VAN STEEN

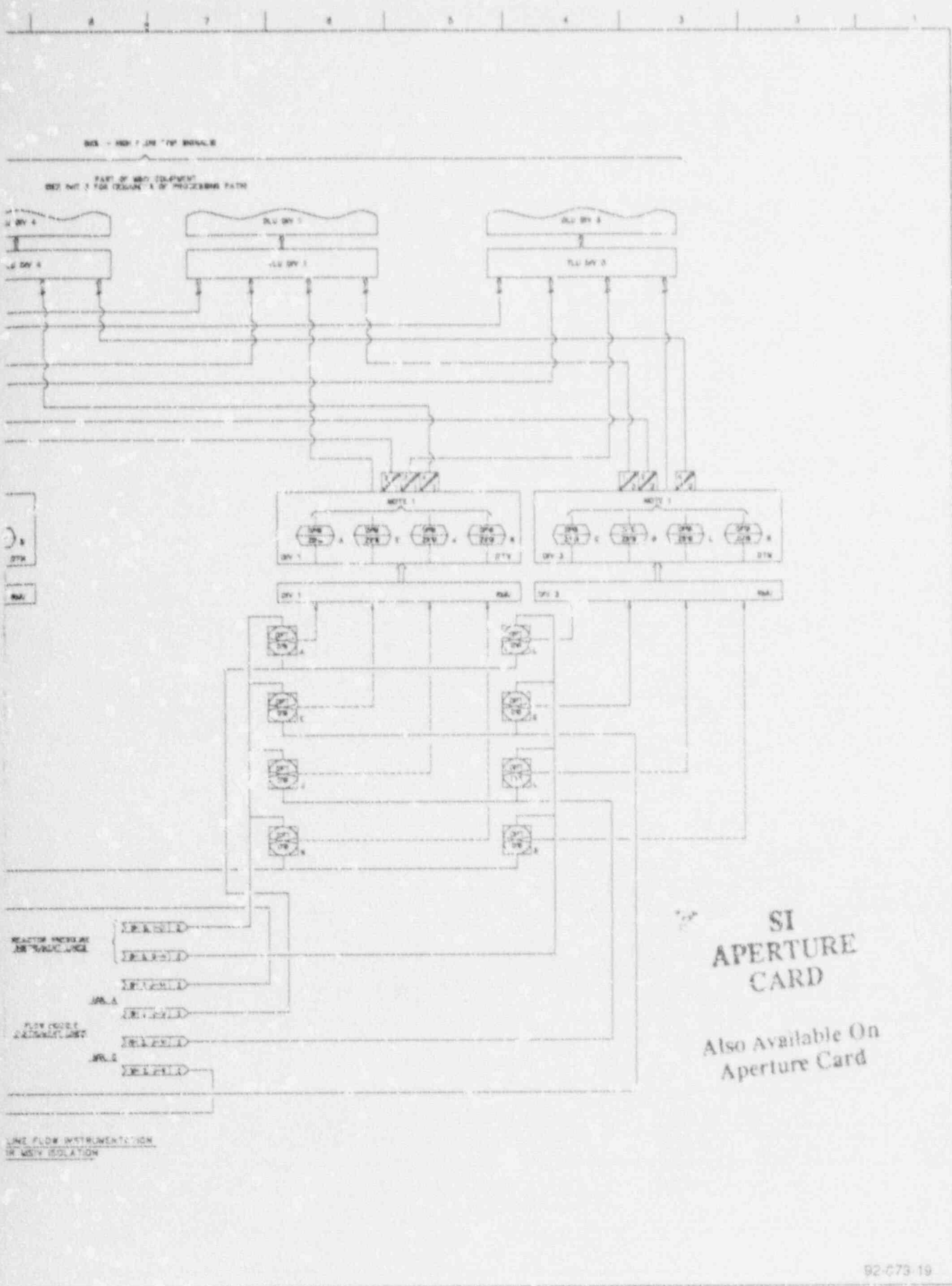
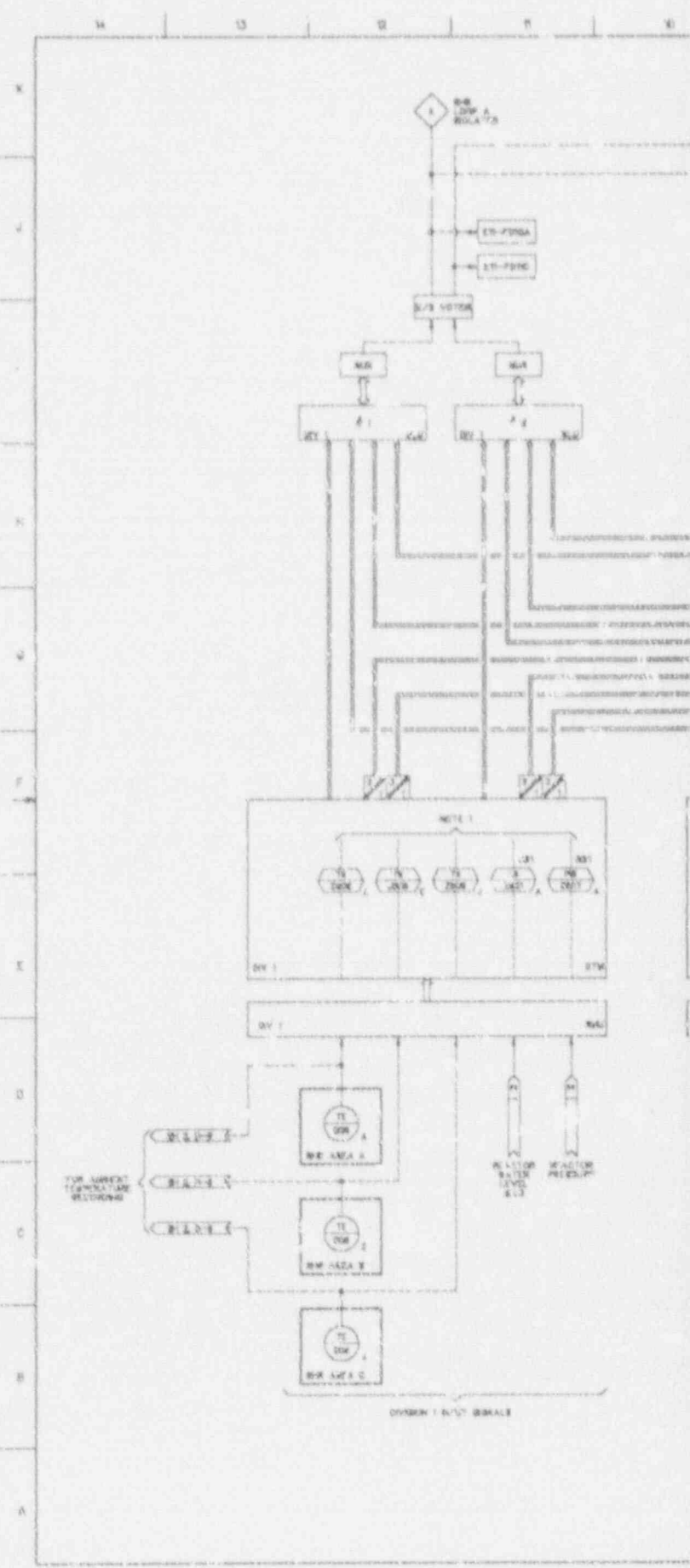


Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 4 of 10)

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FOR CURRENT CONTROL AND REACTOR

DIVISION 1 S/S CONTROL

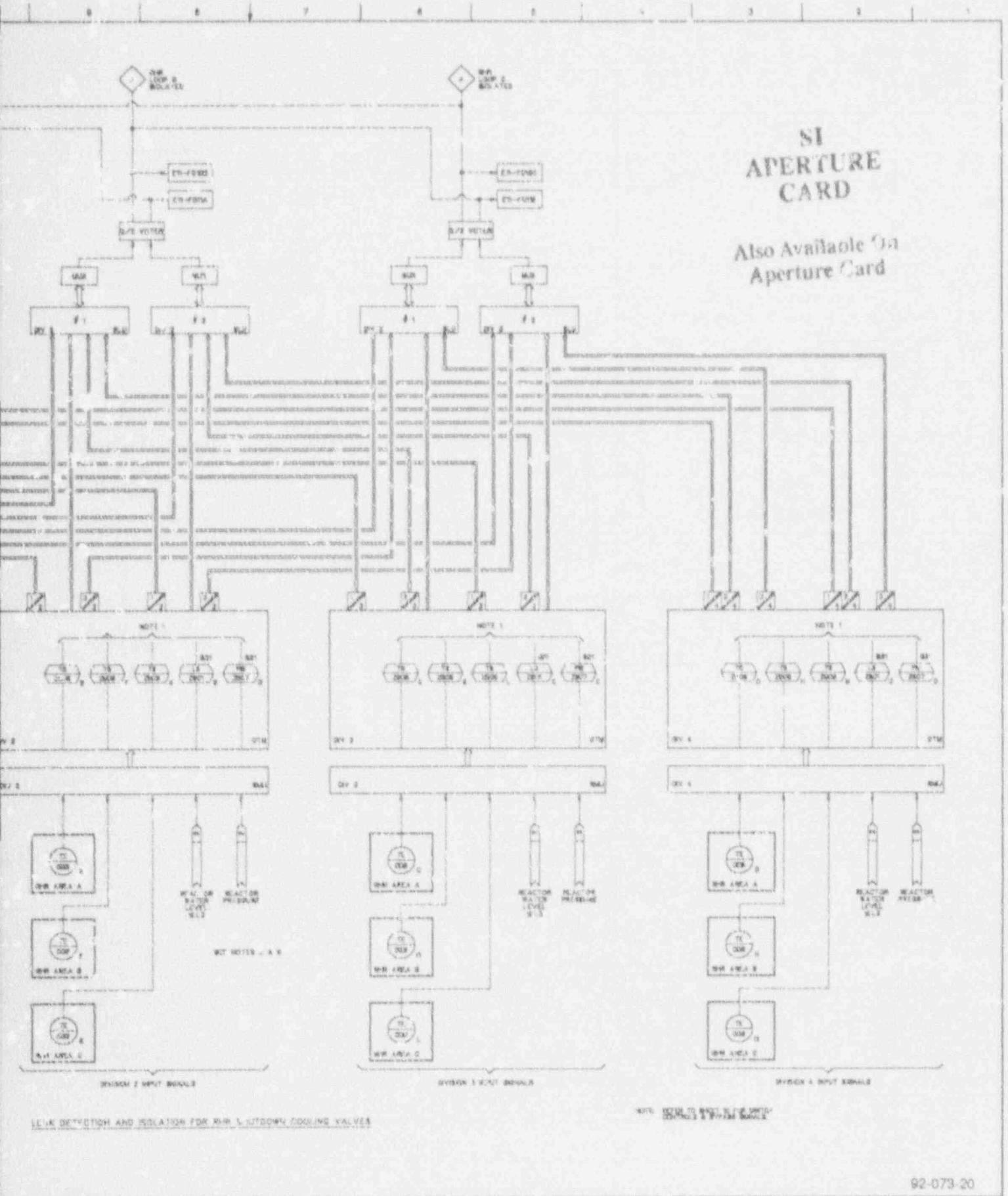
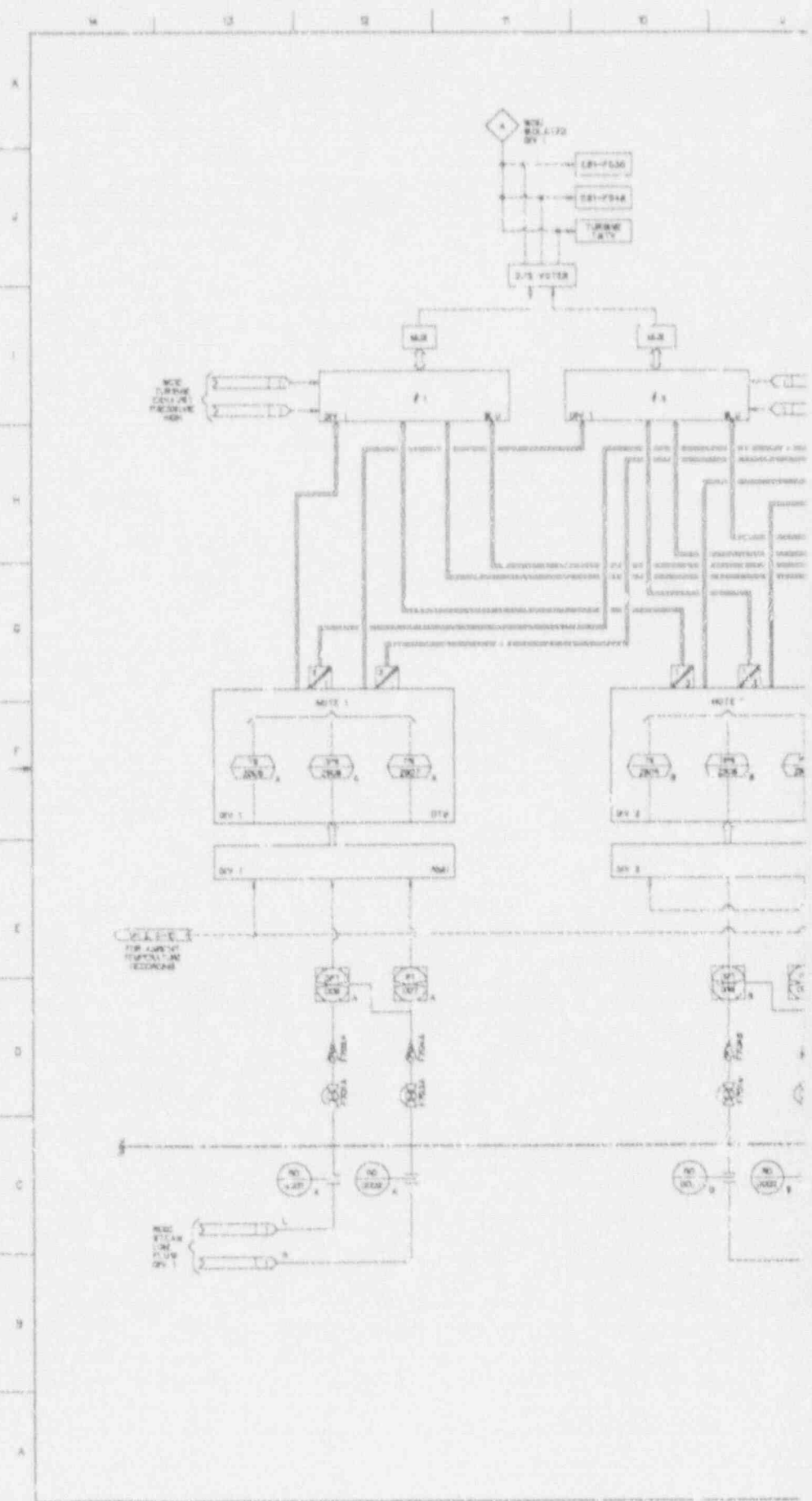


Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 5 of 10)

9204160195-30



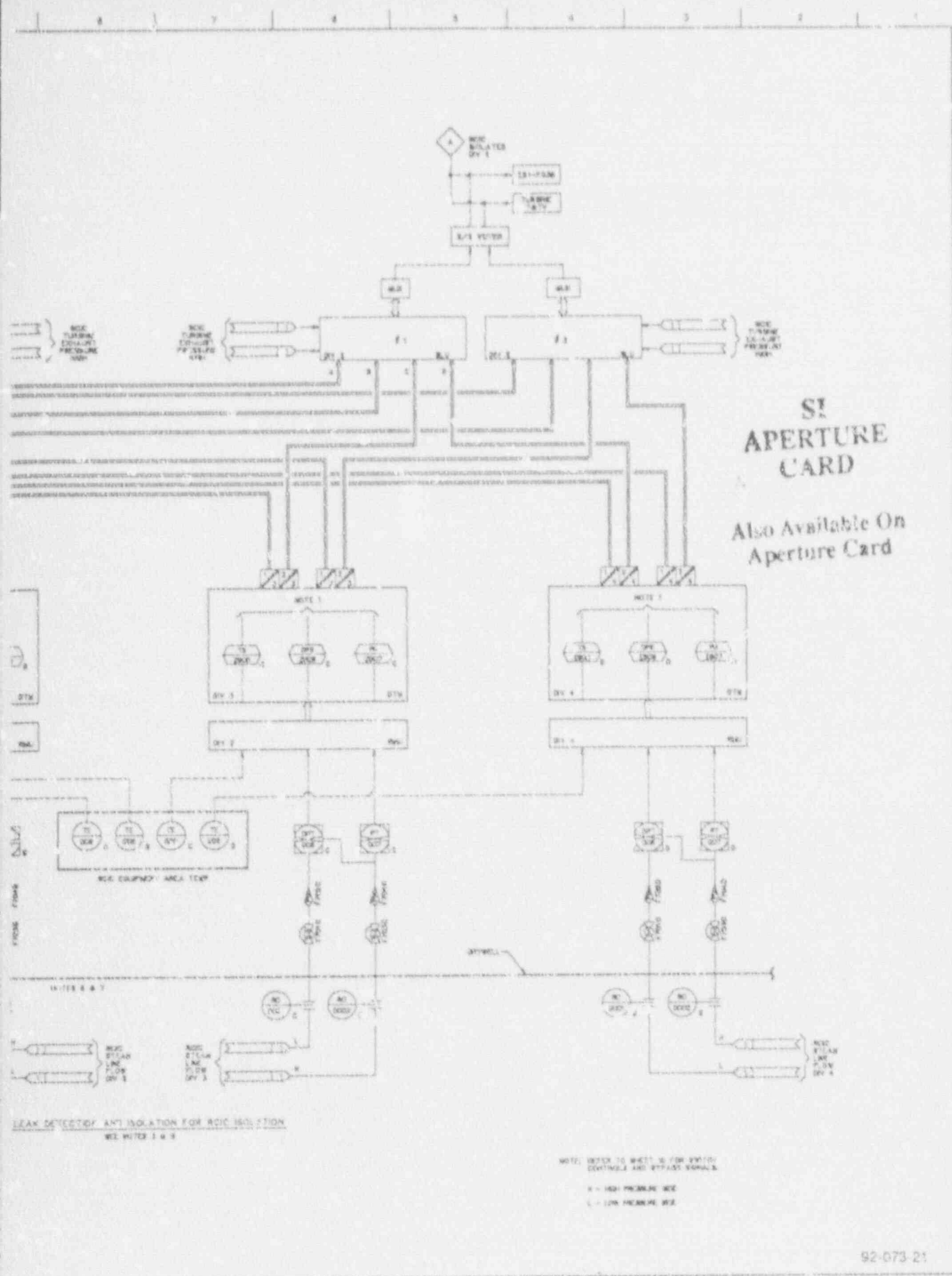
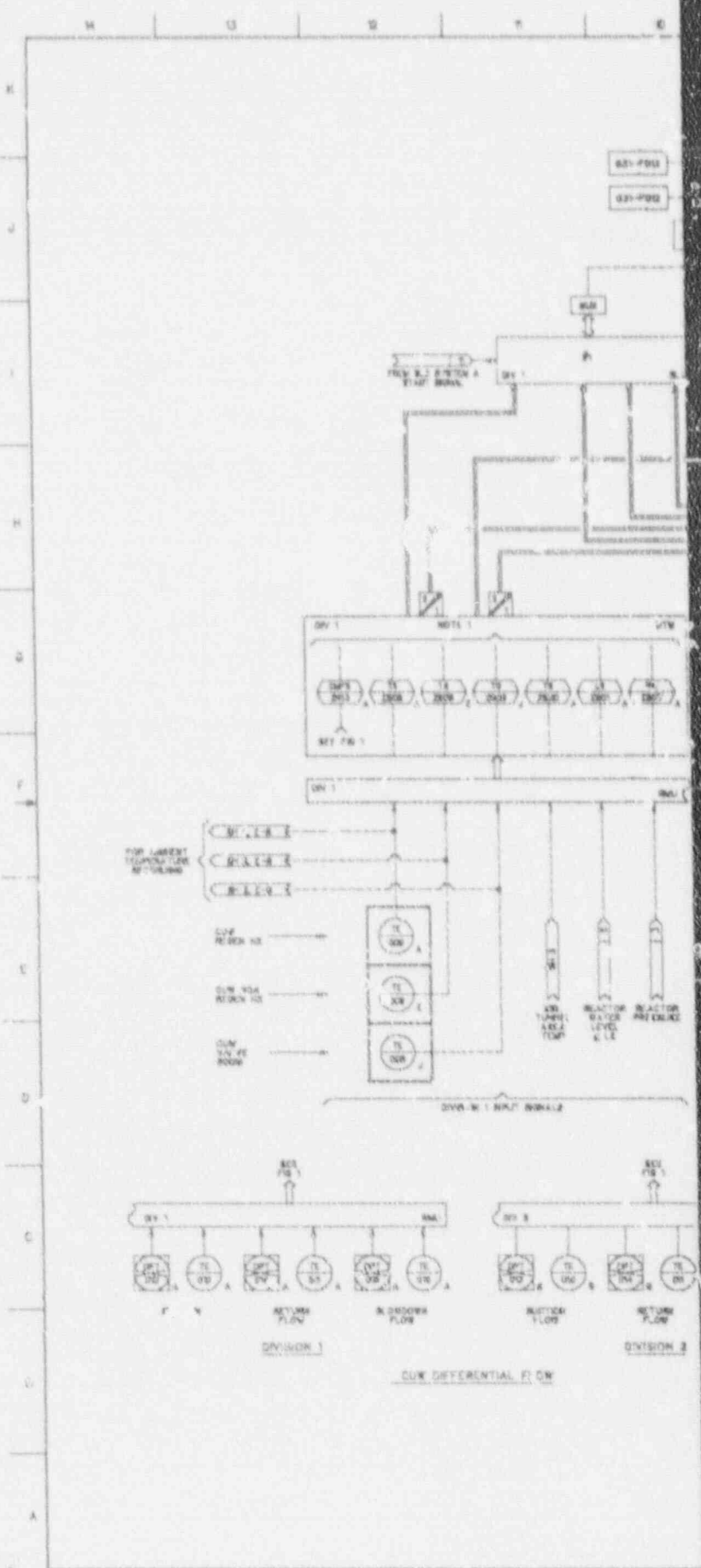


Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 6 of 10)

9204160195-31



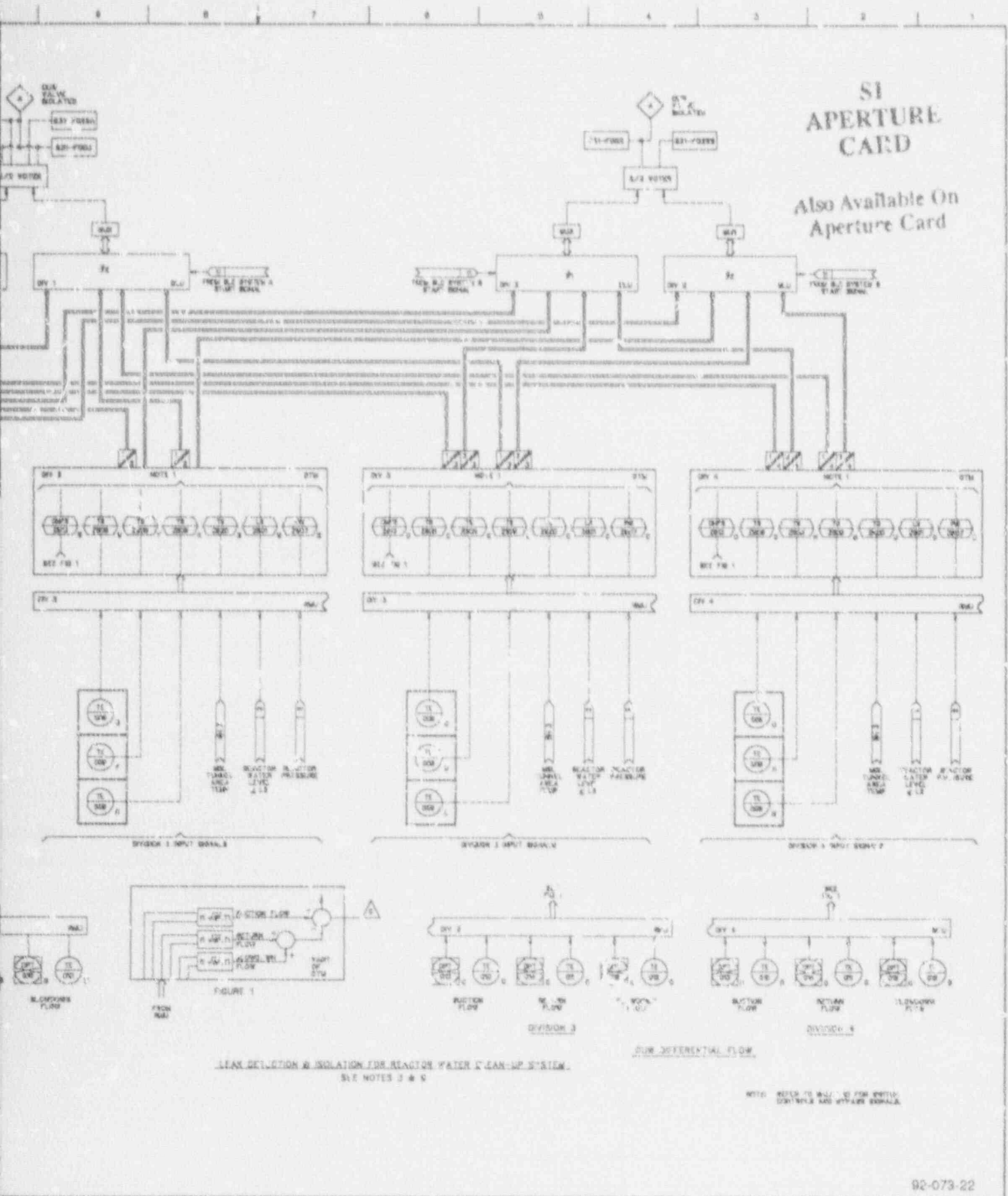
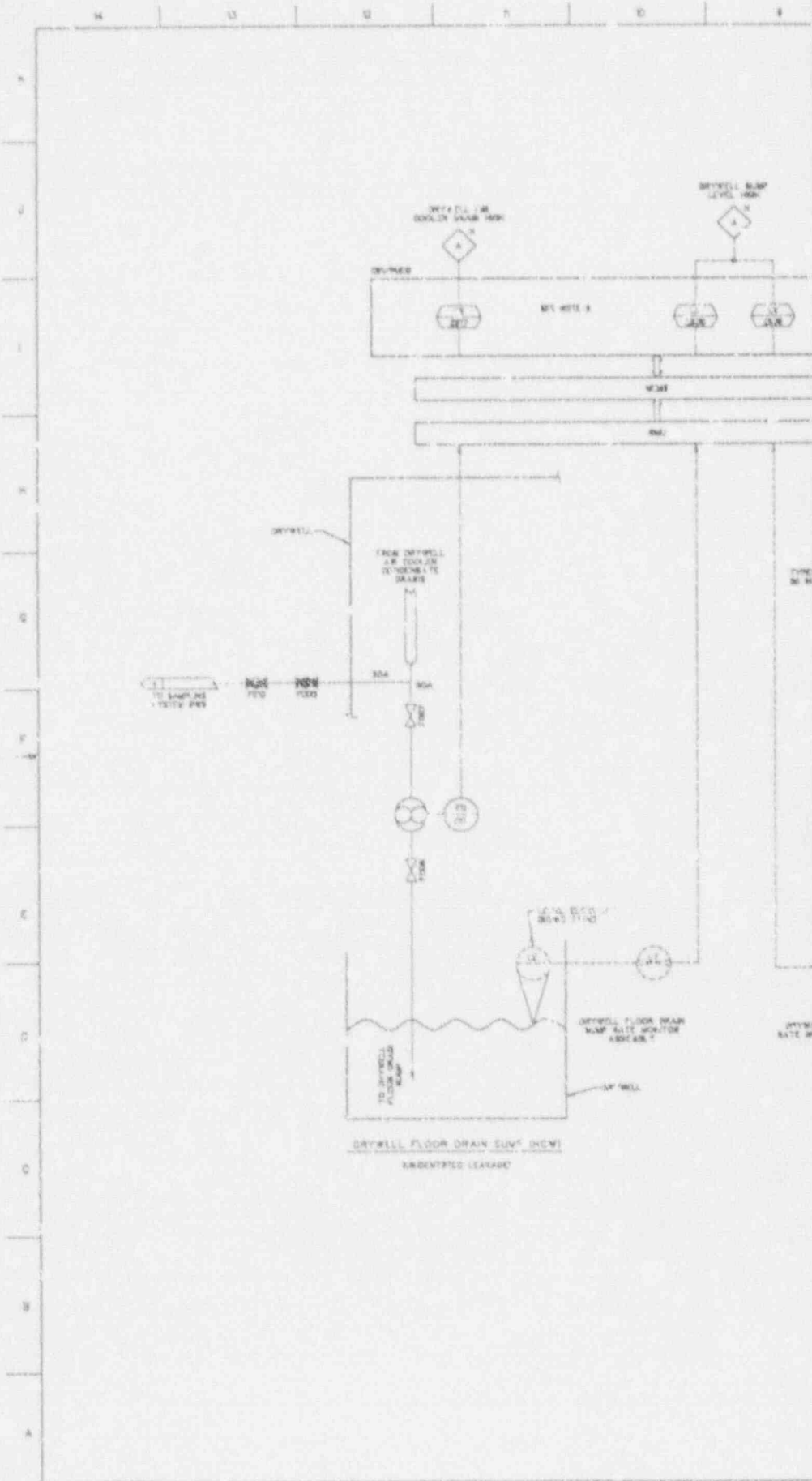


Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 7 of 10)



DRYWELL 100' LEVEL 1000'

DRYWELL 500' LEVEL 1000'

P-100

P-101

W-100

W-101

DRYWELL

FROM DRYWELL 100' TO DRYWELL 500'

TO SAMPLES - VENTY PMS

P-102

P-103

V-100

V-101

DRYWELL FLOOR DRAIN SUMP

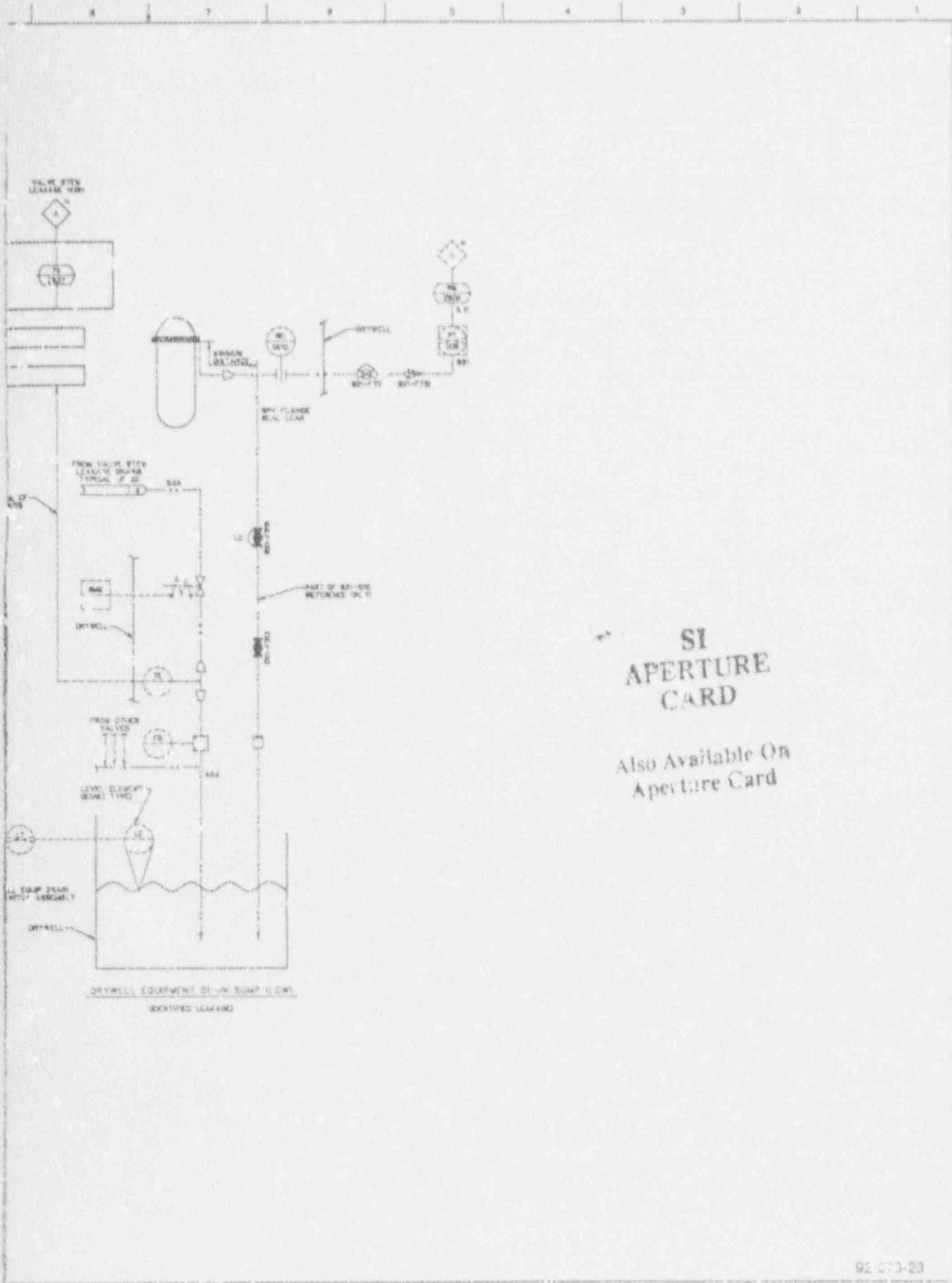
DRYWELL FLOOR DRAIN SUMP SILENT MOTOR ASSEMBLY

DRYWELL FLOOR DRAIN SUMP SILENT MOTOR ASSEMBLY

UNIDENTIFIED LEAKAGE

DRYWELL

DRYWELL



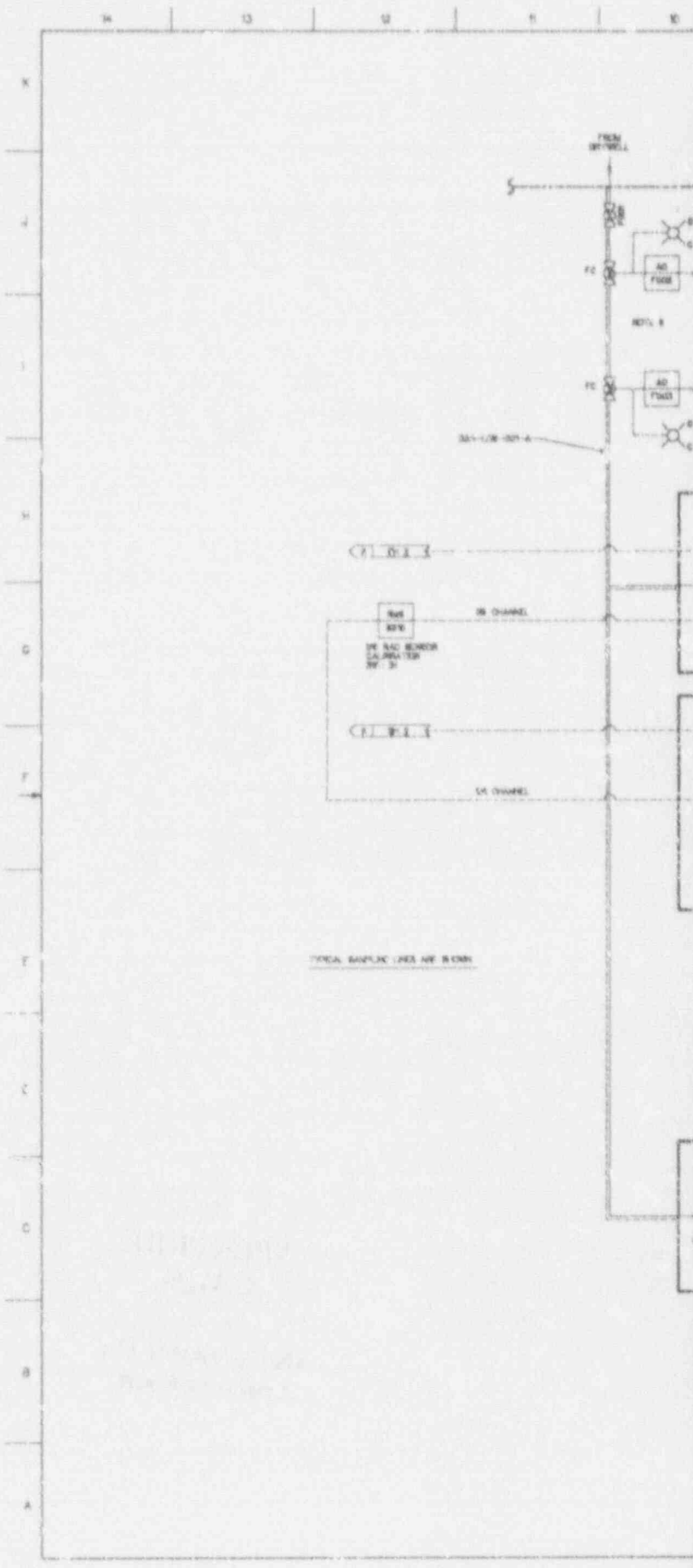
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Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 8 of 10)

9204100195-33



10-11-12-13

10-11-12-13

TOTAL SAMPLES ARE 5000

K
J
I
H
G
F
E
D
C
B
A

14 13 12 11 10

FROM WELLS

FC

FC

30-1/2" DIA

10 CHANNEL

10 CHANNEL

AD TANK

AD TANK

AD TANK

AD TANK

TOTAL SAMPLES ARE 5000

10-11-12-13

10-11-12-13

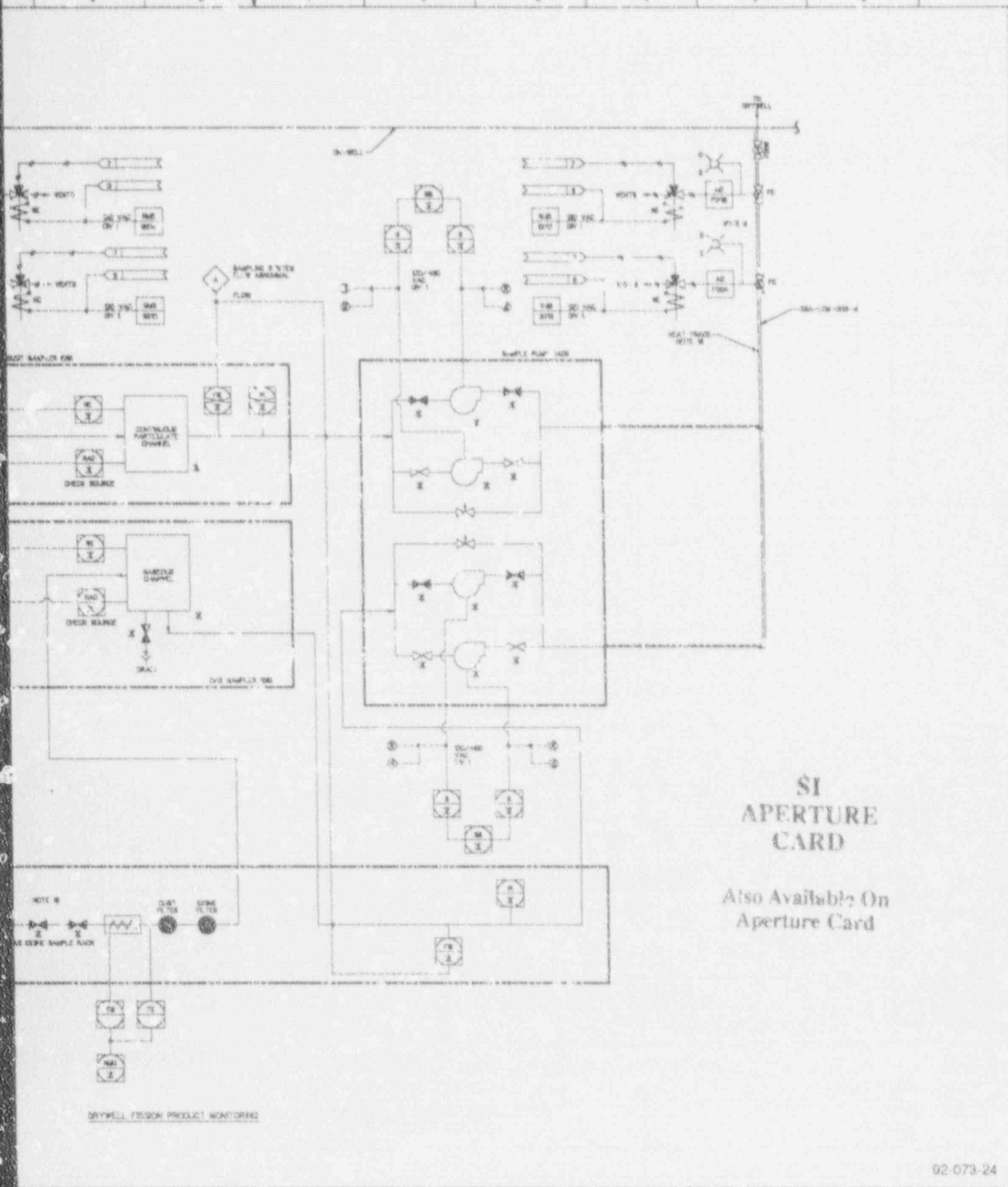
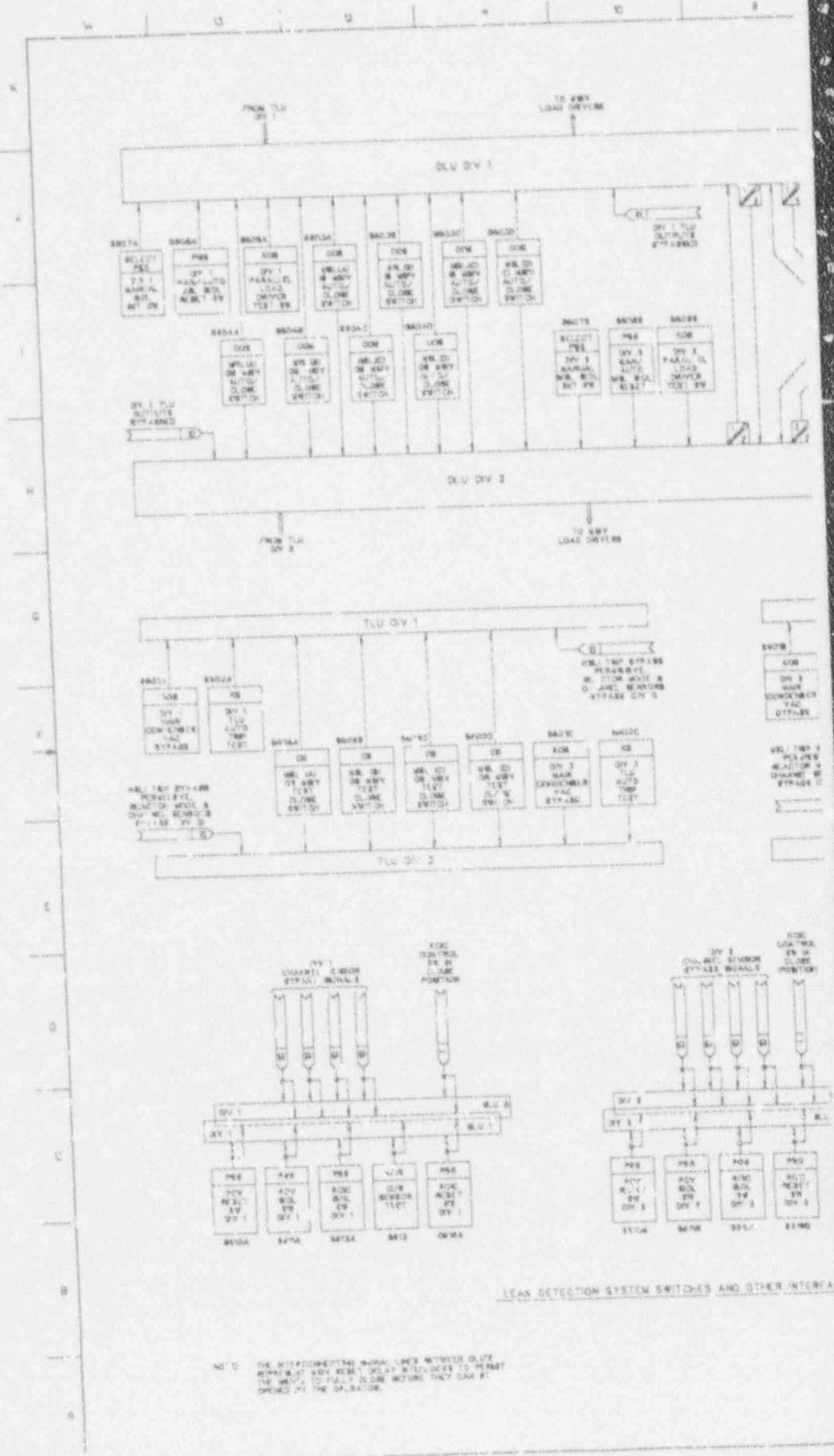
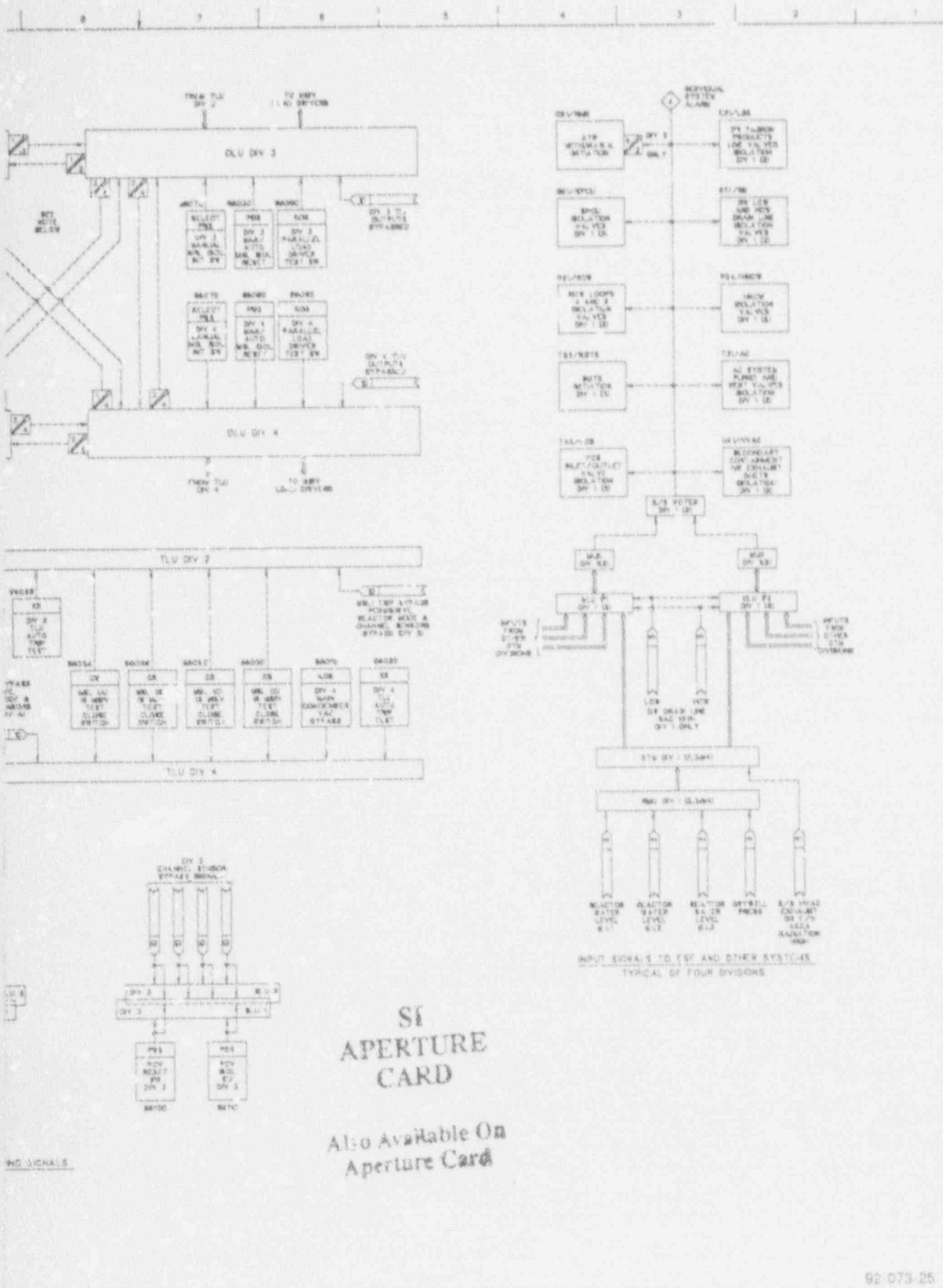


Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM LID (Sheet 9 of 10)



LEAK DETECTION SYSTEM SWITCHES AND OTHER INTERVALS

NOTE: THE INTERCONNECTING NORMAL LINES BETWEEN DIVISIONS ARE NOT TO BE USED AS A MEANS OF IDENTIFYING THE LOCATION OF A LEAK DETECTION SYSTEM SWITCHES TO BE USED BY THE OPERATOR.

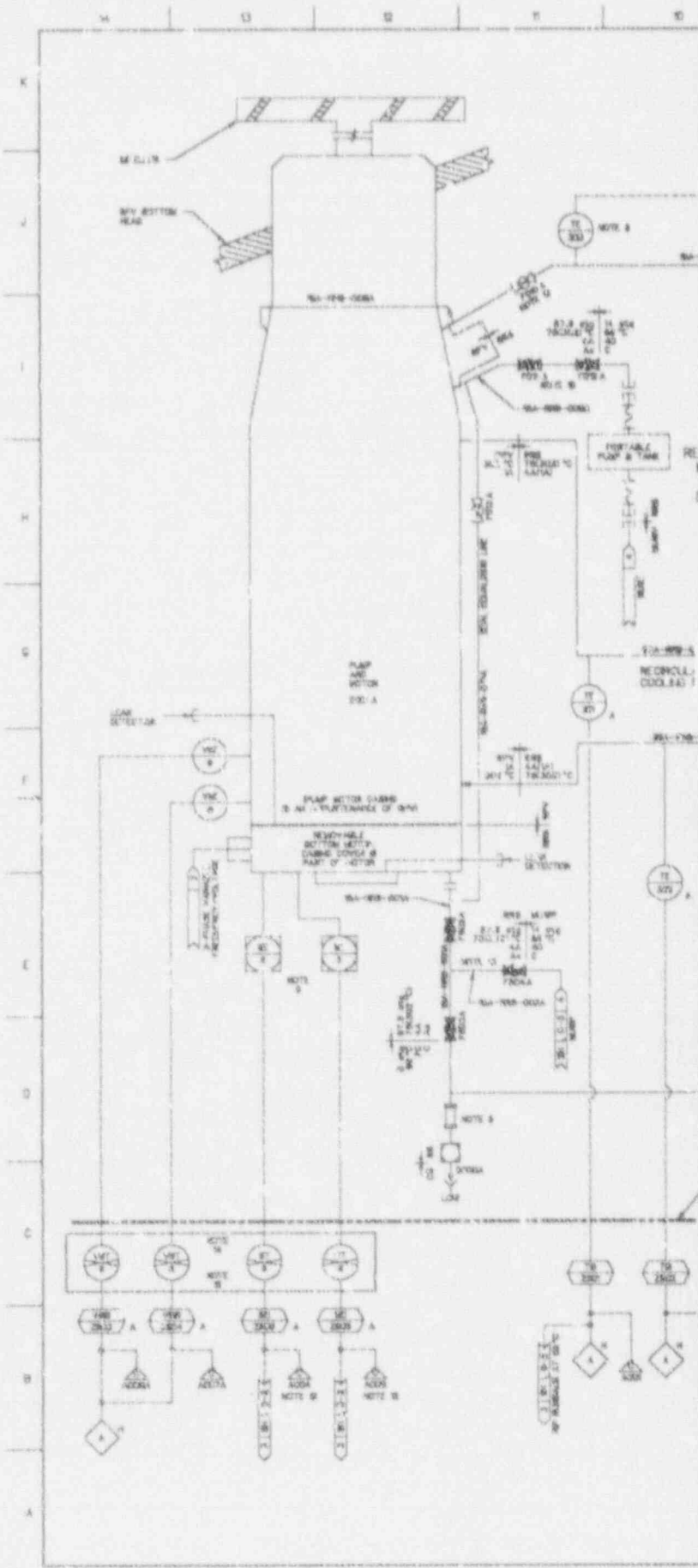


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Figure 5.2-8 LEAK DETECTION AND ISOLATION SYSTEM IED (Sheet 10 of 10)

9204160105-35



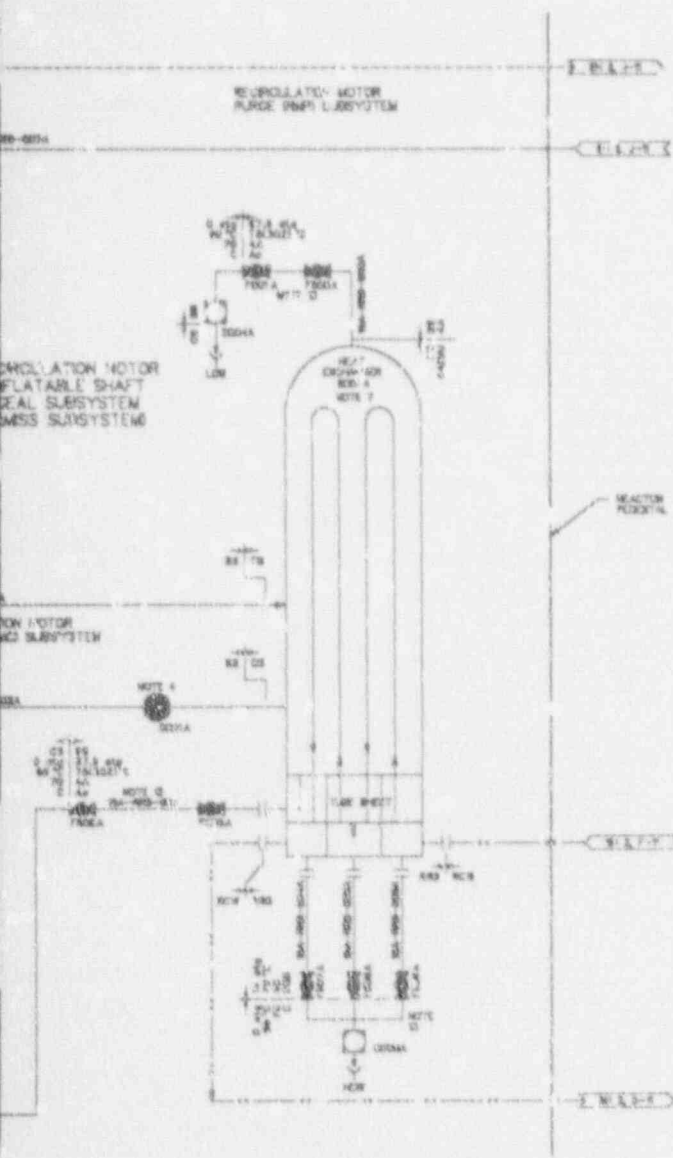


TABLE 5. PIPING SPECIFICATIONS

PIPE NO.	SCHEDULE	MATERIAL	FLUID
001A-H	80	80	W
002A-H	80	29	W
003A-H	80	80	W
004	80	80	W
005A-H	80	80	W
006A-H	80	80	W
007A-H	80	80	W
008A-H	80	80	W
009A-H	80	80	W
010A-H	80	80	W
011A-H	80	80	W
012A-H	80	80	W
013A-H	80	80	W
014A-H	80	80	W
015A-H	80	80	W
016A-H	80	80	W
017A-H	80	80	W
018A-H	80	80	W
019A-H	80	80	W
020A-H	80	80	W
021A-H	80	80	W
022A-H	80	80	W
023A-H	80	80	W
024A-H	80	80	W
025A-H	80	80	W
026A-H	80	80	W
027A-H	80	80	W
028A-H	80	80	W
029A-H	80	80	W
030A-H	80	80	W
031A-H	80	80	W
032A-H	80	80	W
033A-H	80	80	W
034A-H	80	80	W
035A-H	80	80	W
036A-H	80	80	W
037A-H	80	80	W
038A-H	80	80	W
039A-H	80	80	W
040A-H	80	80	W
041A-H	80	80	W
042A-H	80	80	W
043A-H	80	80	W
044A-H	80	80	W
045A-H	80	80	W
046A-H	80	80	W
047A-H	80	80	W
048A-H	80	80	W
049A-H	80	80	W
050A-H	80	80	W
051A-H	80	80	W
052A-H	80	80	W
053A-H	80	80	W
054A-H	80	80	W
055A-H	80	80	W
056A-H	80	80	W
057A-H	80	80	W
058A-H	80	80	W
059A-H	80	80	W
060A-H	80	80	W
061A-H	80	80	W
062A-H	80	80	W
063A-H	80	80	W
064A-H	80	80	W
065A-H	80	80	W
066A-H	80	80	W
067A-H	80	80	W
068A-H	80	80	W
069A-H	80	80	W
070A-H	80	80	W
071A-H	80	80	W
072A-H	80	80	W
073A-H	80	80	W
074A-H	80	80	W
075A-H	80	80	W
076A-H	80	80	W
077A-H	80	80	W
078A-H	80	80	W
079A-H	80	80	W
080A-H	80	80	W
081A-H	80	80	W
082A-H	80	80	W
083A-H	80	80	W
084A-H	80	80	W
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089A-H	80	80	W
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094A-H	80	80	W
095A-H	80	80	W
096A-H	80	80	W
097A-H	80	80	W
098A-H	80	80	W
099A-H	80	80	W
100A-H	80	80	W

- NOTES
1. HIGH POINT VENT SHALL BE PROVIDED FOR FLUIDS SUBJECT TO AUTOMATIC HIGH POINT DRAIN.
 2. CONTAINMENT ISOLATION VALVES SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE DOWNWELL POSITIONED AND IN A HORIZONTAL POSITION.
 3. ALL EQUIPMENT AND INSTRUMENTS SHALL BE PROVIDED BY THE FOLLOWING SPECIFICATIONS.
 4. EQUIPMENT IS TO BE INSTALLED FOR INITIAL SYSTEM FLUING TO BE INSTALLED TEMPORARILY WITH WELDED COUPLERS & BOLTED PERMANENTLY IN LINE.
 5. SPEED ELEMENTS (IF ANY) SHALL CONFORM TO REFERENCES GOVERNMENT REQUIREMENTS.
 6. GASKETS NOT BE PROVIDED IF THE GASKET FLOW REGULATOR IS CAPABLE OF THE COMPLETE OPERATIONAL PROGRAM RANGE.
 7. RECIRCULATION MOTOR HEAT EXCHANGER MUST BE SUPPLIED WITH EACH COOL PUMP.
 8. IT IS NOT LIGHTED AS CLOSE AS POSSIBLE TO MOTOR COUPLER TO BE INSTALLED ONLY IN DOWNWELL AND LOWER FLANGE UNLESS ONLY FLOW TITLES.
 9. REMOVABLE SPEED PIPES FOR SHUT DOWN SHIPING.
 10. LOCATE VALVES AS CLOSE TO MOTOR COUPLER AS POSSIBLE BUT BEHIND ANY OF THE HEAT EXCHANGER.
 11. THE MP SPEED AND VIBRATION ANALYSIS SIGNALS SHALL BE SUPPLIED TO THE PLANT PROTECTIVE EQUIPMENT AND FORWARD CONNECTIONS FOR TEMPORARY STOPPING BY MOTOR ANALYTICAL AND RESTORING EQUIPMENT.
 12. VENT AND DRAIN VALVES SHALL BE CENTRALLY LOCATED FOR EACH MP AND HE.
 13. LOCAL PANEL CONTAINERS BE VENTILATED AND SO SPEED TRANSMISSIONS, ALL SUPPLIED BY PUMP SUPPLIER.
 14. ALL THE PIPING IS BEING CLASSIFIED AS CRITICAL. NOT BE CLASSIFIED AS CRITICAL.

- REFERENCE DOCUMENTS (SEE THE FOLLOWING SECTION) ARE TO BE USED IN CONNECTION WITH THE DRAWING
- | | |
|---|----------|
| 1. CONTROL AND DRIVE SYSTEMS | 100-1001 |
| 2. REACTOR COOLING COOLER WATER SYSTEM | 100-1002 |
| 3. REACTOR FLOW CONTROL SYSTEM | 100-1003 |
| 4. SHUT-DOWN WATER PUMP SYSTEM | 100-1004 |
| 5. PIPING AND INSTRUMENT SPECIFICATIONS | 100-1005 |

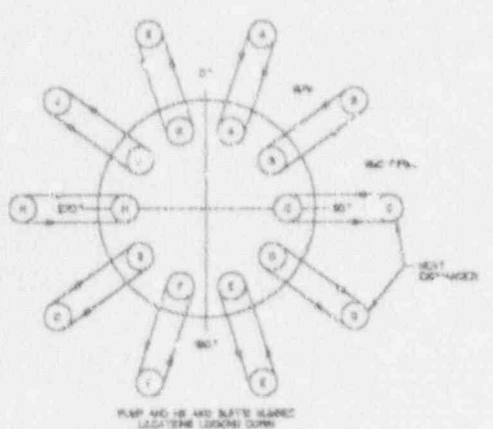


TABLE 1
NO. 1 APERTURE - FLANGES

FLANGE NO.	FLANGE SIZE	NO. HOLES
NO. 1	1200	12
NO. 2	1200	12
NO. 3	1200	12
NO. 4	1200	12
NO. 5	1200	12
NO. 6	1200	12
NO. 7	1200	12
NO. 8	1200	12
NO. 9	1200	12
NO. 10	1200	12
NO. 11	1200	12
NO. 12	1200	12

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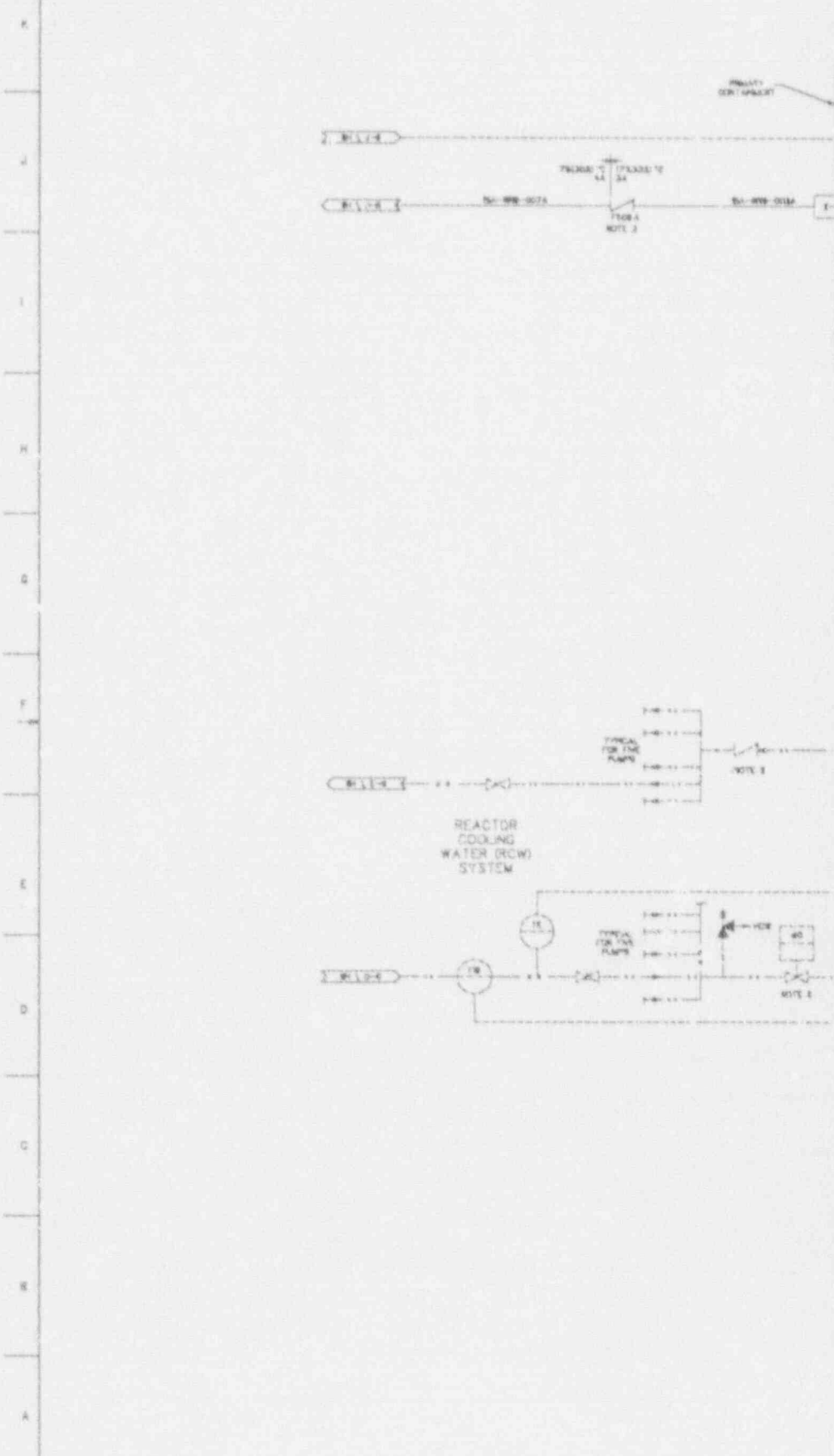
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Figure 5.4-4 REACTOR RECIRCULATION SYSTEM P&ID (Sheet 1 of 2)

W U D H O S



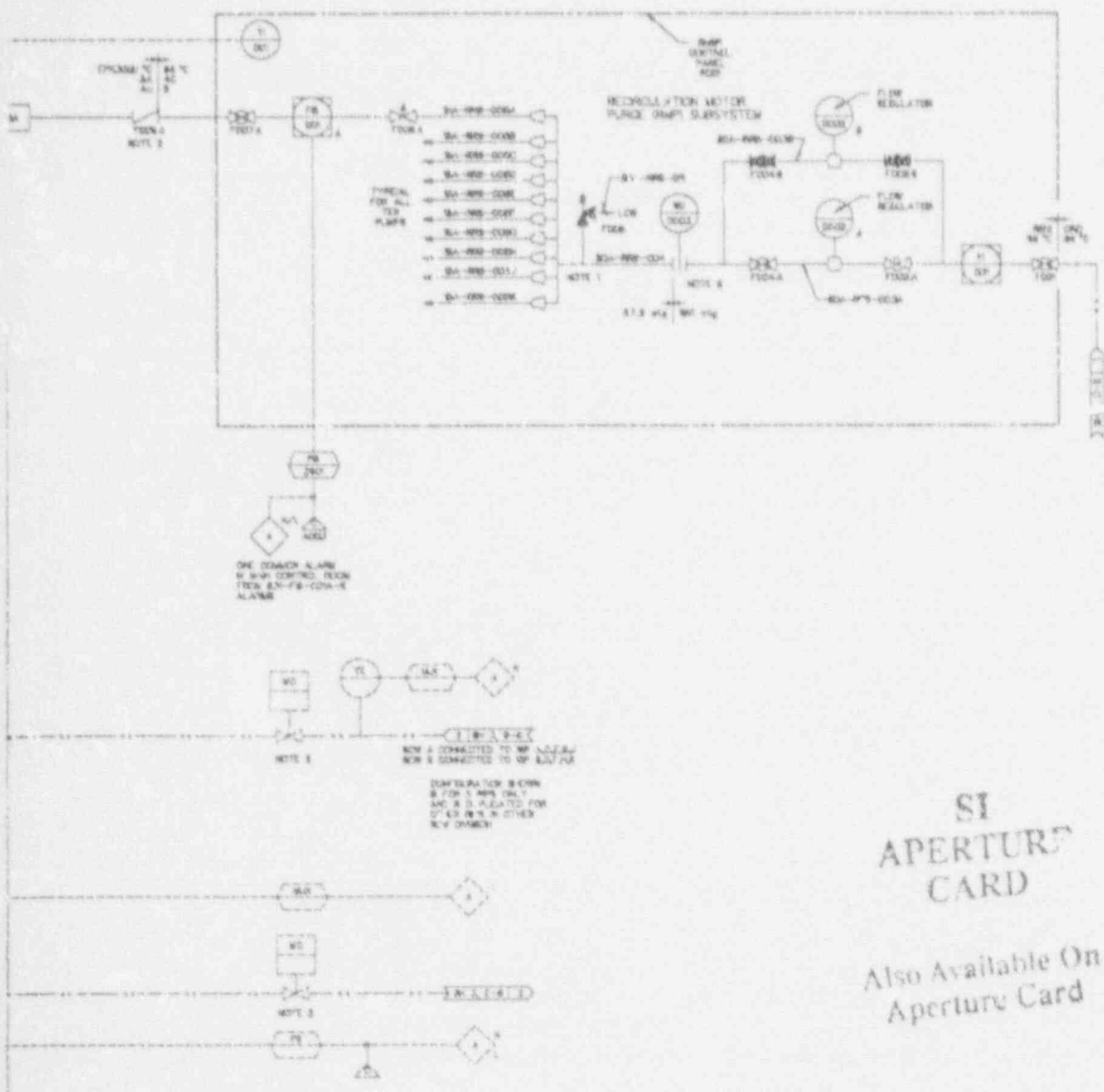
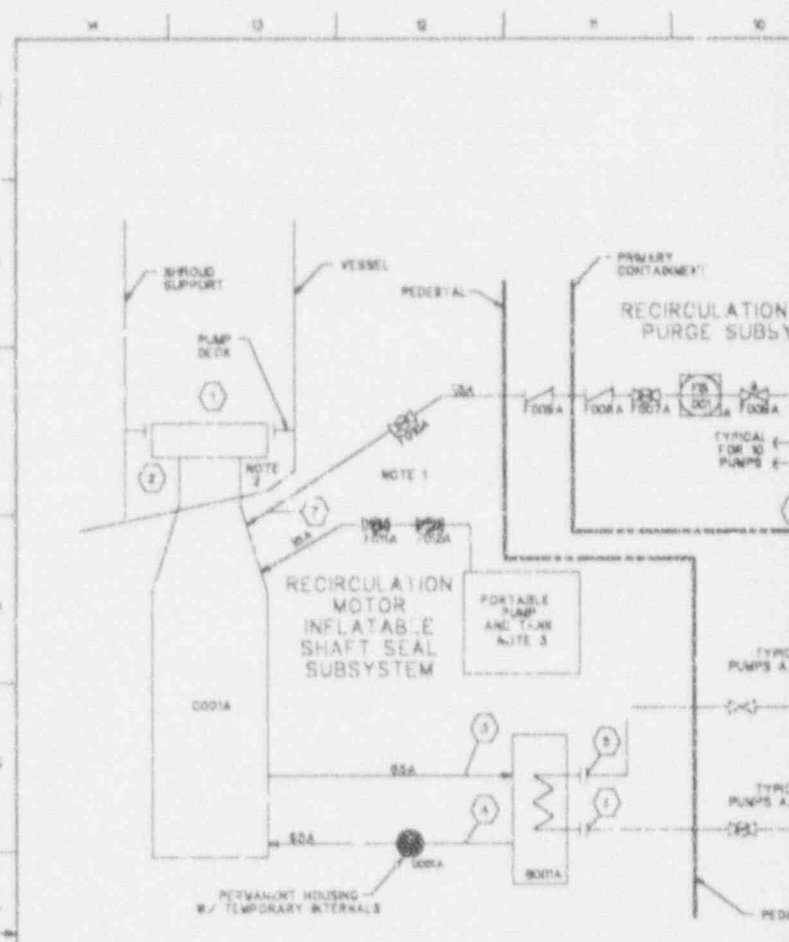


Figure 5.4-4 REACTOR RECIRCULATION SYSTEM P&ID (Sheet 2 of 2)



RECIRCULATION MOTOR COOLING SUB REPEATED FOR PUMPS B,D,F,H.

MODE "B2" REACTOR NORMAL OPERATION --- (8 PUMPS OPERATING)
 DATA SHOWN FOR THE PUMP OUT OF SERVICE
 CORE FLOW = 1000
 PUMP SPEED = 0.0% OF RATED SEE NOTE 3

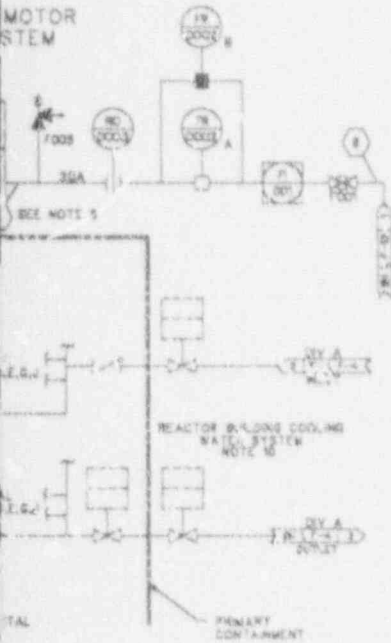
POSITION	1	2	3	4	5	6	7	8
FLOW M ³ /HR	1330	1330			30	30	13/17	130/190
TEMP (°C)	270	270			35	MAX	NOTES 5&6	NOTES 5&6
PRESS	73.0	70.0	77.4	77.2	AP = 1.0 MAX			150
AVAILABILITY								
NPSH	134							

MODE "C" REACTOR HOT STANDBY --- (10 PUMPS OPERATING)
 ALL PUMPS ARE AT SAME SPEED
 CORE FLOW = 32.25
 PUMP SPEED = 450 RPM SEE NOTE 3

POSITION	1	2	3	4	5	6	7	8
FLOW M ³ /HR	2295	2295	2	2	30	30	13/17	130/190
TEMP (°C)	282	282	30	30	30	MAX	NOTES 5&6	NOTES 5&6
PRESS	70.0	70.0	70.3	70.0	AP = 1.0 MAX			150
AVAILABILITY								
NPSH	10							

MODE "D" REACTOR COLD STARTUP --- (10 PUMPS OPERATING)
 ALL PUMPS ARE AT SAME SPEED
 CORE FLOW = 32.25
 PUMP SPEED = 450 RPM SEE NOTE 3

POSITION	1	2	3	4	5	6	7	8
FLOW M ³ /HR	2250	2250	2	2	30	30	13/17	130/190
TEMP (°C)	100	100	36	35	35	MAX	NOTES 5&6	NOTES 5&6
PRESS	1.8	1.8	1.8	2.2	AP = 1.0 MAX			150
AVAILABILITY								
NPSH	20							



MODE 'A' REACTOR NORMAL OPERATION | 10 PUMPS OPERATING |
ALL PUMPS ARE AT SAME SPEED
CORE FLOW = 775 GPM -- RATED DESIGN
PUMP SPEED = 80% OF RATED (NOTE 8) SEE NOTE 9

POSITION	1	2	3	4	5	6	7	8
FLOW (M ³ /HR)	7700	7700	8	8	30	30	15/70	150/190
TEMP. (°C)	278	278	53	53	30	30	30/70	40/80
PRESS. (PSI)	77.4	77.4	78.0	77.8	AP = 10 MAX			138
AVAILABLE NPSH (M)	121							

MODE 'A2' REACTOR NORMAL OPERATION | 10 PUMPS OPERATING |
ALL PUMPS ARE AT SAME SPEED
CORE FLOW = 800 GPM -- RATED DESIGN
PUMP SPEED = 80% OF RATED (NOTE 8) SEE NOTE 9

POSITION	1	2	3	4	5	6	7	8
FLOW (M ³ /HR)	8812	8812	7	7	30	30	15/70	150/190
TEMP. (°C)	278	278	48	38	30	30	30/70	40/80
PRESS. (PSI)	77.4	77.4	77.4	77.2	AP = 10 MAX			138
AVAILABLE NPSH (M)	124							

MODE 'A3' REACTOR NORMAL OPERATION | 8 PUMPS OPERATING |
ONE PUMP OUT OF SERVICE
CORE FLOW = 800 GPM -- RUNNING PUMP DATA
PUMP SPEED = 80% OF RATED (NOTE 8) SEE NOTE 9

POSITION	1	2	3	4	5	6	7	8
FLOW (M ³ /HR)	8281	8281	8	8	30	30	15/70	150/190
TEMP. (°C)	278	278	53	38	30	30	30/70	40/80
PRESS. (PSI)	77.4	77.4	77.4	77.2	AP = 10 MAX			138
AVAILABLE NPSH (M)	134							

NOTES

1. ALL VALVES SHOWN IN THEIR NORMAL PLANT OPERATING POSITION AND ARE IN THE SAME POSITION FOR ALL OPERATING MODES.
2. THE PURGE FLOW (PUMP 7) FLOWS IN TO THE REACTOR AT 2.
3. THE RECIRCULATION MOTOR ISOLATABLE SHAFT SEAL SUBSYSTEM IS USED ONLY DURING SHUTDOWN.
4. EX/YY BEANS MIN/MAX CONDITIONS.
5. VALUES GIVEN FOR POSITION 1-7 ARE FOR EACH ONE OF THE PUMPS OPERATING IN THE DEFINED MODE. CONDITION IS OR 10 PUMPS OPERATING.
6. PUMP RATED SPEED ASSIGNED AT 1800 RPM.
7. THIS VALUE IS MAXIMUM REVERSE FLOW.
8. TDH VALUES INCLUDE 0 PERCENT MARGIN.
9. POSITION '8' IS CALLED EXCLUSIVELY FOR DEFINING DESIGN PRESSURE/TEMPERATURE CONDITIONS | NOT PROCESS CONDITIONS |.
10. NPSH SPEC FOR RPT'S S.D./J.L. IS SIMILAR TO RPT'S A.C.I.E.R.L.
11. POSITIONS 7 & 8 FLOW IS DRAWS/SECOND FOR ALL MODES.

REFERENCE DOCUMENTS UNDER THE FOLLOWING IDENTIFIERS ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.

	REF. NO.
1. CONTROL ROD DRIVE SYS. PFD	C12-1020
2. REAC. BUILDING COOLING WATER SYSTEM PFD	P21-1020
3. REAC. RECHG. SYS. PFD	B31-1010
4. PIPING AND INSTRUMENT SYMBOLS DIAG. WK.	A10-3030

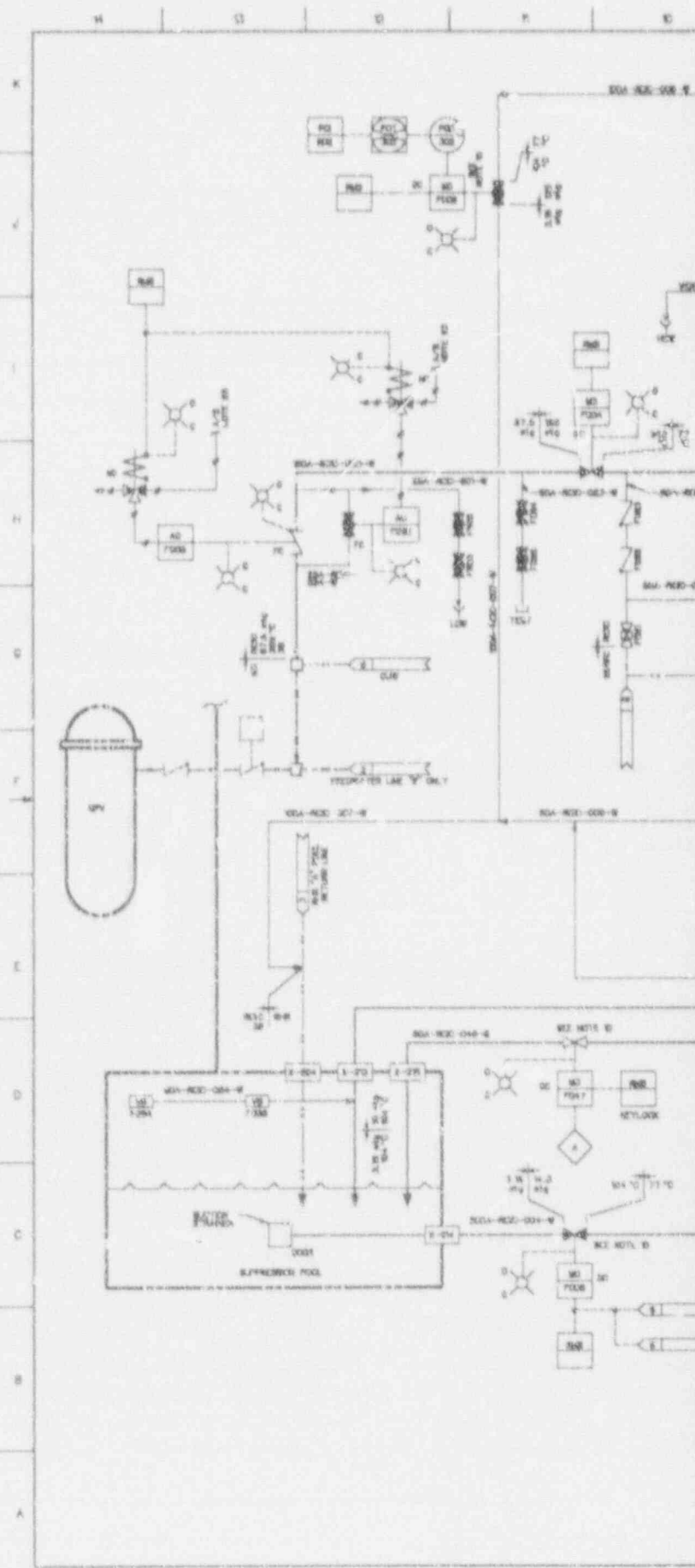
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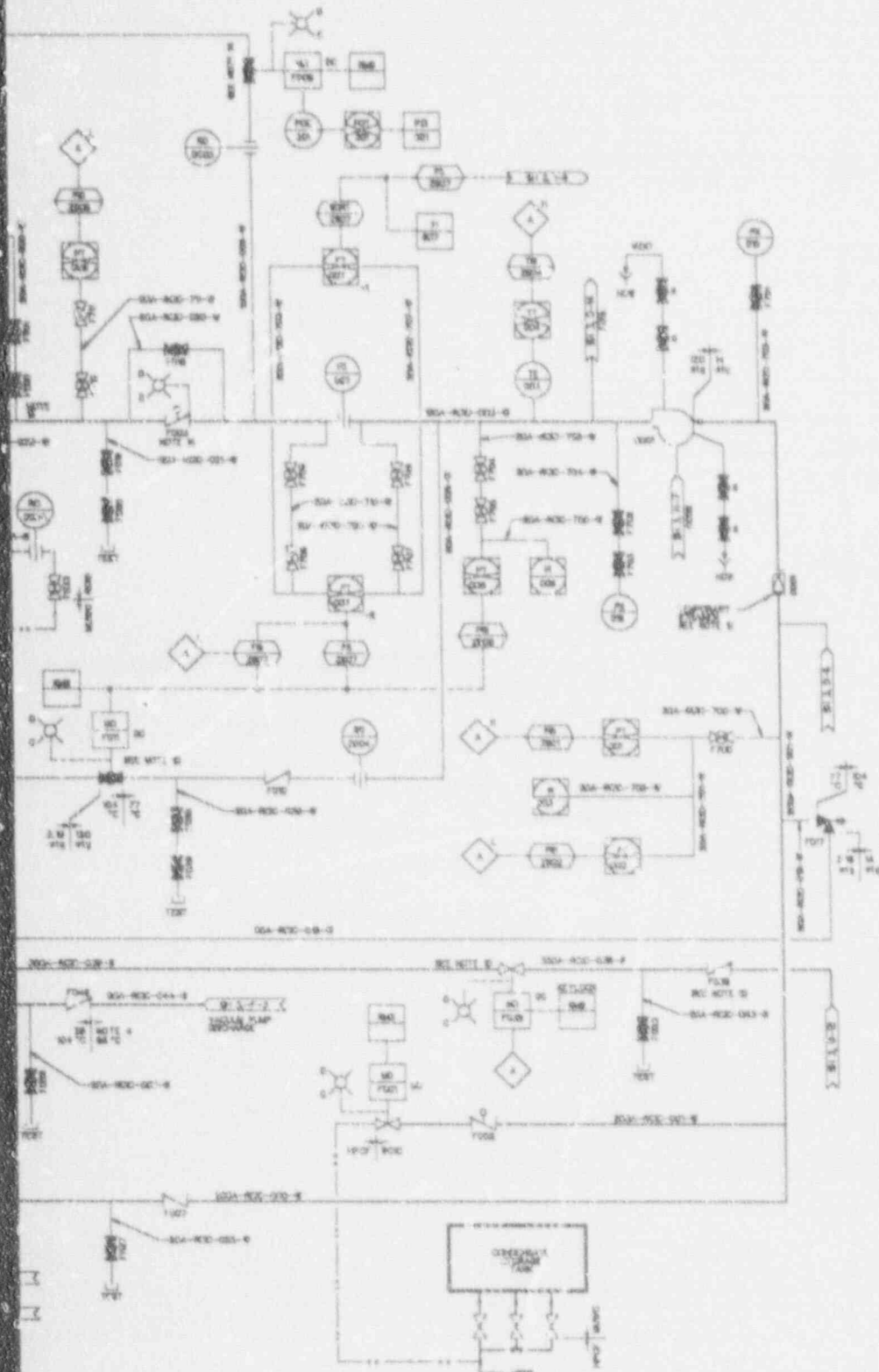
Also Available On
Aperture Card

REF. NO. 021-1000

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Figure 5.4-5 REACTOR RECIRCULATION SYSTEM PFD





- NOTES
1. [REDACTED]
 2. [REDACTED]
 3. [REDACTED]
 4. [REDACTED]
 5. [REDACTED]
 6. [REDACTED]
 7. [REDACTED]
 8. [REDACTED]
 9. [REDACTED]
 10. [REDACTED]
 11. [REDACTED]
 12. [REDACTED]
 13. [REDACTED]
 14. [REDACTED]
 15. [REDACTED]
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 21. [REDACTED]
 22. [REDACTED]
 23. [REDACTED]
 24. [REDACTED]

[REDACTED]

COMPONENT IDENTIFICATION TABLE FOR THIS P&ID SHEET

NO.	DESCRIPTION	SYMBOL
1	REC SYSTEM P&ID	101-1000
2	REACTOR CORE ISOLATION SYSTEM P&ID	102-1000
3	REC SYSTEM P&ID	103-1000
4	LEAK DETECTOR & ISOLATION SYS P&ID	104-1000
5	CLM SYSTEM P&ID	105-1000
6	WASTE WATER CONDENSATE SYS P&ID	106-1000
7	HEAT EXCHANGER SYSTEM P&ID	107-1000
8	REC PROTECTION CORE FLUXER SYS P&ID	108-1000
9	ATMOSPHERIC CONDENS. SYS P&ID	109-1000
10	RETRACTOR AIR SYSTEM P&ID	110-1000
11	VALVE ISLAND LEAKAGE TREATMENT WASTEWATER SYS	111-1000
12	SUPPLEMENTARY POOL TREATMENT	112-1000
13	LEAK DETECTOR AND ISOLATION SYS P&ID	113-1000
14	WATER CONDENSER	114-1000
15	HEATING SYSTEM AND CONDENSATE WATER RETURN SYS	115-1000
16	HIGH CONDUCTIVITY WASTE WASTEWATER SYSTEM	116-1000
17	LOW CONDUCTIVITY WASTE WASTEWATER SYSTEM	117-1000
18	PPWD & SUPPLEMENTATION SYSTEM SYMBOLS	118-1000

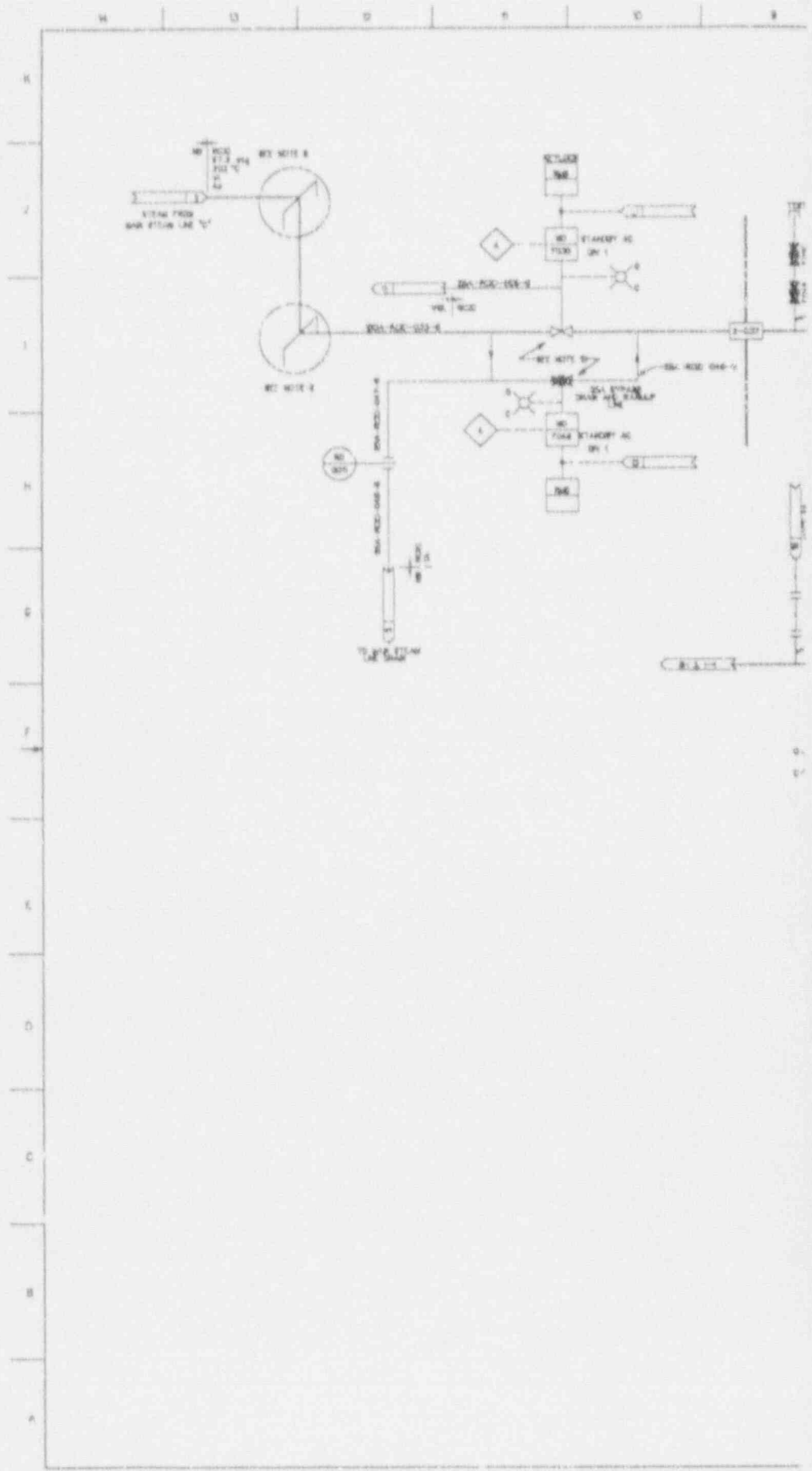
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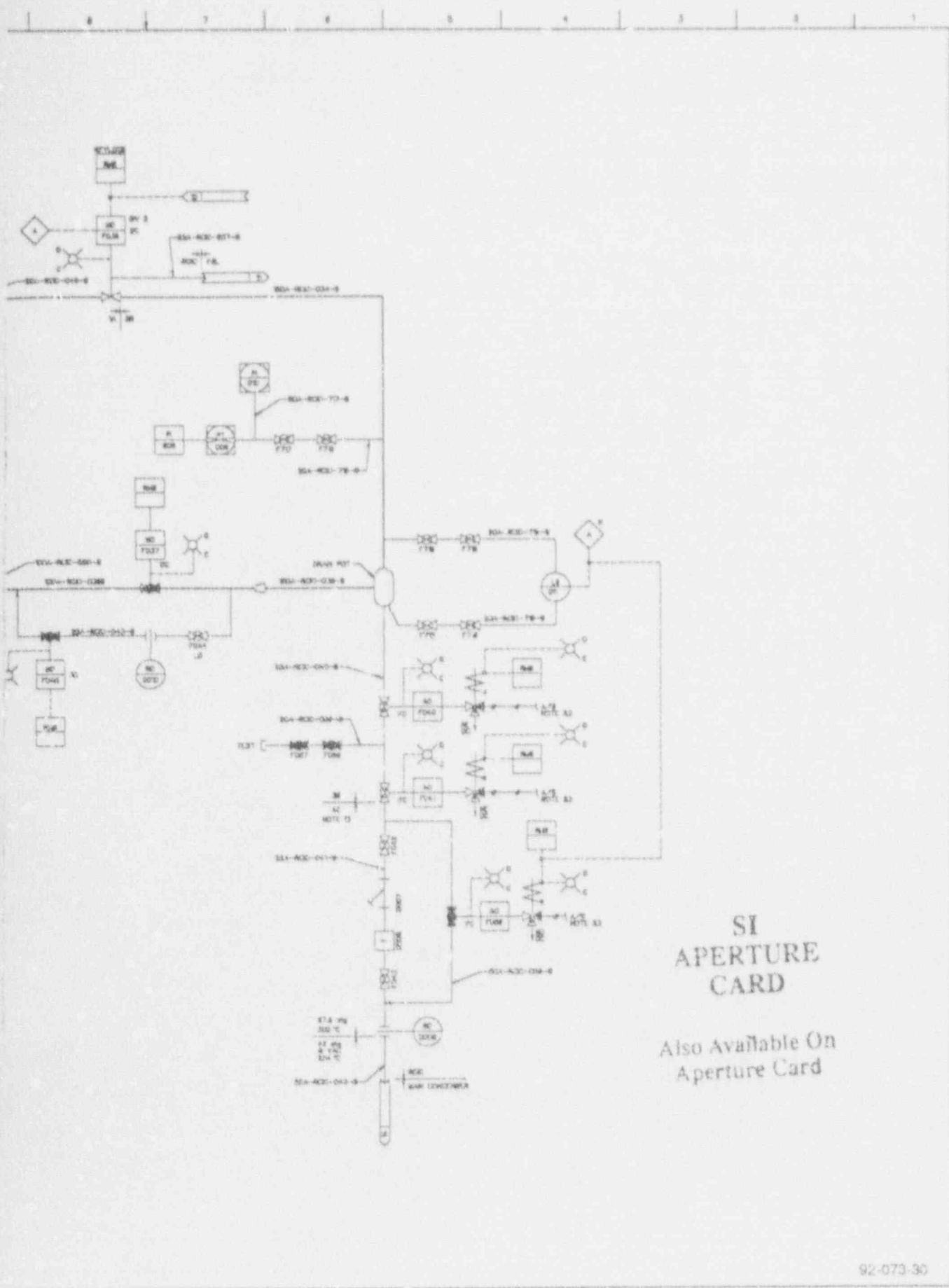
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MPL NO. 151-210

92-073-29

Figure 5.4-8 REACTOR CORE ISOLATION COOLING SYSTEM P&ID (Sheet 1 of 3)



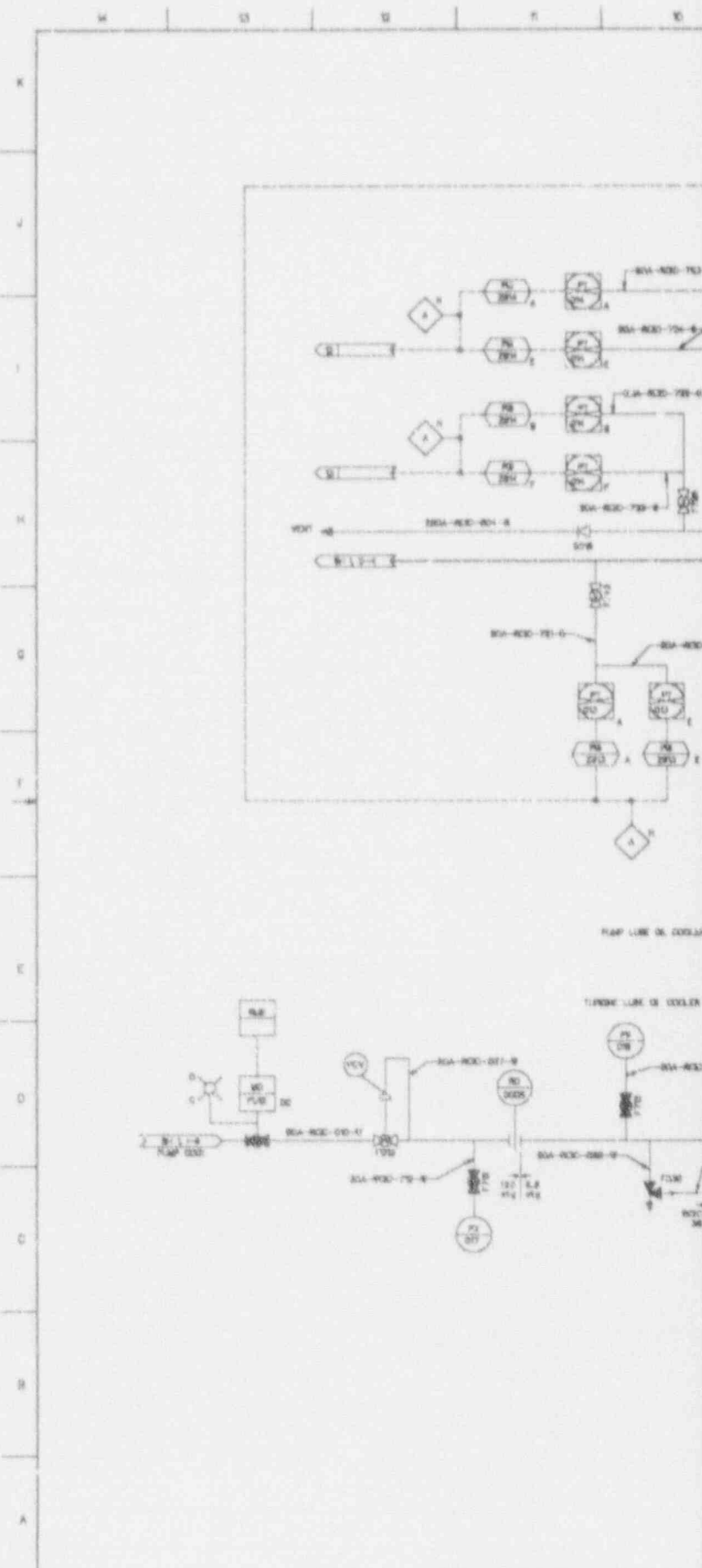


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Aperture Card

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Figure 5.4-8 REACTOR CORE ISOLATION COOLING SYSTEM P&ID (Sheet 2 of 3)



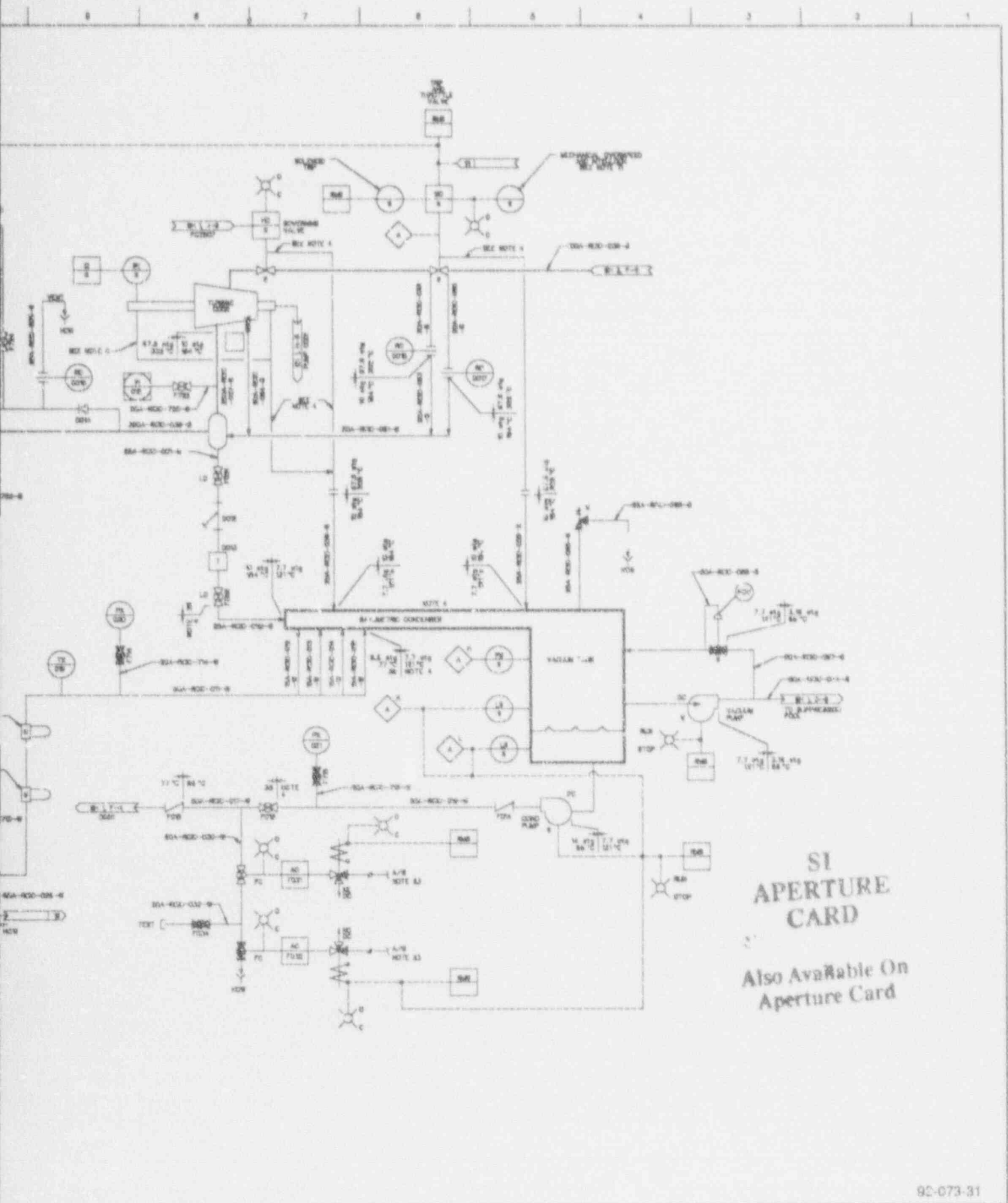
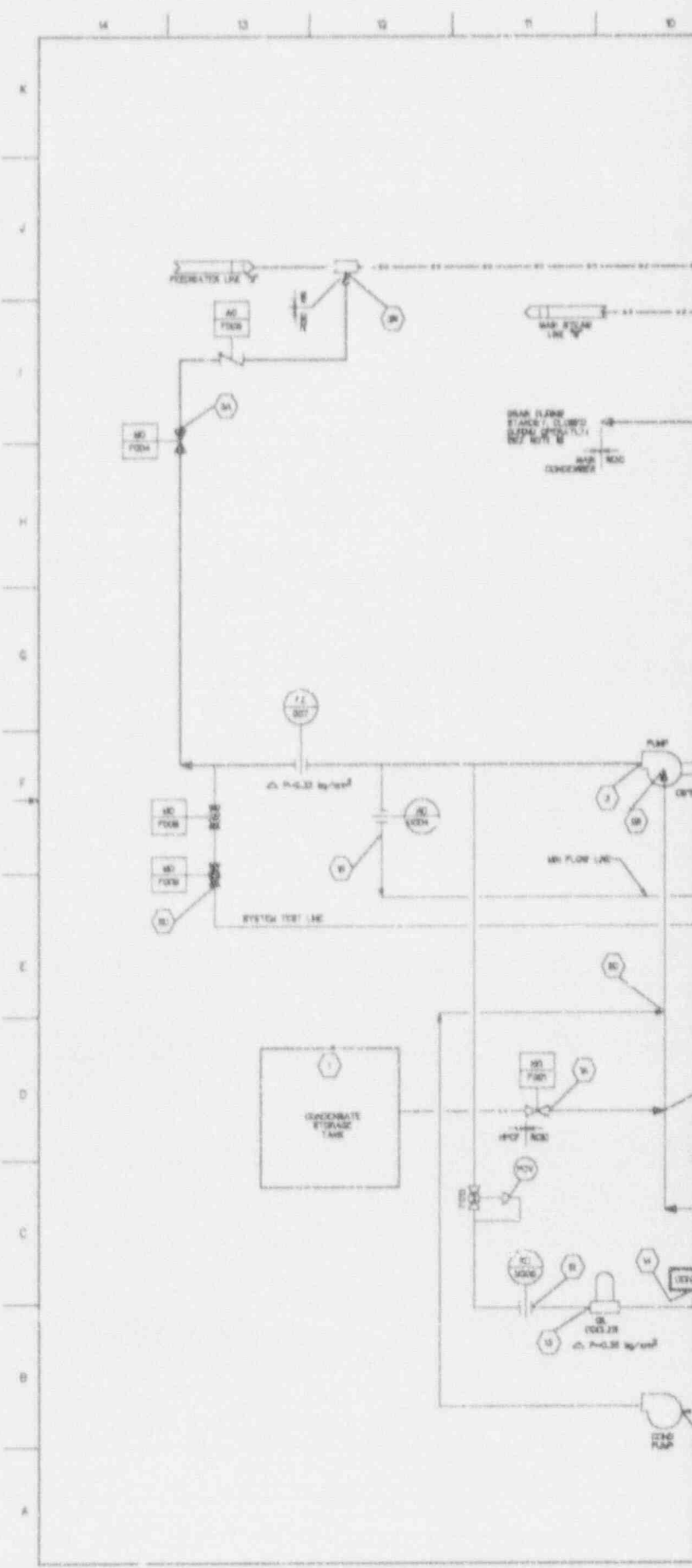
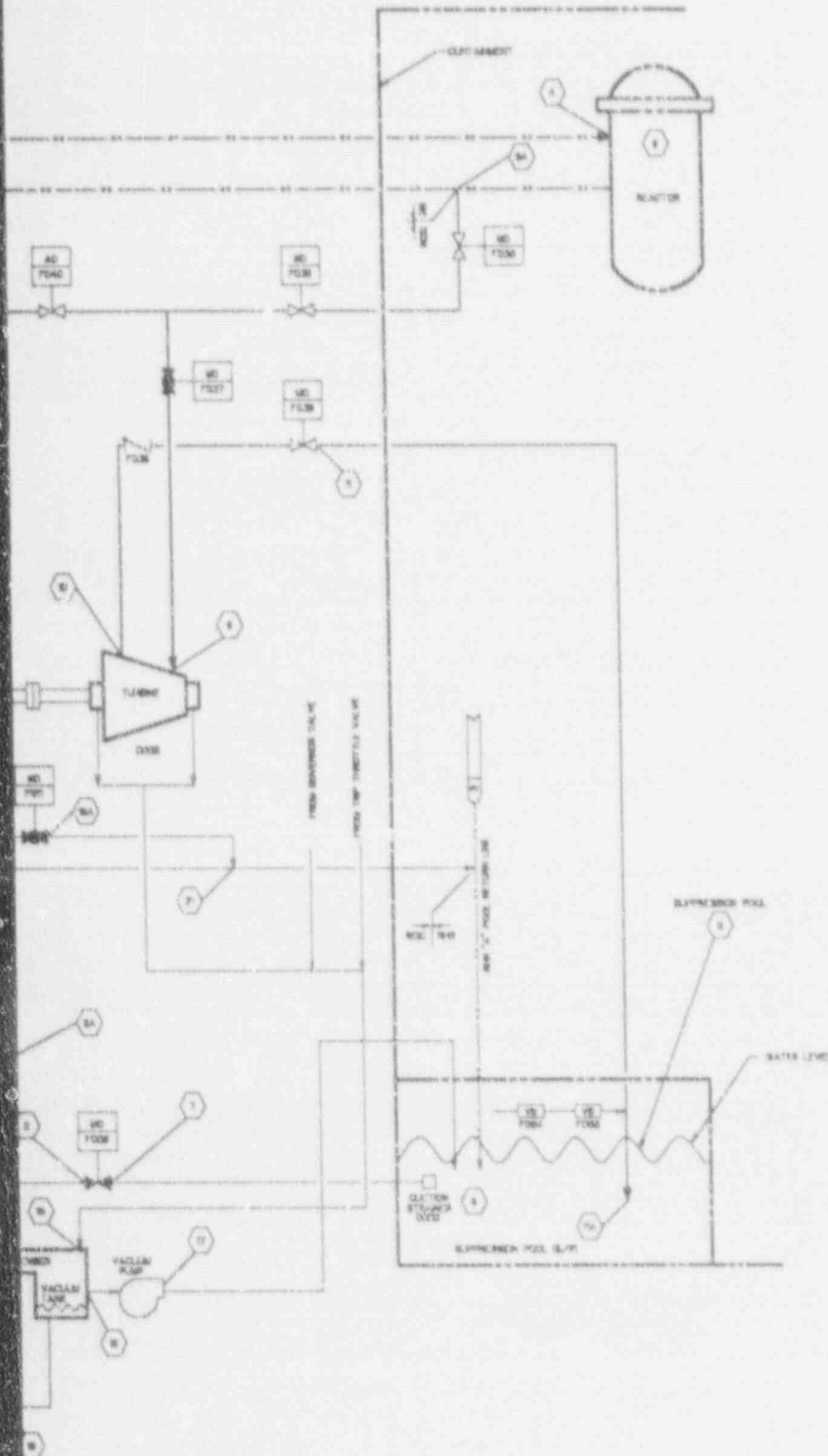


Figure 5.4-8 REACTOR CORE ISOLATION COOLING SYSTEM P&ID (Sheet 3 of 3)



PLANT 1018-1019-1020



- NOTES
1. ATMOSPHERIC PRESSURE OF 10.13 MPa (14.7 PSIA) SHALL BE USED IN CALCULATIONS.
 2. WATER FLOWS ARE GIVEN IN m^3/hr (GPM) FLOWS IN $SEC/m^3/hr$.
 3. THE UNDESIGNED FLOW INDICES PRESSURE DROP OF 0.1 MPa (1.47 PSIA) FOR ORIFICE & A PIPED LINE BETWEEN PORTIONS (7) AND (8).
 4. THE LINE OR COOLER PRESSURE DROP OF 0.1 MPa (1.47 PSIA) & A PIPED LINE BETWEEN PORTIONS (10) AND (11).
 5. THE CONTROL AND WIRING FOR LINE WIRING ARE ARRANGED AS FOLLOWS:
 SLICER FROM CONDENSATE STORAGE (SEE 1 & 2)
 SLICER FROM SUPPRESSION POOL (SEE 1 & 2)
 PUMP (MAINLINE) (SEE 1 & 2)
 STEAM SUPPLY (SEE 1 & 2)
 TURBINE EXHAUST (SEE 1 & 2)
 TEST LINE (SEE 1)
 COOLING SYSTEM (SEE 1)
 6. SYSTEM OPERATOR IS PROVIDED WITH AUTOMATIC PRESSURES IN THE REACTOR VESSEL AND THE SUPPRESSION POOL. IN THIS SYSTEM, THESE CONDITIONS ARE NOT CONTROLLED BY THE SYSTEM, BUT BY THE OPERATOR AND NO DATA IS SHOWN.
 7. PUMP WIRING FLOW MEASUREMENT NOT COVERED BY THIS SYSTEM. THE WIRING FOR THE PUMP IS SHOWN IN THE PUMP WIRING DIAGRAM AT WORKING DRAWING NO. 100-1000.
 8. DURING SYSTEM STARTUP EQUIPMENT IS NOT OPERATING. AFTER TEST FLOW OCCURS THROUGH THE PIPED LINE, THE LINE DRAIN TRAP SYSTEM IS TO BE RESET AND THE PIPED LINE SHALL BE FLOWED TO THE SUPPRESSION POOL. SLICER STRAIGHT & NO PERCENT FLOWING.
 9. STEAM FLOWS FOR TEST MADE AT MAINLINE (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15) ARE BASED UPON A FLOW OF 100 m^3/hr (1328 GPM) THROUGH THE TURBINE EXHAUST LINE DRAIN TRAP SYSTEM AT 10 MPa (147 PSIA) AND 100 m^3/hr (1328 GPM) SYSTEM AT 10 MPa (147 PSIA) AND 100 m^3/hr (1328 GPM).
 10. SEE NOT DEC 1 FOR PUMP PRESSURE.

REFERENCE DOCUMENTS UNDER THE FOLLOWING IDENTIFIERS SHALL BE USED IN CONNECTION WITH THIS DRAWING:

IDENTIFIER	REF. NO.
1. NUCLEAR BOILER SYSTEM PFD	100-1000
2. REACTOR HEAT REMOVAL SYSTEM PFD	100-1000
3. PIPING PRESSURE LOSS FLOWSheet PFD	100-1000
4. RCIC SYSTEM PFD	100-1000
5. PUMP & INSTRUMENTATION	100-1000
6. PIPING & INSTRUMENTATION	100-1000

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REF. NO. 100-1000

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Figure 5.4-9 RCIC SYSTEM PFD (Sheet 1 of 2)

M 0 0 0 0 0 0

K
J
I
H
G
F
E
D
C
B
A

SEE 2 BUTTER FROM CONDENSATE STORAGE REACTOR AT LOW PRESSURE SUPPRESSION POOL AT 2.0/2.0 PRESSURE

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLOW RATE L	-	90	90	90	-	-	90	-	90	90	90	90	90	90
PRESSURE	12	1	1	1	12	-	-	12	-	12	12	12	12	12
TEMP °C	40	40	40	40	40	-	-	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	40/0	40/0	40/0	40/0	40/0	-	-	40/0	40/0	40/0	40/0	40/0	40/0	40/0

SEE 4 BUTTER FROM CONDENSATE STORAGE REACTOR AT LOW PRESSURE SUPPRESSION POOL AT 2.0/2.0 PRESSURE

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLOW RATE L	-	90	90	90	-	-	90	-	90	90	90	90	90	90
PRESSURE	12	1	1	12	12	-	-	12	-	12	12	12	12	12
TEMP °C	40	40	40	40	40	-	-	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	40/0	40/0	40/0	40/0	40/0	1/0	-	40/0	40/0	40/0	40/0	40/0	40/0	40/0

SEE 1 BUTTER FROM SUPPRESSION POOL REACTOR AT LOW PRESSURE SUPPRESSION POOL AT 2.0/2.0 PRESSURE

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLOW RATE L	-	90	90	90	-	-	90	-	90	90	90	90	90	90
PRESSURE	-	1	1	12	12	12	12	12	12	12	12	12	12	12
TEMP °C	-	17	40	40	40	40	40	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	-	17/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0

SEE 5 BUTTER FROM SUPPRESSION POOL REACTOR AT LOW PRESSURE SUPPRESSION POOL AT 2.0/2.0 PRESSURE

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLOW RATE L	-	90	90	90	-	-	90	-	90	90	90	90	90	90
PRESSURE	-	1	1	12	12	12	12	12	12	12	12	12	12	12
TEMP °C	-	40	40	40	40	40	40	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	-	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0

SEE 3 BUTTER FROM SUPPRESSION POOL REACTOR AT LOW PRESSURE SUPPRESSION POOL AT 2.0/2.0 PRESSURE

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLOW RATE L	-	90	90	-	-	90	-	90	-	90	90	90	90	90
PRESSURE	-	1	1	-	12	12	12	12	-	12	12	12	12	12
TEMP °C	-	30	40	-	-	40	40	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	-	30/0	40/0	-	-	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0

SEE NOTE 6

POSITION	1-5A	1-5B	1-5C	1-5D	1-5E	1-5F	1-5G	1-5H	1-5I	1-5J	1-5K	1-5L	1-5M	1-5N
FLOW RATE L	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5	6/5
PRESSURE	12	12	12	12	12	12	12	12	12	12	12	12	12	12
TEMP °C	40	40	40	40	40	40	40	40	40	40	40	40	40	40
RELATIVE HUMIDITY %	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0

FLOW PRESSURE: 0 TO 12 BAR
 DUMP: 0 TO 12 BAR
 12 TO 12 BAR
 12 TO 12 BAR
 12 TO 12 BAR

TEMPERATURE: AUTOMATIC
 0 TO 40 °C
 40 TO 40 °C
 40 TO 40 °C
 40 TO 40 °C

8	9	10	11	12	13	14
0.0	-	0.00	1	-	1	1
1	0.7	1	1	1	-	-
10	10	10	10	10	-	-
10/8	10/8	10/8	10/8	10/8	-	-

8	9	10	11	12	13	14
0.0	-	0.00	1	-	1	1
1	0.7	1	1	1	-	-
10	10	10	10	10	-	-
10/8	10/8	10/8	10/8	10/8	-	-

8	9	10	11	12	13	14
0.0	-	0.00	1	-	1	1
1	0.7	1	1	1	-	-
10	10	10	10	10	-	-
10/8	10/8	10/8	10/8	10/8	-	-

8	9	10	11	12	13	14
0.0	-	0.00	1	-	1	1
1	0.7	1	1	1	-	-
10	10	10	10	10	-	-
10/8	10/8	10/8	10/8	10/8	-	-

8	9	10	11	12	13	14
0.0	-	0.00	1	-	1	1
1	0.7	1	1	1	-	-
10	10	10	10	10	-	-
10/8	10/8	10/8	10/8	10/8	-	-

8-8	9-9	10-10	11-11	12-12	13-13
0.0	0.0	0.0	0.0	0.0	0.0
10	10	10	10	10	10
10	10	10	10	10	10

1. THE PRESSURE AT THIS POSITION DEPENDS ON PUMP APERTURE(S) AND MAY BE VARYING WITHIN THE FOLLOWING RANGE:

POSITION

- (1) FLET TO PUMP FROM CONCRETE STRUCTURE 1.0M
- (2) PRESSURE HEAD = 1.0M
2' WATER ABOVE PUMP FLOOR
- (3) MAXIMUM HEAD TOTAL 2' WATER HEAD
MAX = 7.0M WATER 2' X 2'
TO 4' X 2' WATER 2' X 2'
- (4) VARIATION IN HEAD DUE TO BETWEEN POSITION
(5) AND (6) = 0.1 kg/cm² SEE NOTE 11
- (7) MAXIMUM PRESSURE ALLOWED TO BE ADDED
SYSTEM PERFORMANCE = 12 kg/cm² SW
- (8) (9) MAXIMUM PRESSURE ALLOWED = 0.4 kg/cm² MAX 415
- (10) PRESSURE IS 0.38 kg/cm² LESS THAN POSITION (11)
- (12) SUFFICIENT RADIIUS TO PREVENT LUMPING
DUE TO OUTLET CLEARANCE TO BE SPECIFIED IN
TUBING VENDOR SPECIFICATION
- (13) MAXIMUM PRESSURE AVAILABLE = 0.1 kg/cm² SW
- (14) MAXIMUM PRESSURE AVAILABLE = 0.2 kg/cm² SW
- (15) SUFFICIENT PRESSURE TO RETURN TO
SUPPRESSION TANK
- (16) (17) SUFFICIENT PRESSURE TO RETURN TO
SUPPRESSION TANK

TABLE 1 VALVE POSITION CHART

VALVE	8	9	10	11	12	13	14
MODE A	0	0	0	0	0	0	0
MODE B	0	0	0	0	0	0	0
MODE C	0	0	0	0	0	0	0
MODE D	0	0	0	0	0	0	0
MODE E	0	0	0	0	0	0	0

0 = OPEN 1 = SHUT 2 = THROTTLE

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AND VENT PIPING CORING CHARACTERISTICS

OPERATING PRESSURE - SAME AS LOOP AND SYSTEM
BY FULL CLOSURE OF PRESSURE
RELIEF VALVE TO CLASS 2

DESIGNING TEMPERATURE - SAME AS LOOP AND
SYSTEM BY FULL CLOSURE OF VALVE
RELIEF VALVE TO CLASS 2

THIS DRAWING AND ASSOCIATED DOCUMENTS FOR THE
DESIGN OF THIS SYSTEM ARE ELUCIDATED FOR EACH LOOP AND
SYSTEM AS FOLLOWS

	LOOP A	LOOP B	LOOP C
MAX PRESS	800-820	800-820	800-820
MAX VENT PRESS	800-820	800-820	800-820
MAX TEMP	300-310	300-310	300-310

NOTE: THIS FOR PIPING AND TANKS WILL BE DESIGN
TEMP. DESIGN

DESIGN FUNCTION IS ACCOMPLISHED THROUGH MICROPROCESSOR
CONTROL SYSTEM

NOTE: VALVES CAN BE PROVIDED AT THE SUPPLY
OR THE DEMAND END OF THE PIPING

FOR THE DEMAND END OF THE PIPING THE VALVE SHALL BE PROVIDED
AT THE DEMAND END OF THE PIPING AND SHALL BE DESIGN SPECIFIED
BY THE DESIGNER TO BE FULLY VALVE

SUPPLEMENTAL DOCUMENTS UNDER THE FOLLOWING SYSTEMS ARE
TO BE USED IN CONNECTION WITH THE DRAWING

	SP. NO.
1. NORMAL HEAT REMOVAL SYSTEM P&ID	21-000
2. RESIDUAL HEAT REMOVAL SYSTEM P&ID	21-000
3. SAMPLE SYSTEM P&ID	21-000
4. VENT PRESSURE STANDARD GAS SUPPLY SYSTEM P&ID	21-000
5. REACTOR WATER CLEANUP SYSTEM P&ID	21-000
6. FUEL PUMP CONTROL AND CLEANUP SYSTEM P&ID	21-000
7. VALVE LEAKAGE TREATMENT, BACKUP SYSTEM P&ID	21-000
8. MAKE-UP WATER SYSTEM COMPENSATED P&ID	21-000
9. REACTOR BUILDUP SYSTEM P&ID	21-000
10. HIGH PRESSURE CORE FLOODING P&ID	21-000
11. REACTOR CORE MELT-DOWN SYSTEM P&ID	21-000
12. NUCLEAR SALES SYSTEM P&ID	21-000
13. HIGH CONDUCTIVITY WASTE, BACKUP SYSTEM P&ID	21-000
14. REACTOR HEATING COOLING WATER SYSTEM P&ID	21-000
15. RETRACTION AIR SYSTEM P&ID	21-000
16. PURGITY CONTROL SYSTEM P&ID	21-000
17. NUCLEAR SALES SYSTEM P&ID	21-000
18. SAMPLE SYSTEM P&ID BALLBEAR TUBE	21-000
19. HIGH PRESSURE SYSTEM P&ID	21-000
20. LOW CONDUCTIVITY WASTE, BACKUP SYSTEM P&ID	21-000

SUPPLEMENTAL DOCUMENTS

1. P&ID AND INSTRUMENT SYMBOLS	21-000
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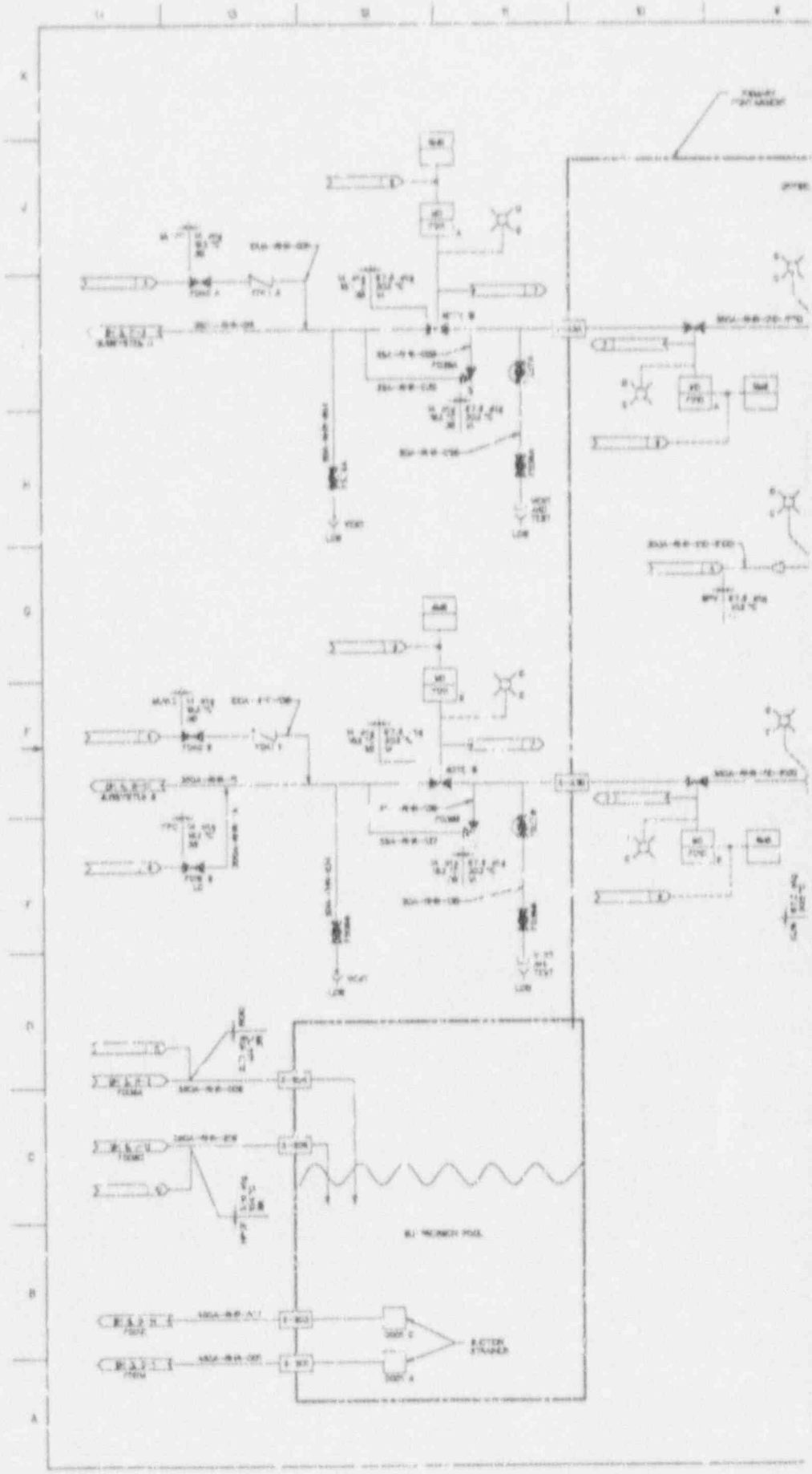
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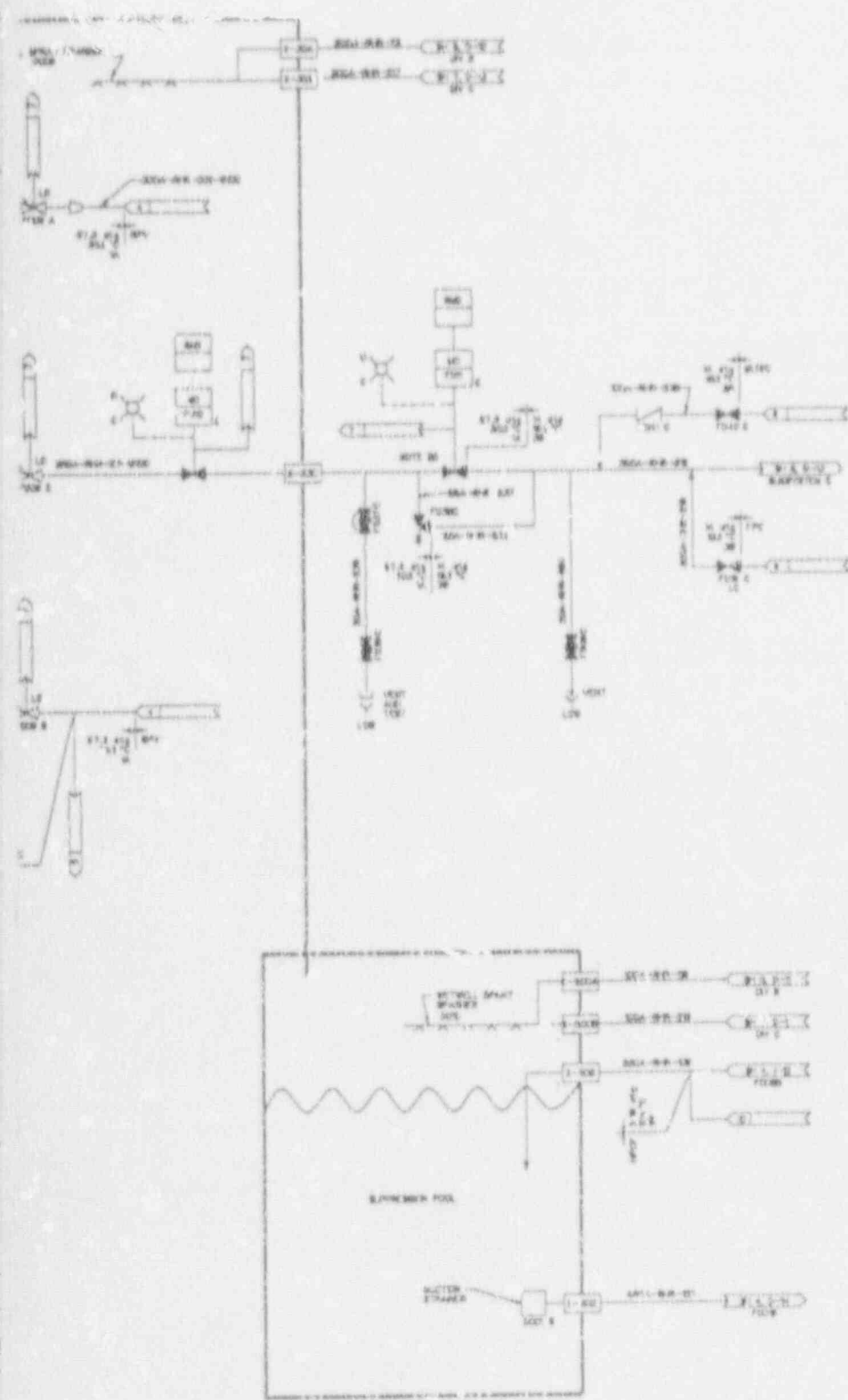
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SP. NO. 21-000

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Figure 5.4-10) RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 1 of 7)





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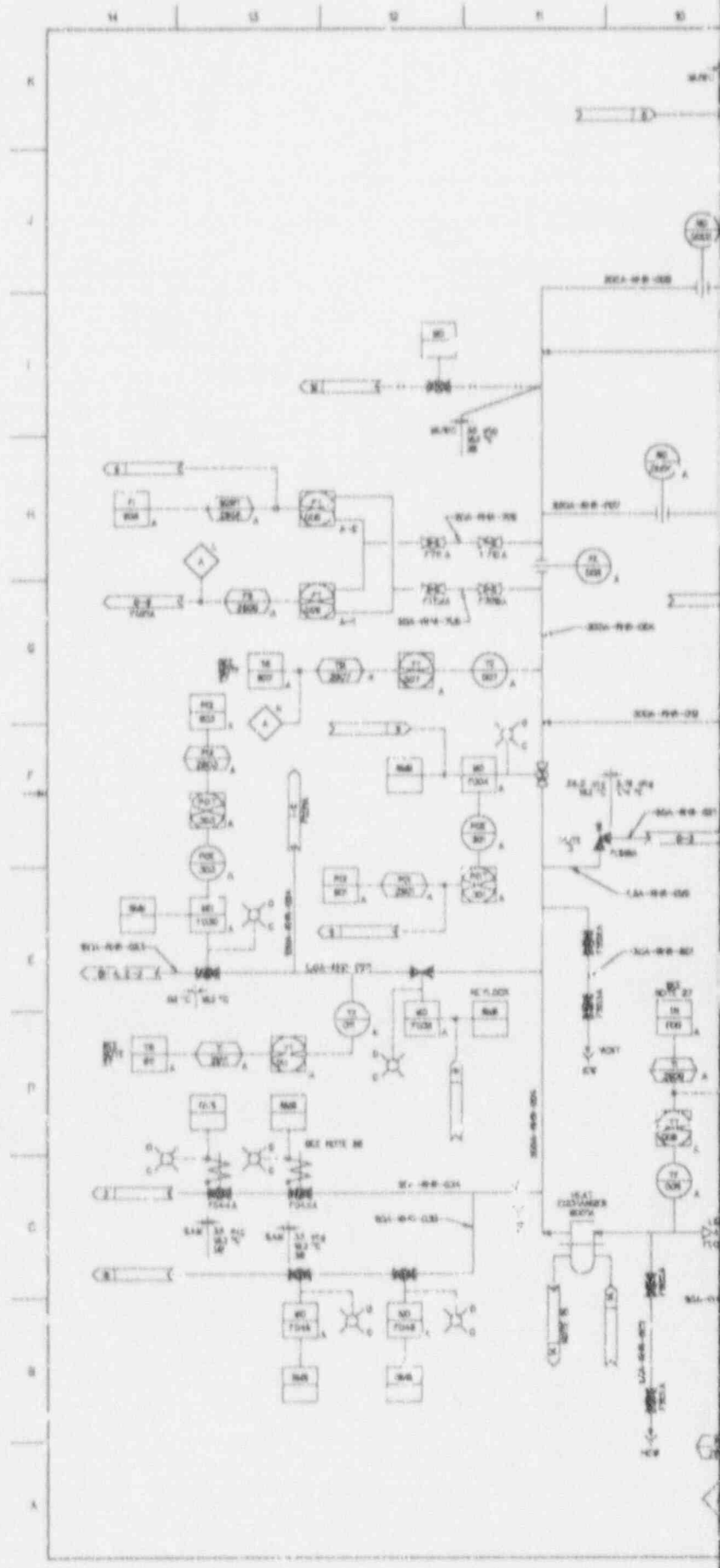
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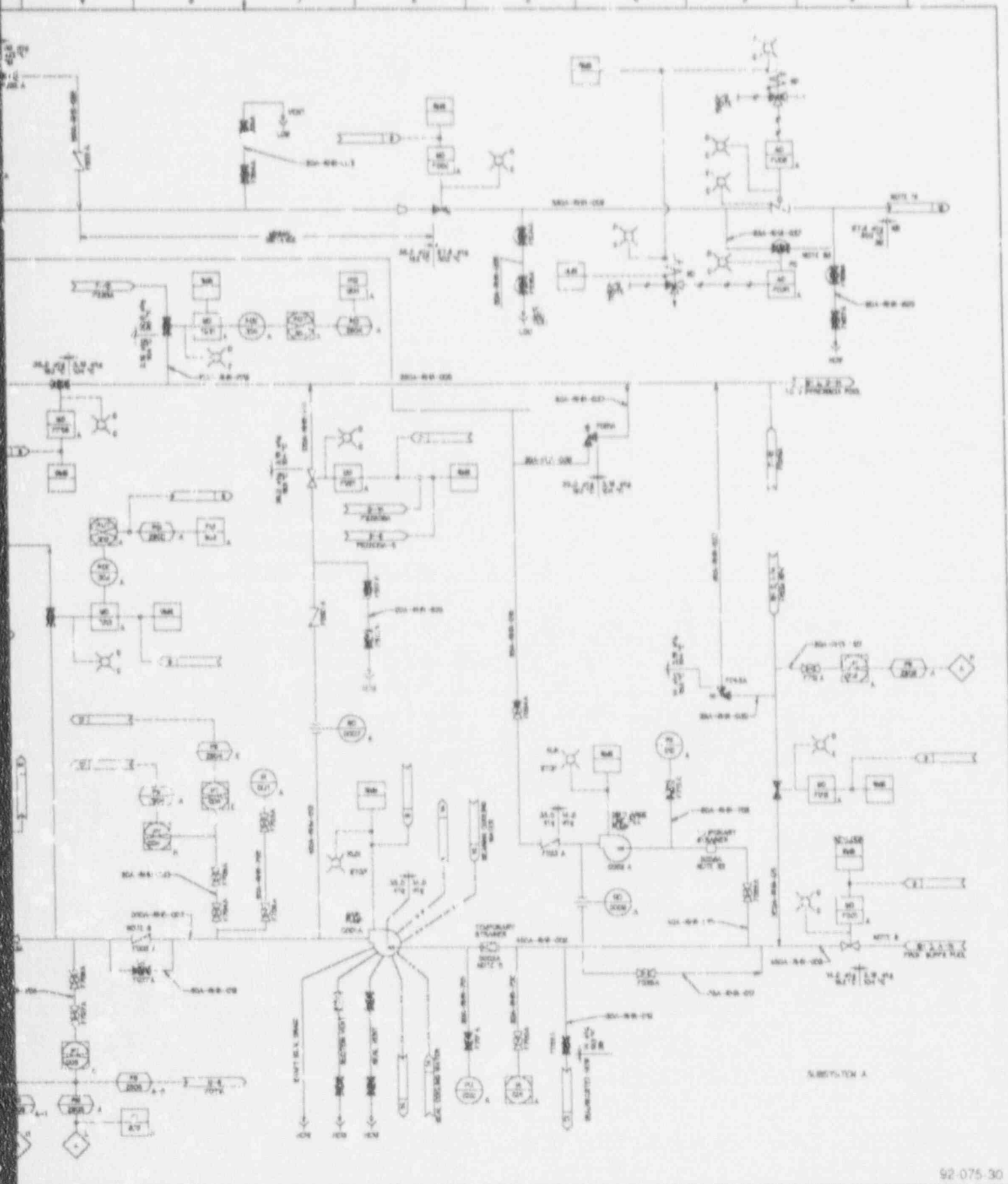
Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 2 of 7)

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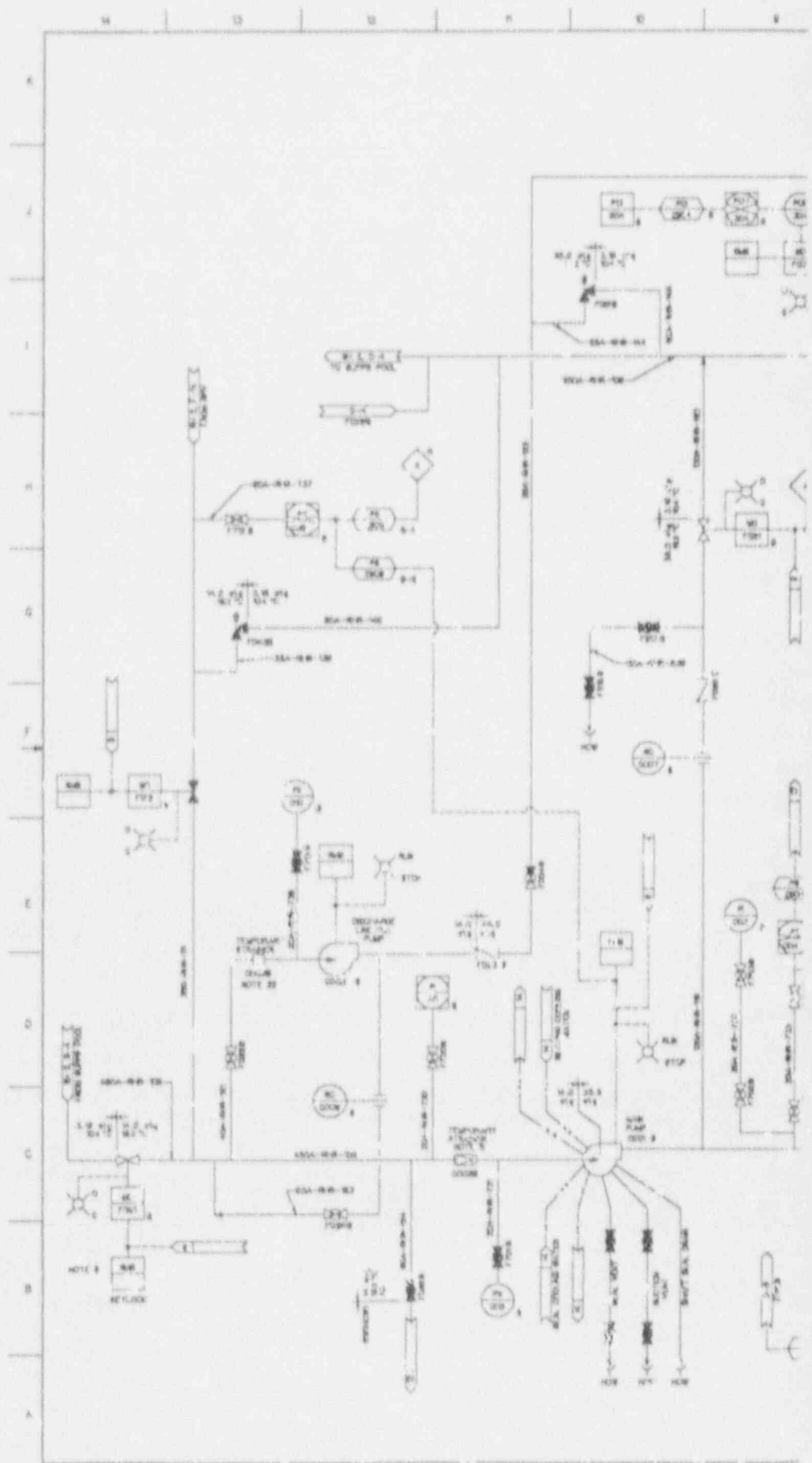
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Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 3 of 7)



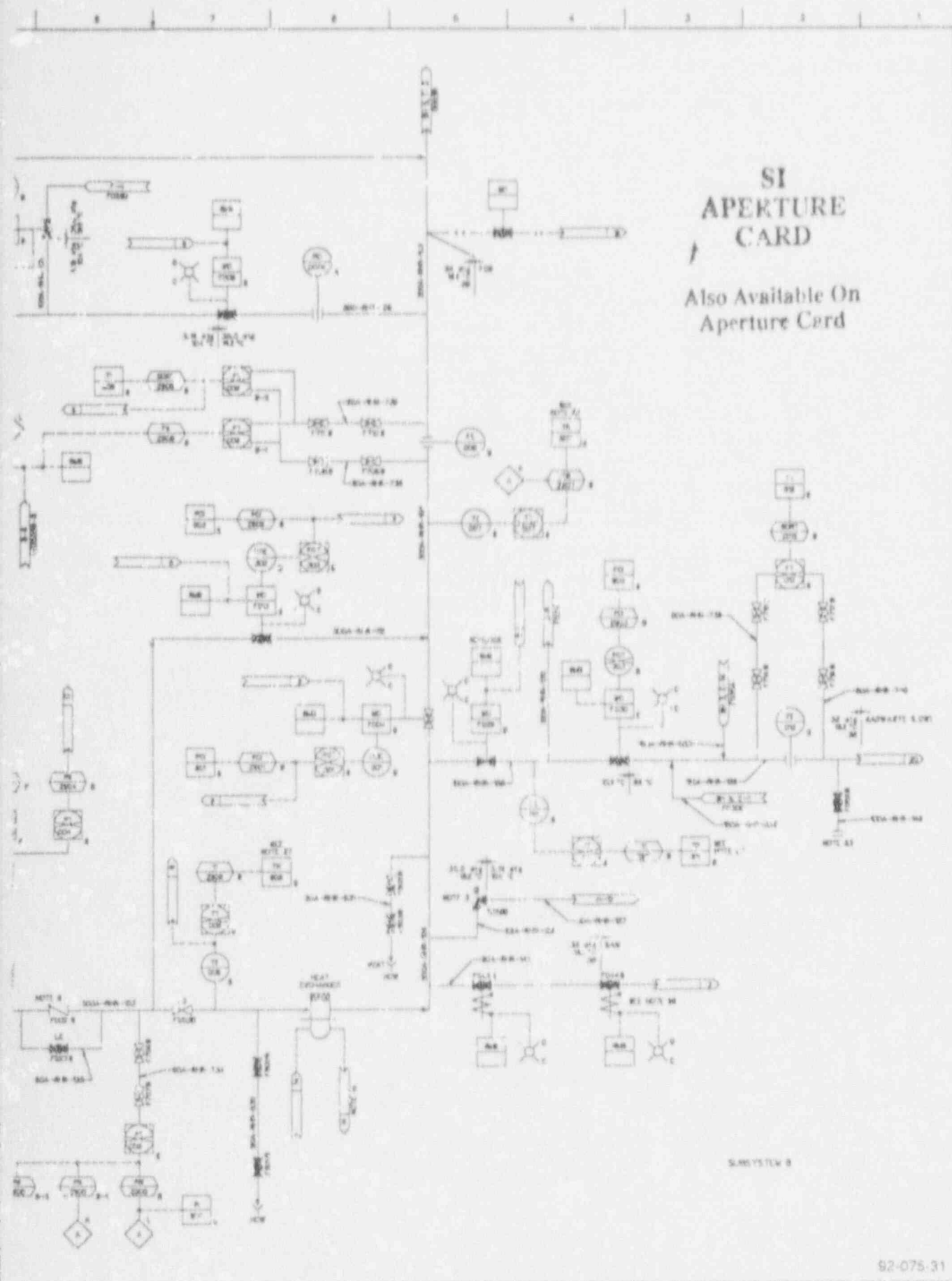
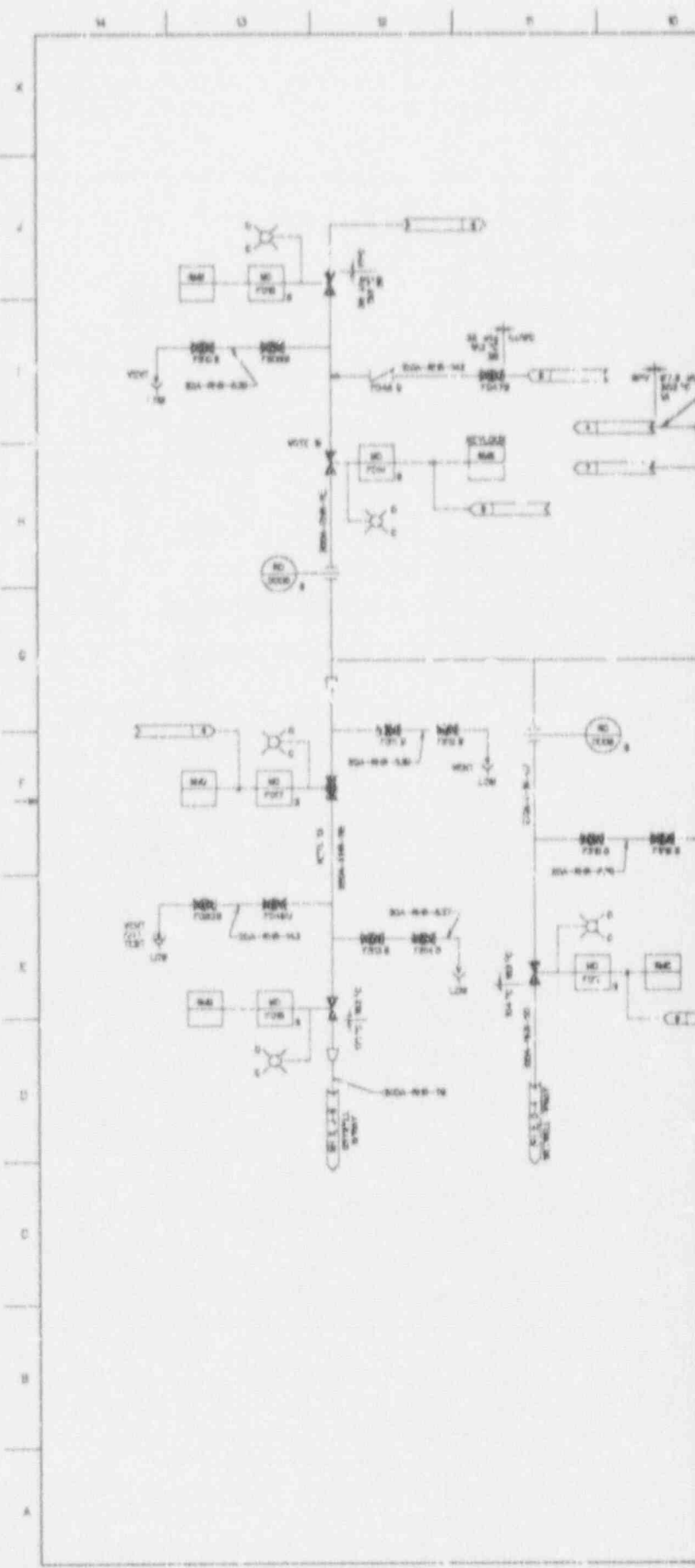
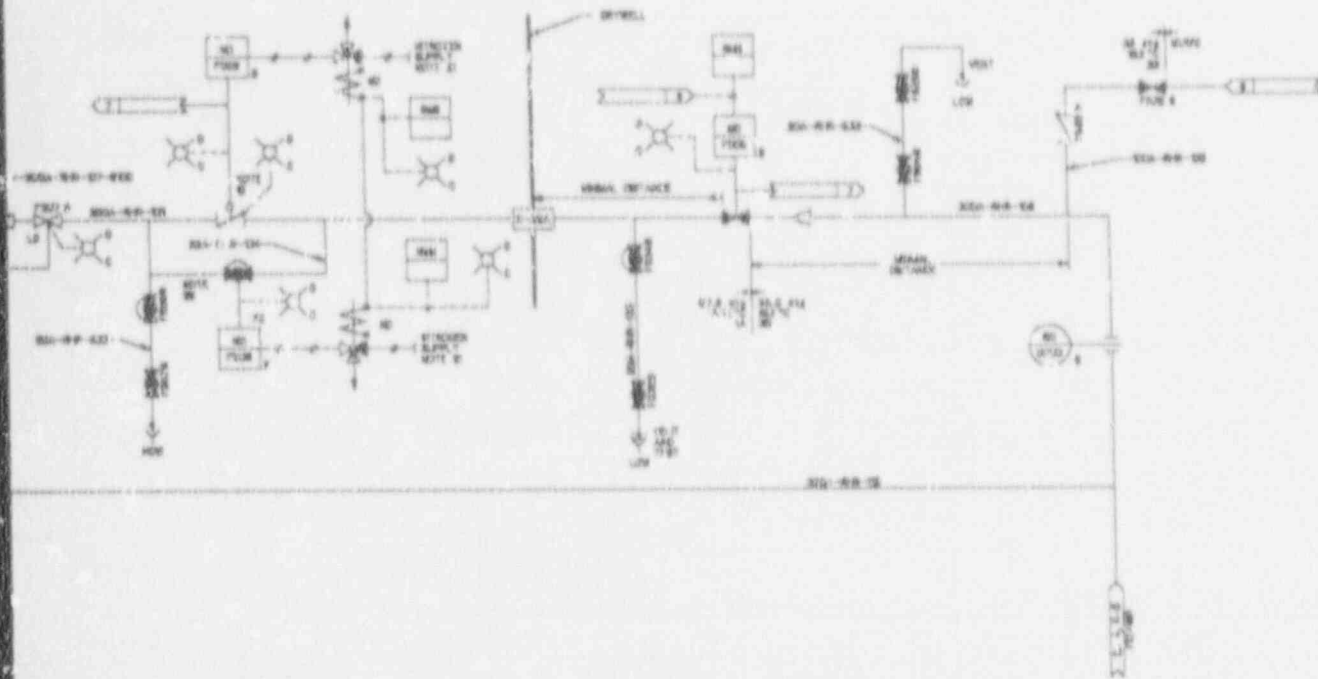


Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 4 of 7)





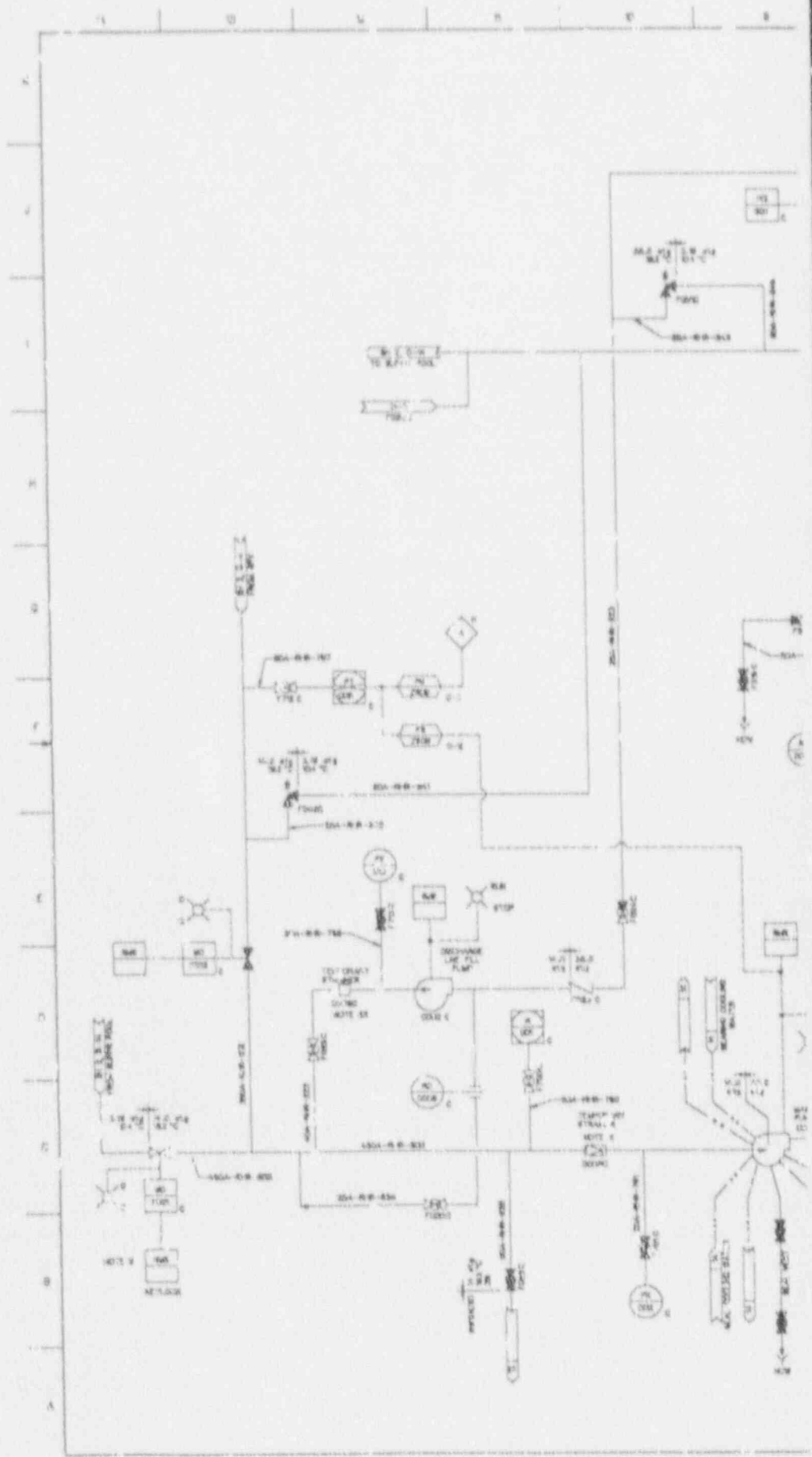
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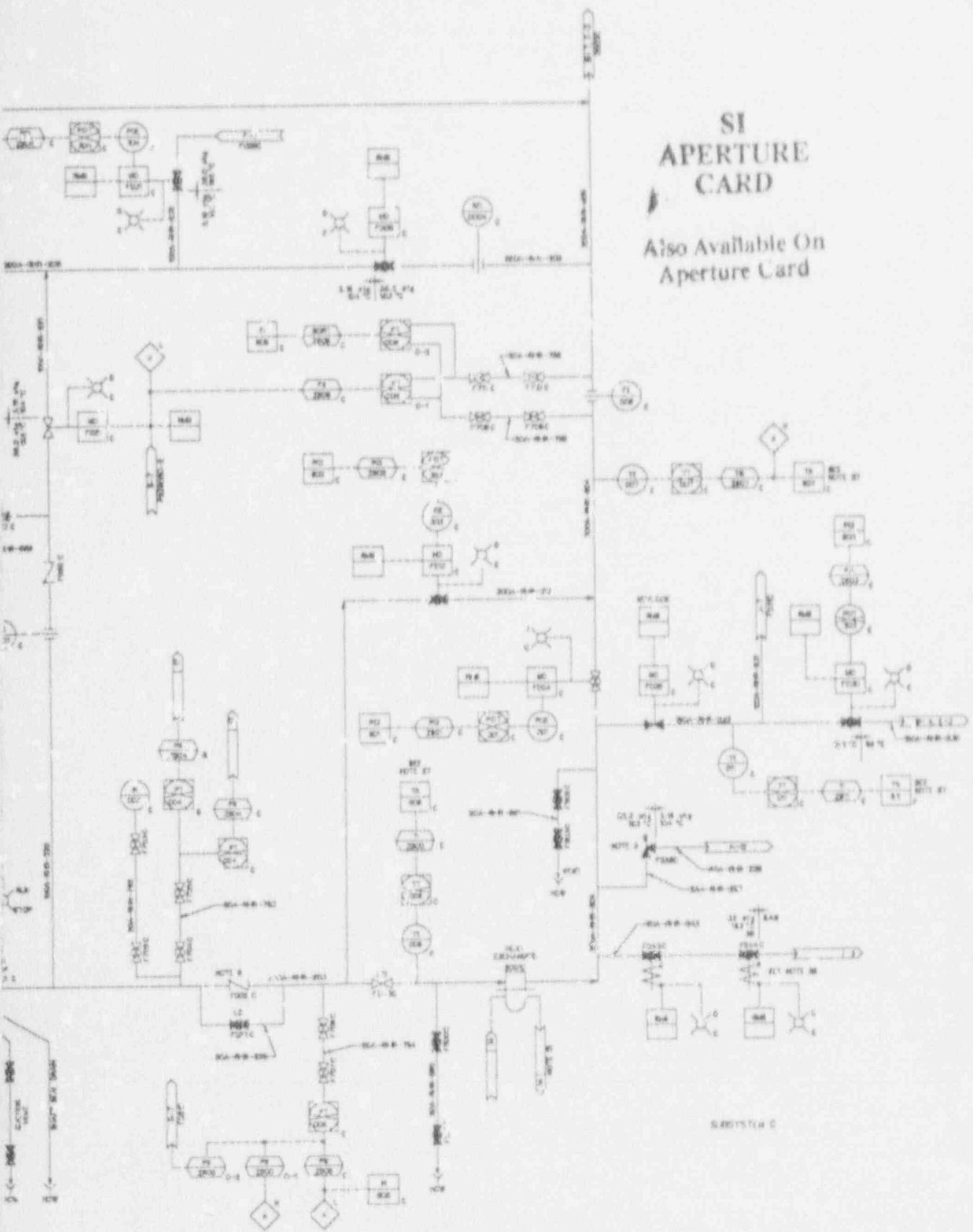
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RESIDUAL

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Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 5 of 7)



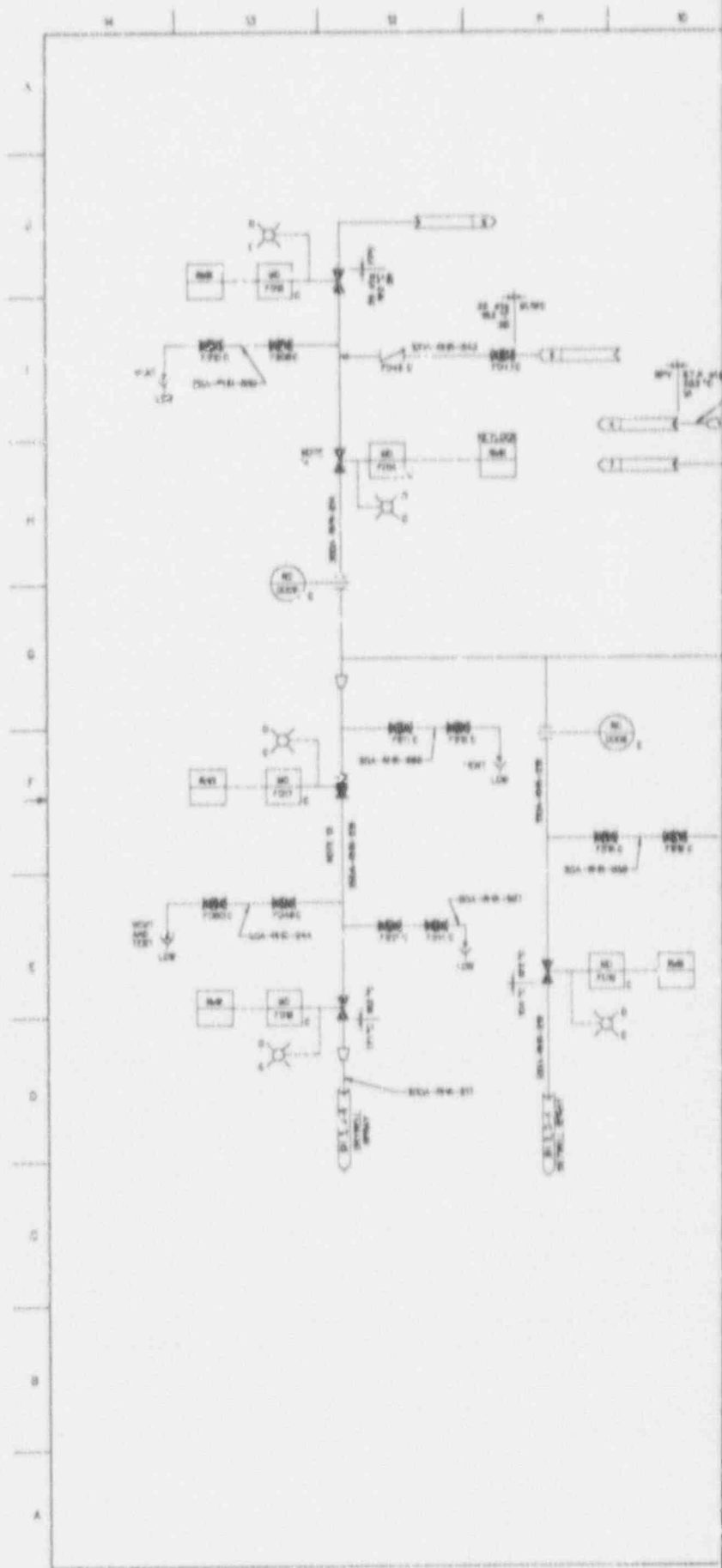


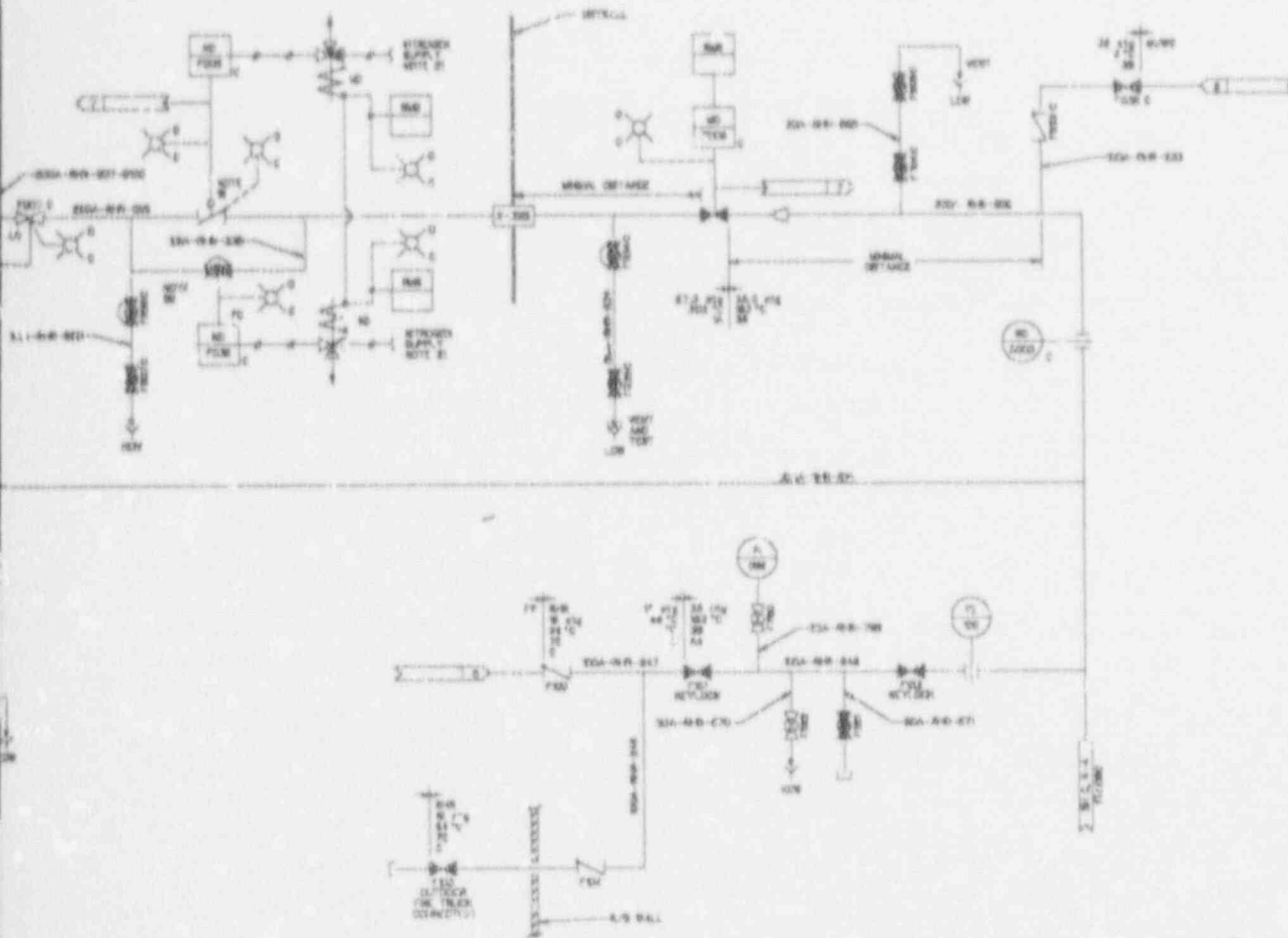
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SUBSYSTEM C

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Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 6 of 7)

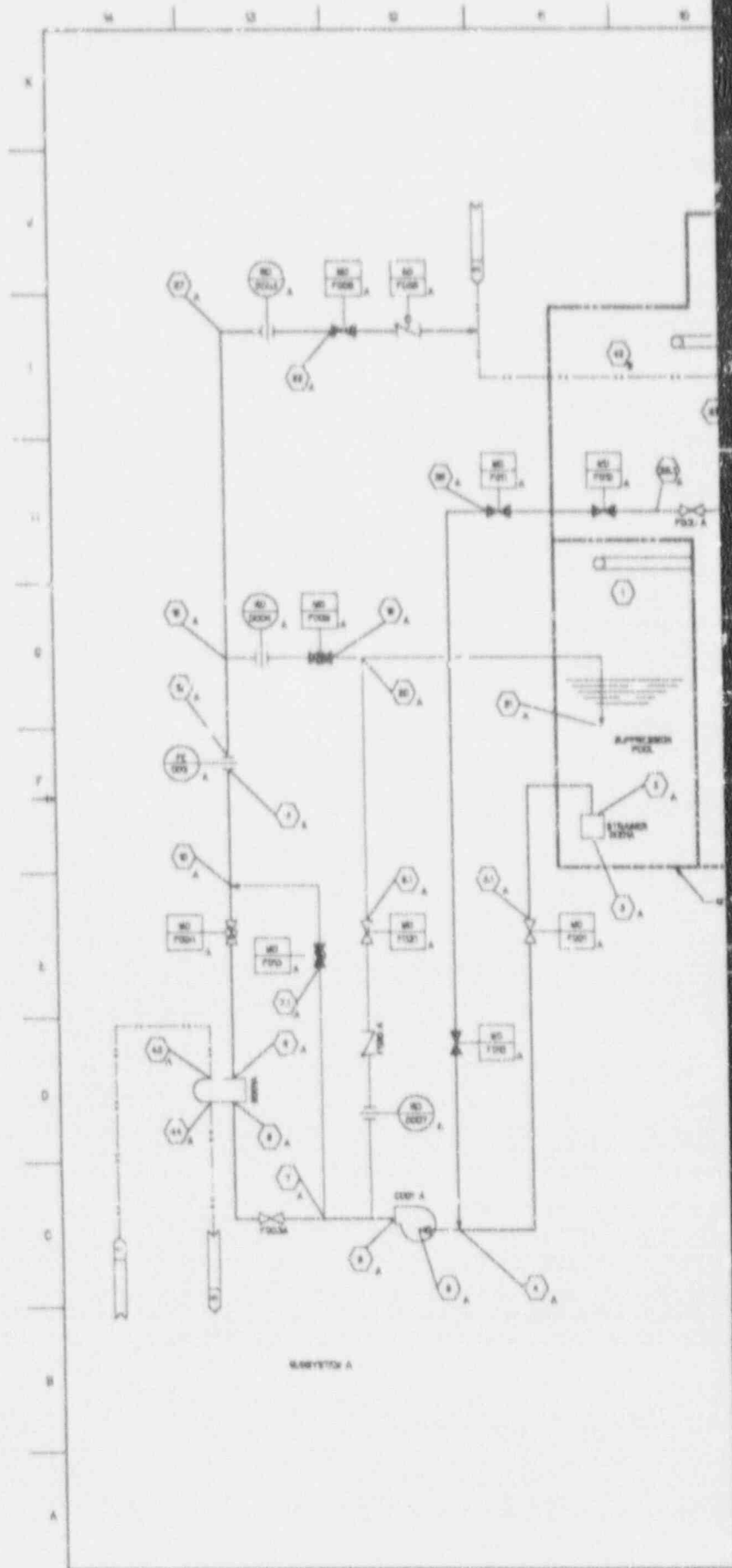


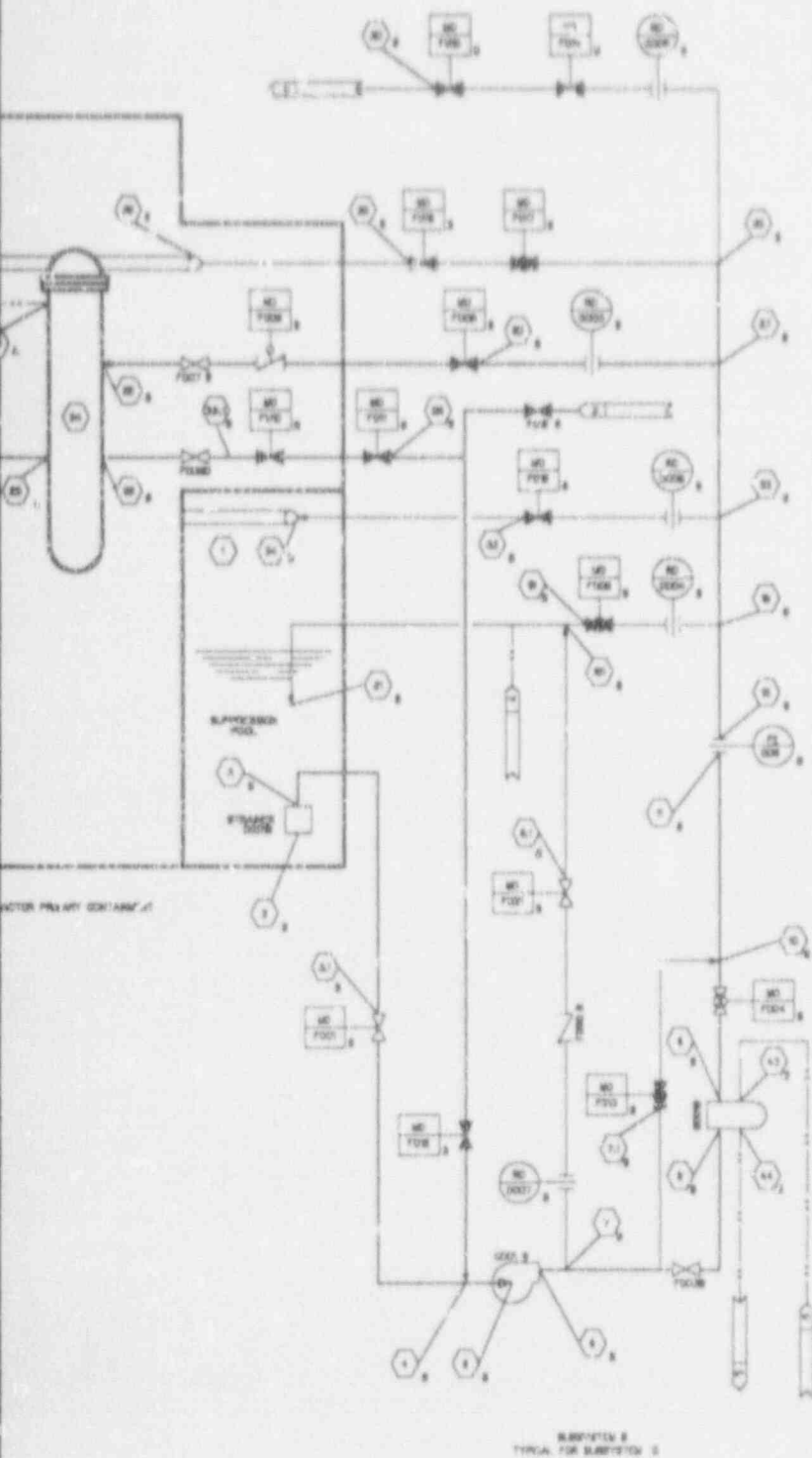


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P&ID SYSTEM

Figure 5.4-10 RESIDUAL HEAT REMOVAL SYSTEM P&ID (Sheet 7 of 7)





NOTES

1. BASIS AS TYPICAL FLOW AND SUBSTITUTION 2 SUBSTITUTION ARE NOT THE USUALLY ASSIGNED VALUES FOR EACH SUBSTITUTION SHALL BE SUBSTITUTED.
2. SYMBOL BETWEEN POINTS WITH EMPTY DATA BLANKS SHALL BE BASED ON OTHER SYMBOLS OR SPECIFIED OPERATING CONDITIONS. EMPTY DATA BLANKS ARE NOT USED IN BASIS OR ACTUAL ARRANGEMENT OR EQUIVALENT SYMBOLS DATA.
3. DASHED LINES INDICATE FLOW DOES NOT PASS THROUGH THESE POINTS.
4. TYPICAL VALUES FOR SUPPLEMENTED POOL TEMPERATURE, MINIMUM POOL TEMPERATURE, MAXIMUM POOL TEMPERATURE, POOL WATER VOLUME.
5. THE FLOW AVAILABLE IN BRANCH 2 AND 3 AT A REFERRED LOCATION 10 FEET ABOVE THE PUMP SOUTHWEST FLOOR MUST BE EQUAL TO 100 GPM. REMAINS AVAILABLE FOR THE FLOW OF 100 GPM AND NOT BE REDUCED TO 100 GPM AVAILABLE AT THE PUMP SOUTHWEST FLOOR MUST BE EQUAL TO 100 GPM. FLOW THE DIFFERENCE IN FLOW BETWEEN THE REFERRED LOCATION AND THE CENTERLINE OF THE PUMP SOUTHWEST FLOOR.
6. TABLE 1 INDICATES VALVE POSITIONING DURING VARIOUS MODES OF OPERATION.
7. THE TABLE 2 FOR REFERENCE ONLY SEE PAUL FOR REQUIRED VALUES.
8. THE WEIGHT OF WATER IN THE SUPPLEMENTED COOLING SYSTEMS SHALL BE EQUAL TO THE VALUE SPECIFIED AND NOT IN ORDER TO PREVENT A FLUXION OF FLOWING LOCAL CONTROL SYSTEMS ASSIGNED TO THE SUPPLEMENTED COOLING SYSTEMS.
9. HEAT EXCHANGER HEAT REMOVAL AND SPRAY BASED UPON 1000 ft^2/min TUBE SIDE FLOW.
10. 1000 ft^2/min HEAT REMOVAL AND SPRAY BASED UPON 1000 ft^2/min TUBE SIDE FLOW.
11. HEAT EXCHANGER HEAT REMOVAL SHOWN FOR FULL FLOW AND MAXIMUM TEMPERATURE DIFFERENCE.
12. ONLY TWO SUBSTITUTIONS ARE REQUIRED AT THIS STAGE OF BUILDOUT.
13. LOCATIONS W/4000 AND 40000 SHOW THE FLOW SPILT ON SHIPP & 40000 WHEN THE SYSTEM SHALL FUNCTION IN MANUALLY CONTROLLED.
14. ONLY ONE SUBSTITUTION 2 REQUIRED FOR THIS MODE OF OPERATION. OTHER SUBSTITUTION 2 OR SUBSTITUTION 3.

SUPPLEMENTED COOLING WATER UNDER THE FOLLOWING STATUSES ARE TO BE USED IN CONNECTION WITH THIS DRAWING.

	WTS. 250
1. REACTOR HEAT REMOVAL SYSTEM PAD	171-1030
2. NUCLEAR BOILER SYSTEM PFD	201-1030
3. FUEL POOL COOLING & CLEANUP SYSTEM PFD	301-1030
4. HIGH P. VESSEL CORE FLOODING SYSTEM PFD	112-1030
5. REACTOR BUILDUP COOLING WATER SYSTEM PFD	101-1030

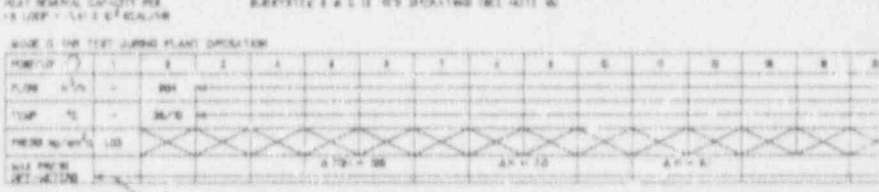
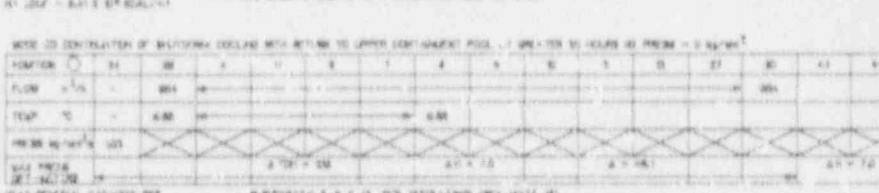
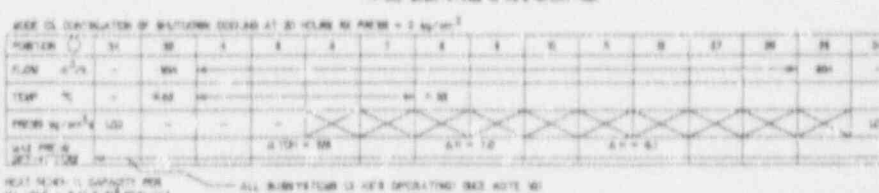
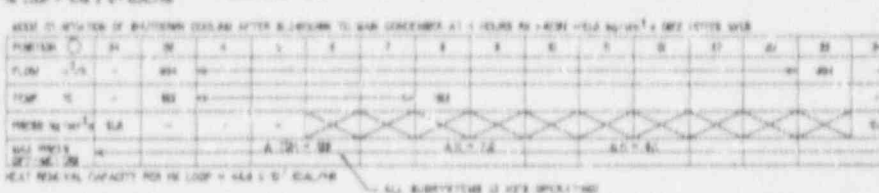
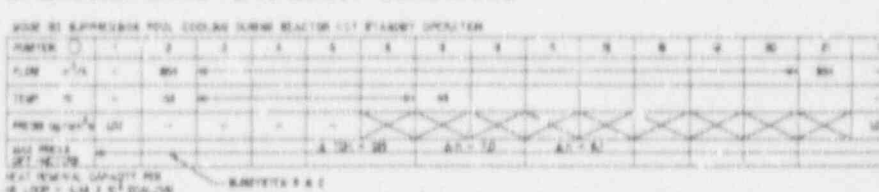
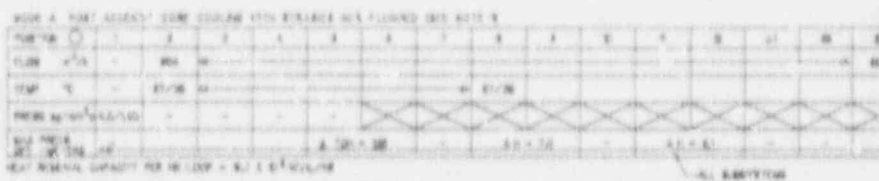
SUPPORTING DOCUMENTS	WTS. 250
1. PFD AND INSTRUMENT DASHES SYMBOLS	112-1030

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WTS. 250 112-1030

Figure 5.4-11 RHR SYSTEM PFD (Sheet 1 of 2)

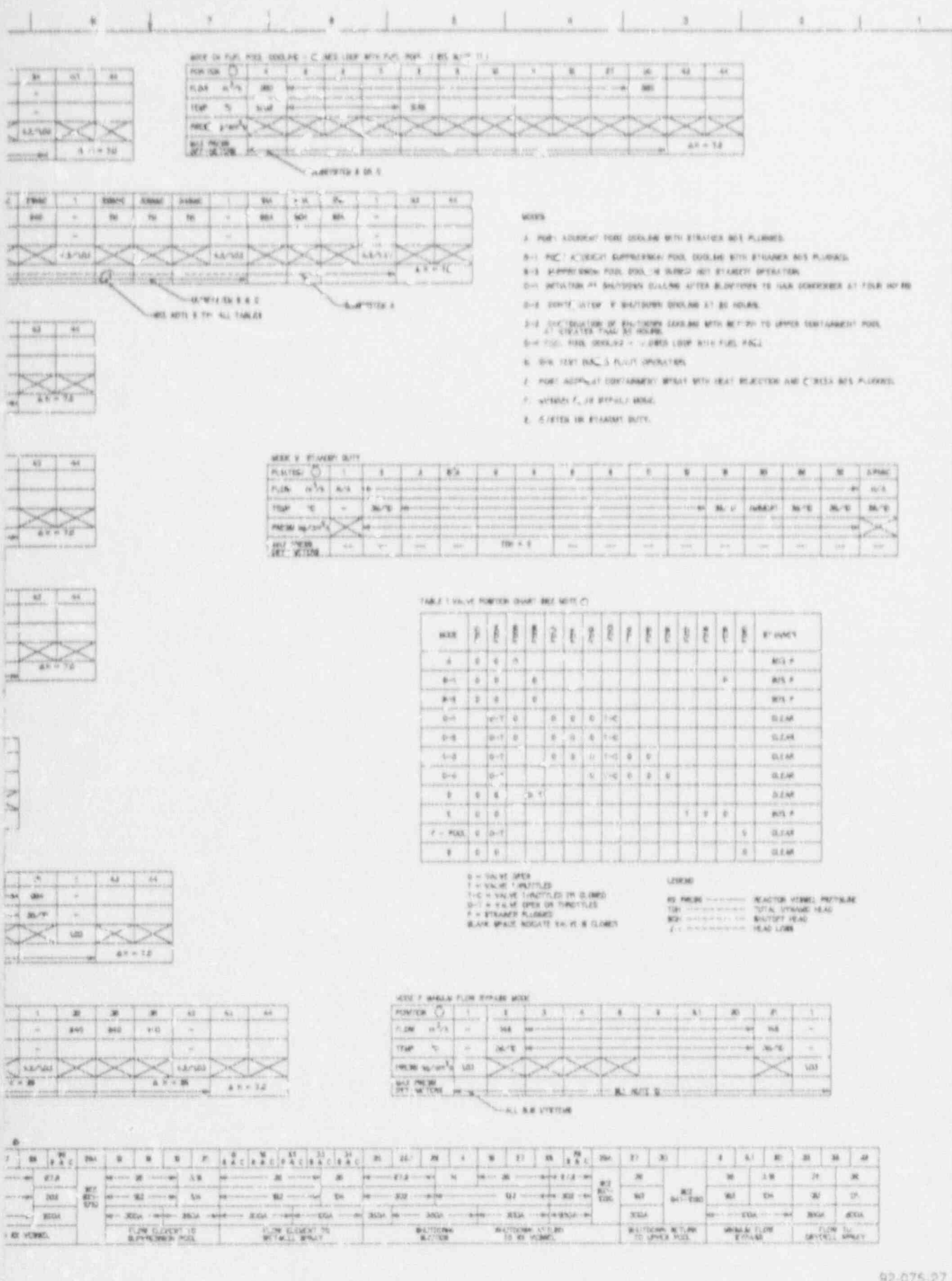


MODES B, C, D, E, G, I, AND H: TABLE (SEE NOTE 8)

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
ALL OPERATING																						
HEAT REMOVAL CAPACITY (kW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
HEAT REMOVAL CAPACITY (MW)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
HEAT REMOVAL CAPACITY (MWe)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
HEAT REMOVAL CAPACITY (MWh)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
HEAT REMOVAL CAPACITY (MWh/yr)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
HEAT REMOVAL CAPACITY (MWh/decade)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

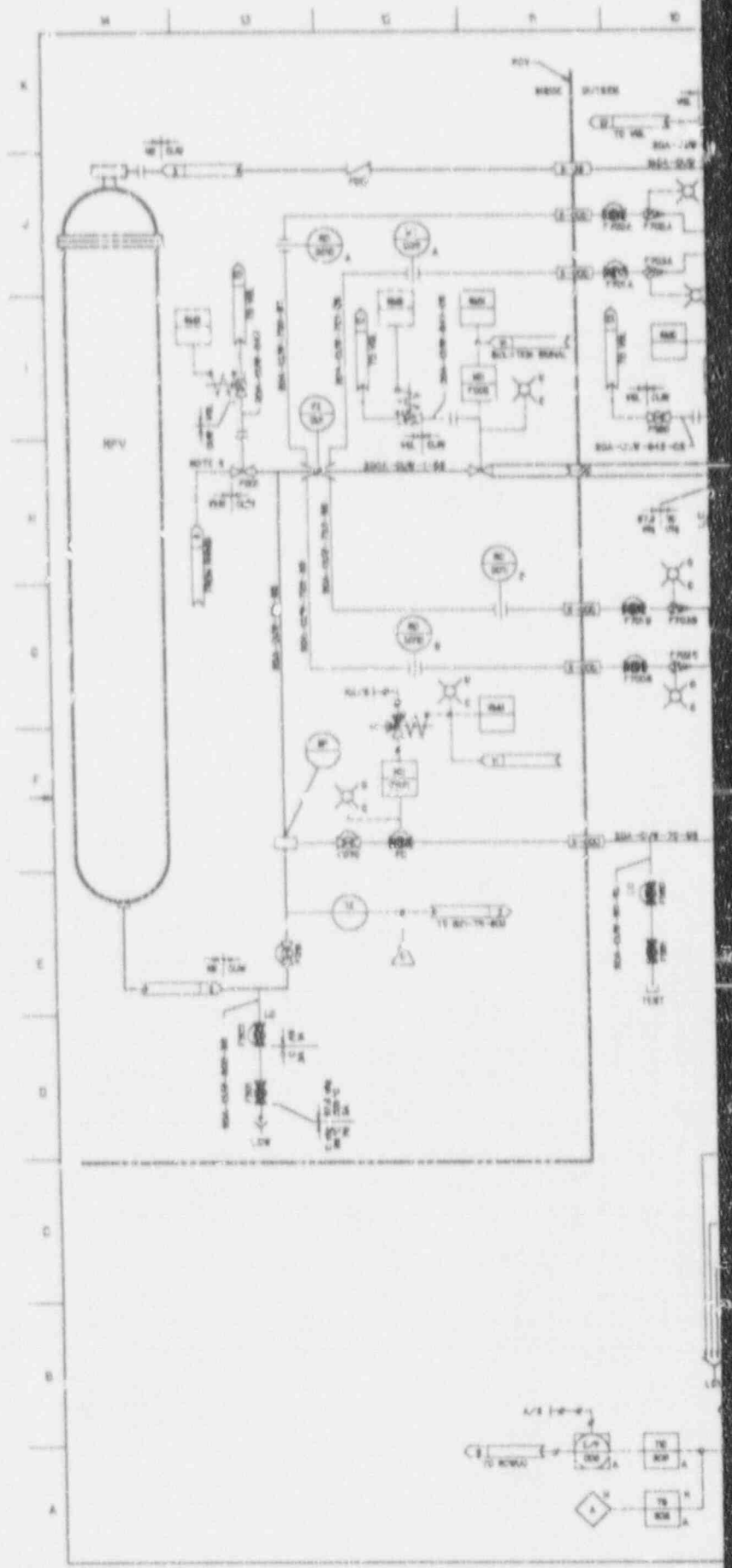
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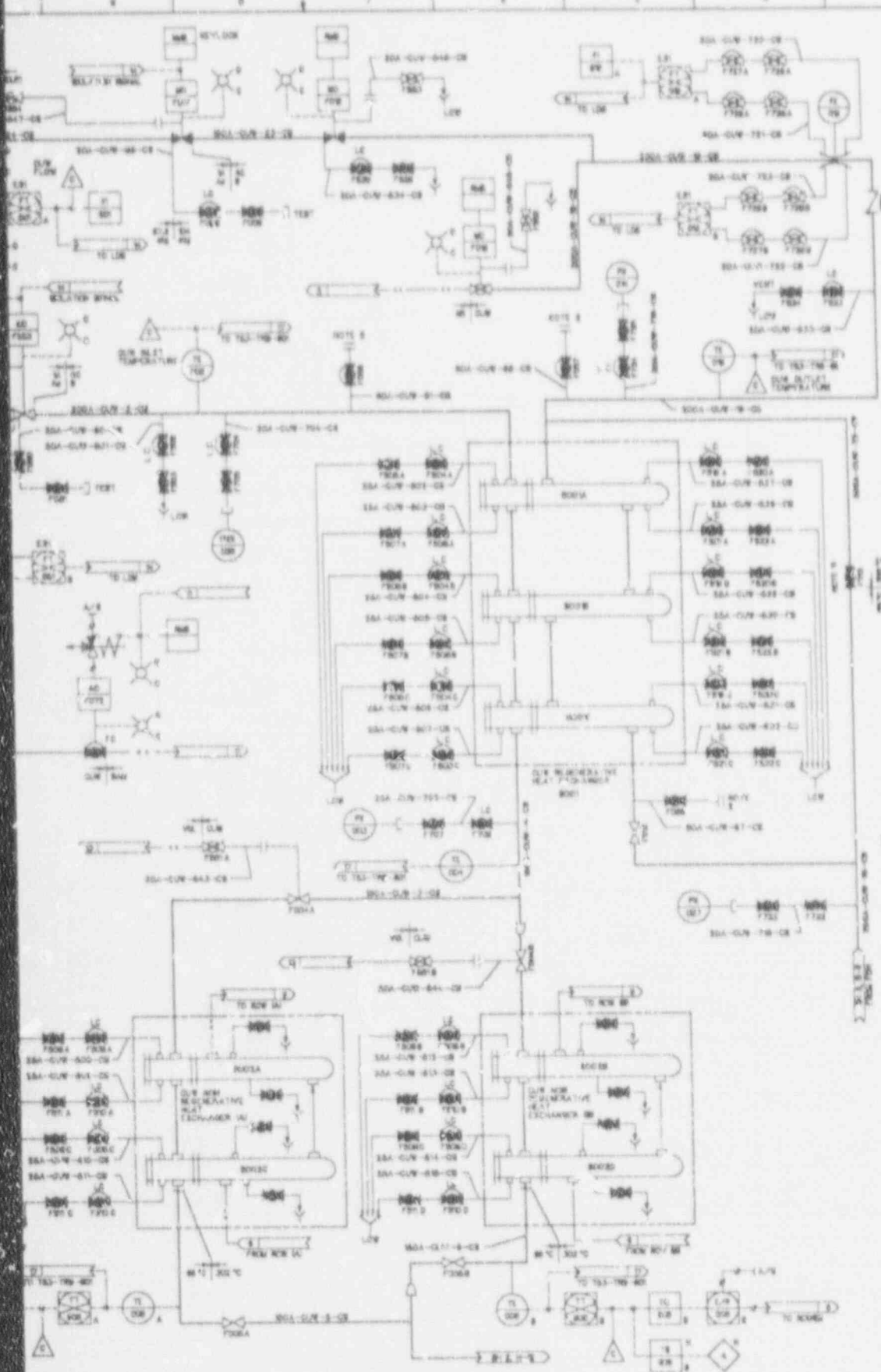
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Figure 5.4-11 RHR SYSTEM PFD (Sheet 2 of 2)





- NOTES
1. MOTOR OPERATED ISOLATOR VALVES ARE CLOSED BY THE FOLLOWING:
 - (A) HIGH TEMPERATURE SIGNAL AT NON-REGENERATIVE HEAT EXCHANGER OUTLET
 - (B) STANDBY LEVEL CONTROL SYSTEM START SIGNAL
 - (C) REACTOR VENTING WATER LEVEL LOW SIGNAL
 - (D) HIGH FLOW DIFFERENTIAL SIGNAL FROM HEAT FLOW TO DOWNFLOW FLOW
 - (E) LEAKAGE IN ONE EQUIPMENT ROOM OR ONE HEAT EXCHANGER ROOM
 2. SIGNALS CONNECTIONS OF CHEMICAL RANGE OF SECONDARY FLOW
 3. IF ONE FID INDICATOR IS OPERATED VALVE (A) IS CLOSED AND SIGNAL OF LOSS OF AIR PROGRAM TO VALVE OPERATOR OR LOSS OF ELECTRIC POWER TO THE ISOLATED VALVE
 4. ISOLATE OTHERWISE NOTED MOTOR OPERATED VALVES (M) POWER
 5. THIS PUMP TYPE IS CARRIED MOTOR PUMP
 6. THIS VALVE IS NOT BY VERTICAL PUMP
 7. THESE SIGNALS SHALL BE DEIGNED CONNECTED TO THE PUMP BOTTOM LINE
 8. QUALITY CONTROL CLASSIFICATION OF SIGNALS AND VALVES ARE DESIGNATED BY SAME CLASS AS CONTROLLING AND NOT THE CONTROLLING SIGNAL LINE NUMBER. THE QUALITY CONTROL CLASSIFICATION OF SIGNALS AND VALVES ARE DESIGNATED SAME CLASS AS THE SIGNAL CLASS
 9. THIS VALVE IS DESIGNED WITH SPECIAL SEAL PROGRAM
 10. THIS LINE IS IMMEDIATELY AFTER PREPARATION TEST
 11. THE SIGNAL OF STANDBY LEVEL OF A-HOPPER SHALL BE OPERATED TO UP-BLEND
 12. ALL OPERATED VALVES HAVE OPERATIONAL VALVE POSITION INDICATOR (A) IS LOCATED IN VISIBILITY OF VALVE OPERATOR
 13. THESE ISOLATED TO FUNCTION
 14. NO VALVES AND INSTRUMENTS TO BE LOCATED IN THE REACTOR COMPARTMENT (INCLUDING THE FILTER DECONTAMINATION)
 15. DESIGN CONDITIONS ARE FOLLOWING:
 - (A) FLOW
 - (B) BACKGROUND CONCENTRATION - 3.5E-06
 - (C) MATERIAL - INTRINSIC
 16. ISOLATE OTHERWISE NOTED ALL VALVES OPERATIONAL PREVIOUS VALVE POSITION INDICATOR (A) IS LOCATED IN VISIBILITY OF VALVE OPERATOR
 17. ISOLATE OTHERWISE NOTED ALL VALVES OPERATIONAL PREVIOUS VALVE POSITION INDICATOR (A) IS LOCATED IN VISIBILITY OF VALVE OPERATOR
 18. NO SIGNALS ARE OPERATED VALVE (A) IS OR LOSS OF AIR PROGRAM TO VALVE OPERATOR AND THE CLOSED OR LOSS OF ELECTRIC POWER TO THE ISOLATED AIR SUPPLY VALVE

REFERENCE DOCUMENTS

REF. NO.	TITLE
1	REACTOR WATER CLEANUP EYE PAD
2	1-CLEAR BOILER SYSTEM PAD
3	BACKGROUND RADIATION EXPOSURE MONITORING EYE PAD
4	LOW RADIATION SYSTEM PAD
5	REACTOR WATER CLEANUP EYE PAD
6	REACTOR WATER CLEANUP EYE PAD
7	REACTOR WATER CLEANUP EYE PAD
8	REACTOR WATER CLEANUP EYE PAD
9	REACTOR WATER CLEANUP EYE PAD
10	REACTOR WATER CLEANUP EYE PAD
11	REACTOR WATER CLEANUP EYE PAD
12	REACTOR WATER CLEANUP EYE PAD
13	REACTOR WATER CLEANUP EYE PAD
14	REACTOR WATER CLEANUP EYE PAD
15	REACTOR WATER CLEANUP EYE PAD
16	REACTOR WATER CLEANUP EYE PAD
17	REACTOR WATER CLEANUP EYE PAD
18	REACTOR WATER CLEANUP EYE PAD

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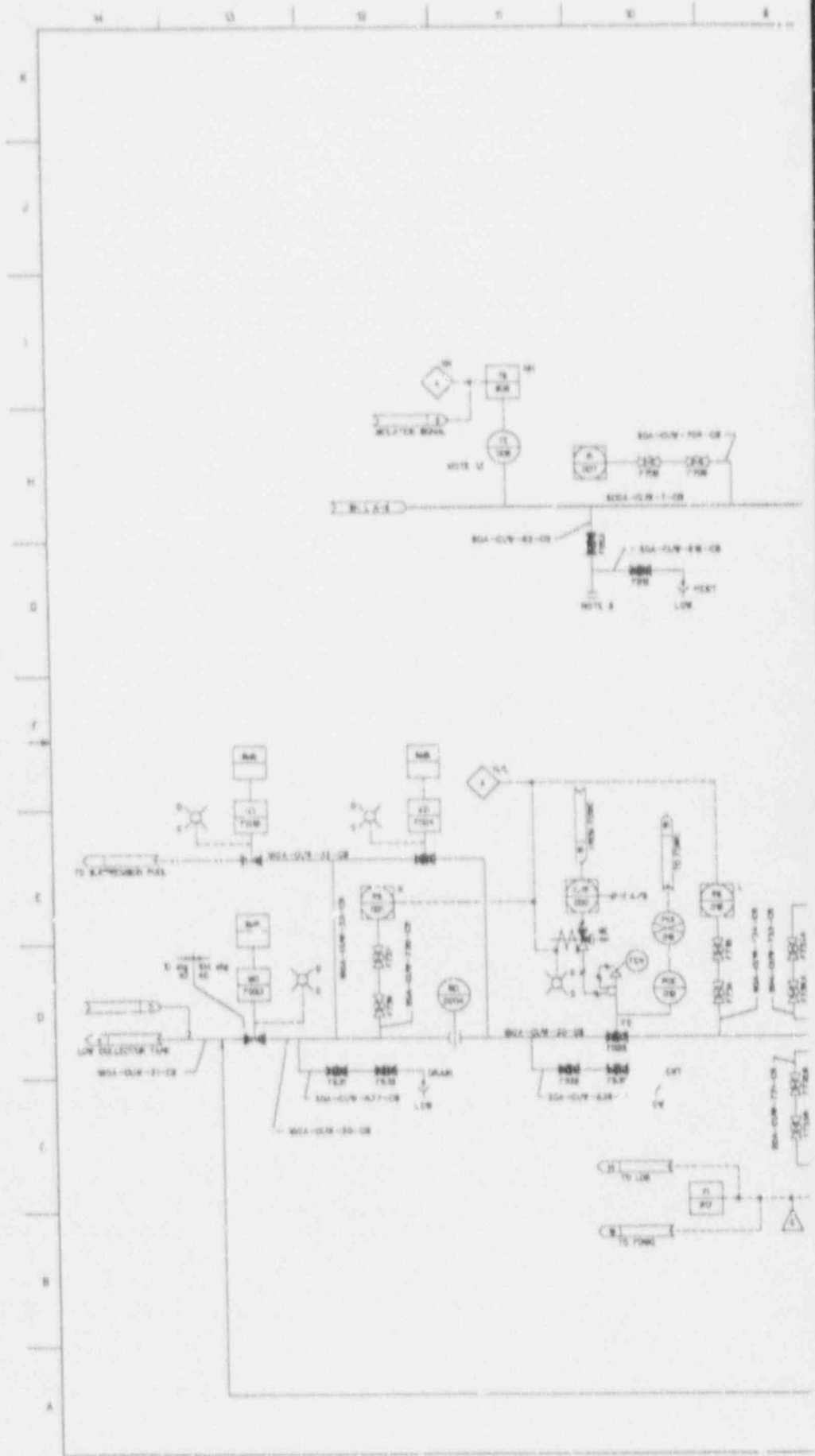
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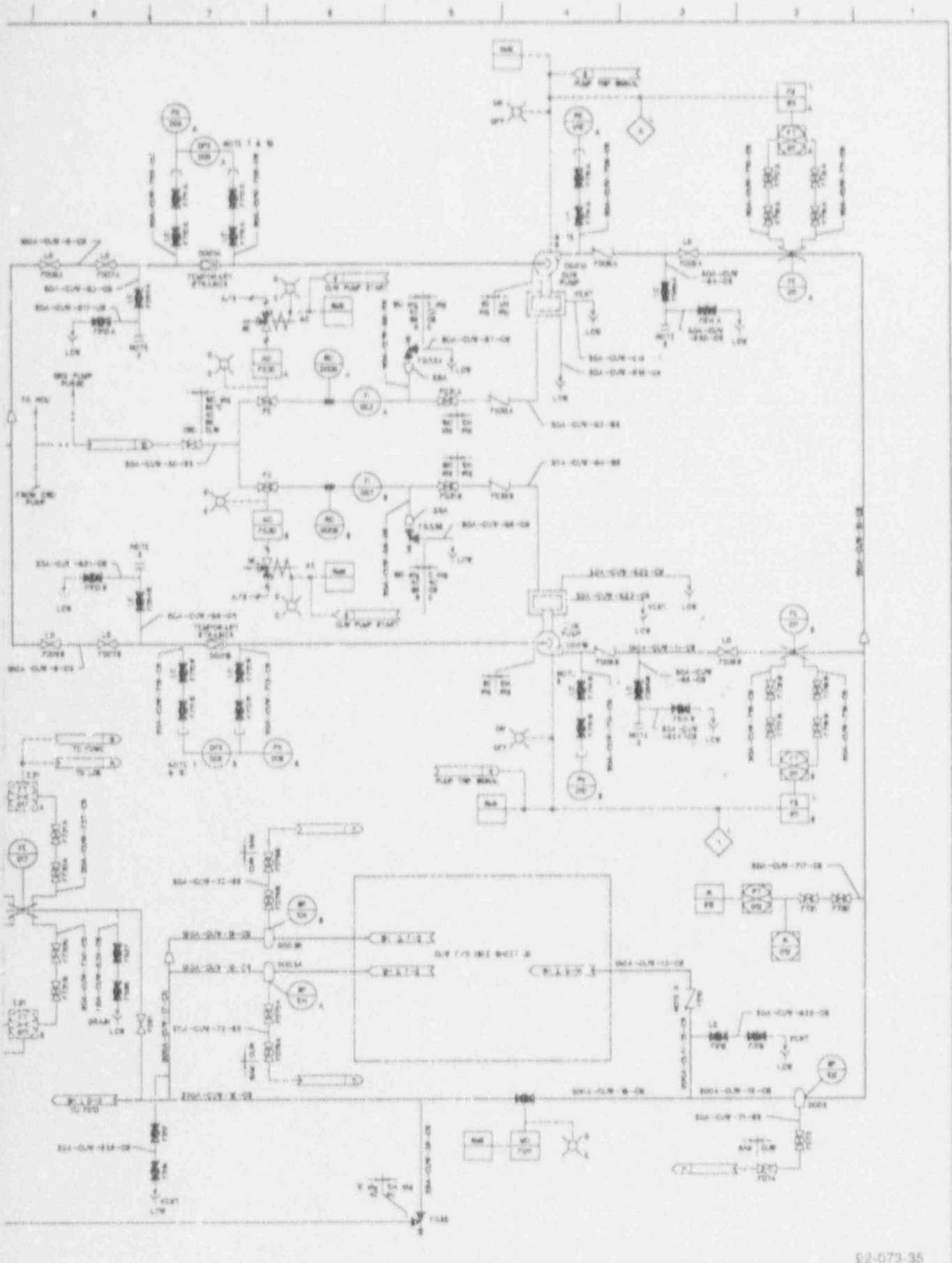
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Figure 5.4-12 REACTOR WATER CLEANUP SYSTEM P&ID (Sheet 1 of 3)

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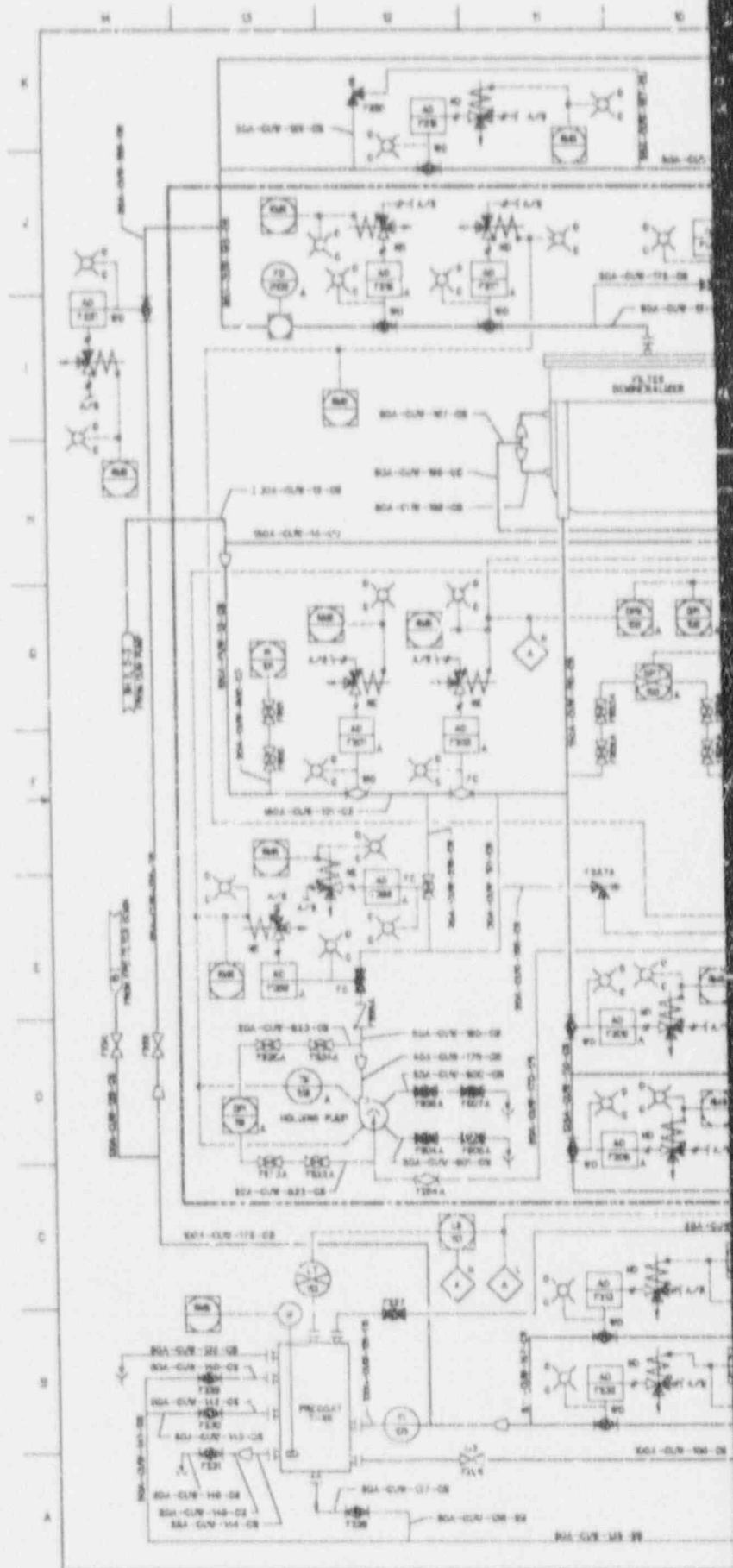
62-073-35

Figure 5.4-12 REACTOR WATER CLEANUP SYSTEM P&ID (Sheet 2 of 3)

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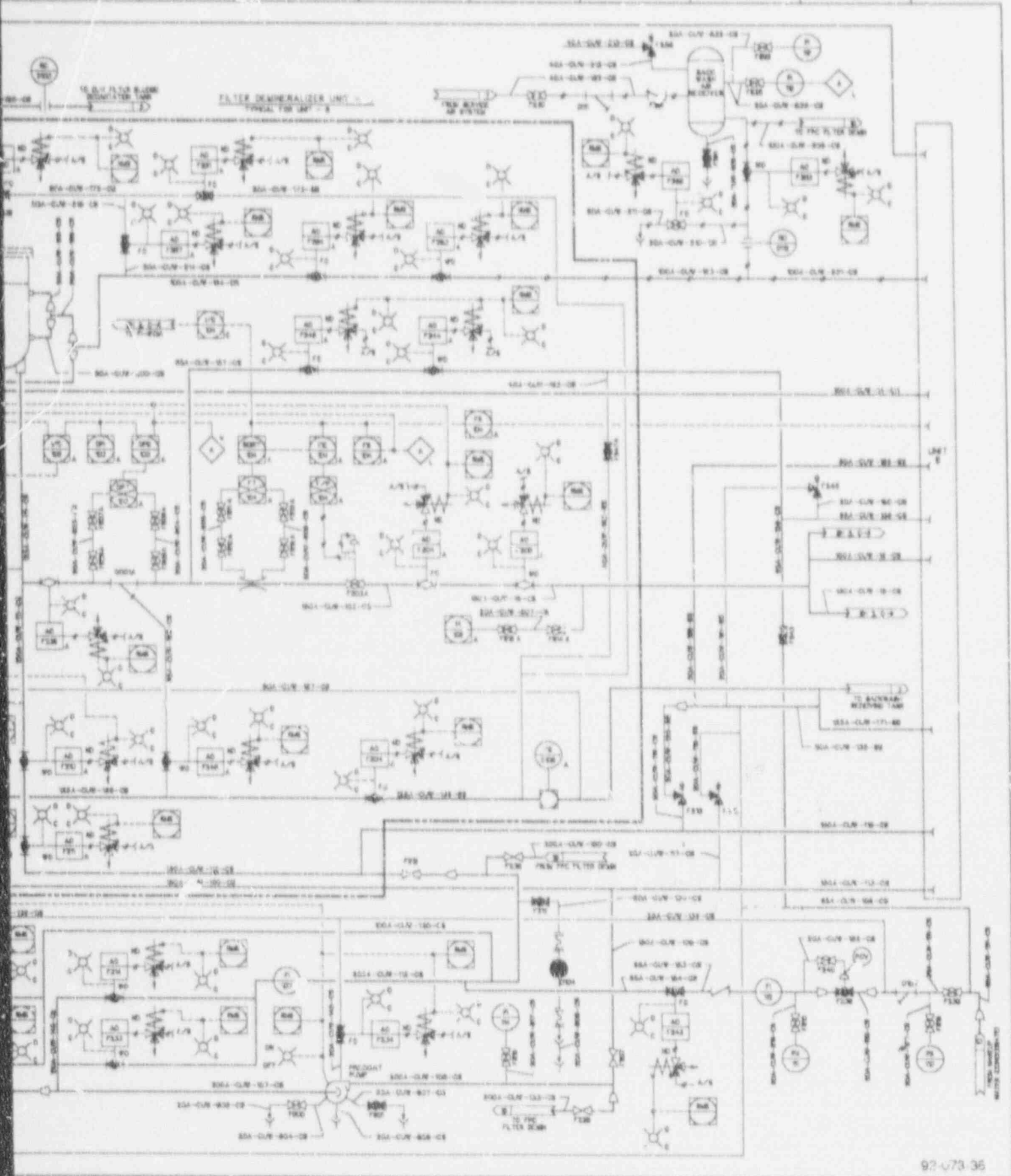
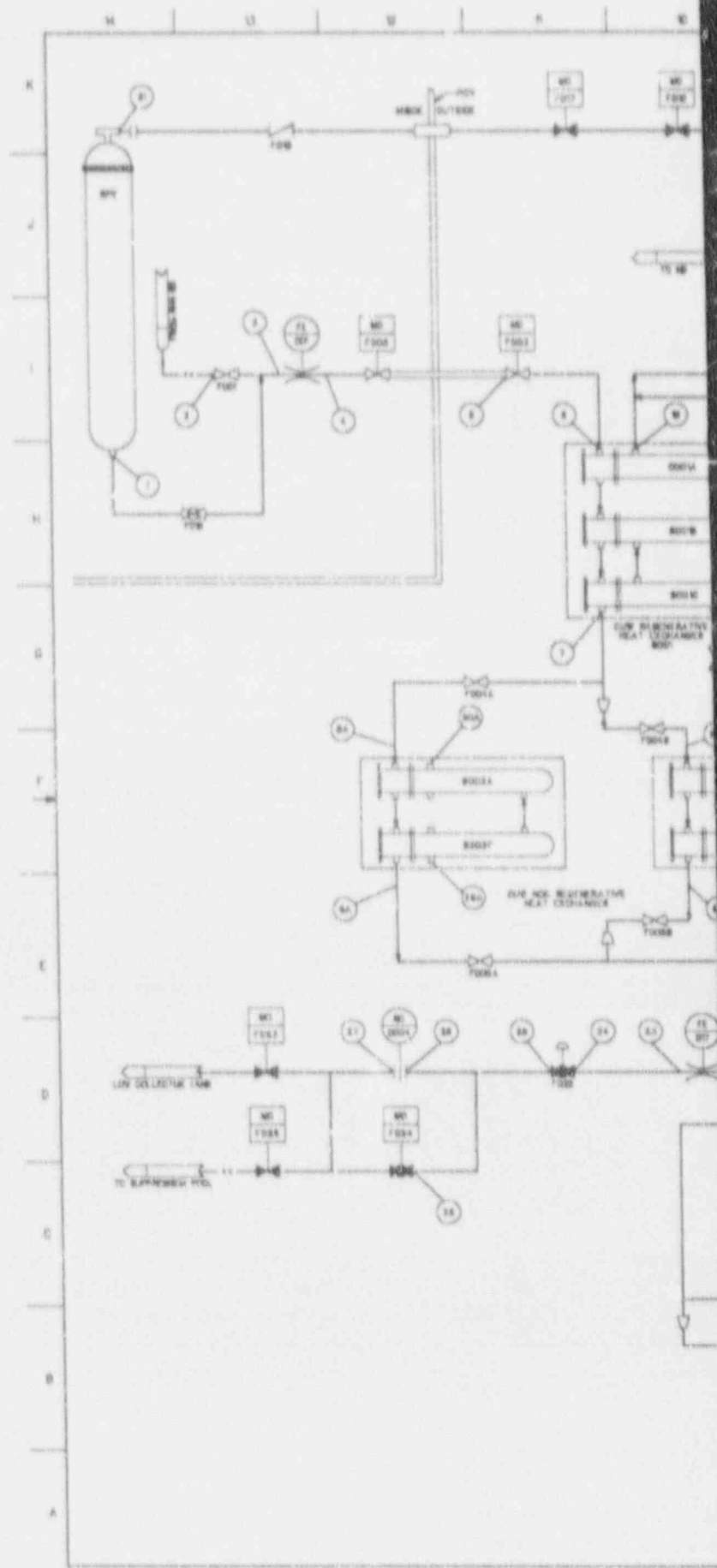
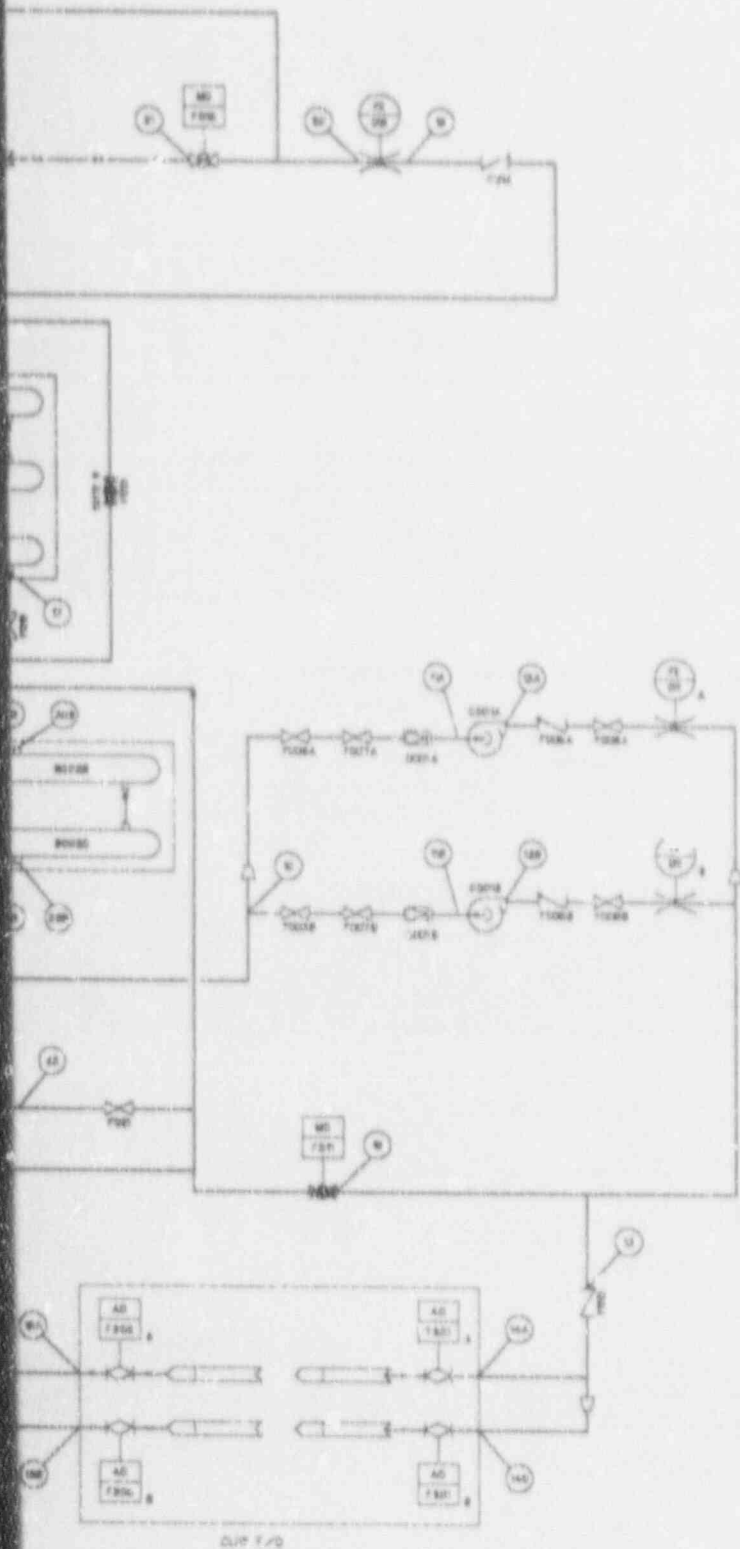


Figure 5.4-12 REACTOR WATER CLEANUP SYSTEM P&ID (Sheet 3 of 3)



100-100-100
 100-100-100
 100-100-100



GENERAL NOTES

1. [Symbol] SHOWS THE PART WHERE THE FLUID DOES NOT FLOW.
2. [Symbol] SHOWS THE VALVE NOT CLOSED FOR THE INDICATED SIDE OF THE SYSTEM.
3. THE PUMP, OUR NON-REGENERATIVE HEAT EXCHANGER AND OUR REGENERATIVE HEAT EXCHANGER SHALL BE OPERATED IN THE MANNER INDICATED IN THE PFD. THE PFD SHALL BE OPERATED IN THE MANNER INDICATED IN THE PFD AT START-UP OPERATION WITH REACTOR PROGRAM 000000.
4. MODE A IN THE BURNER CONTROL SYSTEM IS PLANT EQUIPMENT OPERATING IN THE REGENERATIVE HEAT EXCHANGER AND NON-REGENERATIVE HEAT EXCHANGER.
5. DURING A STARTUP OPERATION THE PFD MAY BE OPERATED IN MODE A OR MODE B.
6. AT MODE B AND MODE C THE PFD SHALL BE OPERATED IN THE MANNER INDICATED IN THE PFD.
7. THE TOTAL FLOW RATE OF REGENERATIVE HEAT EXCHANGER SHALL BE THE SAME AS THE TOTAL FLOW RATE OF NON-REGENERATIVE HEAT EXCHANGER IN MODE B.
8. ALL OF THE FLOW RATE IS SUPPLIED FROM THE REACTOR TO THE REGENERATIVE HEAT EXCHANGER.
9. THE TOTAL FLOW RATE FROM THE REACTOR TO THE REGENERATIVE HEAT EXCHANGER SHALL BE THE SAME AS THE TOTAL FLOW RATE FROM THE REACTOR TO THE REGENERATIVE HEAT EXCHANGER.
10. THE REACTOR AND BURNER SHALL BE OPERATED IN THE MANNER INDICATED IN THE PFD.

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Figure 5.4-13 REACTOR WATER CLEANUP SYSTEM PFD (Sheet 1 of 2)



30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	107	107	107	107	107	107	107	107	107	107	107	107	107
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	108	108	108	108	108	108	108	108	108	108	108	108	108
109	109	109	109	109	109	109	109	109	109	109	109	109	109

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

30	31	32	33	34	35	36	37	38	39	40	41	42	43
107	-	-	-	-	-	-	-	-	-	100	100	-	-
X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	-	-	-	-	-	-	-	-	-	101	101	-	-
109	-	-	-	-	-	-	-	-	-	102	102	-	-

TABLE 1. VALVE OPENING/CLOSING CONDITION

NO.	30	31	32	33	34	35	36	37	38	39	40	41	42	43
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0

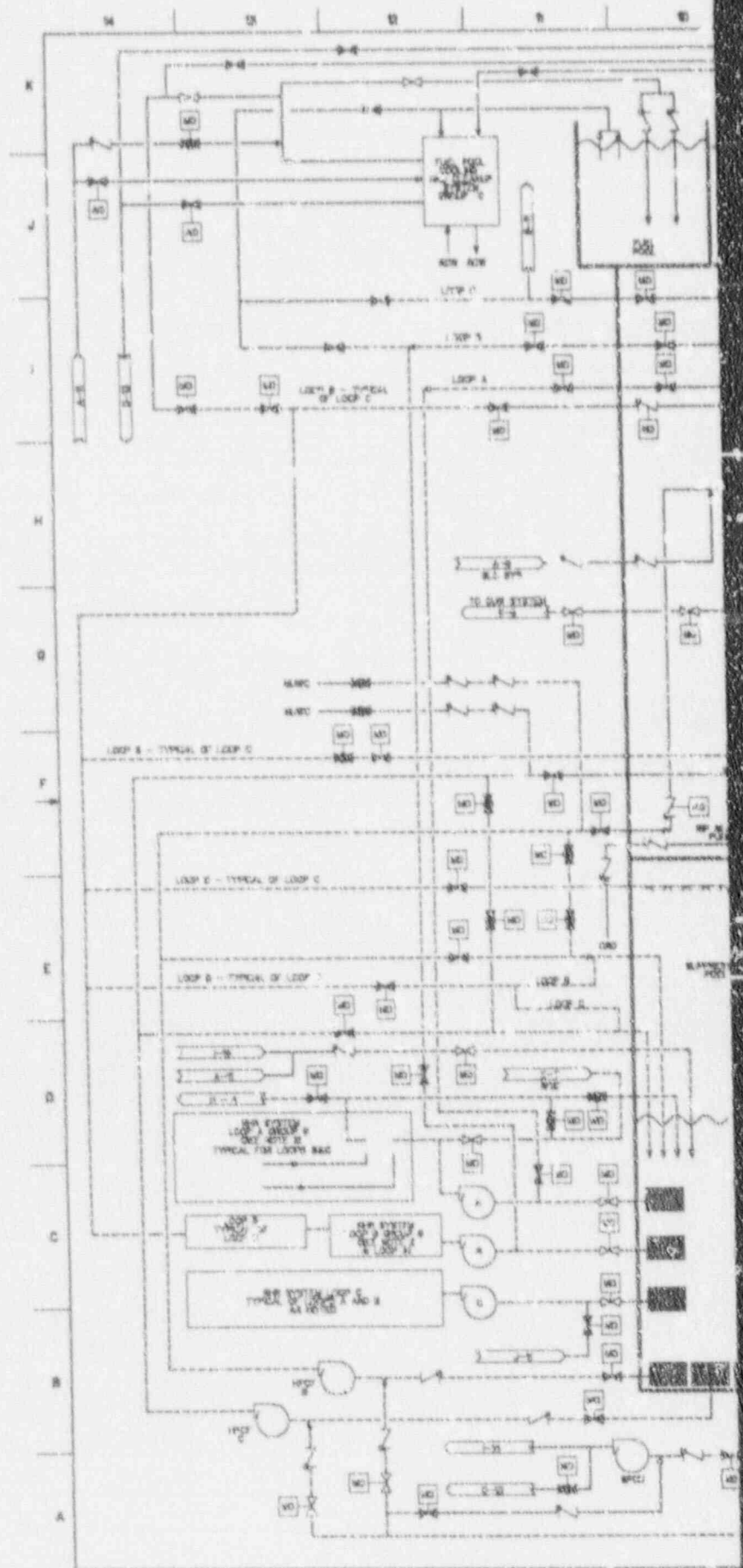
0 - OPEN C - CLOSED T - TRIPPED

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Figure 5.4-13 REACTOR WATER CLEANUP SYSTEM PFD (Sheet 2 of 2)



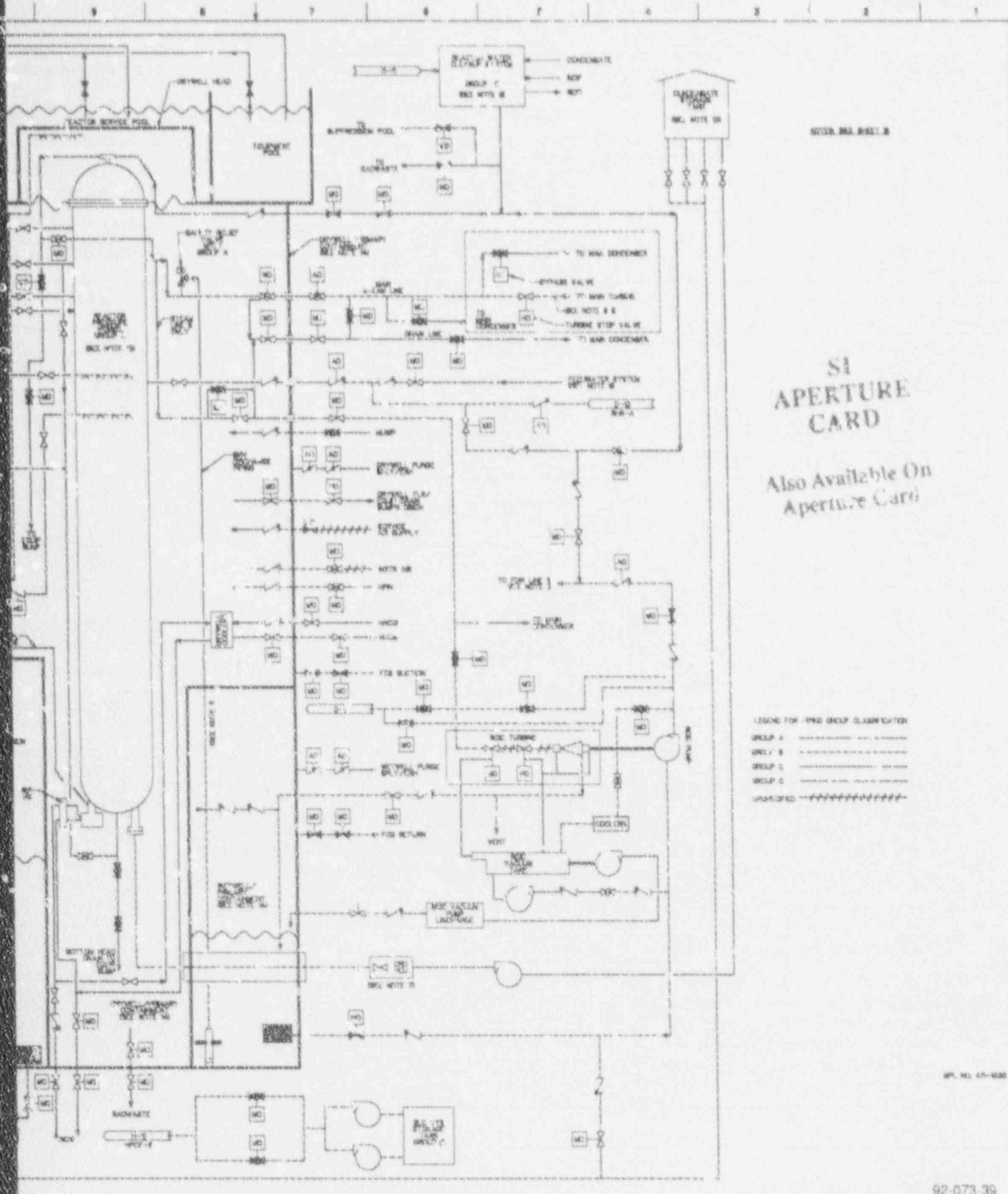


Figure 6.2-38 PLANT REQUIREMENTS, GROUP CLASSIFICATION AND CONTAINMENT ISOLATION DIAGRAM (Sheet 1 of 2)

NOTES

- 1. A SEPARATE LINE IS TO BE PROVIDED FOR SAFTY RELIEF VALVE.
- 2. REACTOR HEAT REMOVAL SYSTEM LOOPS (SUBSYSTEMS) A AND B ARE REPRESENTED AS TYPICAL LOOPS. LOOP C IS SIMILAR TO LOOP B.
- 3. RDC INJECTION VIA FEEDWATER SYSTEM B.
- 4. TABLE 3.2.1 OF 2348.001 IS CONTROLLING FOR GROUP CLASSIFICATION AND CONTAINMENT ISOLATION REQUIREMENTS. THE PRESSURE RELIEF IDENTITY OF NUCLEAR COOLING SYSTEMS SPECIFICATION APP. W-AT-3010 DESCRIBES REQUIREMENTS FOR EACH GROUP CLASSIFICATION. INDIVIDUAL SYSTEMS SHOULD SPECIFY SYSTEM AND COMPONENTS REQUIREMENTS.
- 5. GROUP CLASSIFICATION CHANGES AT VALVE UNLESS OTHERWISE STATED. VALVES SHALL COMPLY TO HIGHEST CLASSIFICATION IN LINE. PUMPS SHALL HAVE LINE GROUP CLASSIFICATION.

6. REACTOR WATER CLEANUP SYSTEM

THE FILTER-DEMINERALIZER PRE-CAT/BACKWASH PORTION OF THE CDM DOWNSTREAM THE HIGH PRESSURE BLOCK VALVES SHALL BE GROUP D.

7. CONTROL RVU DRIVE-HYDRAULIC CONTROL UNIT

THE PORTION OF THE DRG SYSTEM WHICH IS RELATED TO THE SCRAM FUNCTION IS GROUP B. THE PORTION OF THE LAD SYSTEM WHICH IS NOT RELATED TO THE SCRAM FUNCTION IS GROUP D.

8. MAIN STEAM LINE/TURBINE BYPASS LINE BRANCH LINES

- A. THE MAIN STEAM LINE INSPECTION RECORDS RELATING TO THE LINES BETWEEN THE SHUT-OFF VALVE AND TURBINE STOP VALVE SHALL BE MAINTAINED FOR THE LIFE OF THE PLANT. THESE RECORDS SHALL INCLUDE DATA PERTAINING TO QUALIFICATION OF INSPECTOR PERSONNEL, EXAMINATION PROCEDURES, AND EXAMINATION RESULTS.
- B. THE MAIN STEAM LINES AND IM HE COMPONENTS UP TO THE TURBINE STOP VALVES SHALL BE GROUP B, BEYOND IS GROUP D.
- C. BRANCH LINES OF MSL BETWEEN THE EXTERNAL ISOLATION VALVE AND THE TURBINE STOP VALVE SHALL BE GROUP B OUT TO AND INCLUDING THE FIRST VALVE CAPABLE OF TIMELY ACTUATION.
- D. BRANCH LINES OF THE TURBINE BYPASS LINE UP TO THE BYPASS VALVE SHALL BE GROUP B OUT TO AND INCLUDING THE FIRST VALVE CAPABLE OF TIMELY ACTUATION.

9. FEEDWATER

BRANCH LINES OF THE FW LINE BETWEEN THE SECOND AND THIRD VALVE OUT TO AND INCLUDING THE FIRST DEVICE ACTUATED VALVE TO BE GROUP B.

10. CONDENSATE STORAGE TANK

THE CONDENSATE STORAGE TANK WILL BE DESIGNED, FABRICATED, AND TESTED TO MEET THE INTENT OF API STANDARD API 650. IN ADDITION, THE SPECIFICATIONS FRI-1 THIS TANK WILL REQUIRE (1) 100 PERCENT SURFACE EXAMINATION OF THE SIDE WALL TO BE 1/8" DIA AND (2) 100 PERCENT ULTRASONIC EXAMINATION OF THE SIDE WALL WELD JOINTS. GROUP D CLASSIFICATION.

11. PNEUMATIC PIPING, VESSELS & FITTINGS (IF ID IS 1)

PNEUMATIC SYSTEMS ASSOCIATED WITH ACTUATION OF SAFETY RELATED VALVES TO ACCOMPLISH SAFETY FUNCTIONS (E.G. MAIN STEAM SAFETY/RELIEF VALVES) ARE CLASSIFIED GROUP D. THIS CLASSIFICATION IS INTENDED TO APPLY TO COMPONENTS SUCH AS THE AIR PIPING, FITTINGS, AND ACCUMULATOR TANKS. THIS CLASSIFICATION DOES NOT APPLY TO COMPONENTS OF THE SYSTEM SUCH AS AIR CONTROL VALVES, AIR CHECK VALVES, AND CYLINDERS OR DIAPHRAGM AIR ACTUATORS. THESE COMPONENTS ARE CONSIDERED AS "SPECIAL EQUIPMENT" AND ARE SELECTED BASED ON ENGINEERING REVIEW, OPERATING EXPERIENCE, AND TESTING AS BEING THE MOST SUITABLE FOR THE APPLICATION. SUCH EQUIPMENT IS REQUIRED TO BE QUALIFIED TO DEMONSTRATE OPERABILITY DURING NORMAL AND EMERGENCY AMBIENT CONDITIONS. COMPONENTS NORMALLY FURNISHED WITH THE PROCESS VALVE (E.G. AIR CONTROL VALVES, AIR ACTUATORS) ARE PERFORMANCE TESTED WITH THE VALVE AS PART OF ITS ACCEPTANCE TEST PROCEDURE.

12. INSTRUMENT, LOGIC & OTHER

- A. VALVE OFFICE DATA
- B. VALVES AUTOMATIC, LOCKED AUTOMATIC OR INDICATION MANMAN PRE
- C. OFFICE/PPPE SAID TO
- D. VALVE LOCKED CLOSED
- E. VALVE SAFTY IS IF AUTOMATIC INOH-CHECK
- F. VALVE-PROCESS SHUTTY
- G. 8-Ann (1/4") OFFICE L PROCESS TO PERM OF
- H. VALVES AND LINES SO RESTRICTIVE AS TO OF THE LINE.

13. GROUP CLASSIFICATION OF P

PROCESS SYSTEM TO WHICH ALL LINES ARE CONNECTED-DRY-B	GROUP CLASSIFICATION	GROUP CLASSIFICATION OF LINES UP TO AND INCLUDING THE FIRST VALVE
A	A	A
B	B	B
C	C	C
D	D	D

GROUP CLASSIFICATION OF LINES UP TO AND INCLUDING THE FIRST VALVE CAPABLE OF TIMELY ACTUATION.

ON SAFETY RELATED SYSTEMS ESSENTIAL TO BOTH OF

A. AVOIDING THE UNDESIRABLE OPERATIONAL TRANSITION EVENTS BY CONTINUOUS ESSENTIAL SAFETY ACTION

B. SAFETY BYPASSING THE SAFETY

13. THE REACTOR COOLANT PRESSURE AND CONNECTING PIPING, PUMPS AND INCLUDES THE DETERMINATION OF THE SYSTEM OR COMPONENT

14. THE CONTAINMENT IS DESIGNED OF THE SAME TYPE FOR REACTORS WHICH FORM AN EXTENSION OF RETAINING COMPONENTS PART OF THE SYSTEM WHICH AND INCLUDING THE DETERMINATION OF THE CONTAINMENT WHICH IS OF

K
J
I
H
G
F
E
D
C
B
A

SMALL LINES (FIG. 1)

NOTE: OPERABLE, OR EXCESS FLOW
ANNUAL RESETTING, REWOTE POSITION
TICAL SPACING FROM CONTAINMENT.

LIMIT FLOW PER NRC REGULATORY DIVISION.

AUTOMATIC, OR AS ABOVE.

OR LOCKED CLOSED

LOCATED AS CLOSE AS PRACTICAL TO THE
MAIN VENTING OR NON-CONDENSIBLES.

IN THE LINES SHOULD NOT BE
DIMINISH THE SAFETY FUNCTION.

SMALL DIAMETER LINES.

CLASSIFICATION TO AND OR ISOLATION		CLASSIFICATION OF LINES BEYOND ROOT OR ISOLATION VALVES	
WATER	STEAM	SAFETY RELATED SYSTEMS (S)	NON- SAFETY RELATED SYSTEMS
B (2)	B (2)	B	D
R	R	C	D
C (2)	C (2)	N/A	D
D (2)	D (2)		

NO CODE REQUIREMENTS ARE BASED ON CURRENT
R. EACH PROJECT SHALL VERIFY WITH STATE
T. S TO AVOID MISUNDERSTANDINGS AND

OR ARE THOSE SYSTEMS WHOSE ACTIONS ARE
V. FOLLOWS:

RTAM... RESULTS FOR ABNORMAL
NTS, ACCIDENTS, AND SPECIAL
TNG TO THE ACCOMPLISHMENT OF
CTIONS.

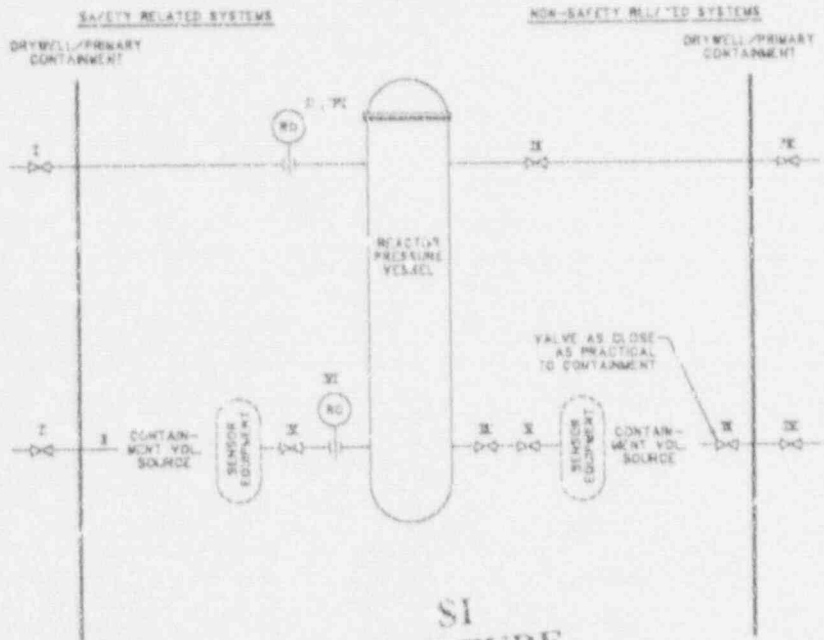
E FAILURE CRITERION (WHERE APPLICABLE).

ARE BOUNDARY INCLUDES THE REACTOR VESSEL,
AND VALVES, AND EXTENDS TO
PRIMARY CONTAINMENT ISOLATION VALVES
INDICATED.

AND CONSTRUCTED TO THE REQUIREMENTS
DRIED CONCRETE CONTAINMENT. COMPONENTS
CONTAINMENT ARE DEFINED AS PRESSURE-
C. MATERIALS OR APPURTENANCES IN THE
L. L. (EXCEPT THE 7.5M) IN NEXT TO
T ISOLATION VALVE LOCATED OUTSIDE OF
PAYLE OF AUTOMATIC ACTUATION (FIG. 8).

FIG. II

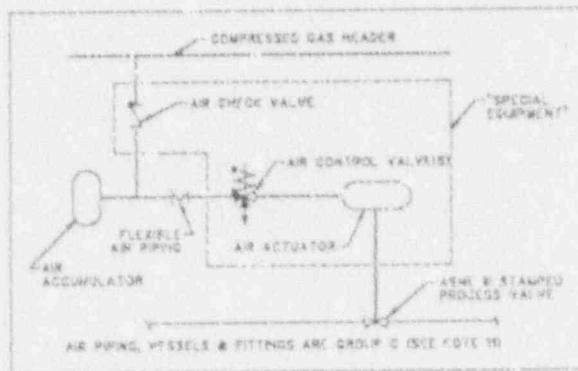
INSTRUMENTATION SAMPLE & OTHER SMALL LINES (SEE NOTE (2))
TYPICAL



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FIG. III

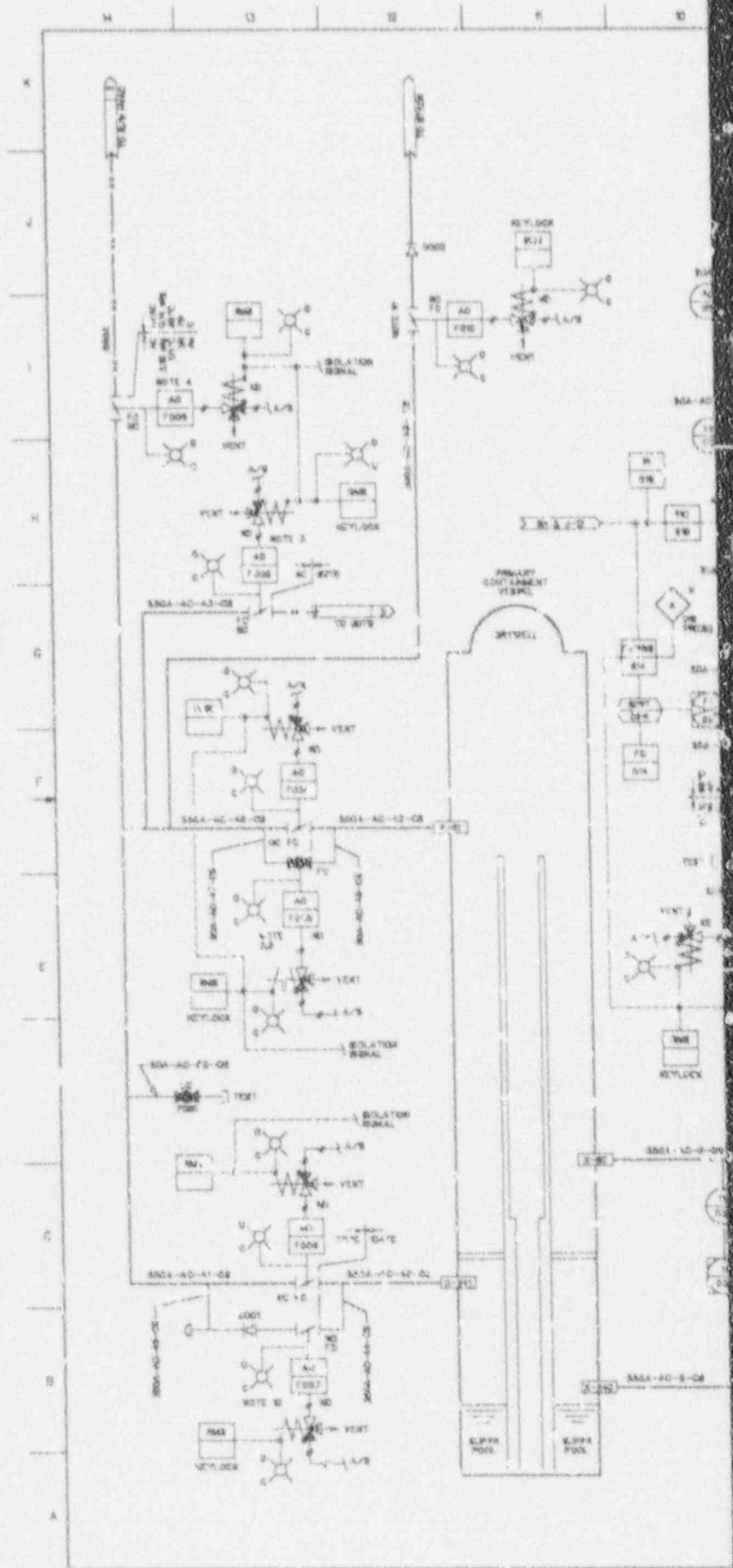


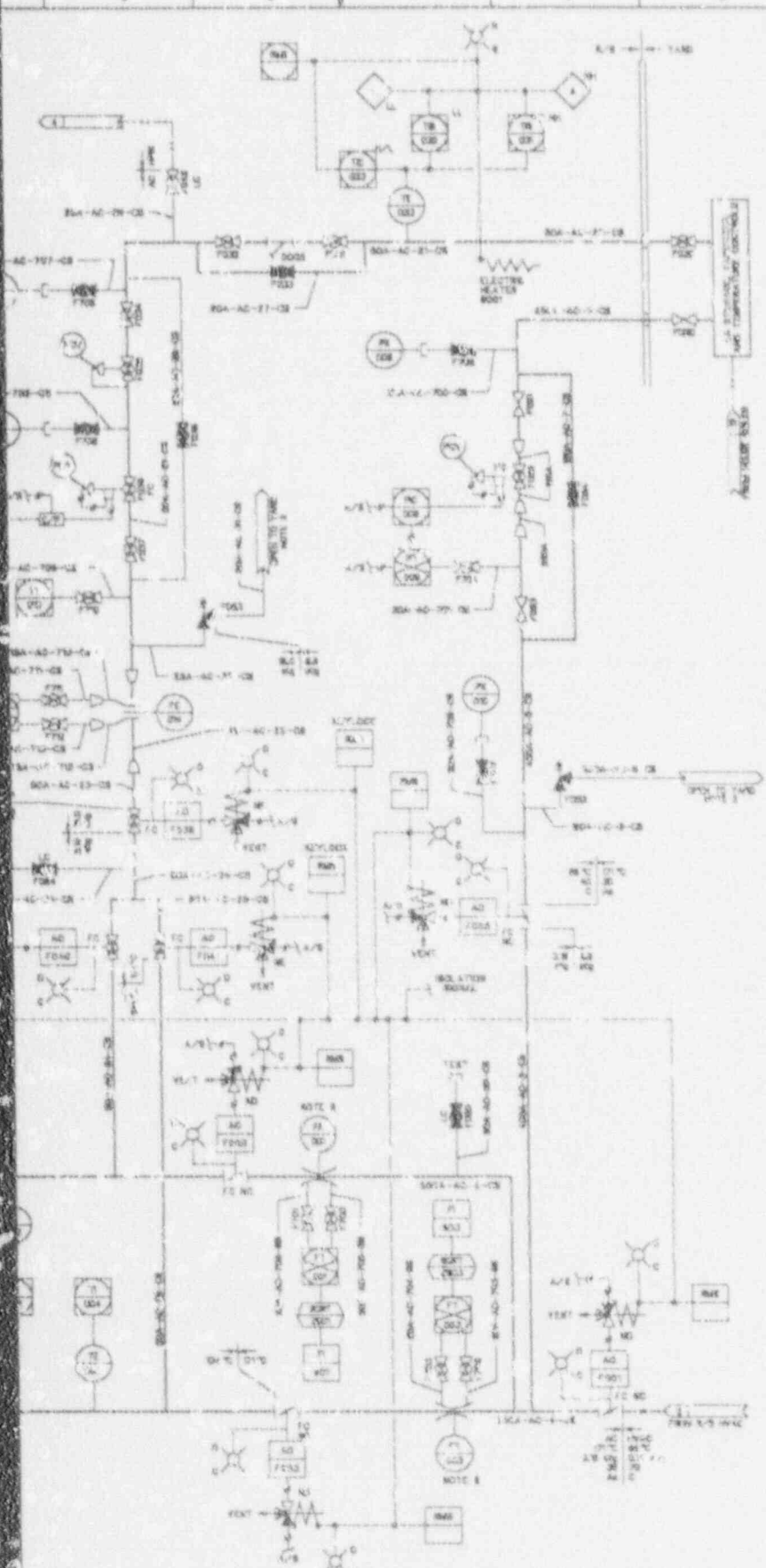
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Figure 6.2-38 PLANT REQUIREMENTS, GROUP CLASSIFICATION AND CONTAINMENT ISOLATION DIAGRAM (Sheet 2 of 2)

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- QUALITY CONTROL GROUP AND QUALITY GROUP CLASSIFICATION ARE PROVIDED IN FOLLOWING TABLE.

ITEM	QUALITY CLASSIFICATION	DESIGN CLASSIFICATION
AC SYS EXCEPT FOR FOLLOWING ITEMS	3	4
POY BOUNDARY	3	3
INAC SYS	3	3
TEST TAP	UPSTREAM OF VALVE	SAME AS PROCESS LINE
	DOWNSTREAM OF VALVE	3
DRAIN	UPSTREAM OF VALVE	SAME AS PROCESS LINE
	DOWNSTREAM OF VALVE	3
WETMENT PIPING	UPSTREAM OF VALVE	SAME AS PROCESS LINE
	TEST TAP FROM VALVE TO CAP	3
- THE EXHAUST TO THE TANK SHALL BE COLLECTED HEAT FROM NORMALLY SUPPLIED MEDIA. THE DESIGN SHALL HAVE A STRUCTURE THAT PROVIDES EXIST OF RAIN.
- THESE VALVES SHALL BE ABLE TO BE OPERATED MANUALLY BY PERSONS THAT OPERATE THE POY ISOLATION SIGNAL.
- THIS VALVE IS NORMALLY OPENED AFTER EACH POY LEAK TEST BY THE HAND WHEEL.
- THIS VALVE SHALL BE USED FOR LIMITING FLOW RATE DURING DECOMMISSIONING FOLLOWING POY INTEGRATED LEAK RATE TEST.
- THE FLOW ELEMENT SHALL BE ANNULAR-TYPE.
- DESIGN CONDITIONS OF PIPING ARE AS FOLLOWS UNLESS OTHERWISE SPECIFIED.

A. MATERIAL	----- CARBON STEEL
B. WELDING	----- 75% ARGON OVER - 80% AC
	----- 80% AND LESS - 80% DC
C. RADIOACTIVE	----- POY BOUNDARY AND EXHAUST LINE, 1.0 μ g/gm
	----- CONDUIT/TANKS ----- 1.0 μ g/gm
D. SOUNDING CLASS	----- POY BOUNDARY 1.0
	----- 1.5" μ g/gm 1.0
E. FLUID	----- 2R OR 4R
- DESIGN CONDITIONS OF TEST, DRAIN AND WETMENT PIPING ARE AS FOLLOWS.

ITEM	MAX OPERATING PRESSURE	MAX OPERATING TEMPERATURE	MATERIAL	
TEST TAP	UPSTREAM OF VALVE	SAME AS PROCESS LINE		
	DOWNSTREAM OF VALVE	SAME AS PROCESS LINE	CS	
DRAIN	UPSTREAM OF VALVE	SAME AS PROCESS LINE		
	DOWNSTREAM OF VALVE	ATMOSPHERIC PRESSURE	CS	
WETMENT PIPING		SAME AS PROCESS LINE		
	CONNECTED TO SUPPRESSOR	1.0 kg/cm ² g	175°C	SS
TEST TAP	UPSTREAM OF VALVE	2.0 kg/cm ² g	175°C	CS
	DOWNSTREAM OF VALVE	2.0 kg/cm ² g	90°C	CS
- SUPPRESSION POOL WATER TEMPERATURE MONITORING IS PROVIDED BY SPIN SYSTEM, VIT 8.
- THESE VALVES ARE NOT PROVIDED WITH AN ISOLATION SIGNAL. CONTROL SWITCHES MUST BE IN LOCKED OPEN.

REFERENCE DOCUMENTS

NO.	DESCRIPTION	REF. NO.
1.	PIPING AND WETMENT SYMBOL DIAGRAM	130-3030
2.	INAC SYSTEM P&ID	043-1000
3.	1" WOODS GAS TREATMENT - 2" TEST P&ID	120-1000
4.	100% IN-TRAC NITROGEN GAS SUPPLY SYSTEM P&ID	084-1000
5.	REACTOR WATER SYSTEM P&ID	081-1000
6.	REACTOR COOLANT WATER TEMPERATURE MONITORING SYSTEM P&ID	121-1000
7.	WATER TREATMENT SYSTEM	041-1000
8.	WATER TREATMENT SYSTEM ES	041-1000
9.	WATER TREATMENT SYSTEM (PLANTED) SYSTEM P&ID	110-1000
10.	REACTOR CORE ISOLATION COOLANT SYSTEM P&ID	121-1000
11.	SUPPRESSION POOL CLEANUP SYSTEM P&ID	081-1000
12.	WATER TREATMENT SYSTEM	041-1000

REF. NO. 131-1000

92-073-41

Figure 6.2-39 ATMOSPHERIC CONTROL SYSTEM P&ID (Sheet 1 of 3)

M O B H R O

K
J
I
H
G
F
E
D
C
B
A

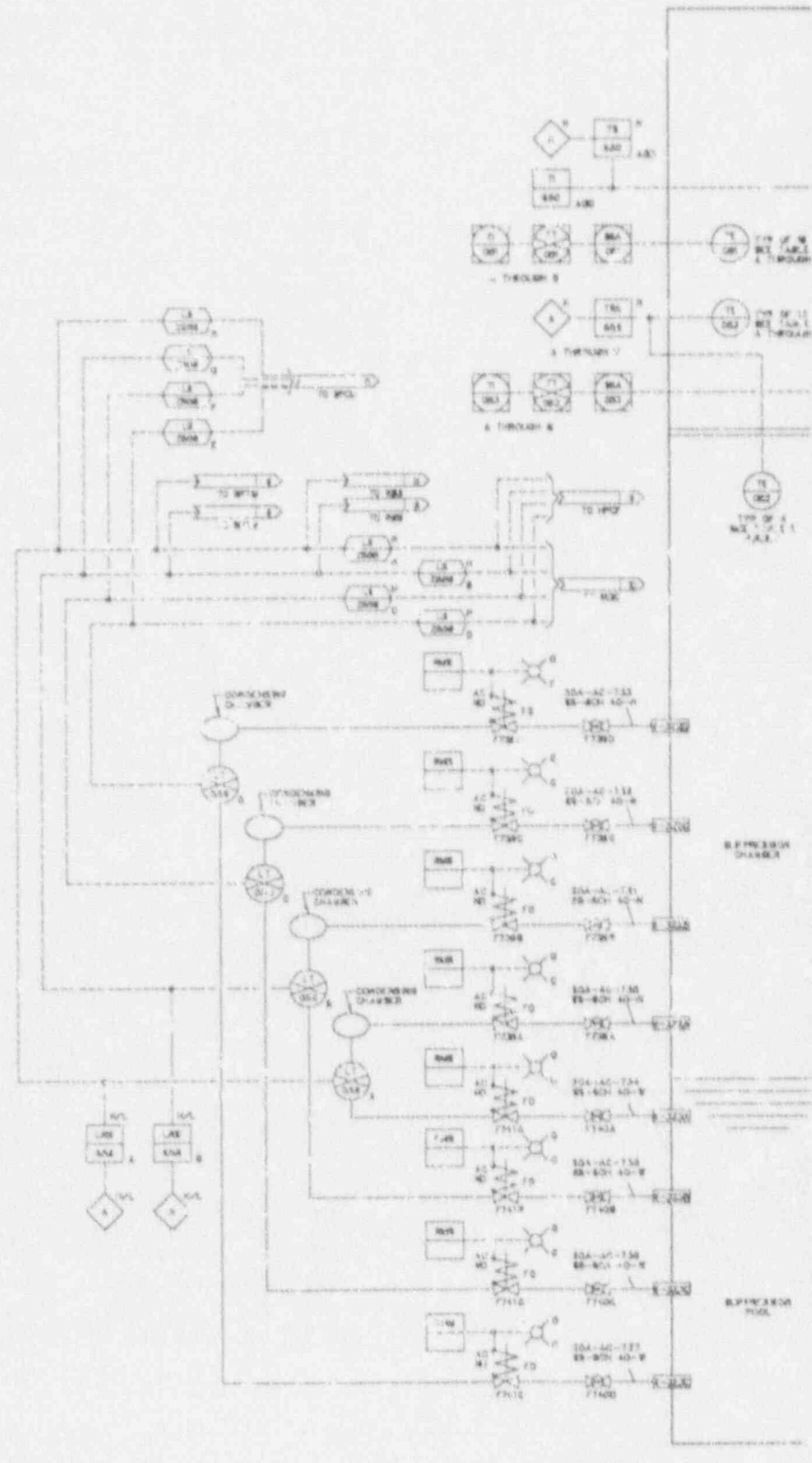
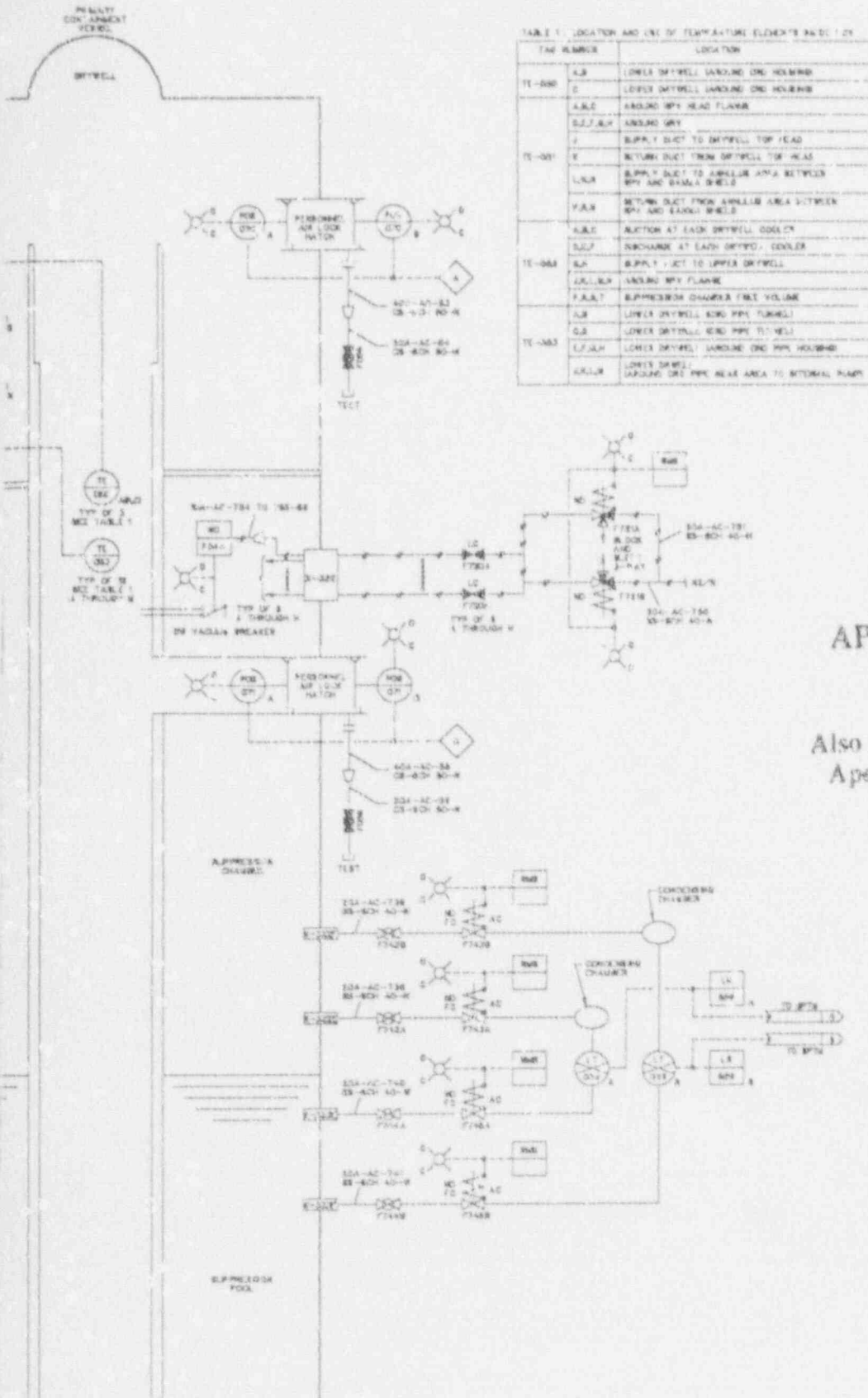


TABLE 1. LOCATION AND USE OF TEMPERATURE ELEMENTS AND C.T.'S

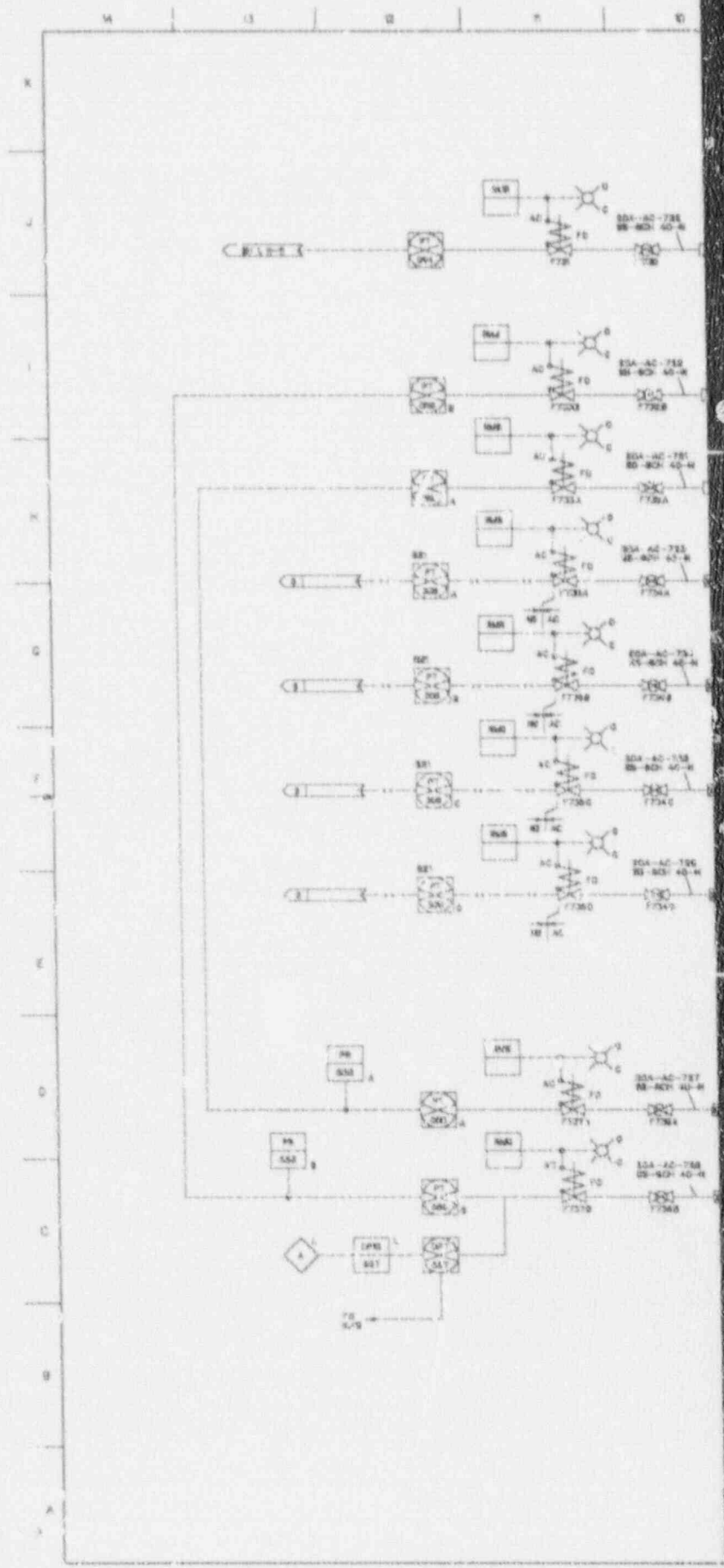
TAG NUMBER	LOCATION	USE	
TE-000	A,B	LOWER DRYWELL SURROUND DRG HOUSING	INDICATOR & ALARM
	C	LOWER DRYWELL SURROUND DRG HOUSING	RESETE
	A,B,C	AROUND RPP HEAD FLANGE	INDICATOR
TE-001	D,E,F,G,H	AROUND DRY	INDICATOR
	I	SUPPLY DUCT TO DRYWELL TOP HEAD	INDICATOR
	J	RETURN DUCT FROM DRYWELL TOP HEAD	INDICATOR
	K,L,M	SUPPLY DUCT TO APOLLIS AREA BETWEEN RPP AND SHALIA WHELS	INDICATOR
	N,O,P	RETURN DUCT FROM APOLLIS AREA BETWEEN RPP AND SHALIA WHELS	INDICATOR
TE-004	A,B,C	SECTION AT EACH DRYWELL COOLER	RECORD & ALARM
	D,E,F	INCHARGE AT EACH DRYWELL COOLER	RECORD & ALARM
	G,H	SUPPLY DUCT TO UPPER DRYWELL	RECORD & ALARM
	I,J,K,L,M	AROUND RPP FLANGE	RECORD & ALARM
TE-003	N,O,P,Q	SUPPRESSOR CHARGER FUEL TOWER	RECORD & ALARM
	R	LOWER DRYWELL RING RPP TUNNEL	INDICATOR
	S	LOWER DRYWELL RING RPP TUNNEL	INDICATOR
	T,U,V,W	LOWER DRYWELL SURROUND DRG HOUSING	INDICATOR
X,Y,Z	LOWER DRYWELL SURROUND DRG HOUSING AREA TO INTERNAL PLUMB	INDICATOR	



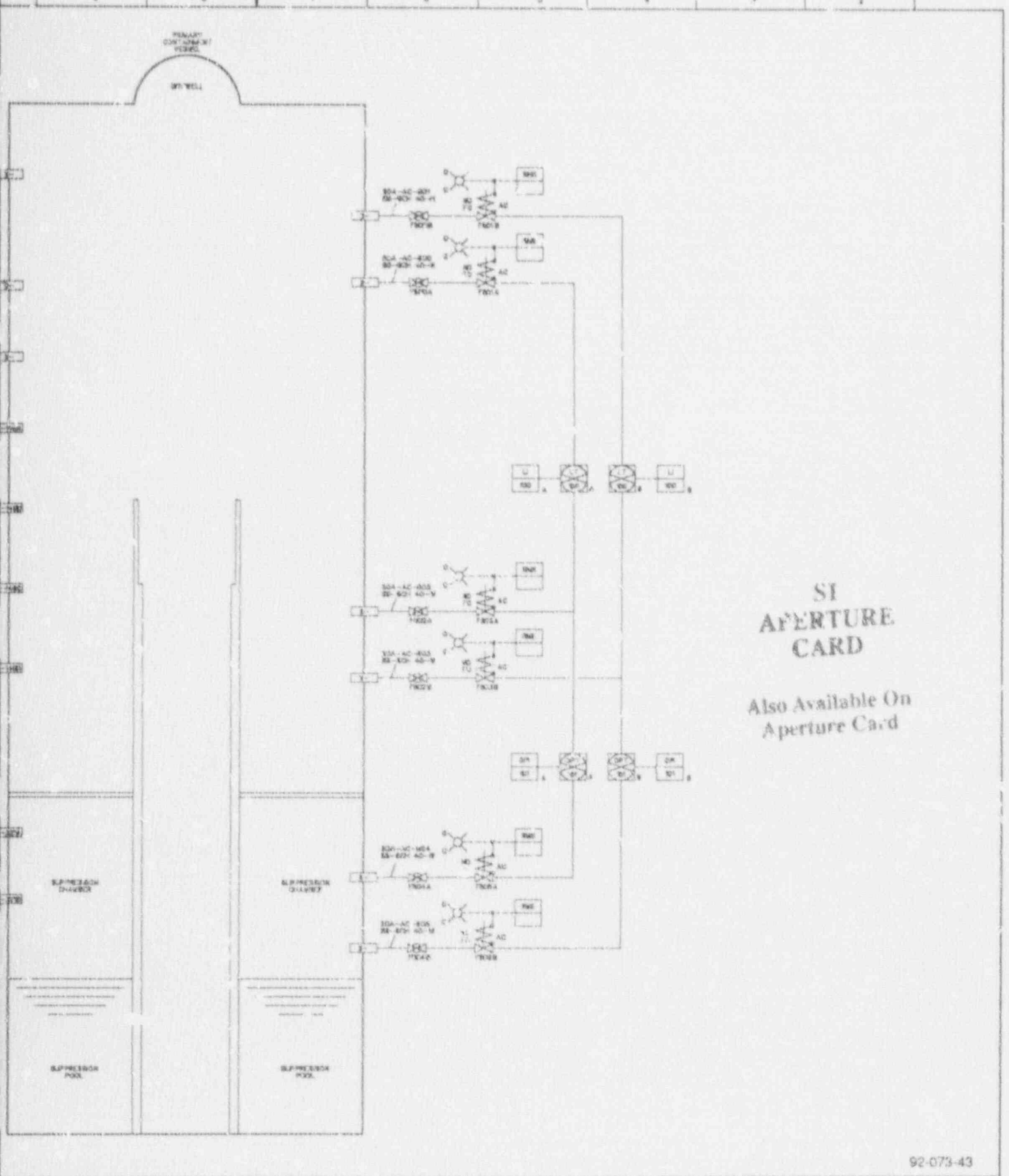
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Figure 6.2-39 ATMOSPHERIC CONTROL SYSTEM P&ID (Sheet 2 of 3)



1

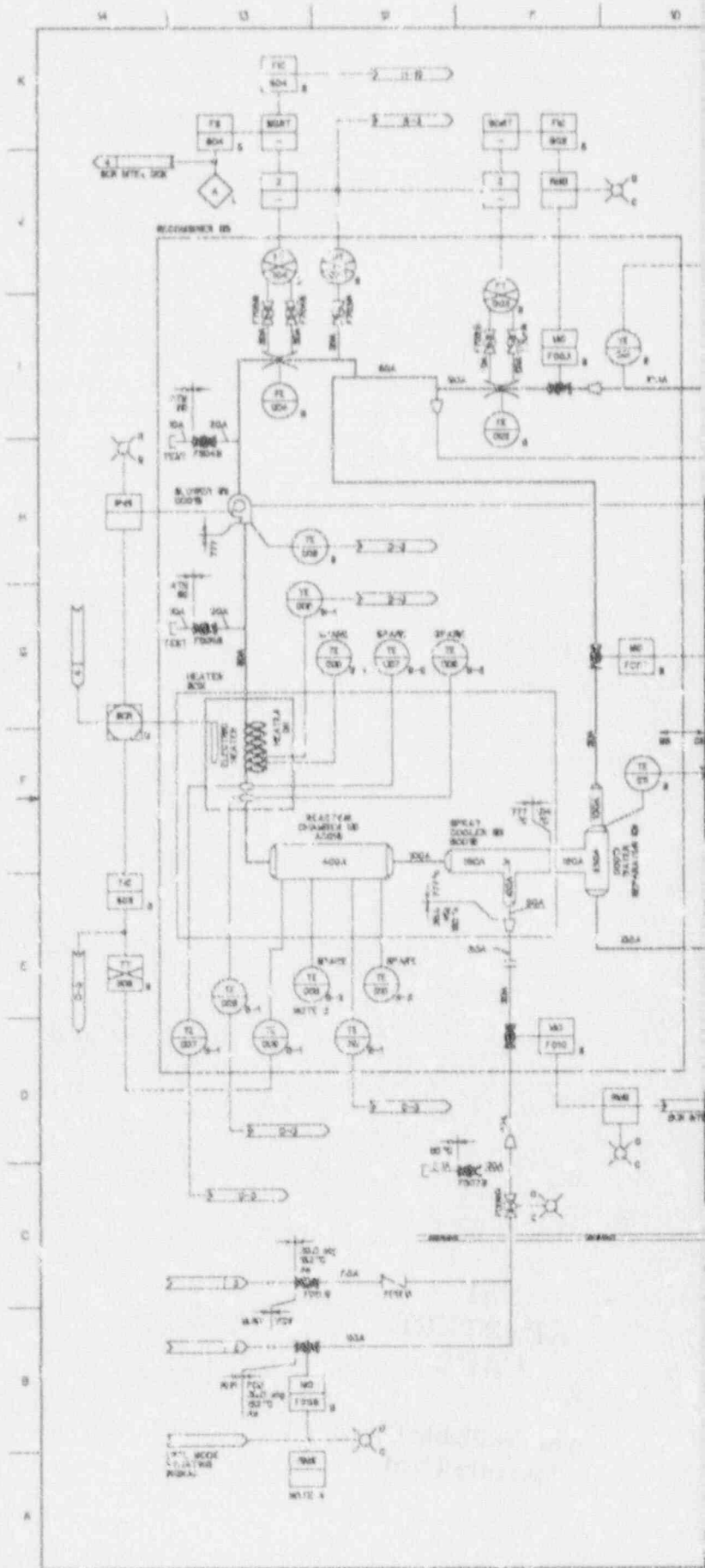


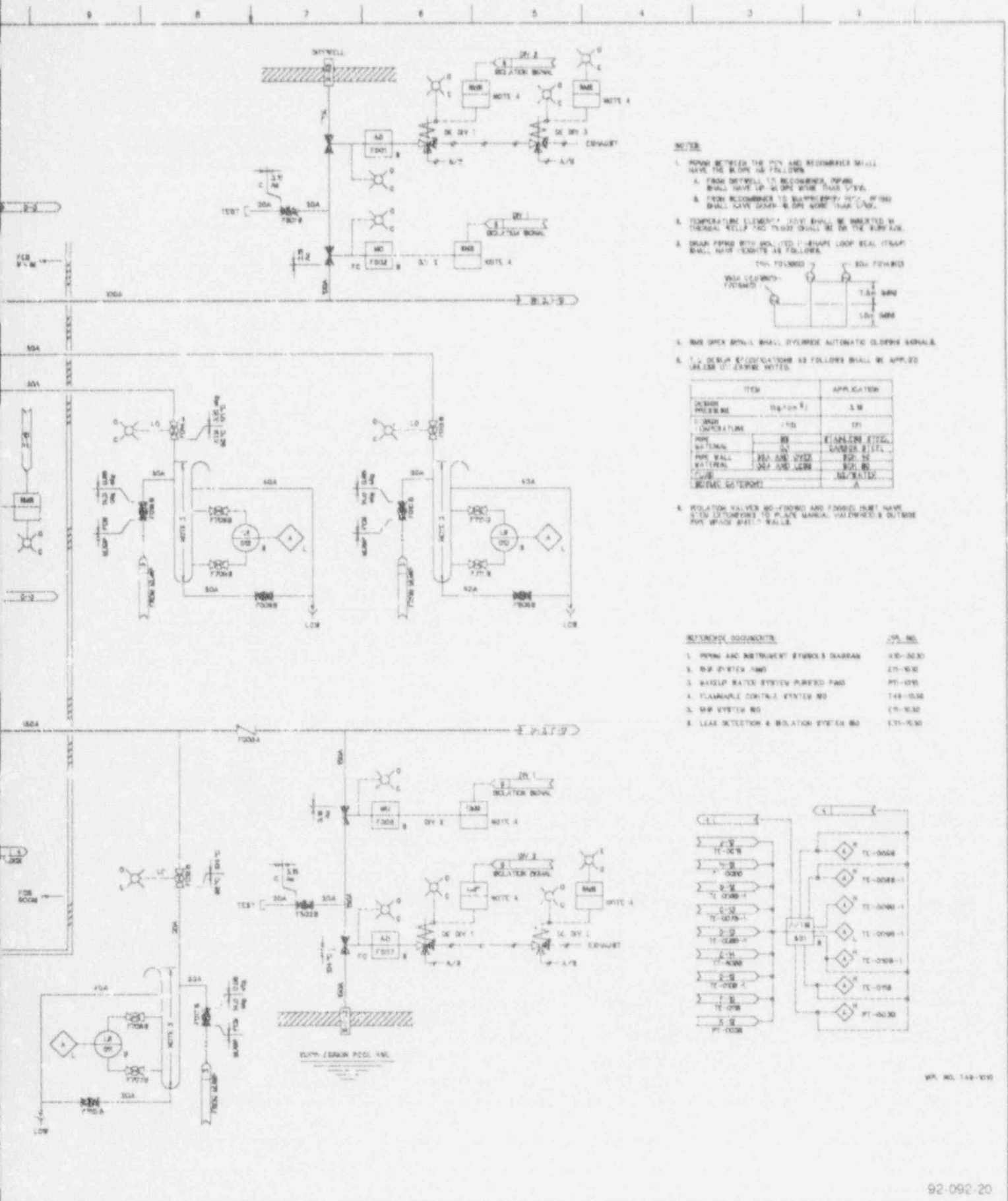
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Figure 6-2-39 ATMOSPHERIC CONTROL SYSTEM P&ID (Sheet 3 of 3)

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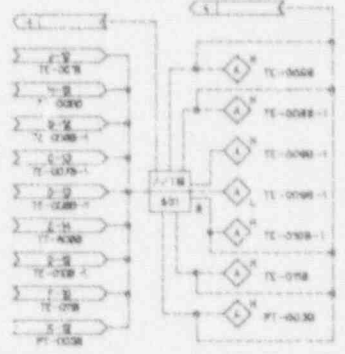




- NOTES**
1. PIPING BETWEEN THE FCV AND RECOMBIBER SHALL HAVE THE BLOCKS AS FOLLOWS:
 - A. FROM DEWELL TO RECOMBIBER, 2" PIPING SHALL HAVE 1" BLOCKS WITH 1/2" DIA. FCV.
 - B. FROM RECOMBIBER TO RECOMBIBER DEWELL, 2" PIPING SHALL HAVE 3/4" BLOCKS WITH 1/2" DIA. FCV.
 2. TEMPERATURE ELEMENTS SHALL BE INSERTED IN THERMAL WELLS AND THERM SHALL BE ON THE FURNACE.
 3. DRUM PIPING WITH 1/2" DIA. THERM LOOP SEAL ITSELF SHALL HAVE THERM AS FOLLOWS:
 - TCV FLOWMETER: 1/2" DIA. THERM
 - RELAY SIGNAL: 1/2" DIA. THERM
 - 1/2" DIA. THERM
 - 1/2" DIA. THERM
 4. RELAY OPERATIONAL SHALL OPERATE AUTOMATIC CLOSURE SIGNALS.
 5. THERM ELEMENT OPERATIONAL AS FOLLOWS SHALL BE APPROVED AS PER THERM NOTES.

ITEM	APPLICATION
ISOLATE PROTECTION (Signal F)	S.M.
TEMPERATURE	TE
RELAY	RELAY
TEMPERATURE	TEMPERATURE
RELAY	RELAY
TEMPERATURE	TEMPERATURE
RELAY	RELAY
TEMPERATURE	TEMPERATURE
RELAY	RELAY

- REFERENCE DOCUMENTS**
- | REF. NO. | DESCRIPTION |
|----------|---------------------------------------|
| 1 | PIPING AND INSTRUMENT SYMBOLS DIAGRAM |
| 2 | RELAY SYSTEMS |
| 3 | RELAY SYSTEMS |
| 4 | FLAMMABLE CONTROL SYSTEM |
| 5 | RELAY SYSTEMS |
| 6 | LEAK DETECTION & ISOLATION SYSTEM |

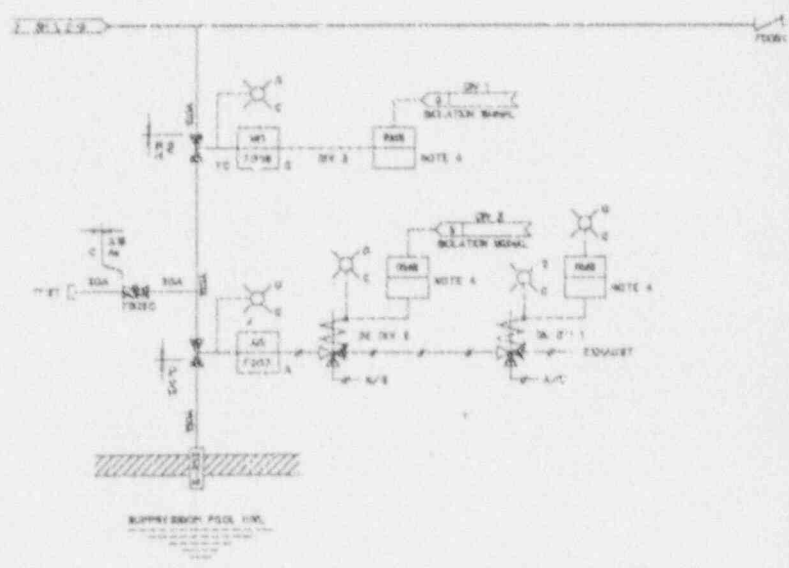
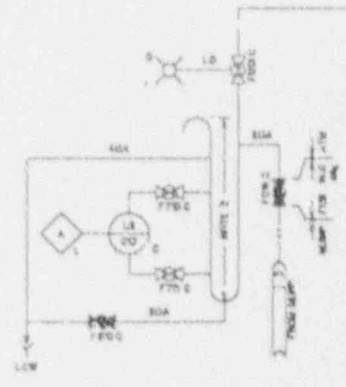
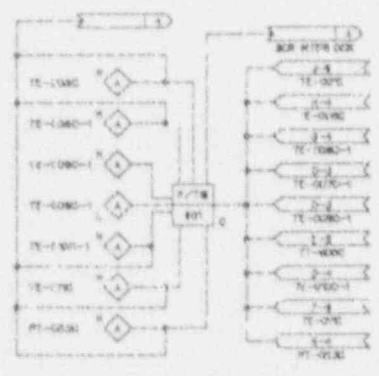
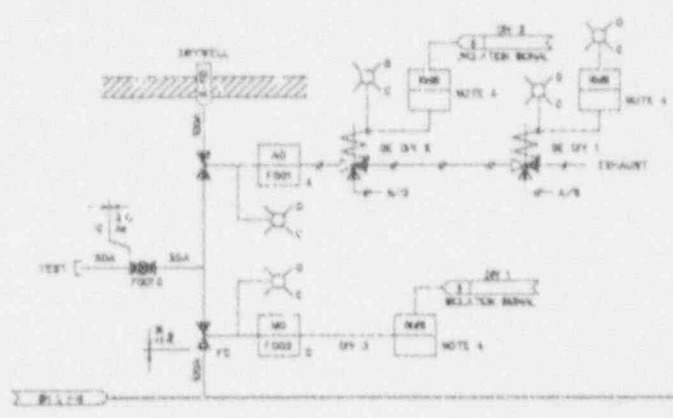


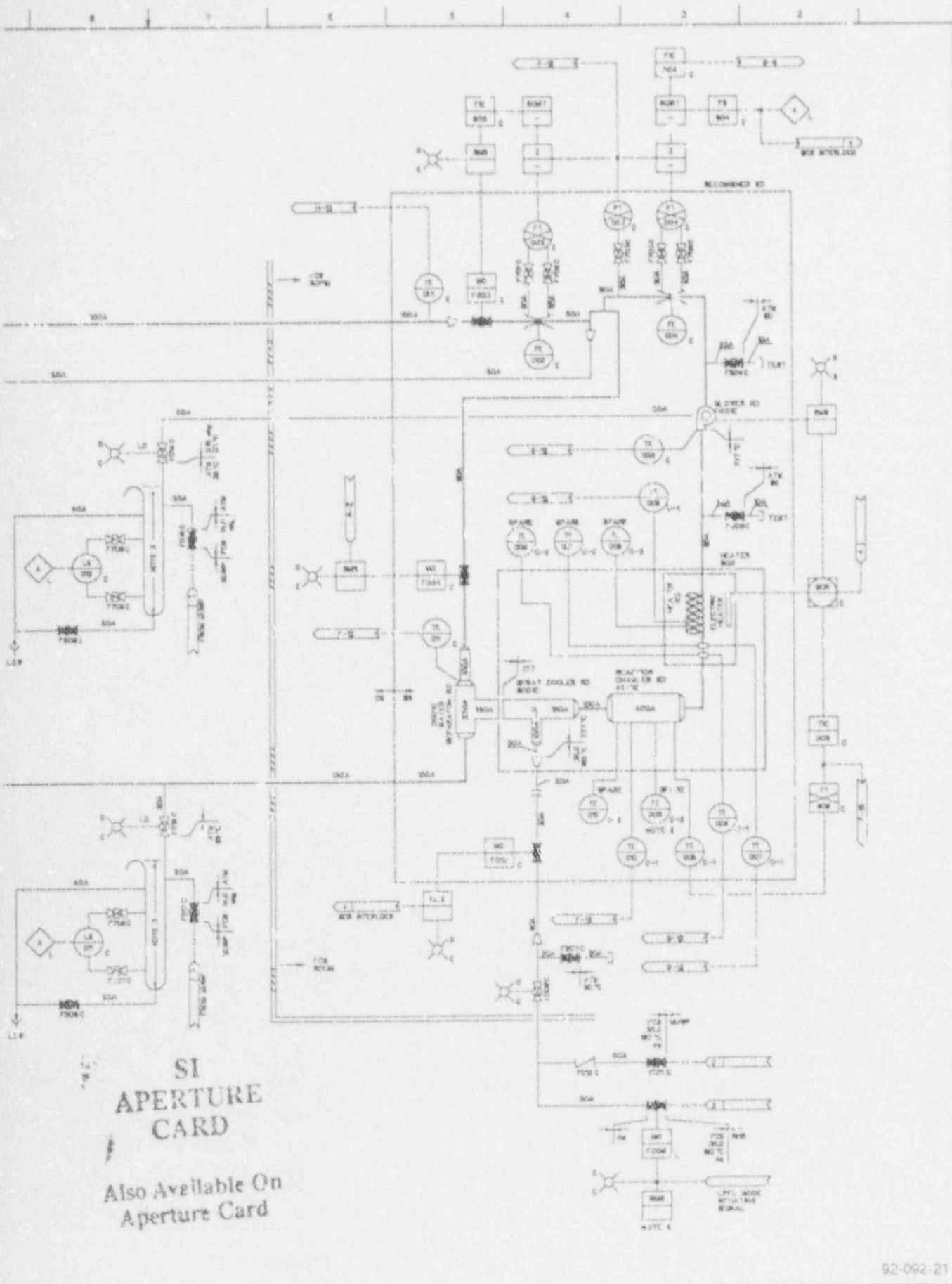
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Figure 6.2-40 FLAMMABILITY CONTROL SYSTEM P&ID (Sheet 1 of 2)

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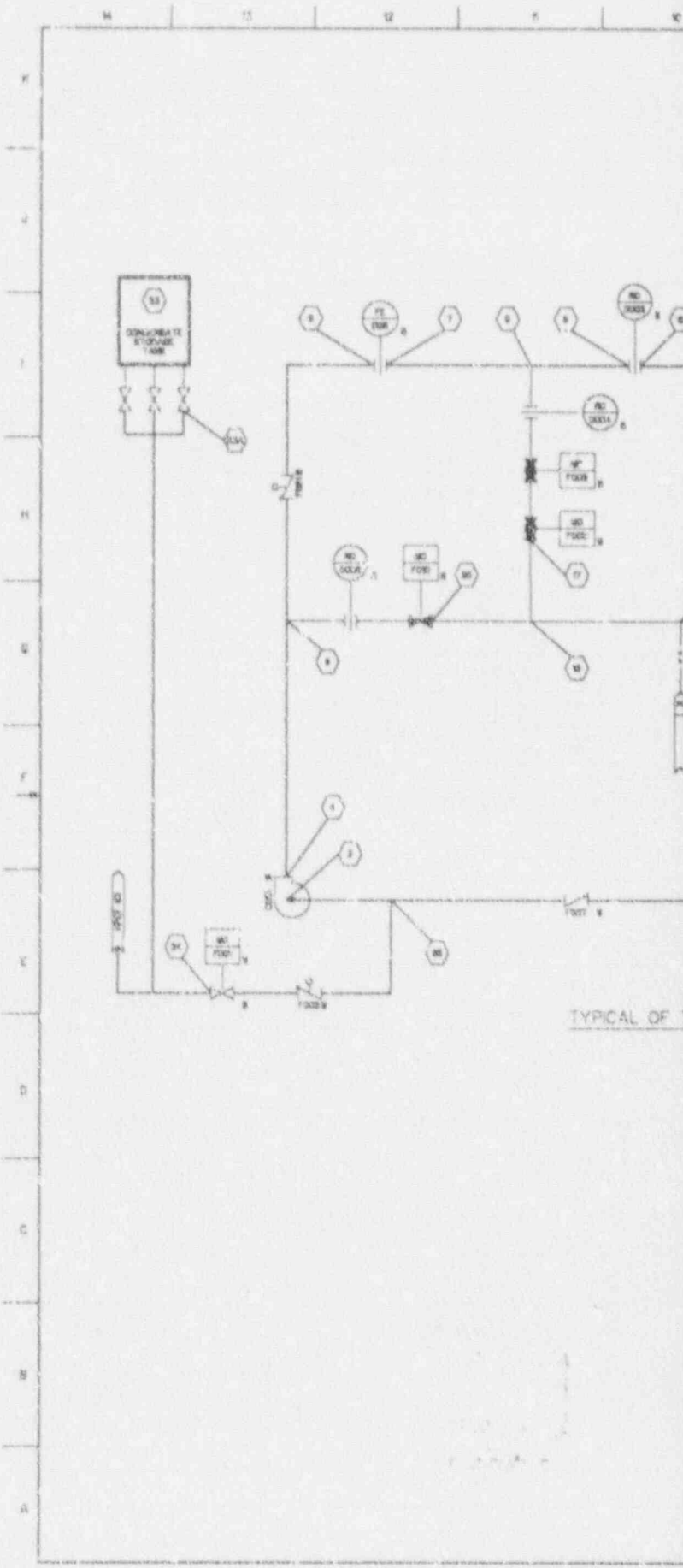




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Figure 6.2-40 FLAMMABILITY CONTROL SYSTEM P&ID (Sheet 2 of 2)

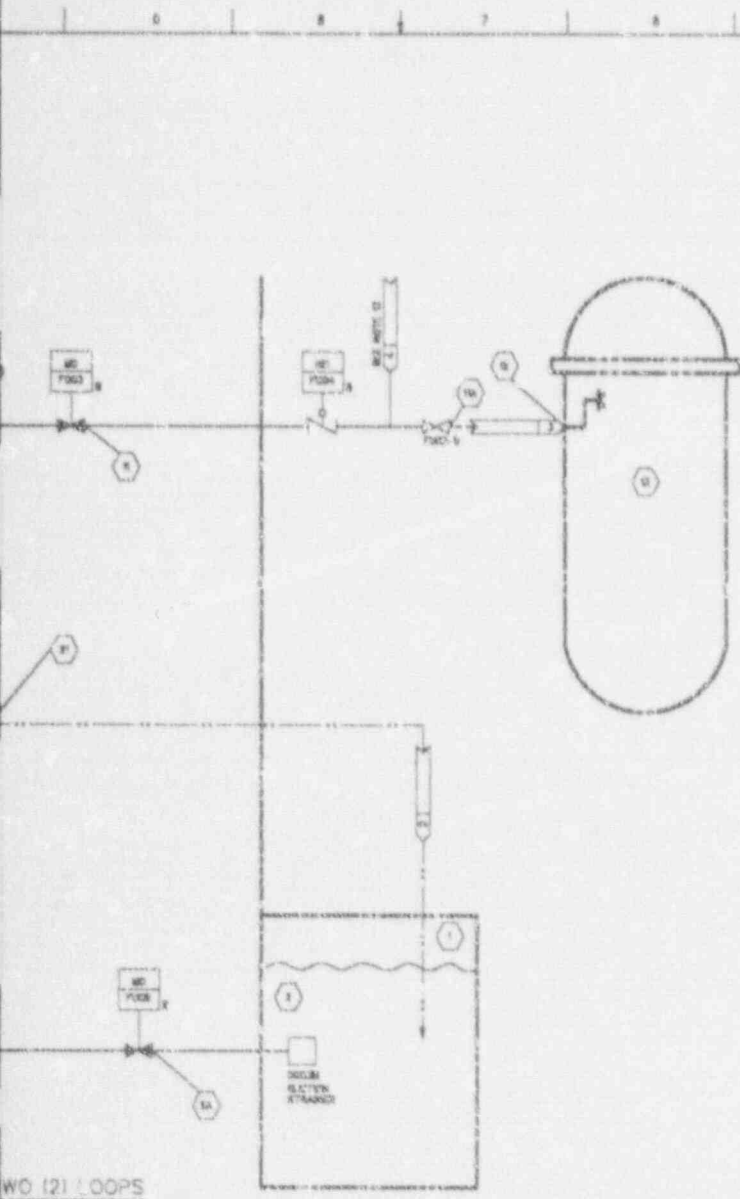


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NOTES

1. STANDBY LEAD CONTROL ONLY OPERABLE INTO CORE FLOODING LOOP & SHUT DOWN NOT AFFECT SYSTEMS PIPING DESIGN FOR THAT LOOP.
2. EMPTY DATA BLANKS ARE TO BE PROVIDED BY THE DESIGN ENGINEER.
 INDICATED BY "X" MARK AND SHOWS VALUES OF THAT PARAMETER.
3. MAXIMUM ELEVATED DIFFERENCE BETWEEN T-1, MINIMUM SUPPLEMENTARY PUMP LEVEL AND THE CORE DRAINAGE LOOP VESSEL HEIGHTS IS NOT SETTING.
4. IN CASE OF THE PUMP AVAILABLE AT 1. SECTION WITHIN THE PUMP FLOOR, SHALL BEET OR EXCEED 4.2 METERS WITH ELECTRIC STANDBY IN A PLANNED.
5. THE PRESSURE DIFFERENCE BETWEEN POINTS A AND B SHALL BE MAINTAINED DURING OPERATIONAL TESTING SO THAT:
 - (a) THE FLOW SHOULD BE FOR UNDER 10% IS EQUALLED OR EXCEEDED AT THE POINT C PROMISED OPERATED.
 - (b) THE FLOW AVAILABLE TO THE CORE PUMPS IN MODE "1" IS NOT 10% THAN PROMISED IN MODE "0".
 - (c) THE PUMP VESSEL ALLOWABLE SLIGHT LOW IS NOT EXCEEDED.
 - (d) THE MINIMUM FLOW DOES NOT EXCEED PROMISED TEST FLOW.
6. STANDBY FLOW SHOULD BE IN MODE "1" & APPROXIMATELY 10% OF THE PUMP VESSEL HEIGHTS WHICH FLOW SHOULD BE 10% OF THE MINIMUM FLOW REQUIREMENTS "1" WITH "X" MARK AS BE PLANNED.
7. THIS TABLE IS FOR REFERENCE ONLY. SEE REFERENCES DOC 1 FOR REQUIRED VALUES.
8. TABLE 1 INDICATE VALUE POSITIVE SIGNIFY VESSEL OPERATING MODES.
9. FOR MODE 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.
10. KEEP 10% RESERVE WATER TEST OPERATIONS FOR THE WATER SUPPLY AND NON-PRESSURE-FLUID FLOW CONDITION. THE RESERVE LOW CONDITION SHOULD BE USED FOR DESIGN OF THE FLOW TEST LOOP.
11. VALVE CSD-1000 & C AUTOMATICALLY OPEN ON REACTOR WATER LOW LEVEL AND CLOSED ON HIGH LEVEL.
12. INTERCONNECTED BETWEEN THE LOW-PRESSURE CORE FLOODING SYSTEM AND THE HIGH-PRESSURE ARE FROM HPCF LOOP "1" TO RWR "1" ETC.
13. "1" CONNECTION IS ON LOOP "1" ONLY.
14. PUMP AVAILABLE FROM THE CONDENSATE TANK WITH 4.2 METER HEAD OR EXCEED WITH RESERVE IN MODE "1".
15. POSITIONING ALL IN AND BE APPLICABLE WHEN ELECTRIC IS TAKEN FROM "0".
16. PROMISED WITH ELECTRIC BALANCE IS UNCORRECTED WITHOUT TANK.
17. USE WITHIN ELECTRIC LINE LOW FROM SUPPLEMENTARY POOL TO PUMP ELECTRIC.
18. REQUIRED TOTAL STANDBY HEAD.

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

NO.	DESCRIPTION	REF. NO.
1.	LOW PRESSURE CORE FLOODING PYS PAGE	130-1000
2.	REACTOR HEAT REMOVAL S/T P/S	15-1000
3.	REACTOR PRESSURE VESSEL SYSTEM	91-400
4.	STANDBY LEAD CONTROL V/S P/S	100-1000

SUPPORTING DOCUMENTS

NO.	DESCRIPTION	REF. NO.
1.	PUMP & RETRACTION DRAWING SYMBOLS	100-1000

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Figure 6.3-1 HPCF PROCESS DIAGRAM (Sheet 1 of 2)

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WEEK 14' LOADING REACTION AT HIGH PRESSURE LOOP 8 OR 10 SEE NOTE 10

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FLOW m^3/s	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
TEMP °C	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
PRESS kg/cm^2	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
MAX PRESS SET-POINT										0/A	0/A	0/A	0/A	0/A	0/A

WEEK 14' ASSESSMENT REACTION AT MEDIUM FLOW RATE LOOP 8 OR 10 SEE NOTE 10 AND 11

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FLOW m^3/s	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
TEMP °C	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
PRESS kg/cm^2	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
MAX PRESS SET-POINT										0/A	0/A	0/A	0/A	0/A	0/A

WEEK 14' ASSESSMENT PUMP OPERATING AT MEDIUM LOOP 8 OR 10 SEE NOTE 10

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FLOW m^3/s	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
TEMP °C	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
PRESS kg/cm^2	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
MAX PRESS SET-POINT										0/A	0/A	0/A	0/A	0/A	0/A

WEEK 14' SYSTEM TEST TO SUPPLEMENTARY POOL LOOP 8 OR 10 SEE NOTE 10 AND 11

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FLOW m^3/s	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
TEMP °C	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
PRESS kg/cm^2	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
MAX PRESS SET-POINT										0/A	0/A	0/A	0/A	0/A	0/A

WEEK 14' SYSTEM TEST TO SUPPLEMENTARY POOL LOOP 8 OR 10 SEE NOTE 10

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FLOW m^3/s	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
TEMP °C	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
PRESS kg/cm^2	0/A	0/A	0/A							0/A	0/A	0/A	0/A	0/A	0/A
MAX PRESS SET-POINT										0/A	0/A	0/A	0/A	0/A	0/A

MODE '1' VALVE OPERATION ON STANDBY SEE NOTE 9 AND 8

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FLW	100%	75%	50%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TEMP	100/70	80/70	60/70	40/70	20/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70
PRSS	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE '1' - STANDBY

POSITION	1	2	3	4	5	6	7	8	9	10
FLW	100%	75%	50%	25%	0%	0%	0%	0%	0%	0%
TEMP	100/70	80/70	60/70	40/70	20/70	0/70	0/70	0/70	0/70	0/70
PRSS	100	100	100	100	100	100	100	100	100	100

INDICATED INFORMATION SEE NOTE 11

MODE	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
MODE	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
TEMP	100/70	80/70	60/70	40/70	20/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70	0/70
PRSS	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE '1' VALVE POSITION TABLE

VALVE	POSITION	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			
MODE '1'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
MODE '2'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MODE '3'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MODE '4'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MODE '5'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MODE '6'	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

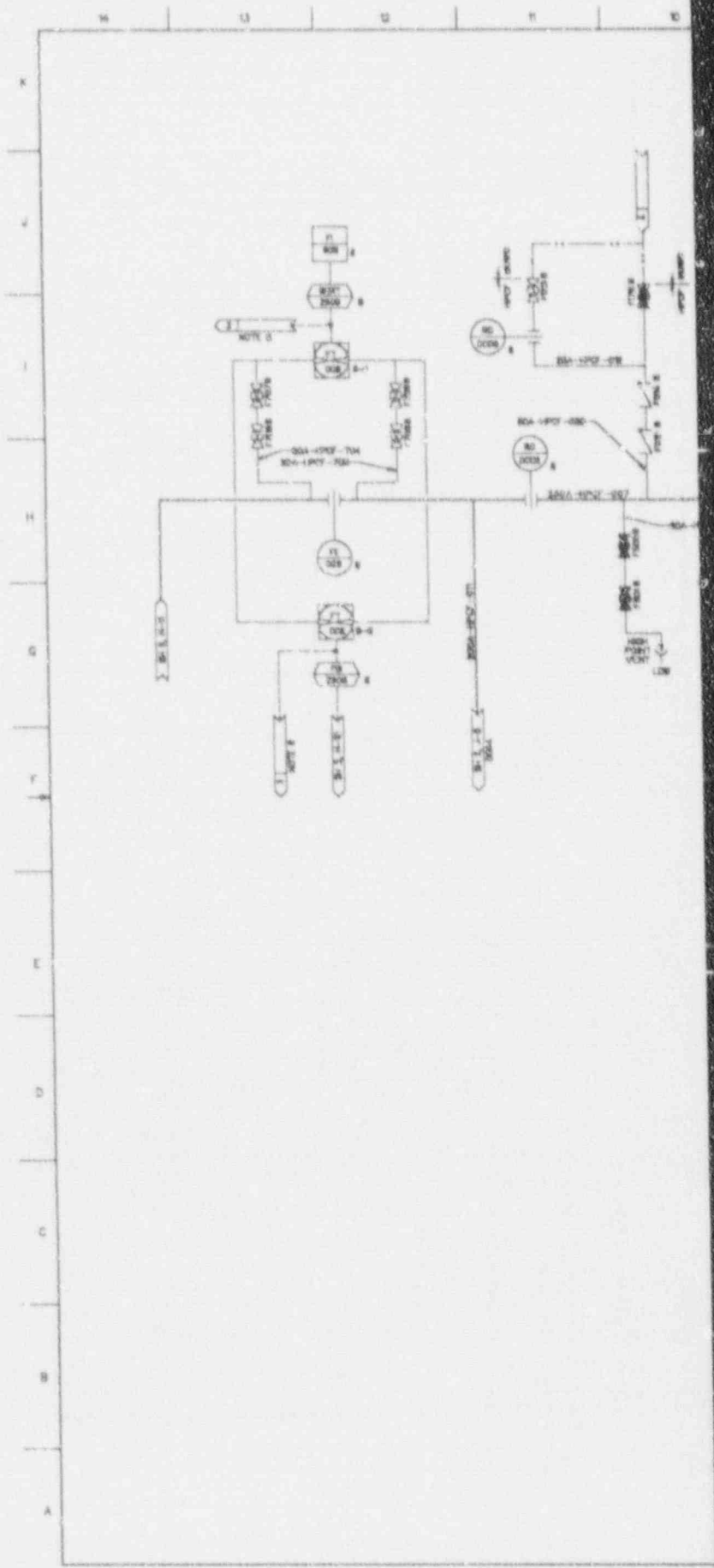
0 - SHUT - 1 - 75% - 2 - THROTTLED

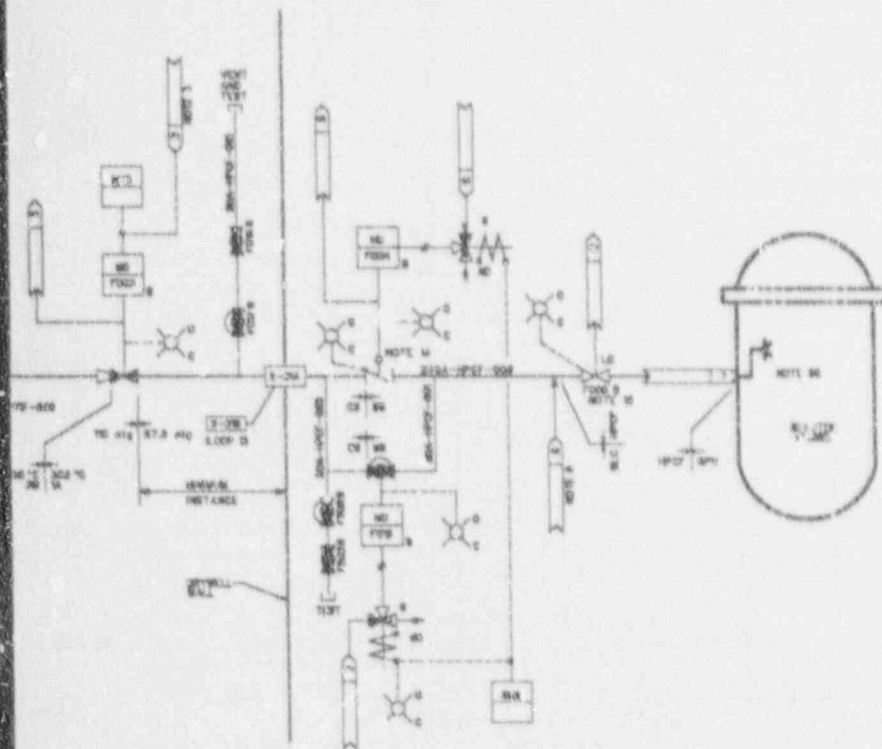
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Figure 6.3-1 HPCF PROCESS DIAGRAM (Sheet 2 of 2)

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 100-1000-100
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EXPLANATORY COMMENTS UNDER THE FOLLOWING IDENTIFIERS ARE TO BE USED IN CONNECTION WITH THIS DRAWING.

1. BACON BUILDUP COOLING SYSTEM SYSTEM P&ID	MP. NO. 77-400
2. ISOLATE BLOWER SYSTEM P&ID	801-830
3. REACTOR BLOWDOWN SYSTEM P&ID	001-040
4. MAKE-UP WATER SYSTEM CONDENSATE P&ID	701-077
5. HIGH PRESSURE HYDROGEN SUPPLY SYSTEM P&ID	754-000
6. VALVE SLAM LOCKING TREATMENT, MAINFRAME SYS P&ID	101-070
7. REACTOR PRESSURE VESSEL SYSTEM	01-400
8. HIGH CONDUCTIVITY WATER SYSTEM P&ID	101-100
9. STANDBY LOAD CONTROL SYSTEM P&ID	041-070
10. GENERAL HEAT REMOVAL SYSTEM P&ID	271-070
11. HIGH PRESSURE CORE FLOODER SYSTEM P&ID	000-000
12. HIGH PRESSURE CORE FLOODER IIS	700-030
13. SUPPLEMENTARY TEMPERATURE MONITORING SYSTEM P&ID	703-030
14. REACTOR CORE ISOLATOR COOLING SYSTEM P&ID	020-070
15. SUPPRESSION POOL CLEAN-UP SYSTEM P&ID	001-070
16. LOW CONDUCTIVITY WATER, MAINFRAME SYSTEM P&ID	101-100

SUPPORTING DOCUMENT	MP. NO.
1. Piping and Instrumentation Diagram Symbols	AS-300B

NOTES

1. PIPING HEAD POINT VENTS AND LOW POINT DRAINS ARE TO BE LOCATED AS NECESSARY.
2. INSTRUMENT LINE DESIGN AND VALVING SHALL BE IN ACCORDANCE WITH INSTRUMENT PIPING SPECIFICATION AS-300B.
3. THE METHOD OF MOUNTING LOCAL INSTRUMENTS IS TO BE DETERMINED BY MP&ID DRAWINGS.
4. VENT DRAINS AND RELIEF VALVES - INHALE SYSTEM TO LOC- AND HIGH OR SUPPLEMENTAL PULLS ARE BY P&ID DRAWINGS.
5. FOR ADDITIONAL CONTROLS, ROOM INDICATOR LIGHTS, SYSTEMS ALARMS AND REMOTE MANUAL SWITCHES, SEE THE MP&ID DRAWINGS.
6. PROVISIONS FOR EQUIPMENT ISOLATION SHALL BE IN ACCORDANCE WITH THE CURRENT LOCKING REQUIREMENTS.
7. EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY SYSTEM NUMBER UNLESS OTHERWISE NOTED.
8. THIS MP&ID IS USED FOR LOOP D ONLY.
9. IMPROVED TYPING SHALL BE HORIZONTAL OR VERTICAL UPWARD FROM THE STEEL WALL TO THE POINT OF ATTACHMENT WITH THE REACTOR VESSEL.
10. REACTOR VESSEL ISOLATION IS BY THE HIGH PRESSURE CORE FLOODER SYSTEM.
11. SENSOR LINE WIRE SHALL BE INSTALLED AT THE INSTALLED SENSOR POINT, ACTUAL LINE WIRE INSTALLED BY THE MP&ID DRAWINGS SHALL REFLECT THE PROVIDED DATA HYDRAULIC REQUIREMENTS.
12. VALVES FORGING ARE RECOMMENDED FOR MAINTENANCE AND/OR LEAK RATE TESTING.
13. PUMP COOLING WATER, IF IT APPLIES, IS FROM SYSTEM P&ID.
14. DRAIN VALVES FORGING SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE REACTOR VESSEL NOZZLE.
15. VALVES FORGING AND FORGING SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE CONTAINMENT RESTRICTOR OF THE PIPING LINE TO THE SUPPLEMENTAL P&ID.
16. ALL MOTOR OPERATED VALVES ARE AC OPERATED UNLESS OTHERWISE NOTED.
17. COMMON LINE FOR MP&ID-0, MP&ID-1, 700, AND MP&ID-2.
18. ALL PIPING CONNECTIONS SHALL BE MADE AT THE POINT OF ATTACHMENT TO THE REACTOR VESSEL.
19. THE LOOP D REPLACE DRAFT WITH A DRAFTED D AND E AND DRAFT.
20. P&ID DESIGN SPECIFICATIONS ARE AS FOLLOWS:
 - A. MAXIMUM OPERATING PRESSURE - SEE SPECIFIC BOUNDARY SYMBOL
 - B. MAXIMUM OPERATING TEMPERATURE - SEE SPECIFIC BOUNDARY SYMBOL
 - C. MATERIAL - CARBON STEEL, EXCEPT:
 1. AS NOTED
 2. SEE SPECIFIC BOUNDARY SYMBOL
 - D. DESIGN CLASS - SEE SPECIFIC BOUNDARY SYMBOL
 - E. SA CLASS - SEE SPECIFIC BOUNDARY SYMBOL
 - F. BOUNDARY CLASS - AS NOTED
 - G. FILL - WATER
21. VALVE FORGING IS AT LOWEST POINT IN THE SYSTEM TO ALLOW FOR DRAINAGE.
22. DRAIN AND VENT PIPING DESIGN CONFORMS AND:
 - BOUNDARY OPERATING PRESSURE - SEE AS NOTED FOR EACH BOUNDARY SYMBOL
 - BOUNDARY OPERATING TEMPERATURE - SEE AS NOTED FOR EACH BOUNDARY SYMBOL
23. THE NUMBER FOR LOOP D SHALL BE THE SAME AS FOR LOOP A FOR THE SAME P&ID AS FOR LOOP A.
24. FOR VALVES AND C SHALL BE LOCATED TO RELIEVE THE CONTAINMENT RESTRICTOR SHALL BE NOTED IN THE MP&ID DRAWINGS.
25. THIS DRAWING WITH THE MP&ID IS BELIEVED TO BE COMPLETE.

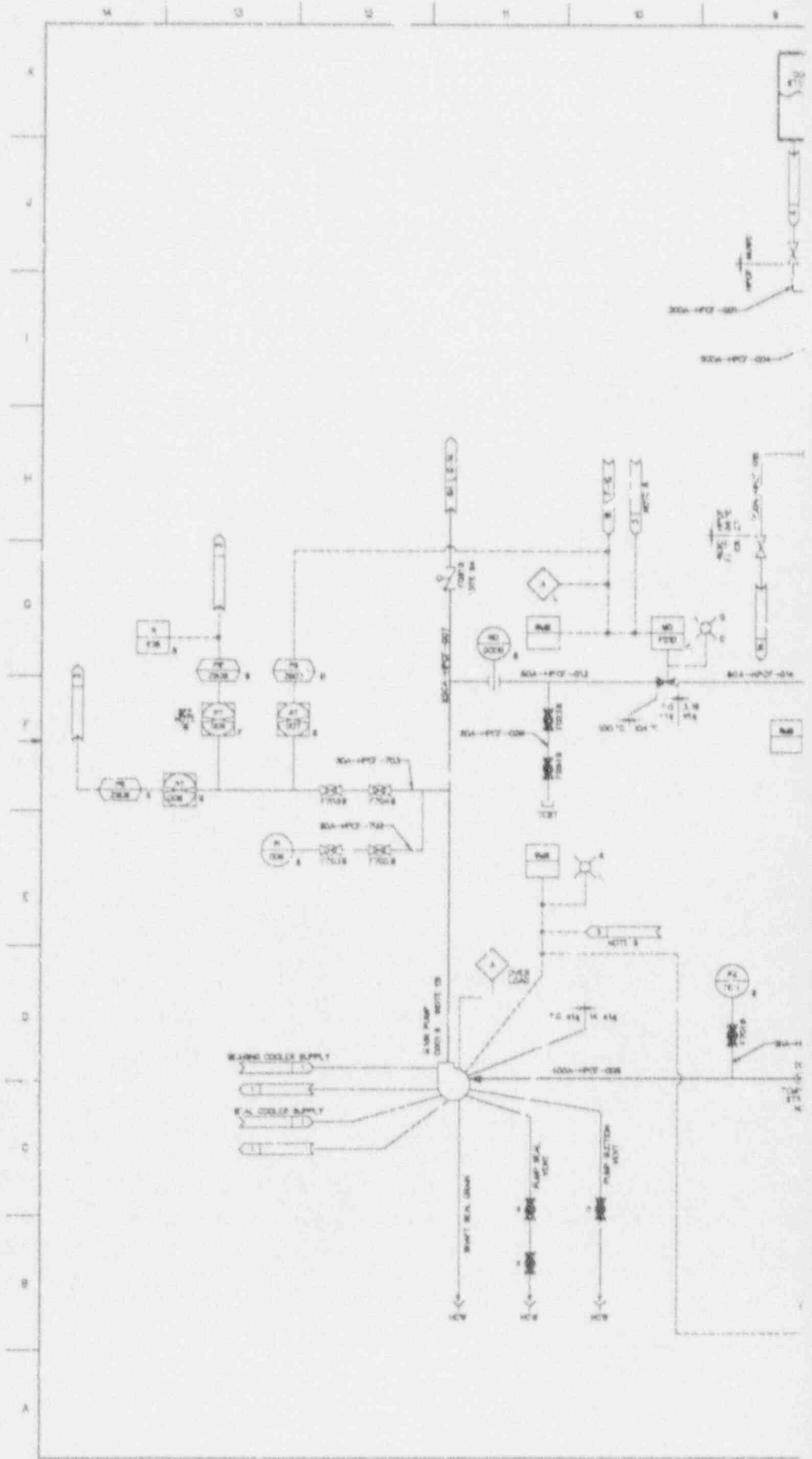
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Figure 6.3-7 HIGH PRESSURE CORE FLOODER SYSTEM P&ID (Sheet 1 of 2)



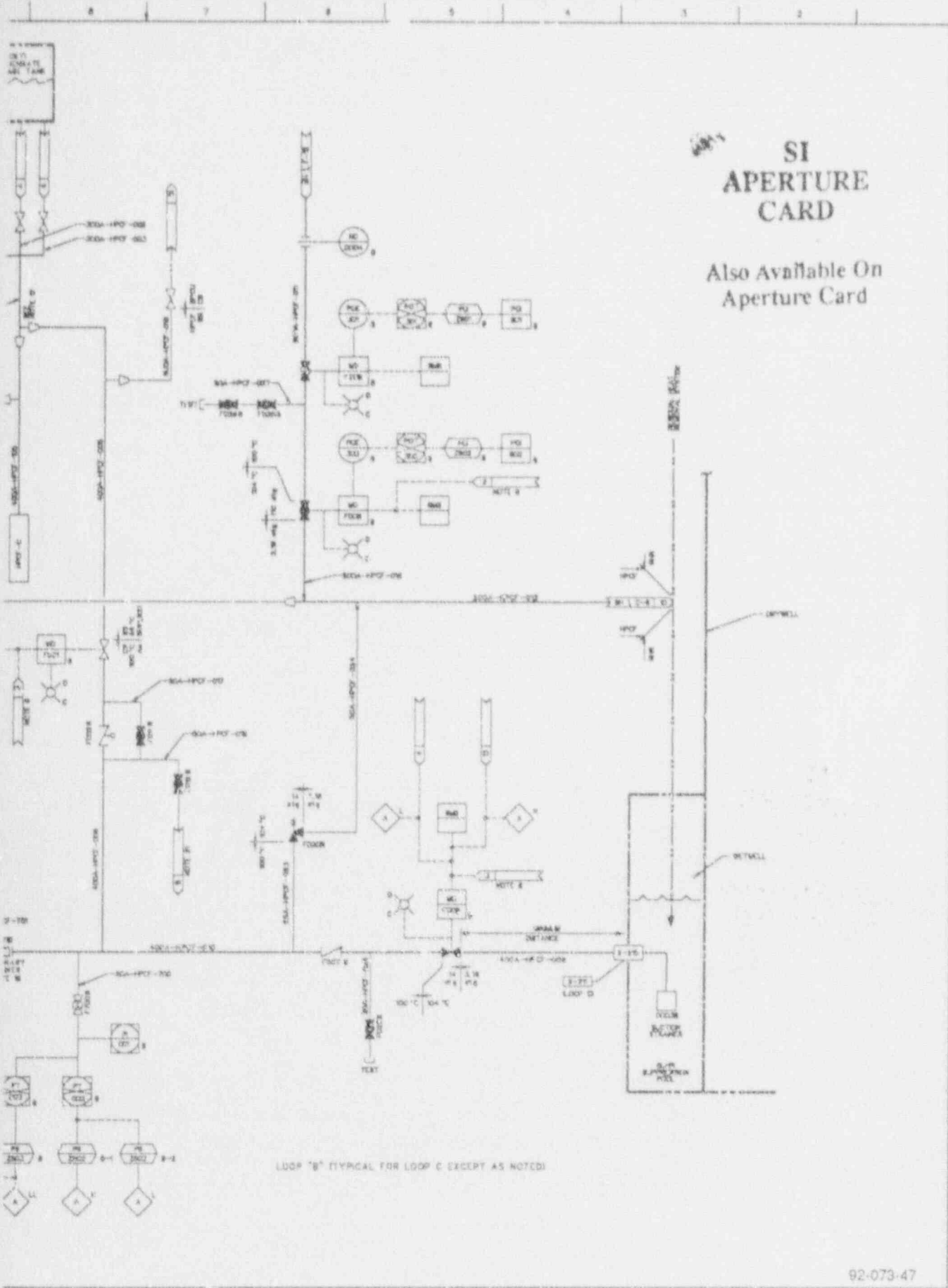
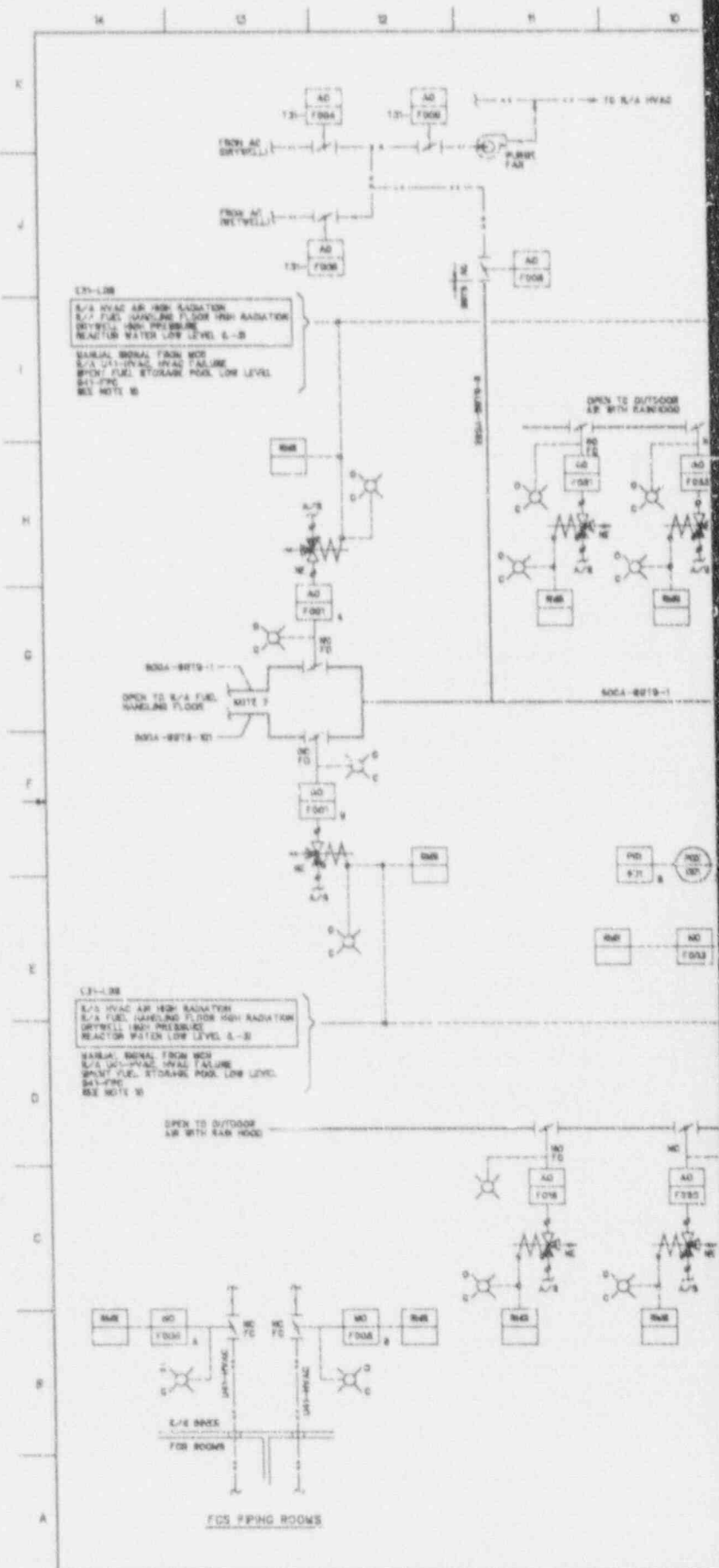
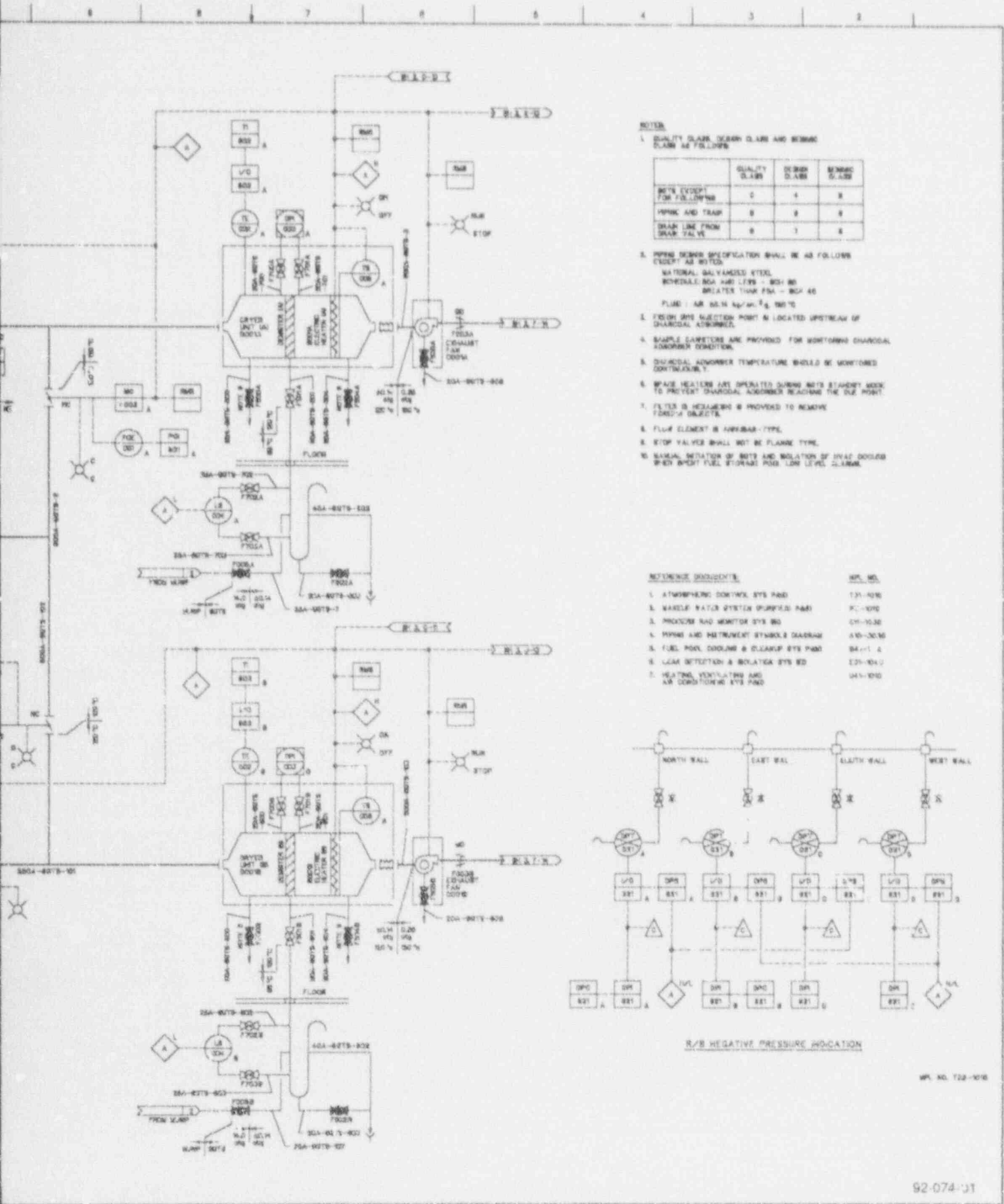


Figure 6.3-7 HIGH PRESSURE CORE FLOODER SYSTEM P&ID (Sheet 2 of 2)

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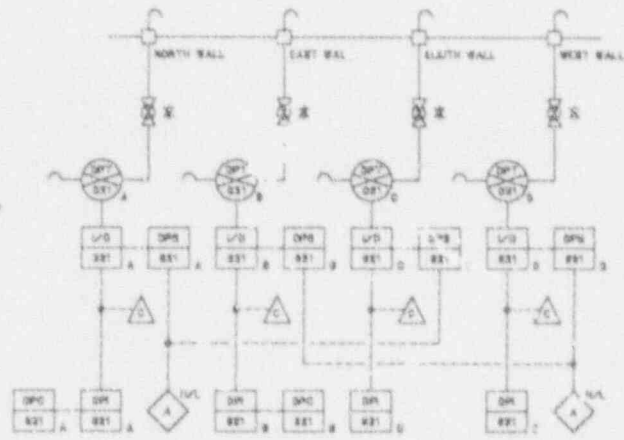
NOTES

1. QUALITY CLASS, DESIGN CLASS AND MESHING CLASS AS FOLLOWS:

	QUALITY CLASS	DESIGN CLASS	MESHING CLASS
NOTE EXCEPT FOR FOLLOWING	0	4	B
HPMC AND TRAP	0	0	0
SHAR LINE FROM SHAR VALVE	0	1	B
2. HPMC DESIGN SPECIFICATION SHALL BE AS FOLLOWS EXCEPT AS NOTED:
 - NATIONAL GALVANIZED STEEL
 - SCHEDULE 80A AND 1.75" - 80# BS
 - GREATER THAN 20A - 80# BS
 - FLUID: AIR 60.14 kg/m³ @ 20°C
3. FRESH AIR SUCTION POINT & LOCATED UPSTREAM OF CHARCOAL ASSEMBLY.
4. SAMPLE CARTRIDGES ARE PROVIDED FOR MONITORING CHARCOAL ASSEMBLY CONDITION.
5. CHARCOAL ASSEMBLY TEMPERATURE SHOULD BE MONITORED CONTINUOUSLY.
6. SPACE HEATERS ARE OPERATED DURING NOTE STANDBY MODE TO PREVENT CHARCOAL ASSEMBLY REACHING THE DUE POINT.
7. FILTER IS HEAVYWEIGHT PROVIDED TO REMOVE FOREIGN OBJECTS.
8. FLOW ELEMENT IS ANNEHAR-1 TYPE.
9. STOP VALVE SHALL NOT BE FLANGE TYPE.
10. SIGNAL DETECTOR OF 8075 AND SIGNAL OF 1044 DOUBLE W/HP SHORT FUEL STORAGE PMS LOW LEVEL CLAMM.

REFERENCE DOCUMENTS

- | | |
|---|----------|
| 1. ATMOSPHERIC CONTROL SYS P&ID | 131-1030 |
| 2. WAREHOUSE WATER SYSTEM PUMP&ID P&ID | PC-1070 |
| 3. PROCESS GAS MONITOR SYS SD | 01-1030 |
| 4. HPMC AND INSTRUMENT SYMBOLS DIAGRAM | 410-3030 |
| 5. FUEL POOL COOLING & CLEANUP SYS P&ID | 84-1114 |
| 6. LCAE DETECTOR & ISOLATE SYS SD | 221-8041 |
| 7. HEATING, VENTILATING AND AIR CONDITIONING SYS P&ID | 041-810 |

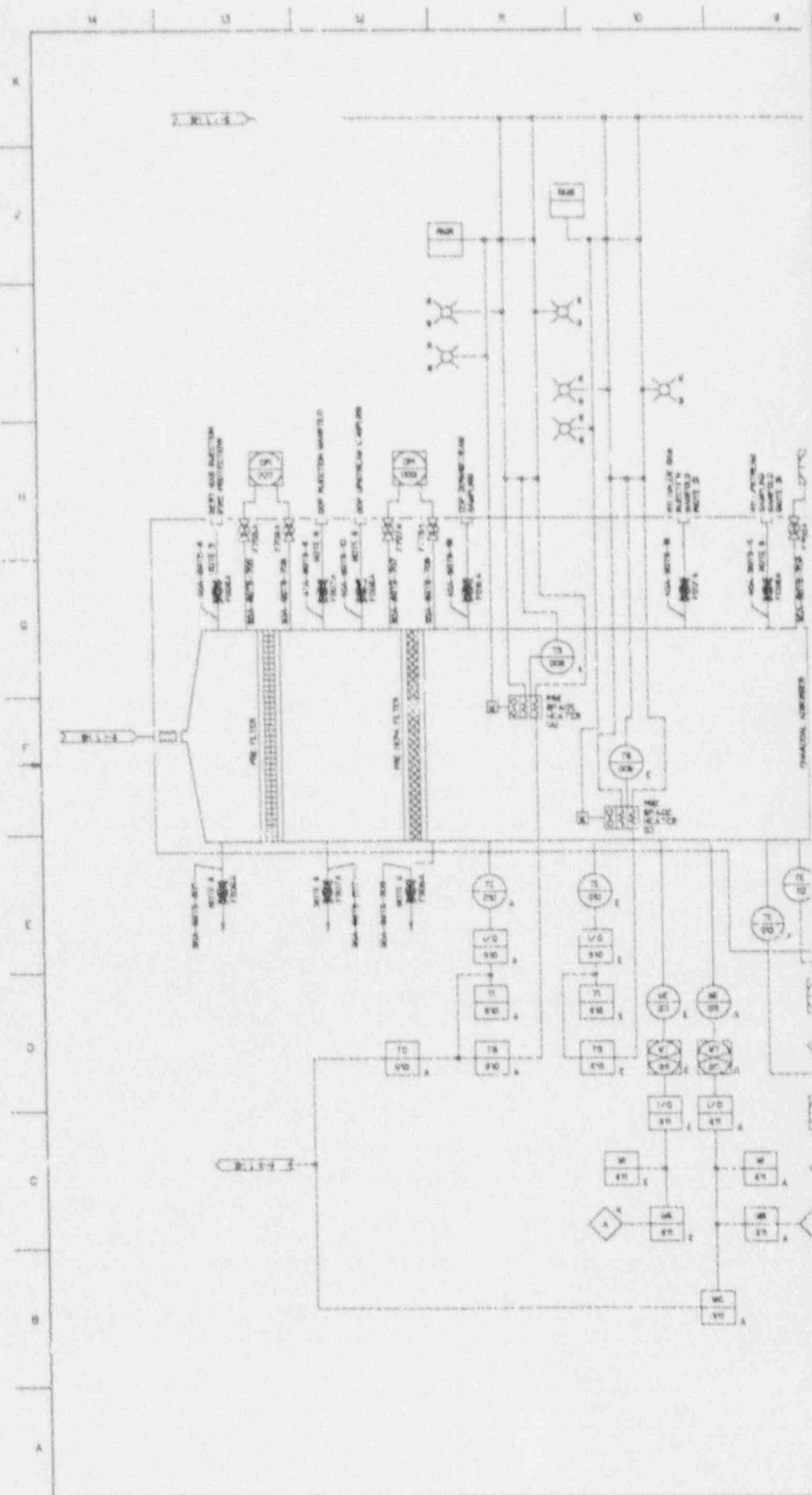


R/B NEGATIVE PRESSURE ISOLATION

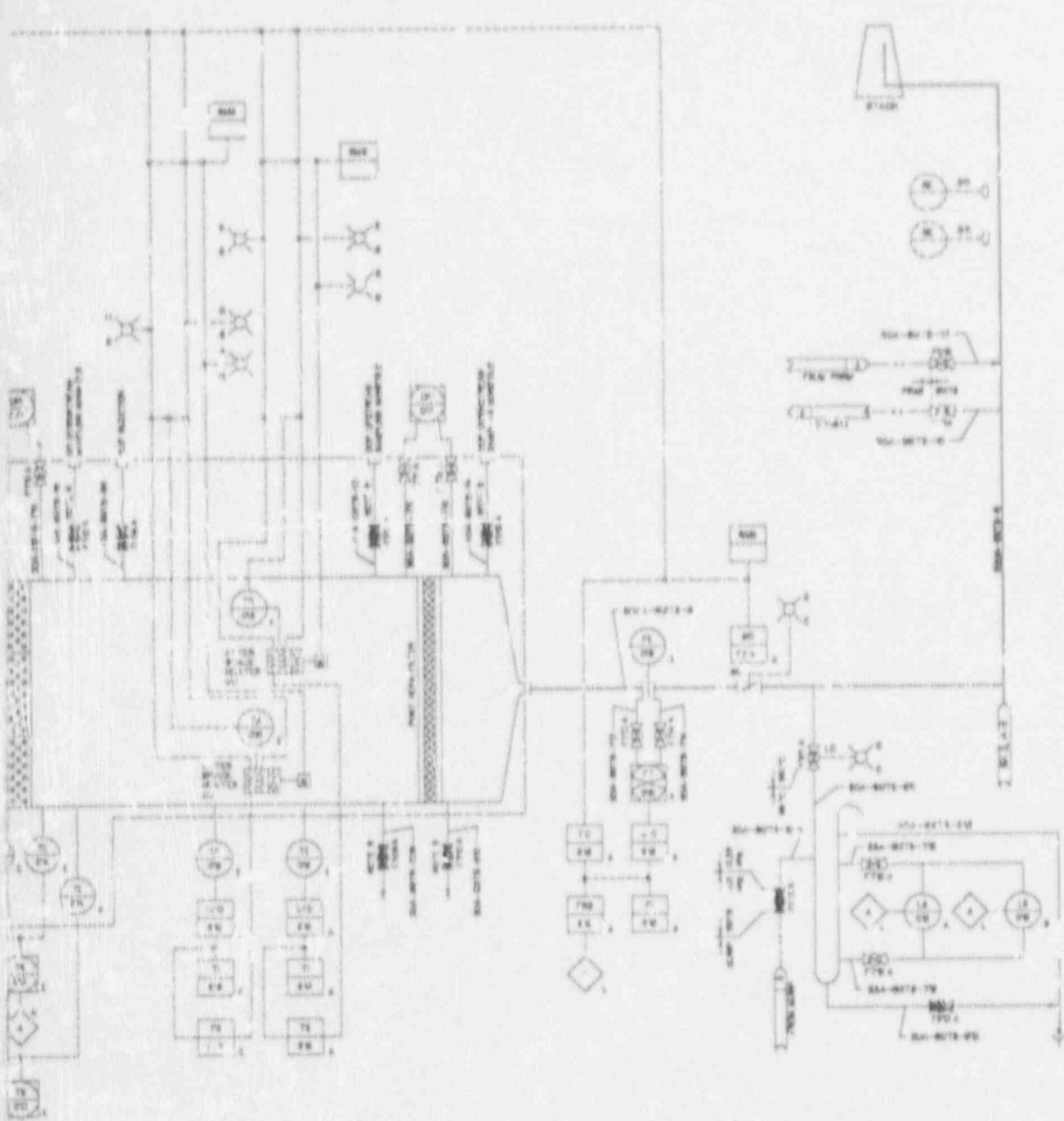
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Figure 6.5-1 STANDBY GAS TREATMENT SYSTEM P&ID (Sheet 1 of 3)



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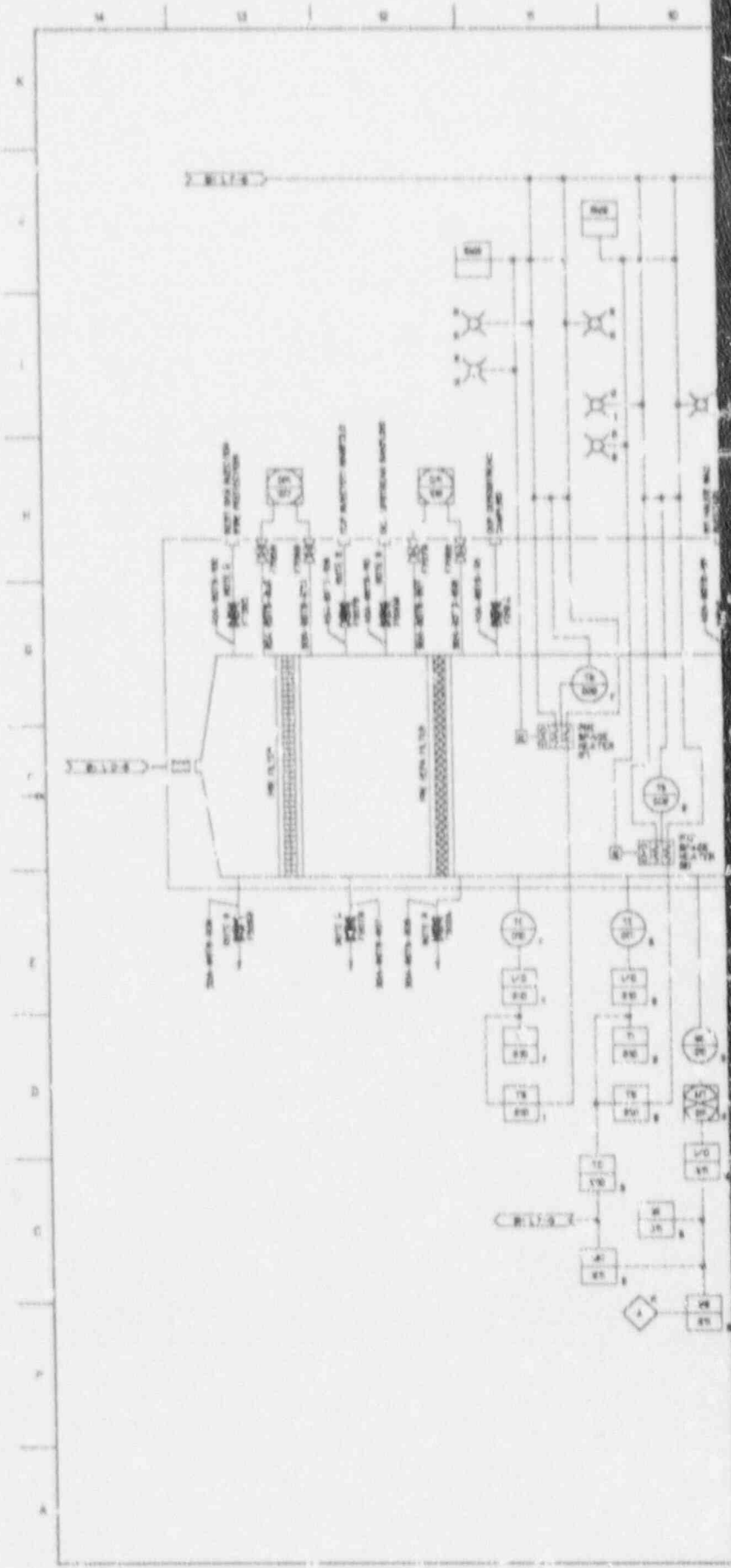
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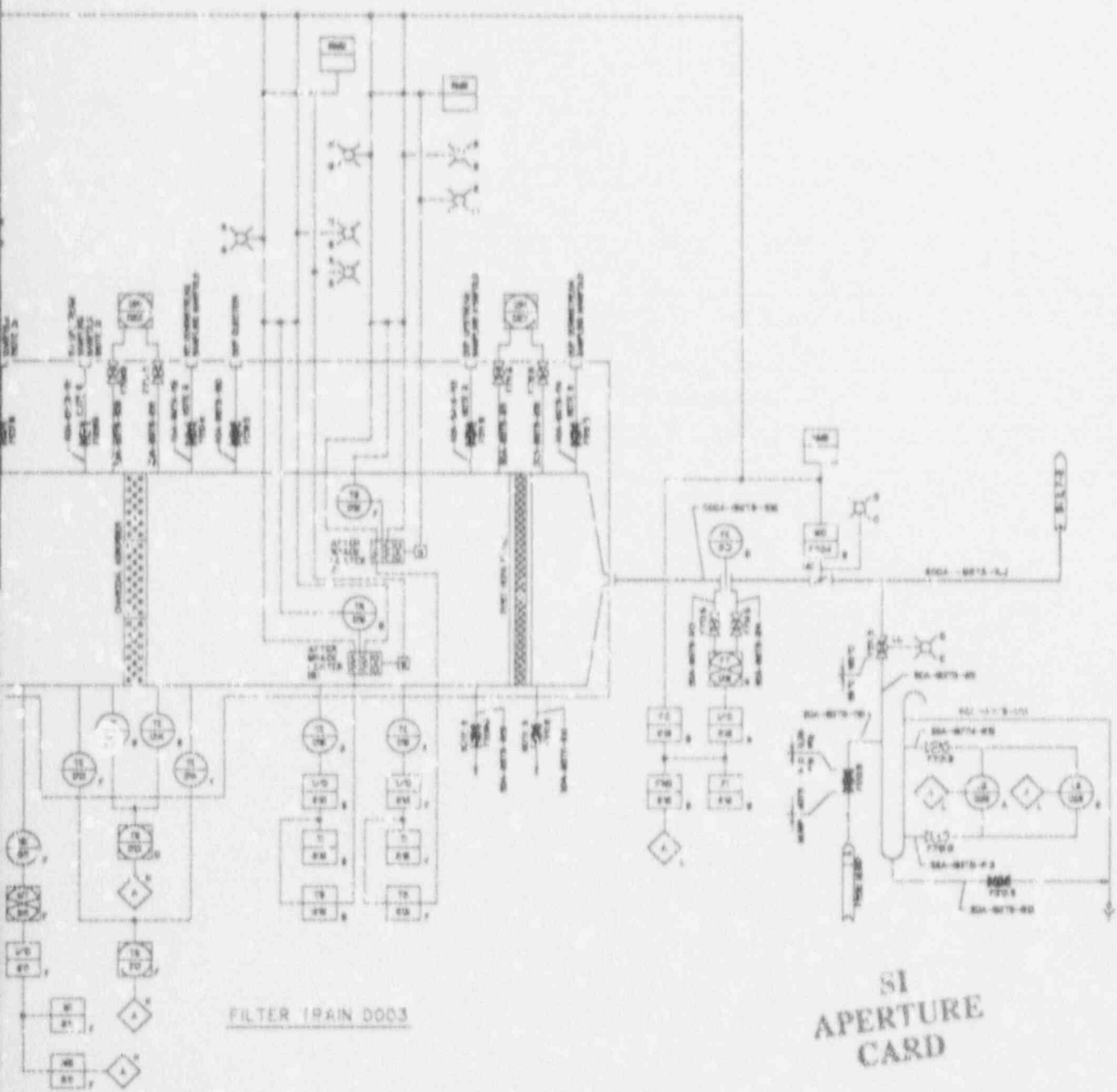
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Figure 6.5-1 STANDBY GAS TREATMENT SYSTEM P&ID (Sheet 2 of 3)



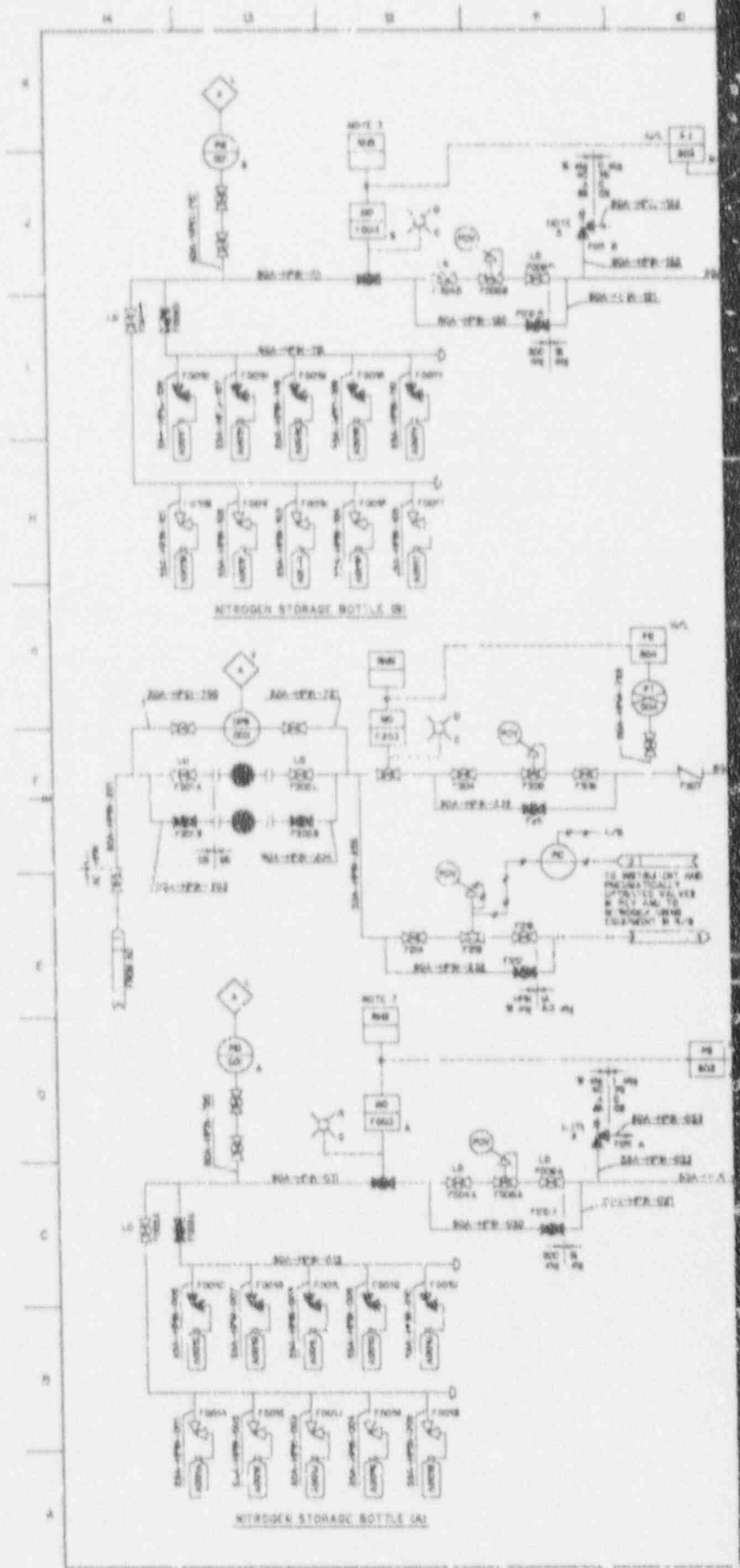


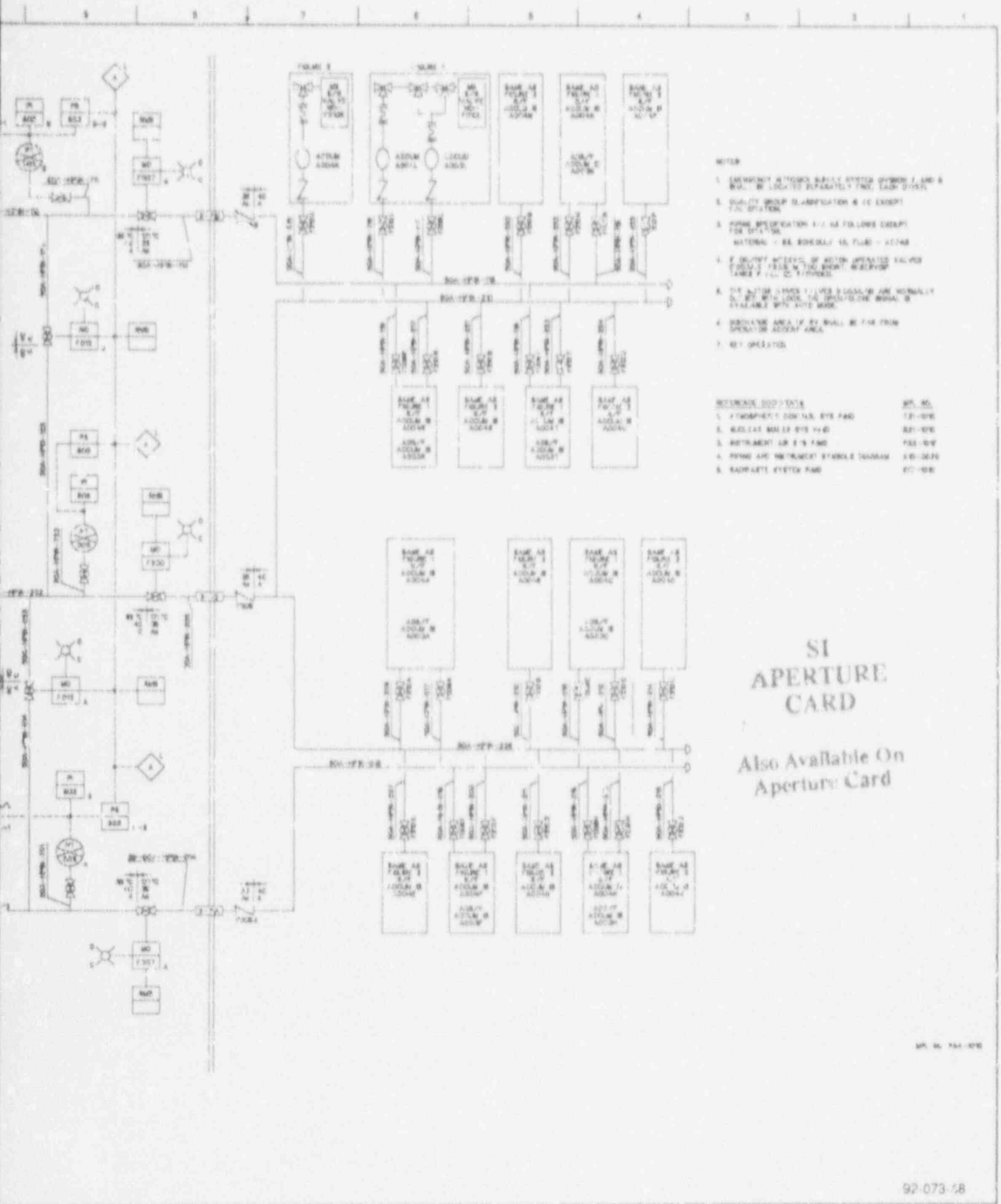
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Figure 6.5-1 STANDBY GAS TREATMENT SYSTEM P&ID (Sheet 3 of 3)





- NOTES
1. EQUIPMENT & TOWER SCHEDULE SYSTEMS (SYSTEM 1 AND 2) SHALL BE LOCKED SEPARATELY FROM EACH OTHER.
 2. QUALITY GROUP CLASSIFICATION IS CC EXCEPT T.C. SYSTEM.
 3. PUMP SPECIFICATION 1-1-16 FOLLOWS EXCEPT FOR SYSTEM. MATERIAL - AS SPECIFIED IN PLAN - AT 748.
 4. F. QUALITY GROUP OF MOTOR OPERATED VALVES (SYSTEM 1 & 2) IN THE EVENT RECEIVED TABLE 1-1-1-17 (REVISED).
 5. THE MOTOR OPERATED VALVES SPECIFIED ARE NORMALLY 2" BY 150 LB. CLASS. THE SPECIFIC SIGNAL IS AVAILABLE WITH THIS MARK.
 6. INSTRUMENT AREA 17 BY SHALL BE THE FROM OPERATOR ACCESS AREA.
 7. KEY SPECIFIED.

REFERENCE CONNECTIONS

REF. NO.	DESCRIPTION	REV. NO.
1.	ATMOSPHERIC CONDENSER STEAM PANO	12-1000
2.	WALL-LAT CONDENSER STEAM PANO	82-1000
3.	INSTRUMENT AIR 2" PANO	748-1000
4.	PUMP AND INSTRUMENT SYMBOLS TRAINING	100-1000
5.	RAJWATEL SYSTEM PANO	87-1000

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REV. 10, 748-1000

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Figure 6.7-1 NITROGEN GAS SUPPLY SYSTEM P&ID

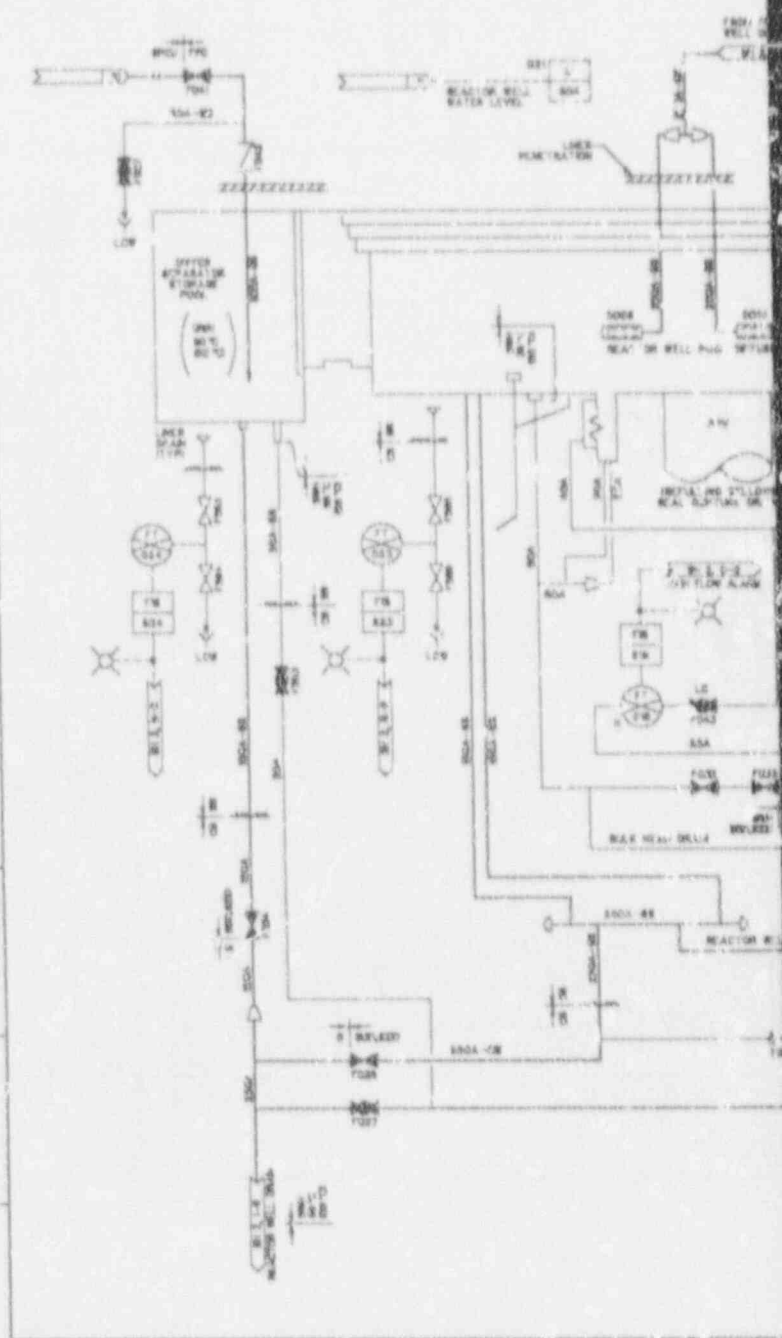
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NOTE:

- 1. ALL EQUIPMENT AND INSTRUMENTS ARE PROVIDED BY THE USER UNLESS OTHERWISE NOTED.
- 2. HEAT AND BEAR VALUES ARE REQUIRED AT ALL OPERATING POINTS AND POINTS NOTED BY EQUIPMENT SUPPLY VENTS AND DRAWING.
- 3. WATER PUMP IDENTIFICATION: (A) UNLESS OTHERWISE NOTED.

ITEM	APPLICATION
DESIGN OPERATING PRESSURE (psig)	150
DESIGN OPERATING TEMPERATURE (°F)	300
DESIGN OPERATING TEMPERATURE (°C)	150
DESIGN CATEGORY	UNCLASSIFIED
DESIGN FLUID	WATER
DESIGN MATERIAL	STEEL
DESIGN THICKNESS	NO. AND SMALLER NO. 10
DESIGN CLASS	NO. AND LARGER NO. 10
DESIGN CLASS	QUALITY CLASS 4B

- 4. ALL INSTRUMENTS, VALVES AND CONTROLS ARE PROVIDED BY THE USER UNLESS OTHERWISE NOTED.
- 5. TEMPERATURE INPUT ONLY POINTS ARE SHOWN.
- 6. ALL SYSTEM TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS.



THE LOWTY AND ALARM
IN THE MAIN CONTROL ROOM
SHOULD BE AND THE EMERGENCY STOP VALVE
CLOSE TO OTHER VALVES IN THE MAIN CONTROL ROOM
SHOULD BE MAINTAINED OPEN.

NO OILCUTTING SHOULD BE USED BY THE
CONCRETE STRUCTURE BY THE

OR LIQUIDS SHOULD BE INSTALLED NEAR
THE VALVE TUBES

OR CONDENSER TANKS,

OR

OR

1. TO BE FOR THE VALVE AND TO BE CLOSED BY LOCAL OPERATOR
OR TO BE FOR THE VALVE AND TO BE CLOSED BY LOCAL OPERATOR

2. ALL AIR SUPPLY VALVES TO BE OPEN BY LOCAL OPERATOR
OR TO BE FOR THE VALVE AND TO BE CLOSED BY LOCAL OPERATOR

3. NO VALVES OR INSTRUMENTS ARE TO BE LOCATED IN THE BOREHOLE
TEMPERATURE CONTAINER AT THE INSTRUMENT SITE

4. A CONDENSER TANK IS TO BE LOCATED FROM THE LOCAL OPERATOR
OR TO BE FOR THE VALVE AND TO BE CLOSED BY LOCAL OPERATOR

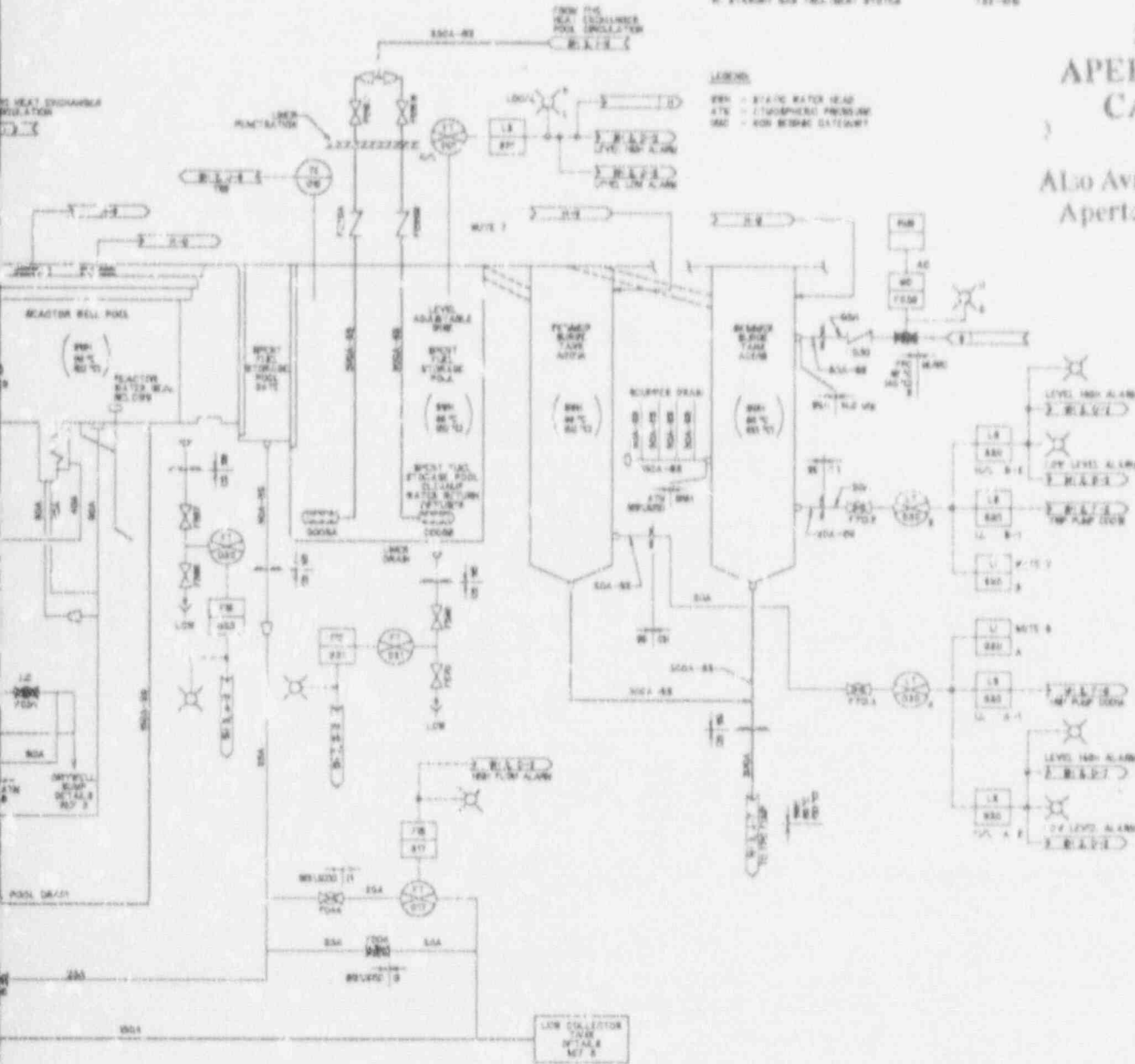
5. VALVE TUBES TO BE INSTALLED NEAR THE VALVE TUBES
OR TO BE FOR THE VALVE AND TO BE CLOSED BY LOCAL OPERATOR

REFERENCE DOCUMENTS

NO.	DESCRIPTION	REF. NO.
1.	PIPING AND INSTRUMENT SYMBOLS DIAGRAM	410-3000
2.	FUEL POOL COOLING & CLEANUP SYSTEM P&ID	921-0000
3.	FUEL POOL COOLING & CLEANUP SYSTEM P&ID	921-0001
4.	REACTOR SYSTEM P&ID	114-100
5.	SAPWASTE SYSTEM P&ID	115-100
6.	WATER TREATMENT SYSTEM P&ID	116-100
7.	REACTOR WATER CLEANUP SYSTEM P&ID	117-100
8.	REACTOR WATER CLEANUP SYSTEM P&ID	118-100
9.	REACTOR WATER CLEANUP SYSTEM P&ID	119-100
10.	REACTOR WATER CLEANUP SYSTEM P&ID	120-100
11.	REACTOR WATER CLEANUP SYSTEM P&ID	121-100
12.	REACTOR WATER CLEANUP SYSTEM P&ID	122-100
13.	REACTOR WATER CLEANUP SYSTEM P&ID	123-100
14.	REACTOR WATER CLEANUP SYSTEM P&ID	124-100

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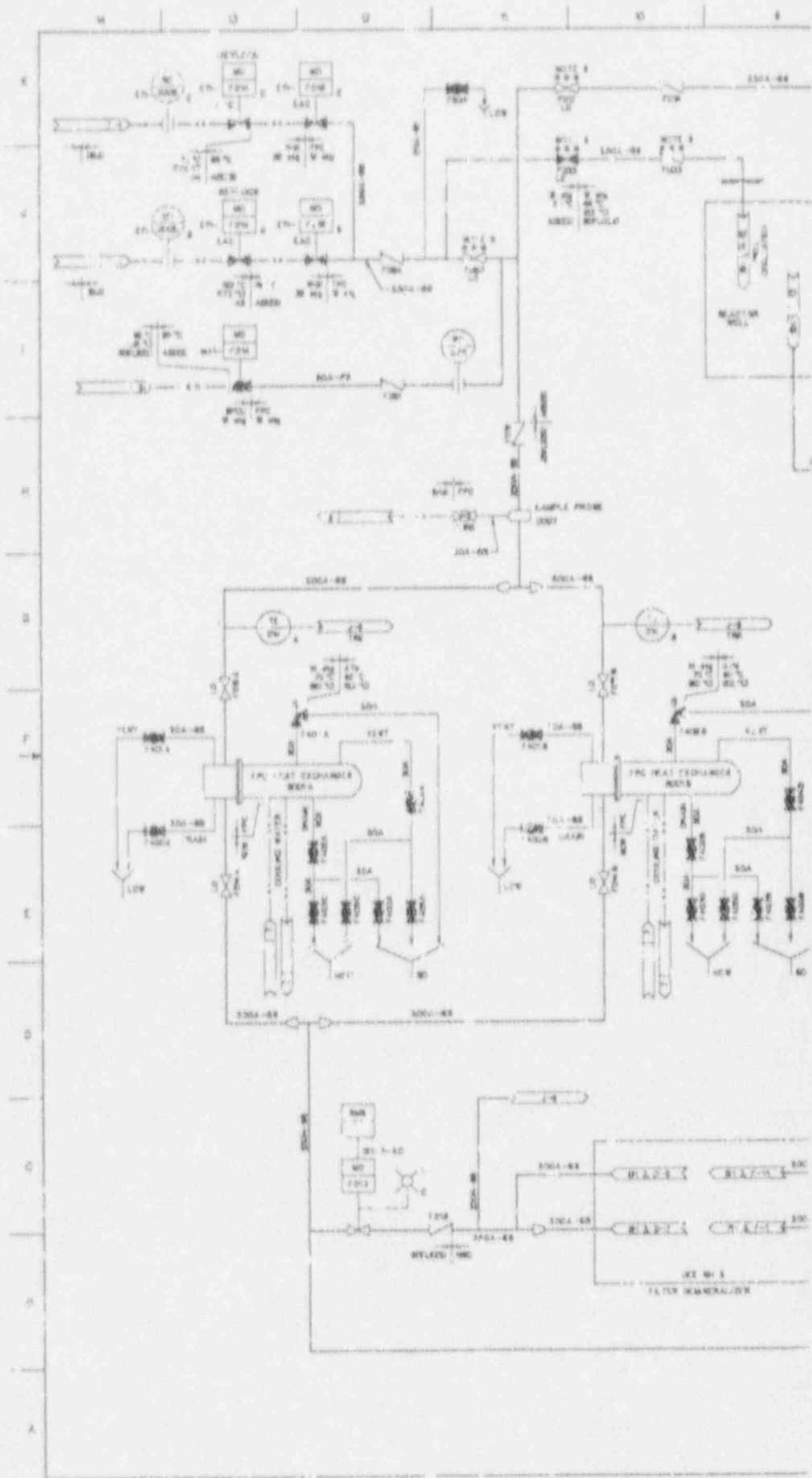
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Figure 9.1-1 FUEL POOL COOLING AND CLEANUP SYSTEM P&ID (Sheet 1 of 3)



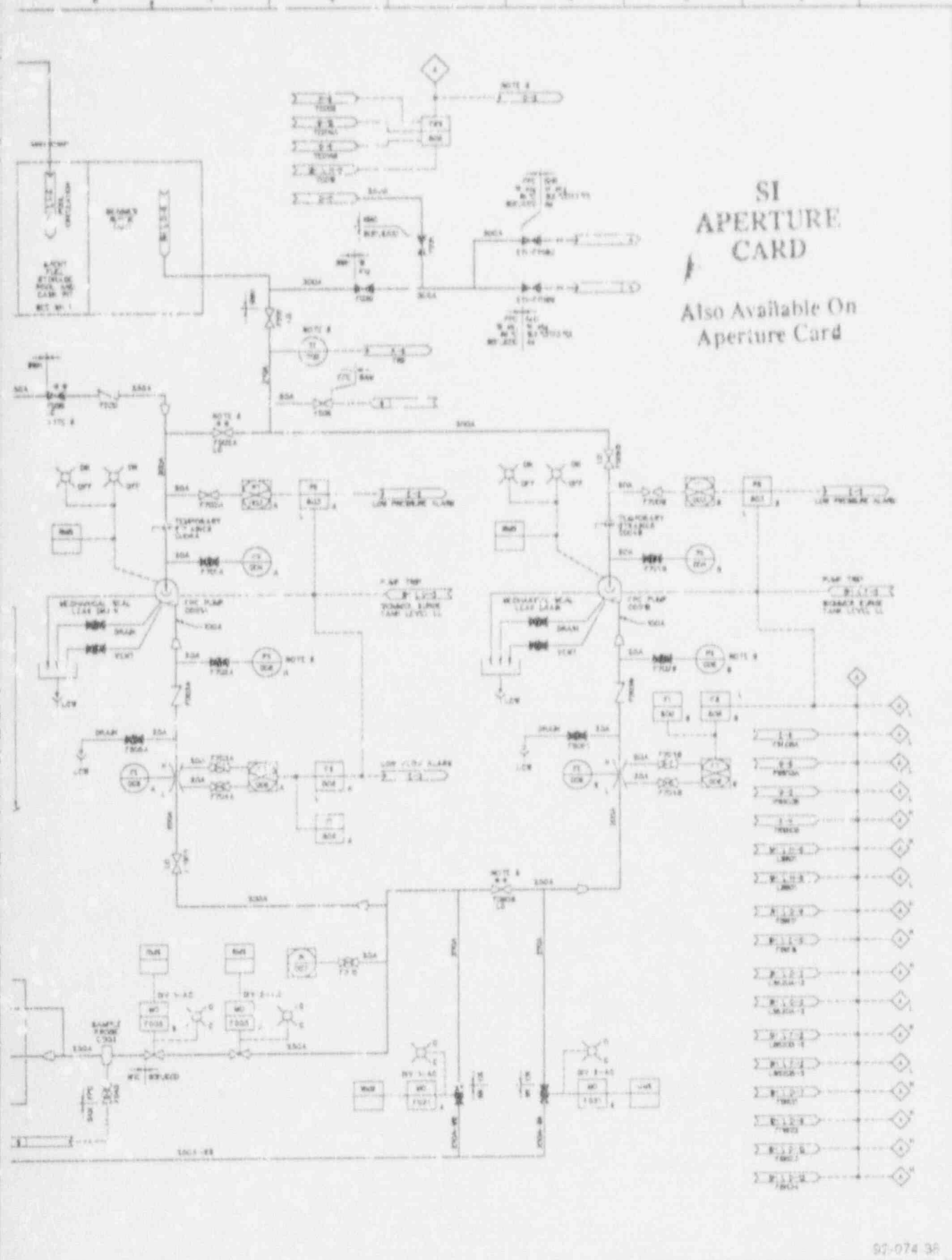
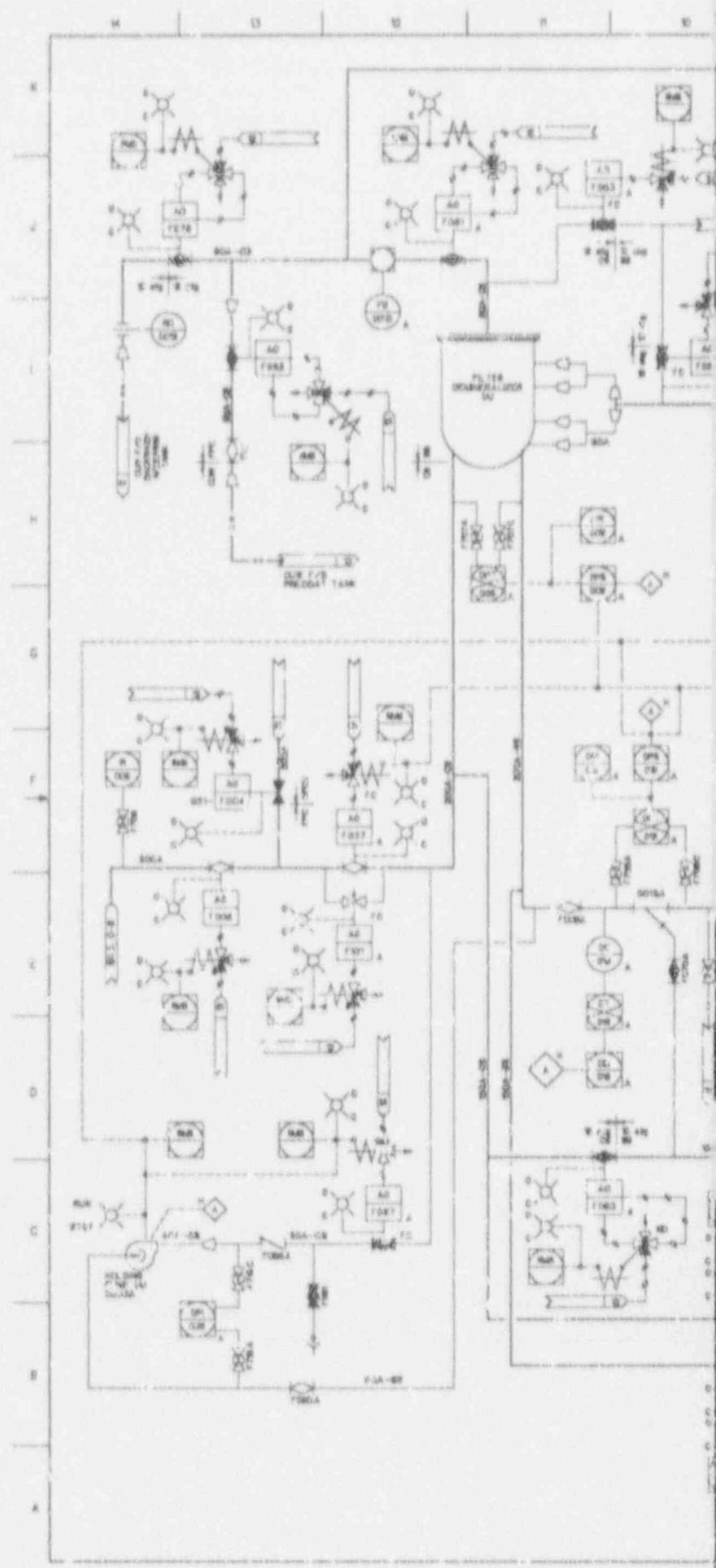
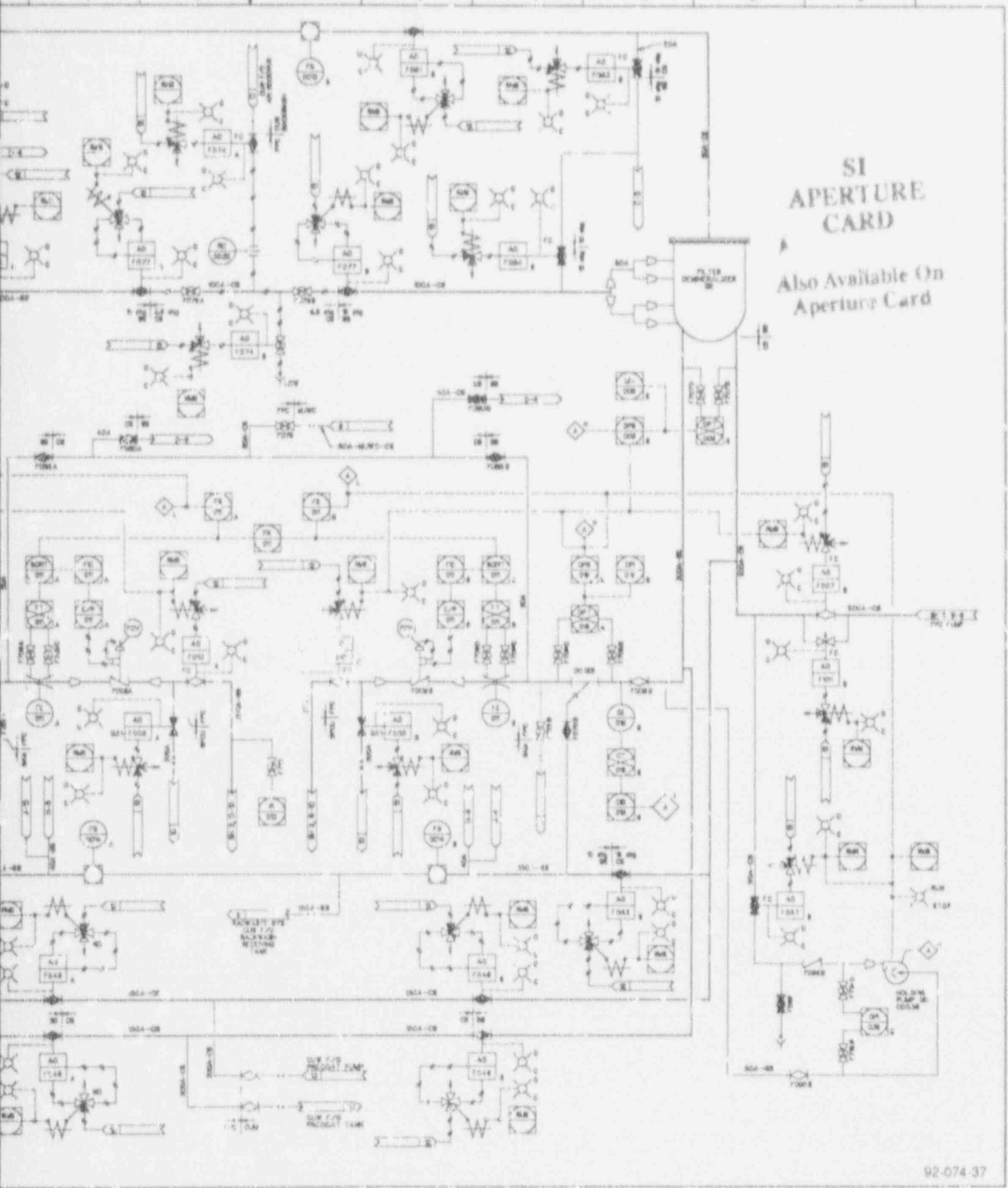


Figure 9.1-1 FUEL POOL COOLING AND CLEANUP SYSTEM P&ID (Sheet 2 of 3)

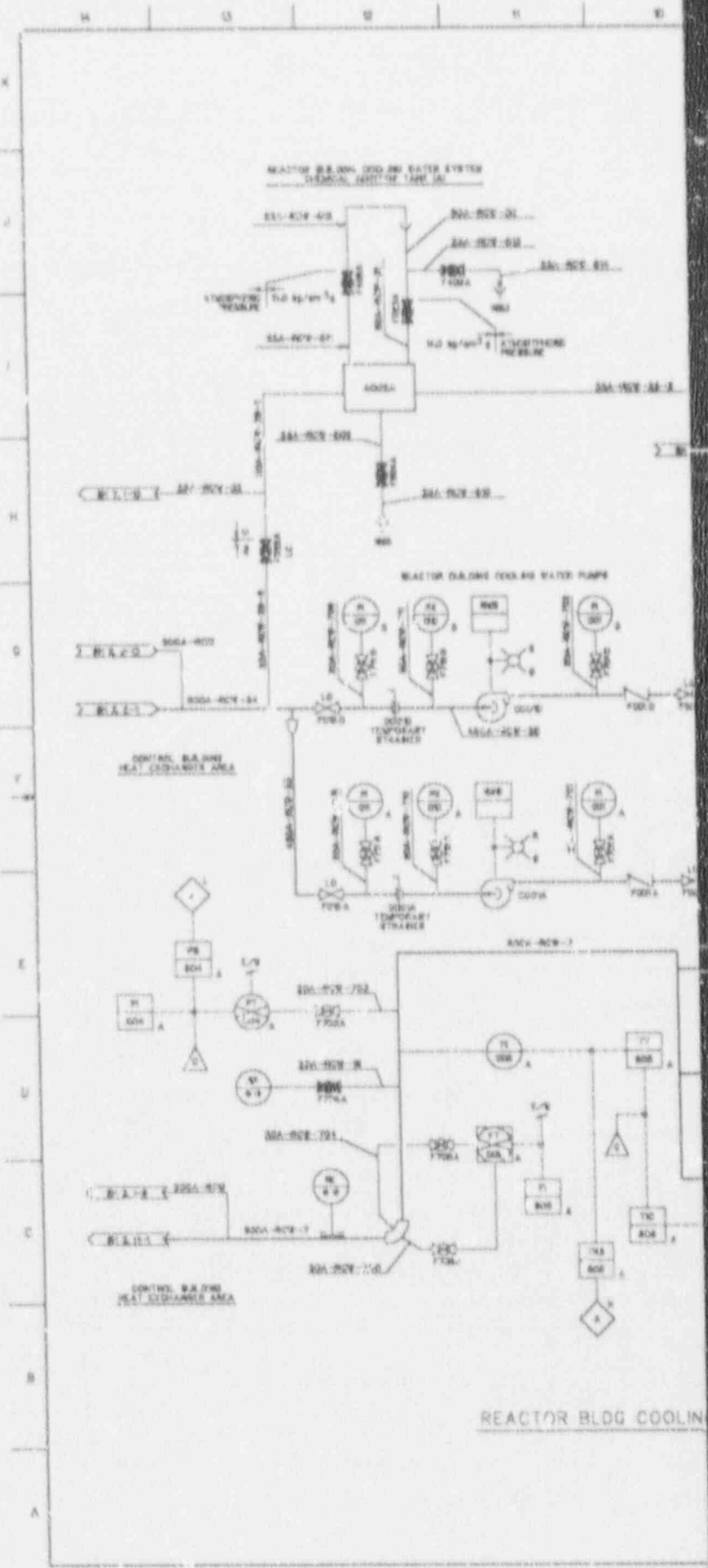


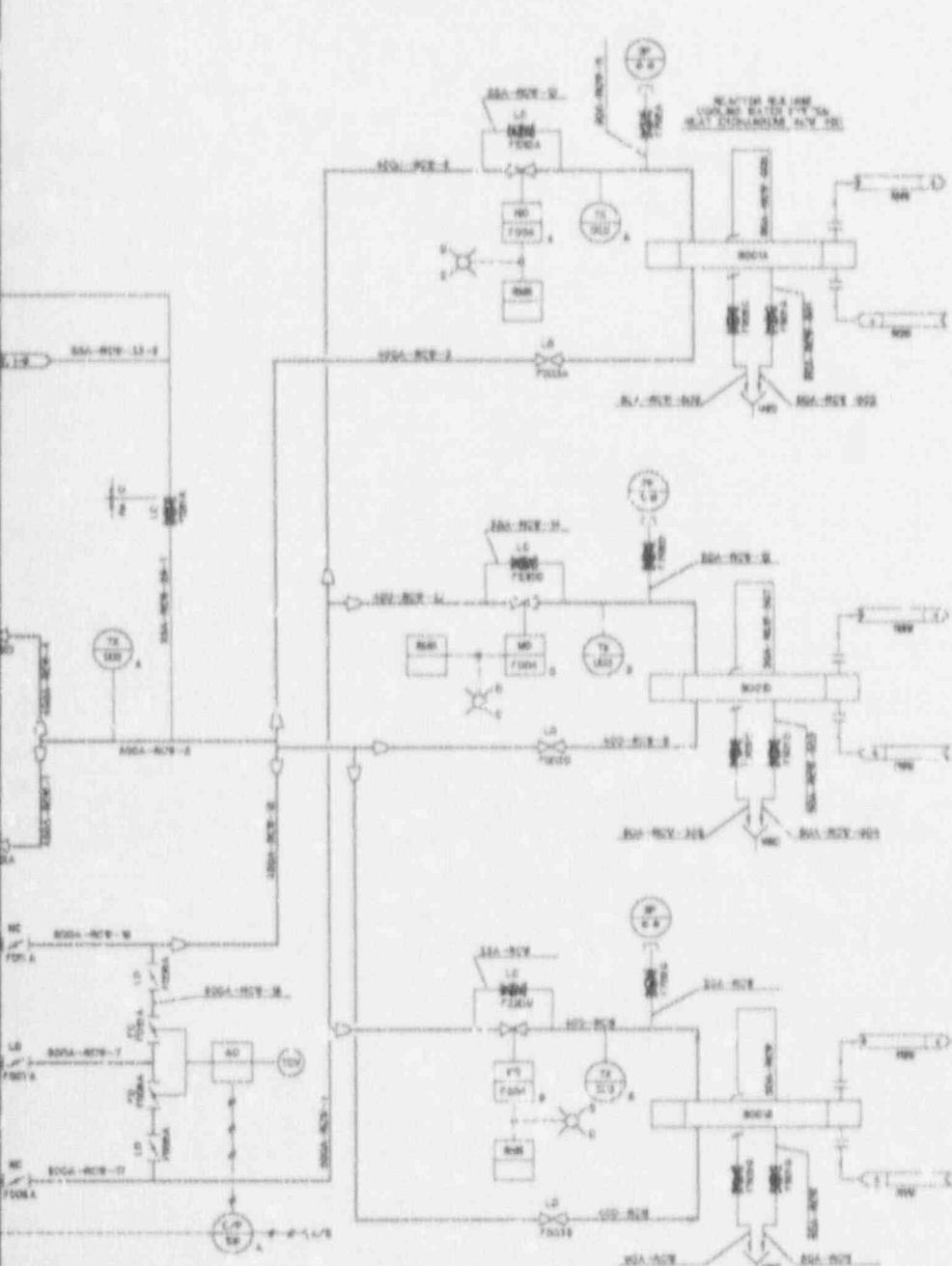


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Figure 9.1-1 FUEL POOL COOLING AND CLEANUP SYSTEM P&ID (Sheet 3 of 3)





METER

1. THE FOLLOWING METER SPECIFICATIONS ARE APPLIED UNLESS OTHERWISE NOTED.

ITEM	APPLICATION
SCREEN PRESSURE	30" H ₂ O
SCREEN TEMPERATURE	30 °F
MAX OPERATING TEMP	10 °F
PIPE MATERIAL	CARBON STEEL
FACE SEAL	304 AND 316
FACE SEAL	304 AND 316
FACE SEAL	316
FLUID	DEMINERALIZED WATER
WEIGHT CLASS	AS CLASS C 0.400

- THE HEATING BULB OF EACH METER IS TO BE 1/2" LONG AND RECOMMENDED SUPPLY AND RETURN LINE SIZE SHALL BE 1/2" NPT. THE HEATING FLUID METER WILL CONNECT TO 1/2" NPT.
- THE FOLLOWING VALVE SIZES ARE LOCATED AT THE CLEARANCE:
 - (A) SHUT-TURN DISCHARGE LINE STOP VALVE
 - (B) REACTOR BUILDING LINE SHUT-OFF VALVE
 - (C) 1/2" SAMPLE ETC. PRIMARY VALVE
- THE TEMPERATURE MEASUREMENT ELEMENTS SHALL BE LOCATED AT THE CLEARANCE FROM THE COOLING WATER BELL AS APPROPRIATELY SIZED.
- TYPE OF THE STAINER BODY CAN BE CHANGED.

REFERENCE DOCUMENT

REF. NO.	DESCRIPTION	REV. NO.
1	PROCESS AND INSTRUMENT SYMBOL DIAGRAM	100-1000
2	REACTOR BUILDING WATER SYSTEM	100-1000
3	COMPONENT INSTRUMENTATION AND OTHER ETC. NO.	100-1000
4	REACTOR BUILDING WATER SYSTEM	100-1000
5	REACTOR BUILDING WATER SYSTEM	100-1000
6	REACTOR BUILDING WATER SYSTEM	100-1000
7	REACTOR BUILDING WATER SYSTEM	100-1000
8	REACTOR BUILDING WATER SYSTEM	100-1000
9	REACTOR BUILDING WATER SYSTEM	100-1000
10	REACTOR BUILDING WATER SYSTEM	100-1000
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12	REACTOR BUILDING WATER SYSTEM	100-1000
13	REACTOR BUILDING WATER SYSTEM	100-1000
14	REACTOR BUILDING WATER SYSTEM	100-1000
15	REACTOR BUILDING WATER SYSTEM	100-1000
16	REACTOR BUILDING WATER SYSTEM	100-1000
17	REACTOR BUILDING WATER SYSTEM	100-1000
18	REACTOR BUILDING WATER SYSTEM	100-1000
19	REACTOR BUILDING WATER SYSTEM	100-1000
20	REACTOR BUILDING WATER SYSTEM	100-1000
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28	REACTOR BUILDING WATER SYSTEM	100-1000
29	REACTOR BUILDING WATER SYSTEM	100-1000

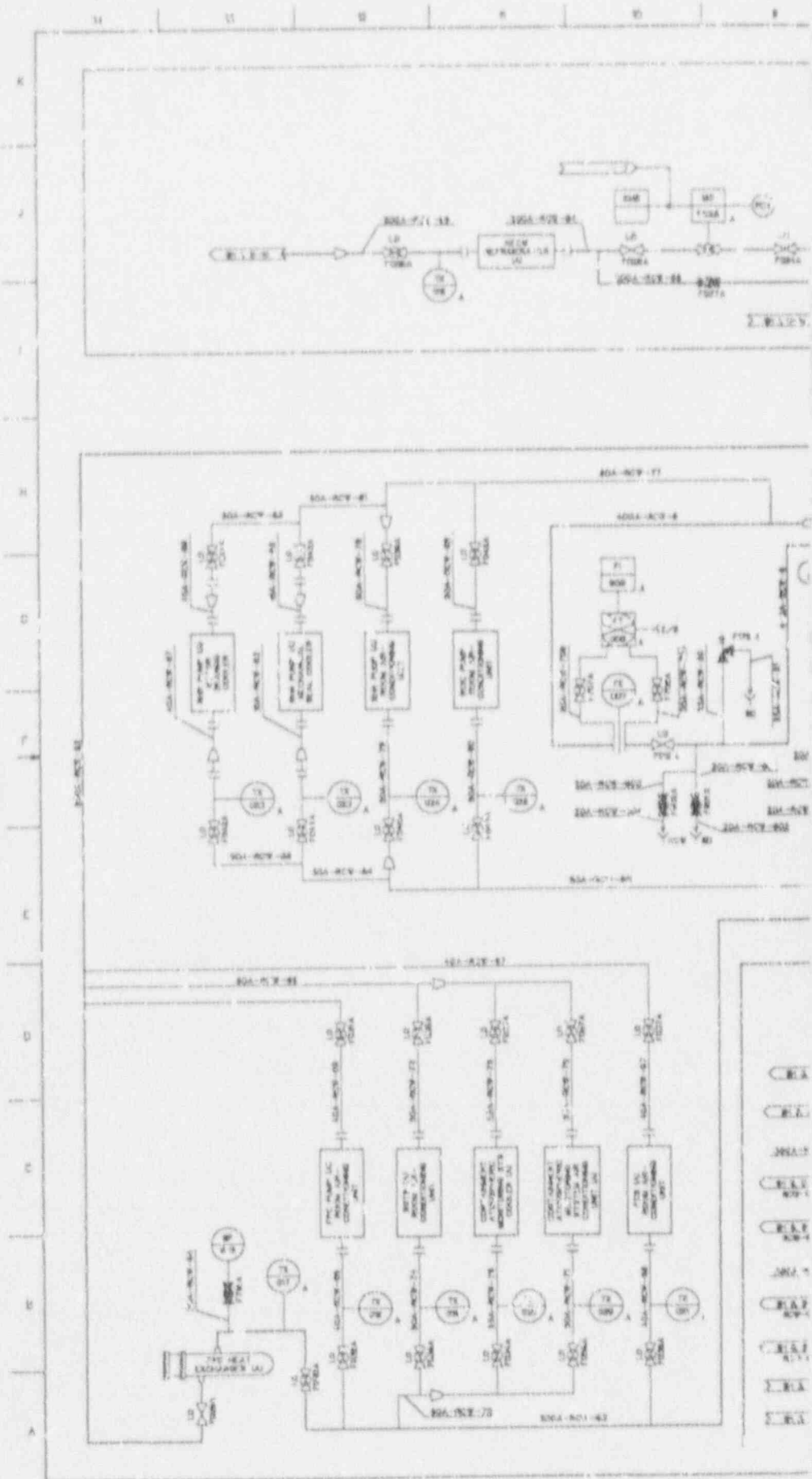
LEGEND
 P - SUBSTITUTION BY THE OTHER ETC
 (F) - FLOAT LINE FLOW SWITCH

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Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 1 of 9)

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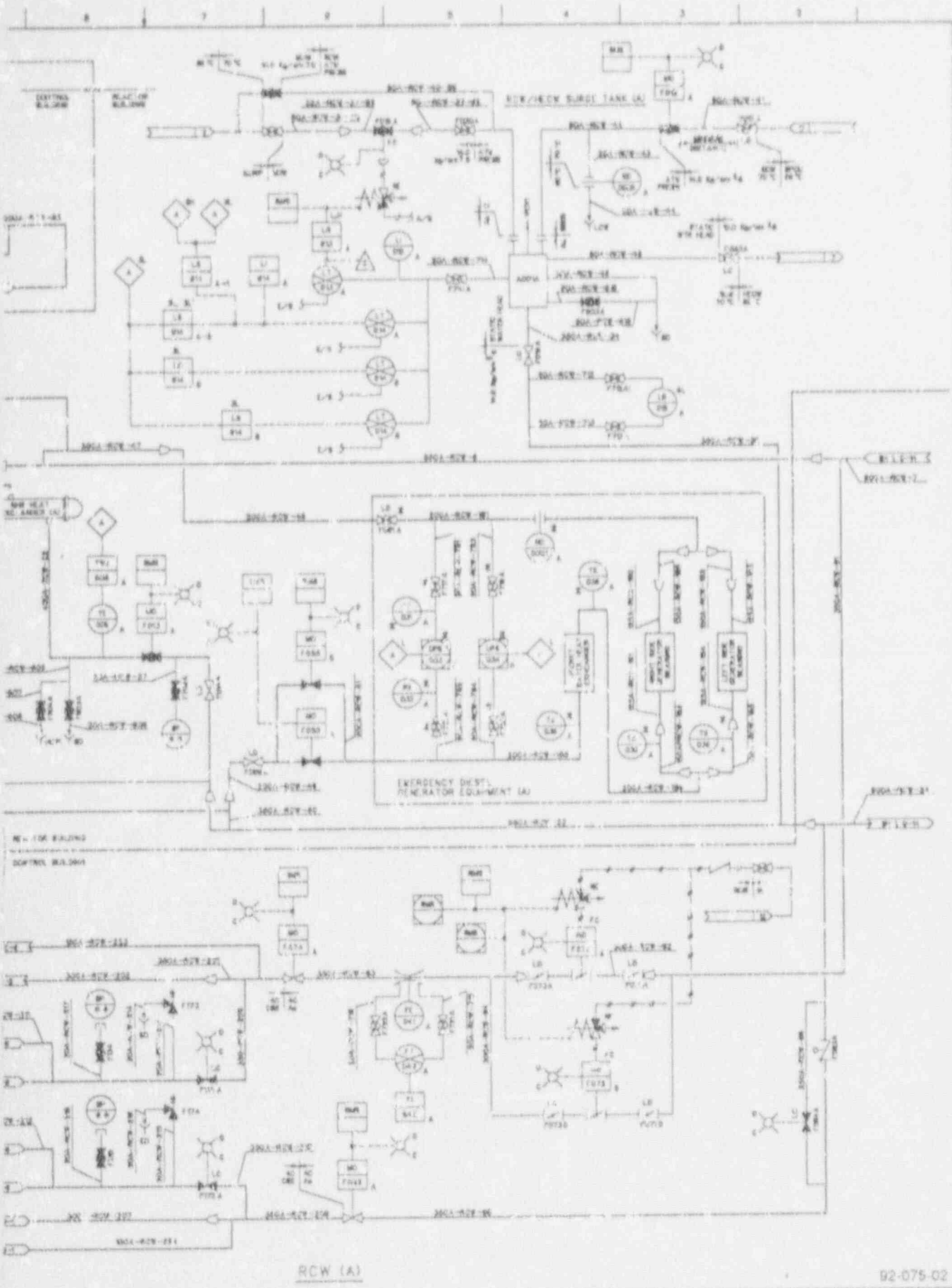
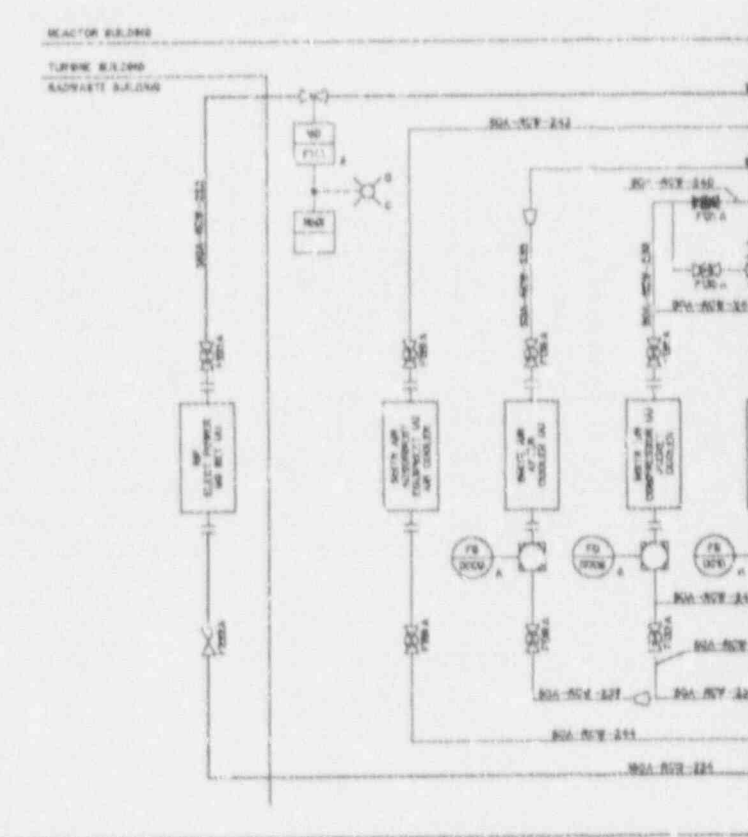
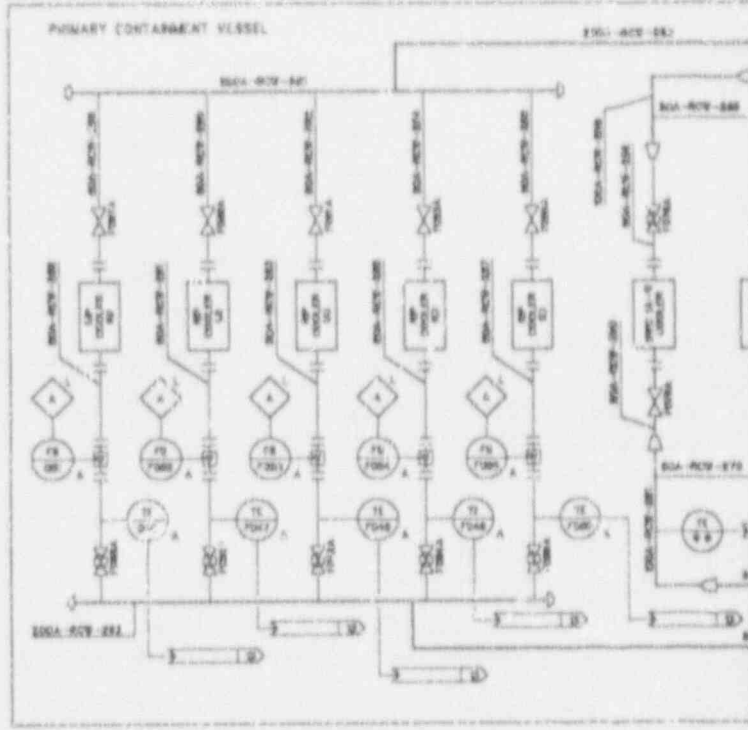


Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 2 of 9)

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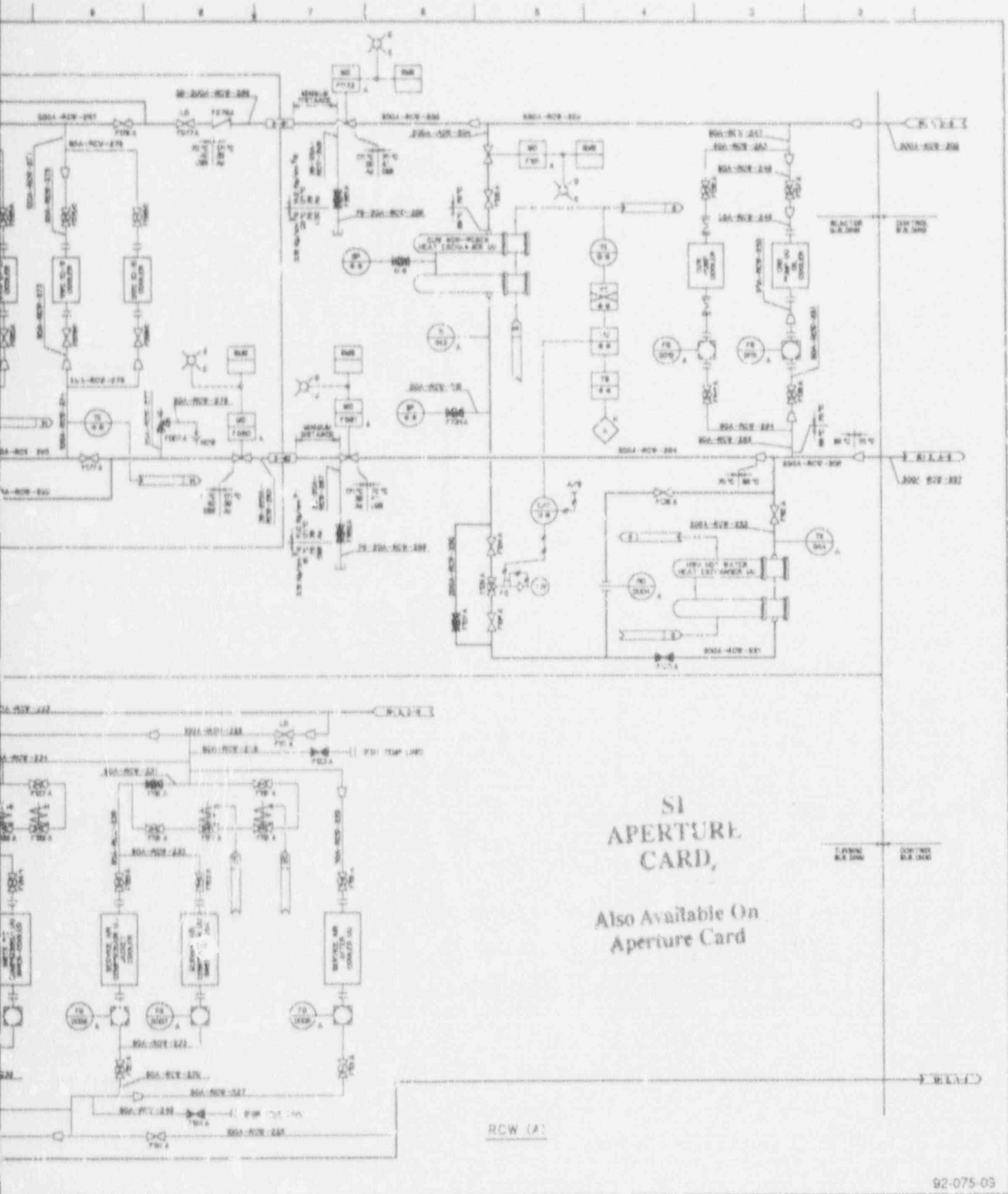
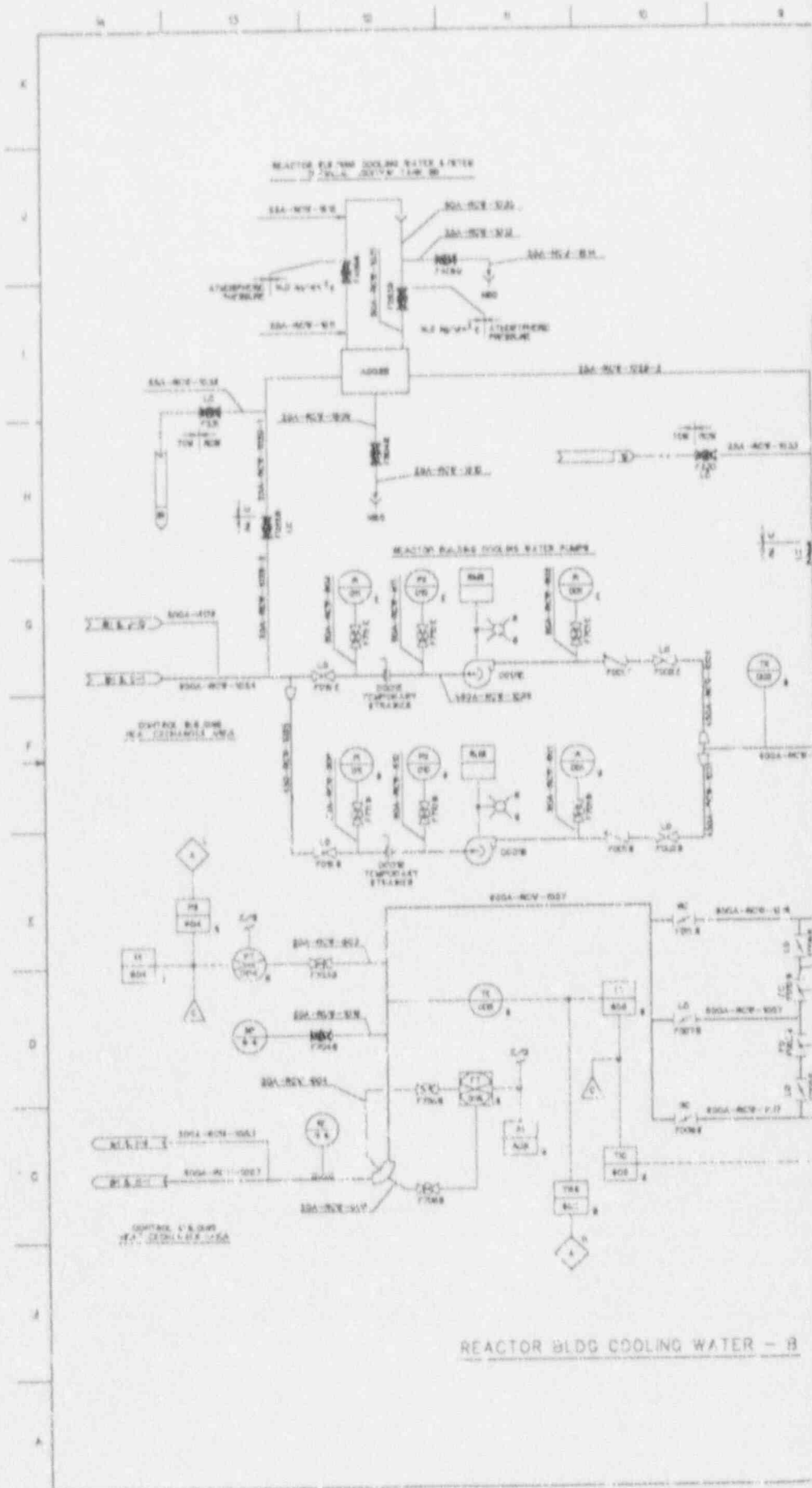
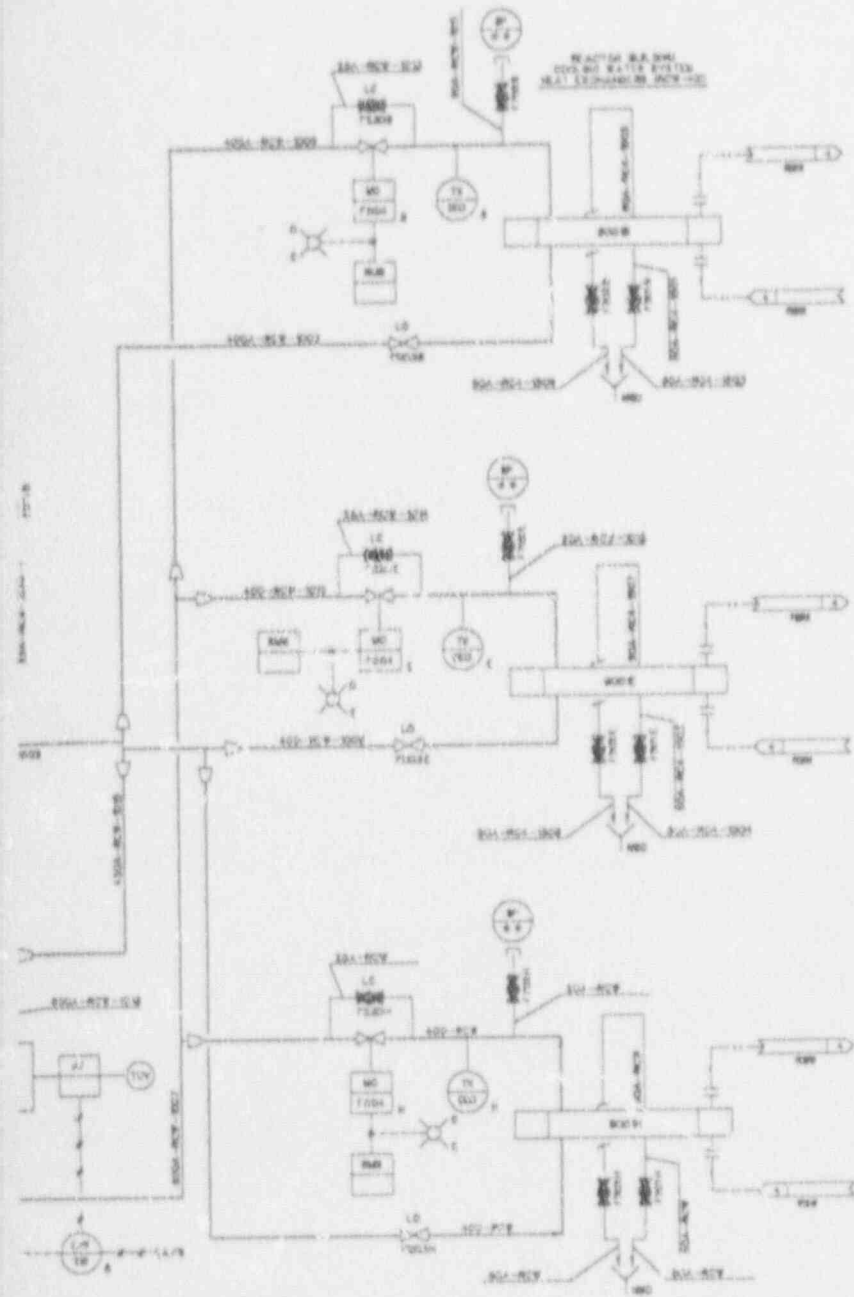


Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 3 of 9)

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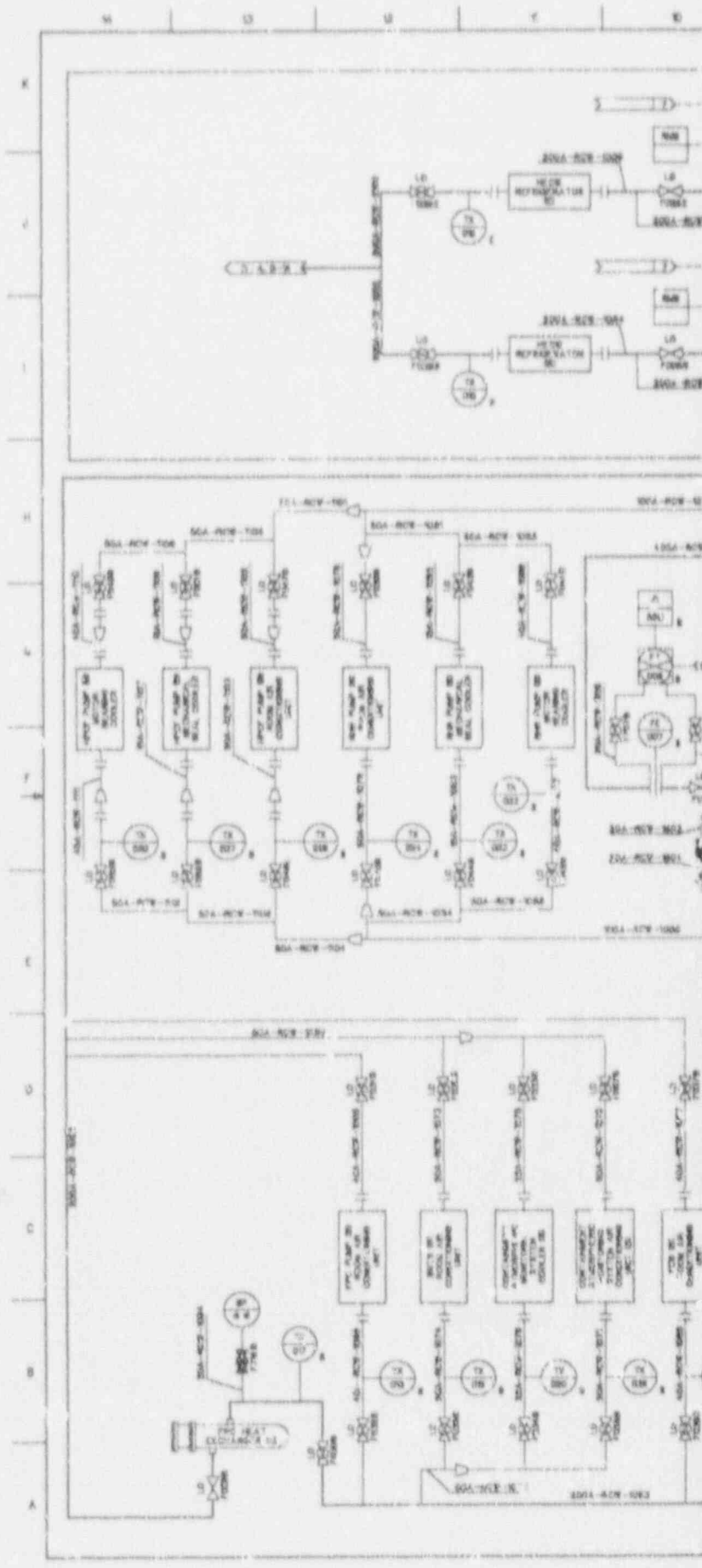
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Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 4 of 9)

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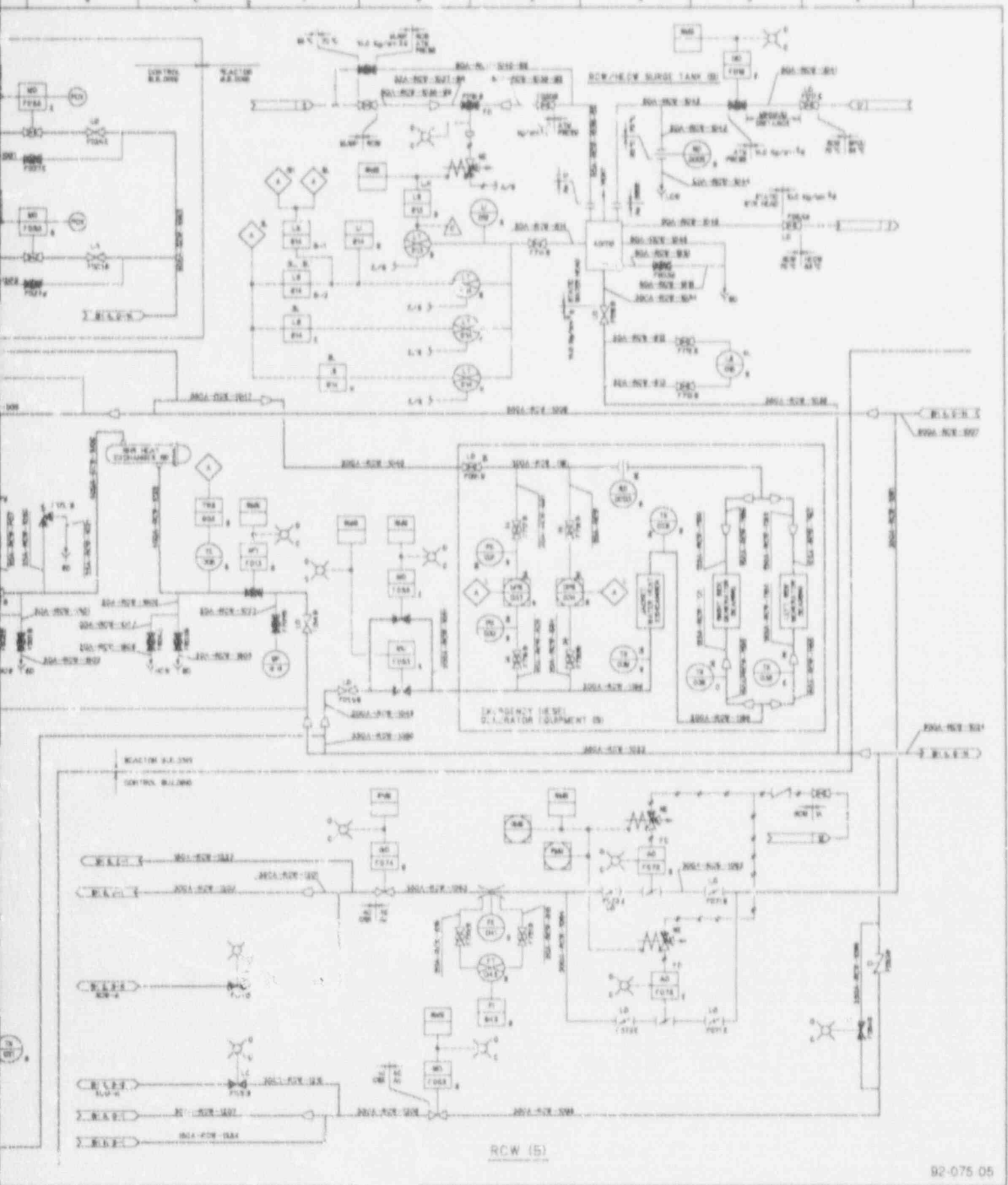
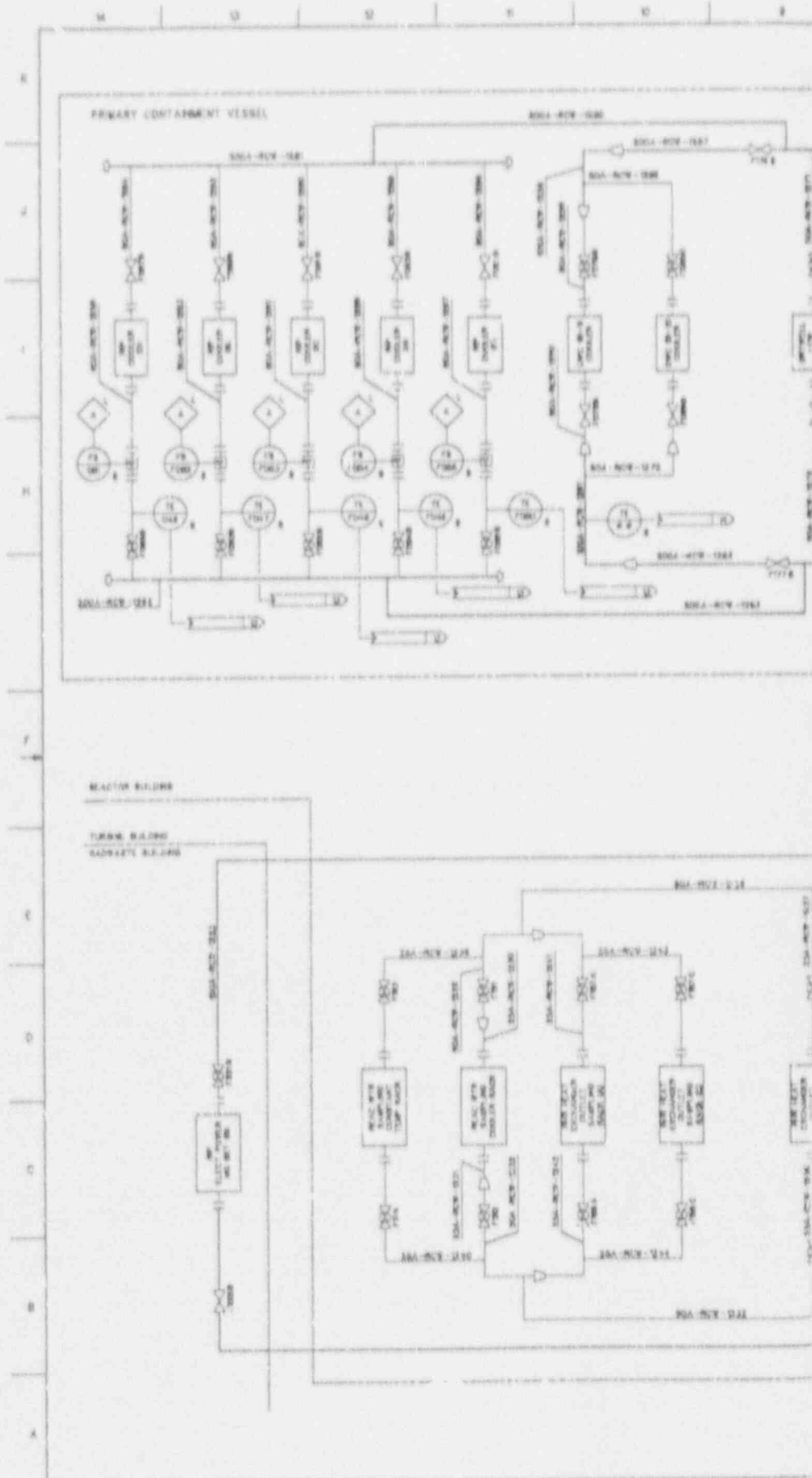
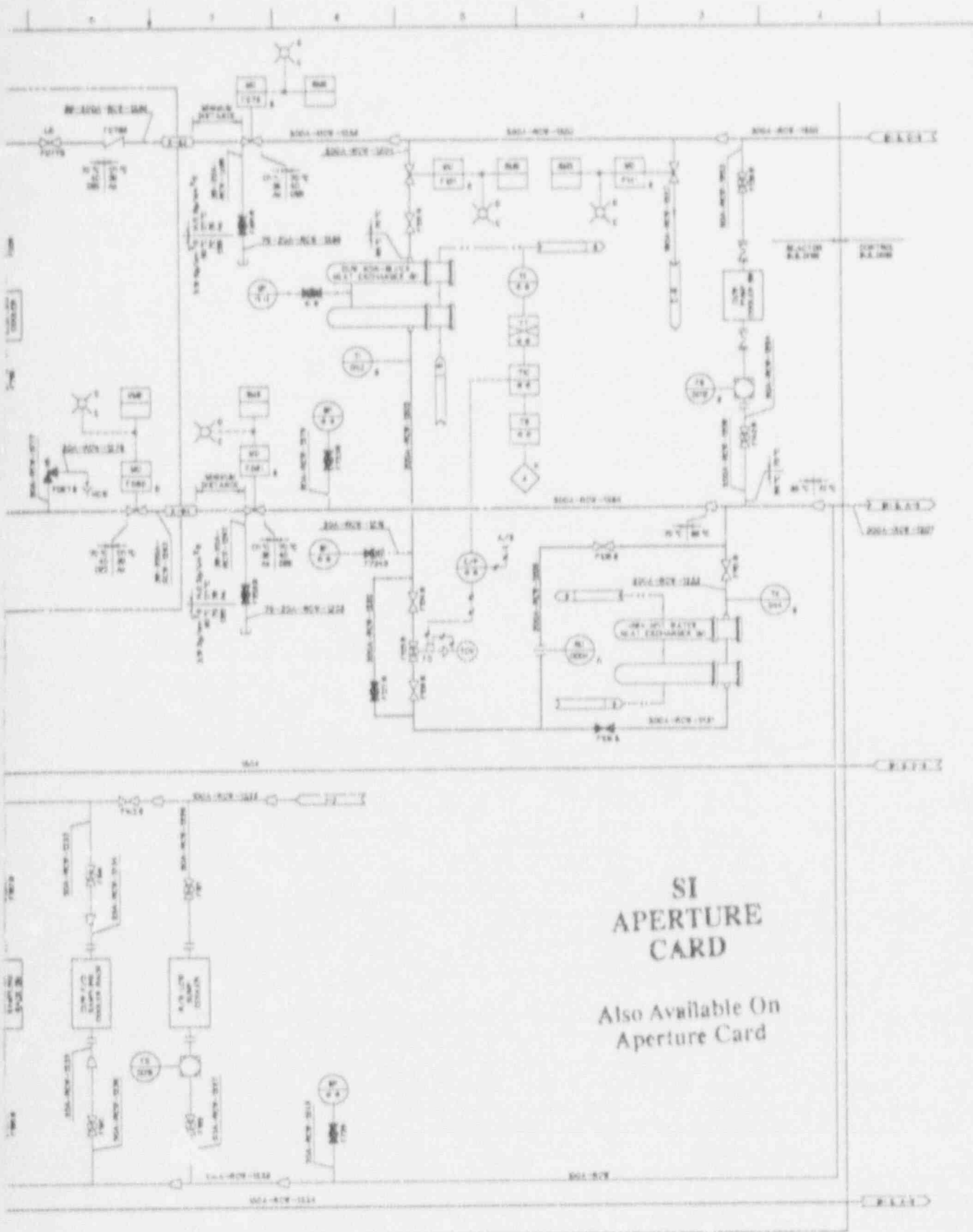


Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 5 of 9)





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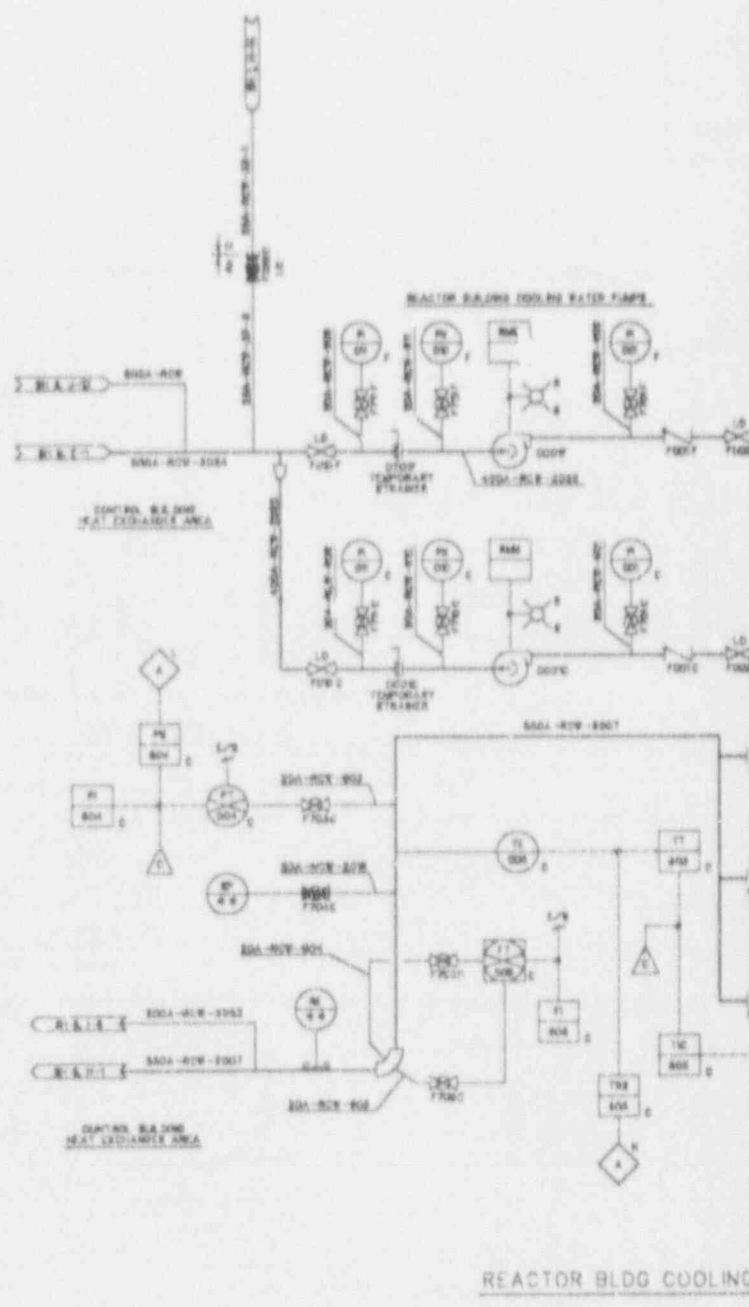
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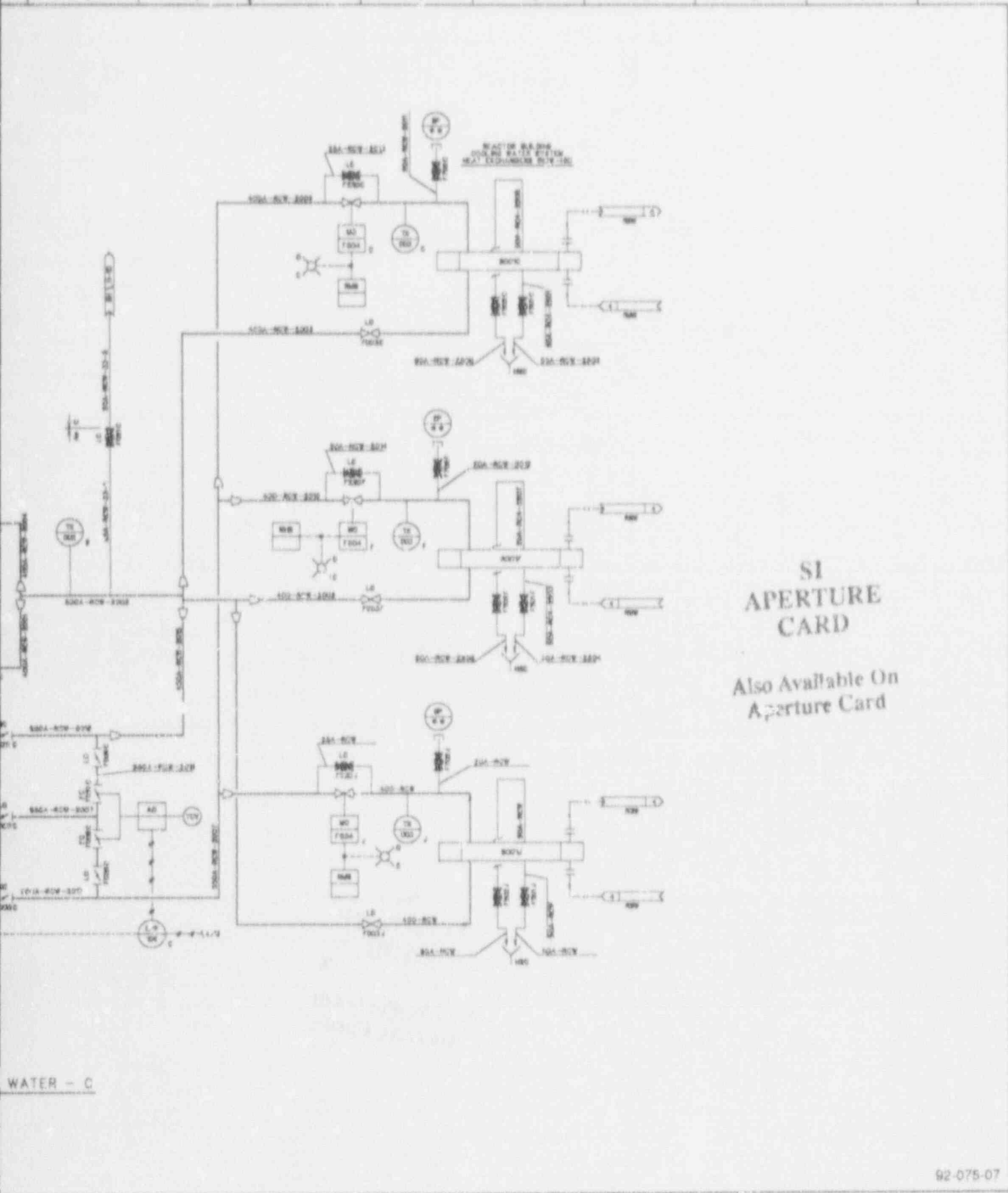
Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 6 of 9)

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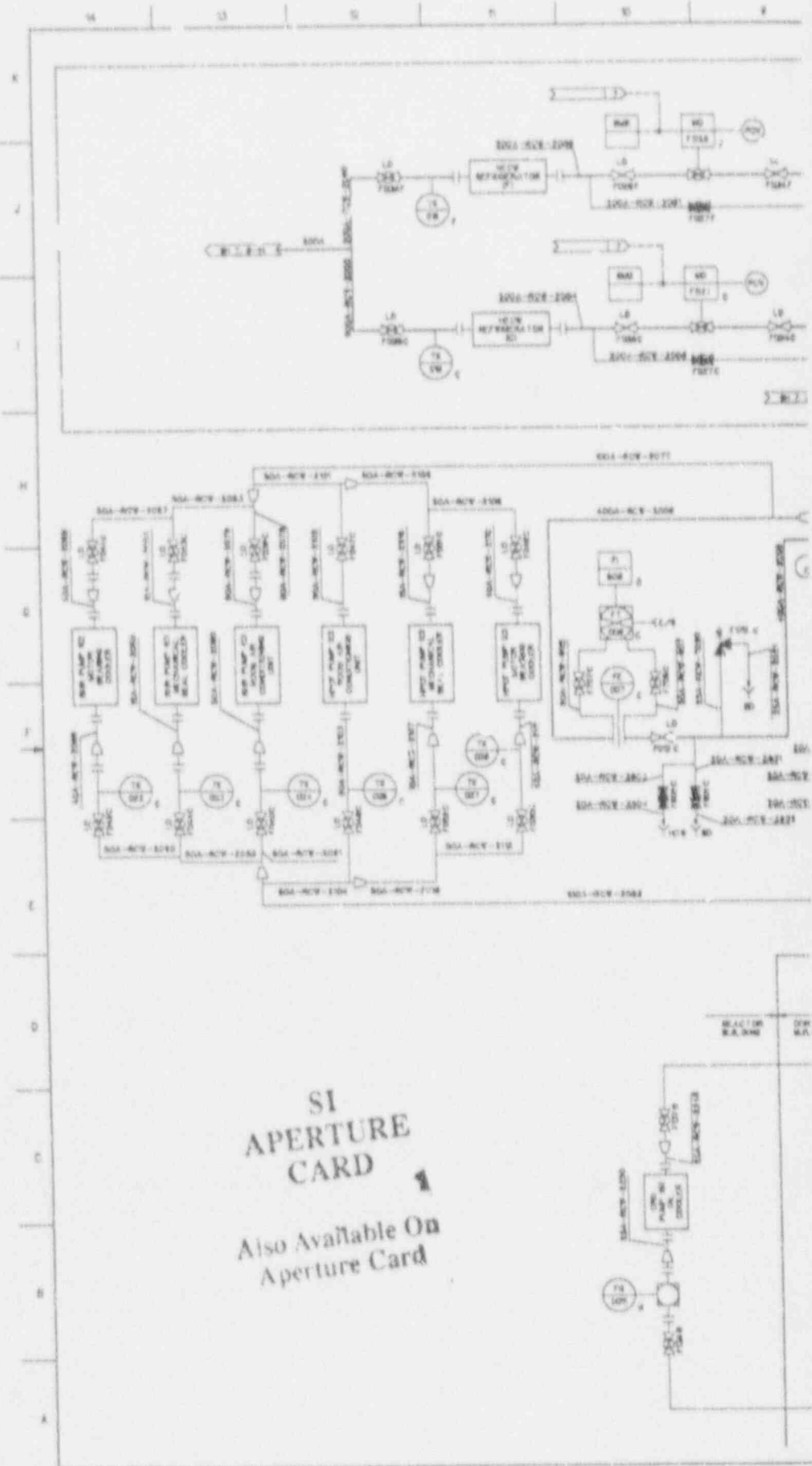
REACTOR BLDG COOLING



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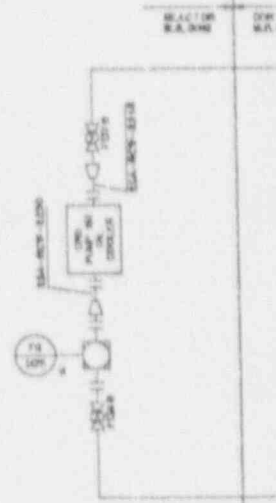
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Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 7 of 9)



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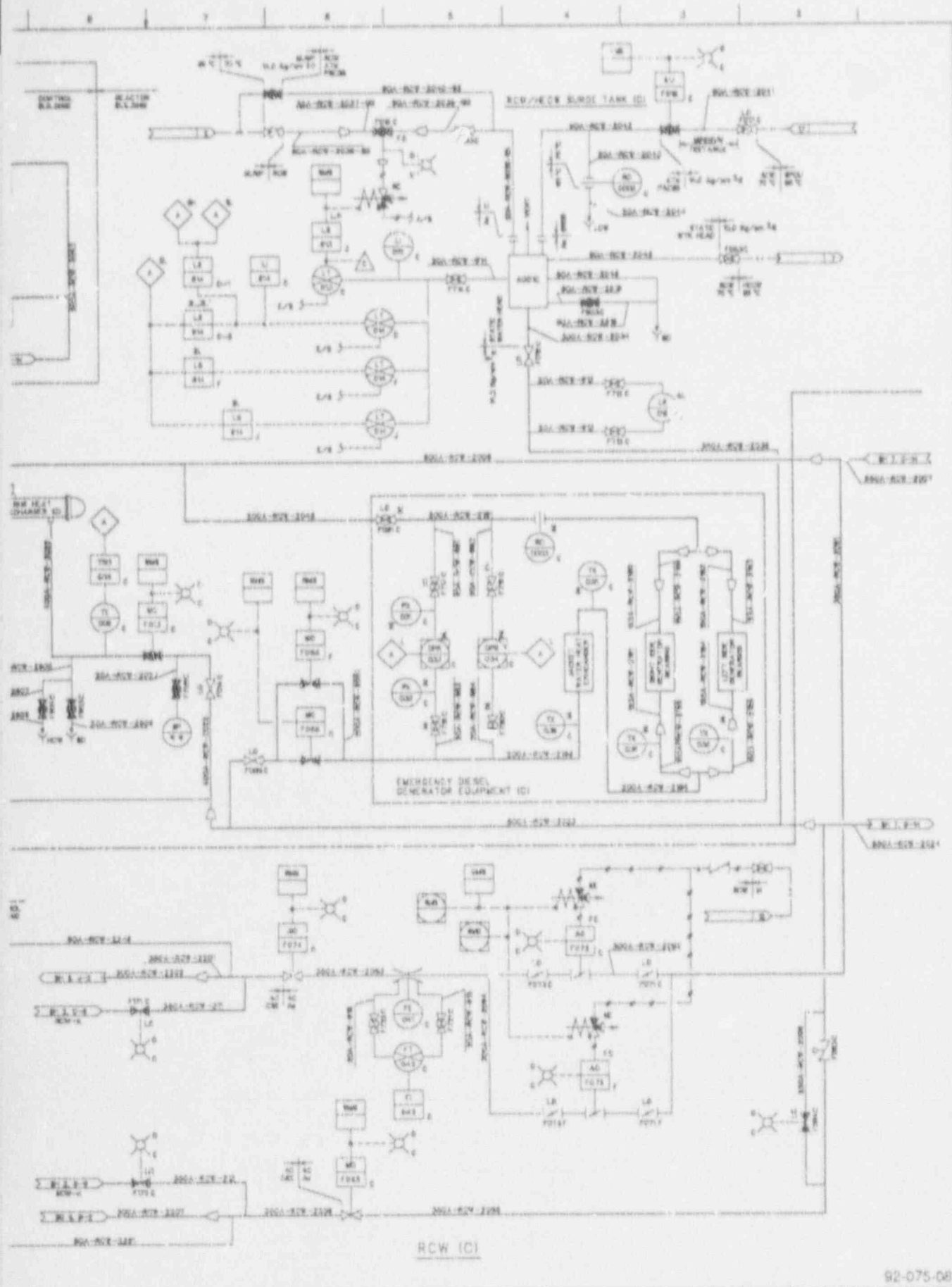
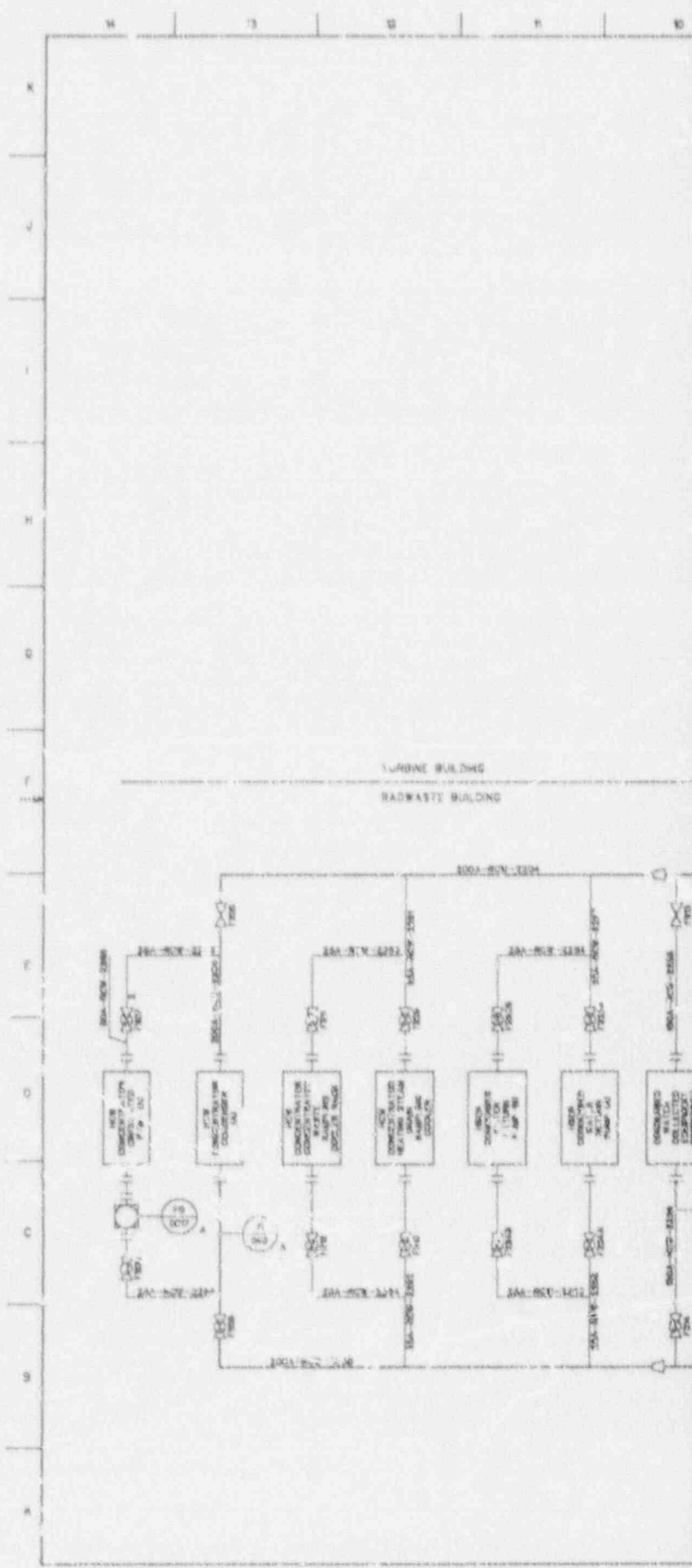
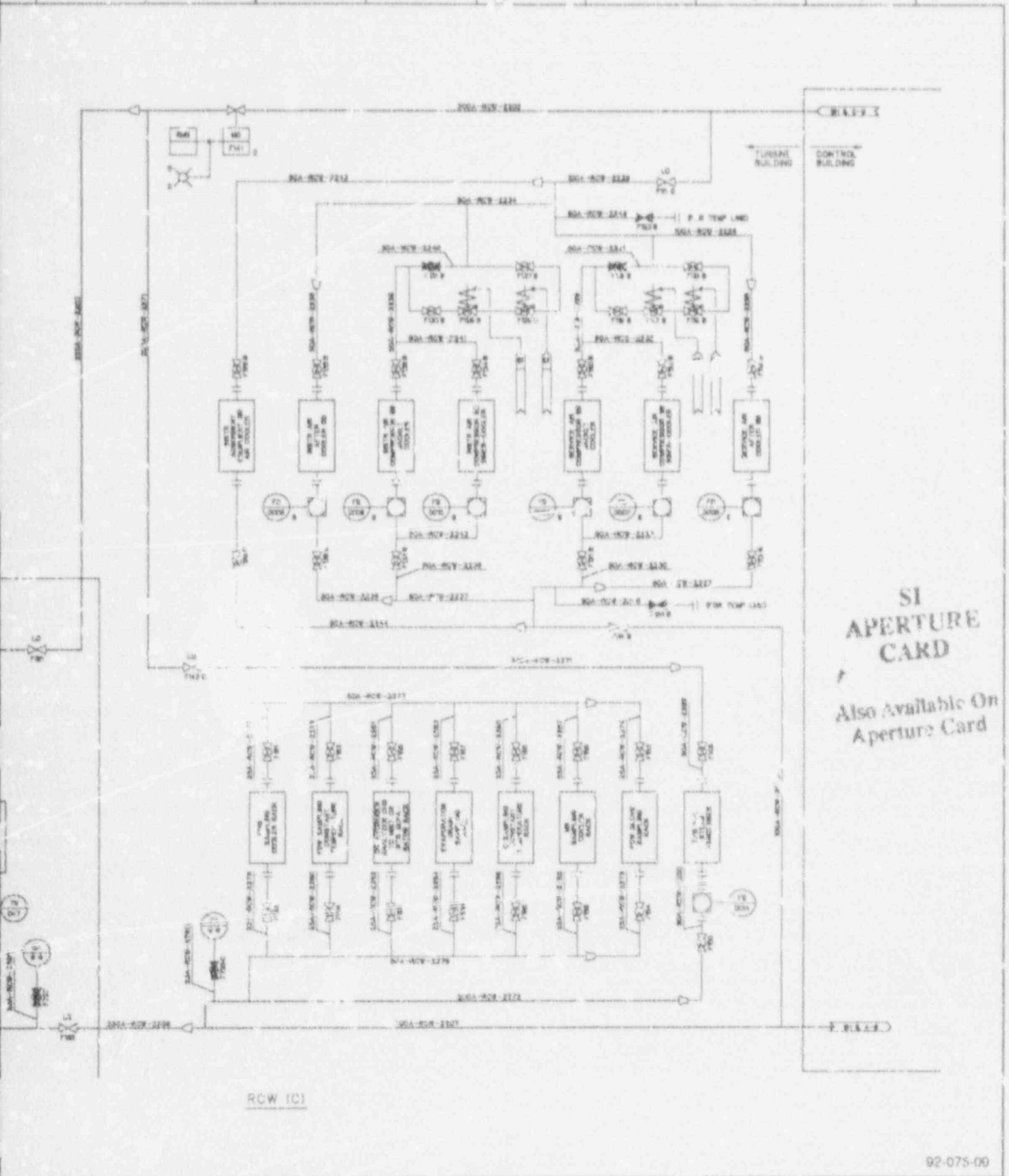


Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 8 of 9)





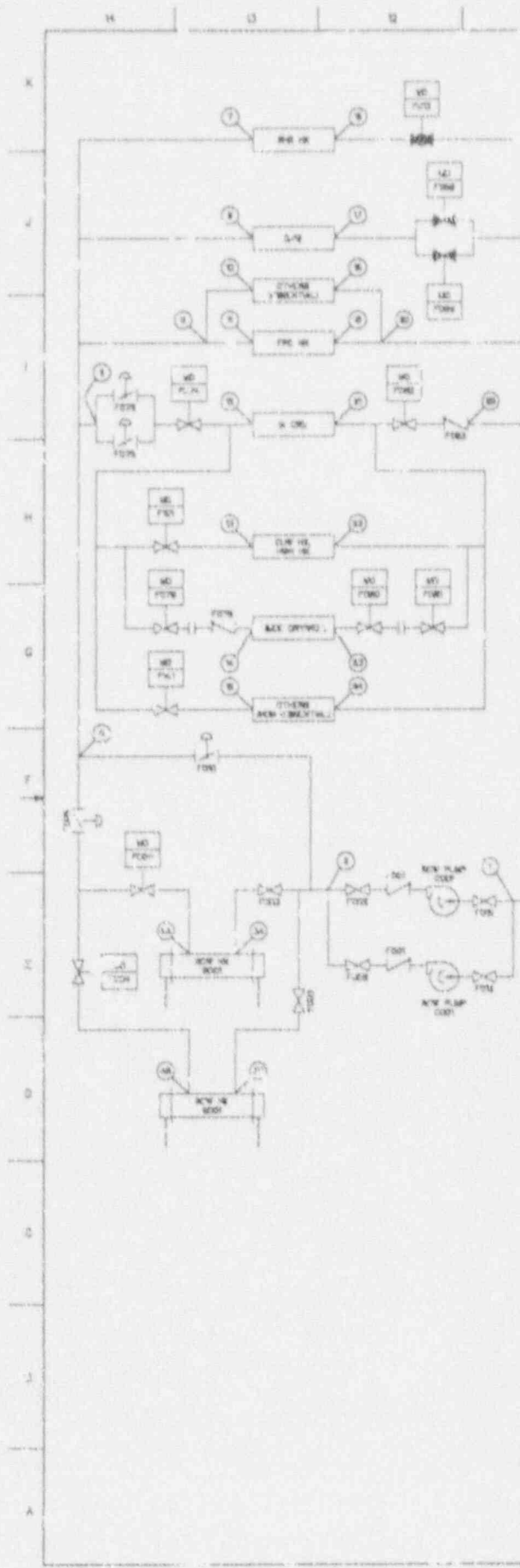
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Figure 9.2-1 REACTOR BUILDING COOLING WATER SYSTEM P&ID (Sheet 9 of 9)



MODE A NORMAL OPERATING

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 7
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE B REACTOR SHUTDOWN

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 16
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE C REACTOR SHUTDOWN

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 16
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE D HOT STAND-BY

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 7
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE E HOT STAND-BY

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 7
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE F SUPPRESSION POOL

POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 7
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

MODE G SUPPRESSION POOL

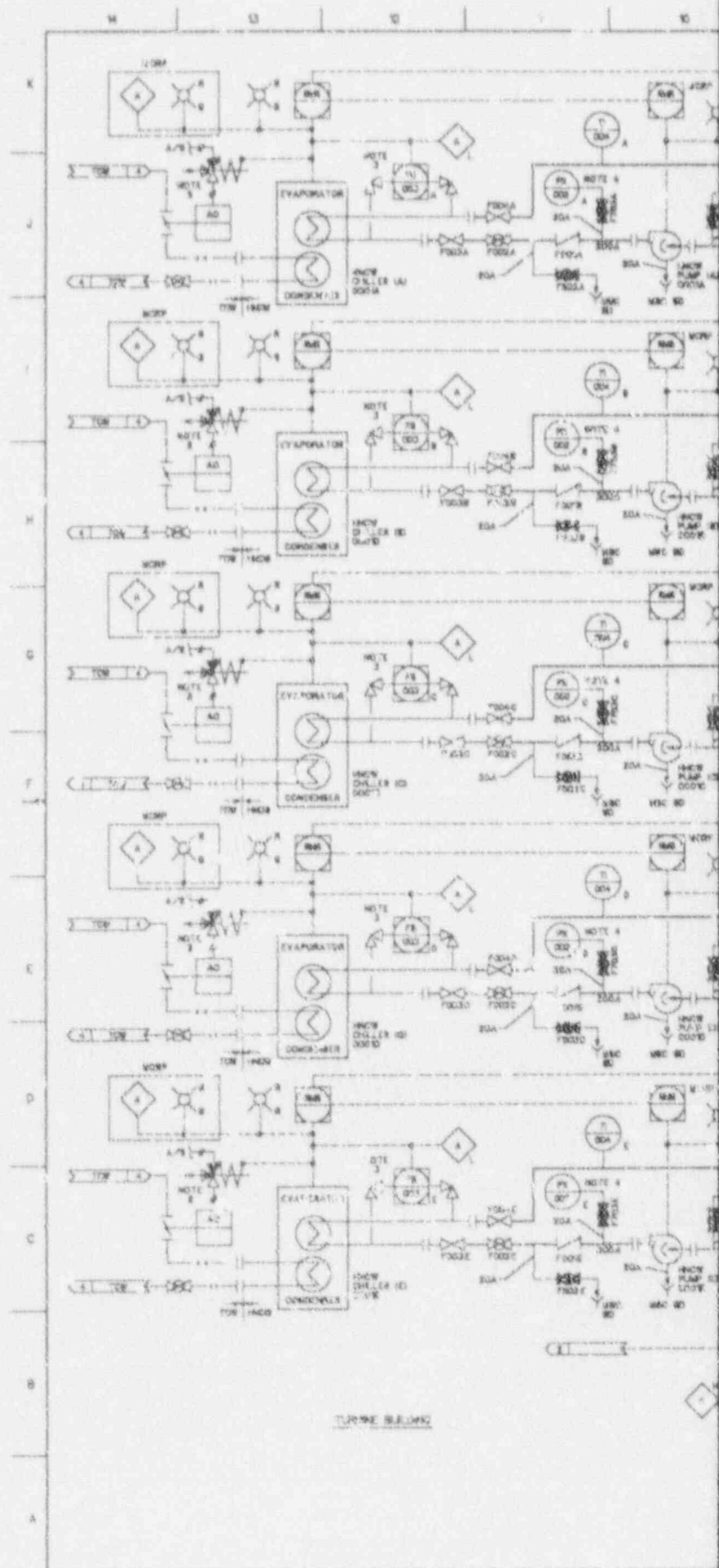
POSITION	1
FLOW m^3/hr	RCV AL 10 RCV ED 7
PRESSURE $kg/cm^2 a$	RCV AL 10 RCV ED 3
TEMPERATURE	RCV AL 10 RCV ED 4
FD	RCV ED 4

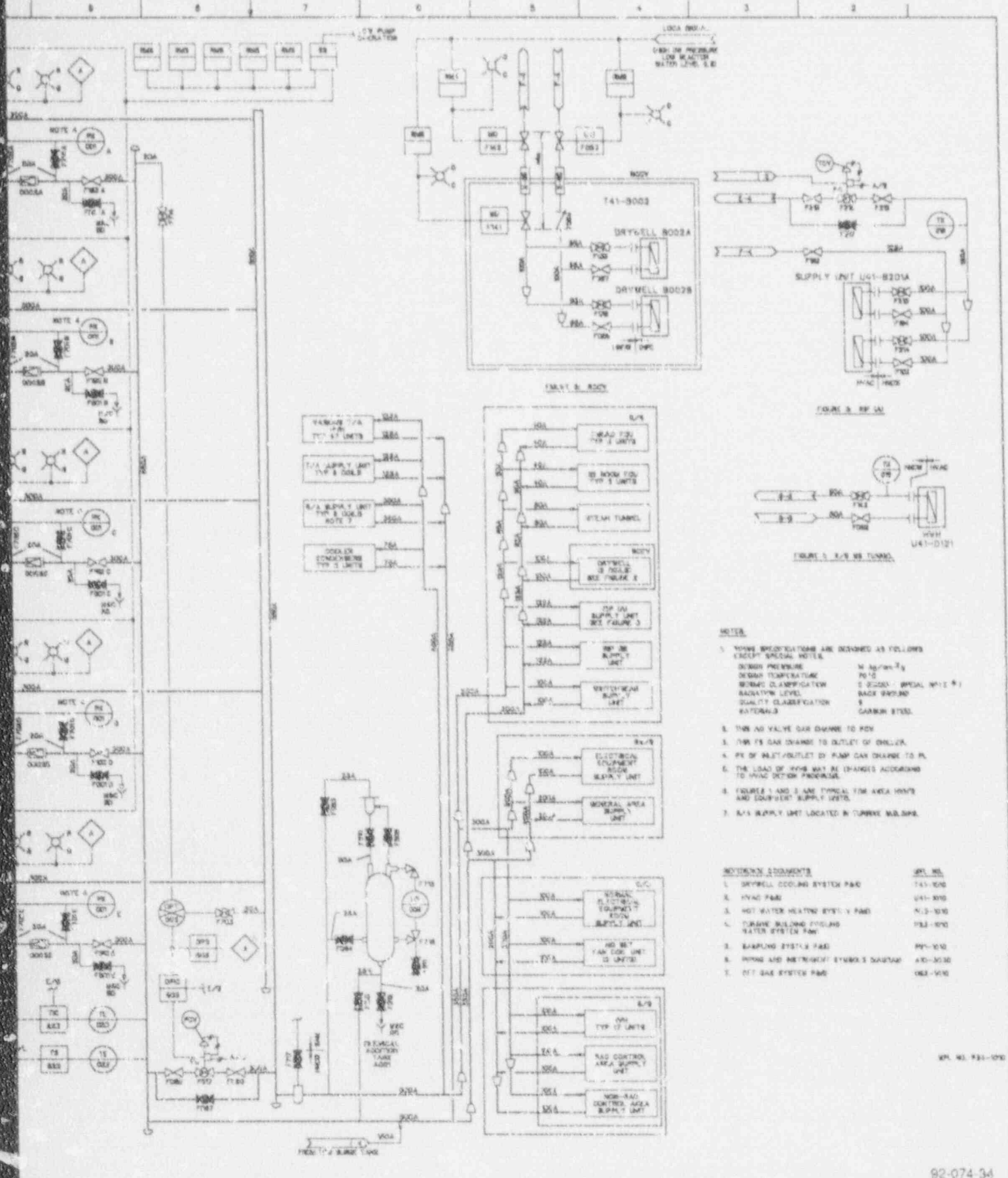
TABLE 1 RCV VALVE POSIT

MODE	RCV VALVE POSIT
MODE A	C-T C-T C-T C
MODE B	C-T C-T C-T C
MODE C	C-T C-T C-T C
MODE D	C-T C-T C-T C
MODE E	C-T C-T C-T C
MODE F	C C C C
MODE G	C C C C

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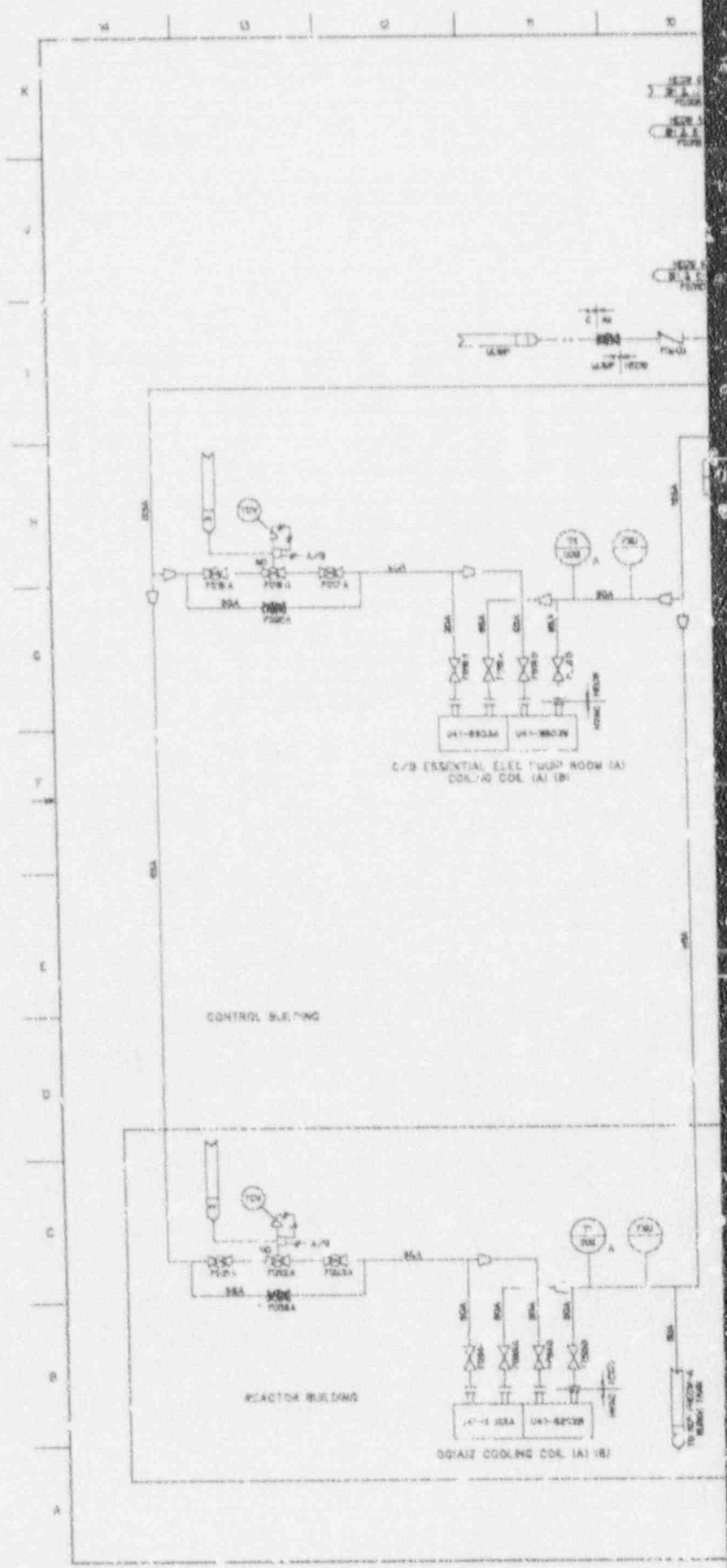
- NOTES**
1. PUMP SPECIFICATIONS ARE IDENTICAL AS FOLLOWS EXCEPT SPECIAL NOTES:
DESIGN PRESSURE: 10 psig
DESIGN TEMPERATURE: 70 F
SCHEDULE: 304L
SAGACITY LEVEL: B
QUALITY CLASSIFICATION: S
MATERIALS: 304L STAINLESS STEEL
 2. THIS IS VALVE CAN CHANGE TO FLOW.
 3. THIS IS VALVE CAN CHANGE TO OUTLET OF DRYWELL.
 4. PR OF INLET/OUTLET OF PUMP CAN CHANGE TO PL.
 5. THE LOAD OF THIS UNIT IS CHANGED ACCORDING TO HVAC DESIGN PROGRESS.
 6. FIGURES 1 AND 2 ARE TYPICAL FOR AREA HVAC AND EQUIPMENT SUPPLY UNITS.
 7. S/W SUPPLY UNIT LOCATED IN TURBINE BUILDING.

NOTATION

SYMBOL	DESCRIPTION	REF. NO.
1	DRYWELL COOLING SYSTEM P&ID	T41-8002
2	HVAC P&ID	T41-8003
3	HOT WATER HEATED BY CV P&ID	T41-8004
4	TURBINE BUILDING COOLING WATER SYSTEM P&ID	T41-8005
5	SAMPLING SYSTEM P&ID	T41-8006
6	PIPING AND INSTRUMENTATION SYMBOLS DIAGRAM	T41-8007
7	DIT-200 SYSTEM P&ID	062-100

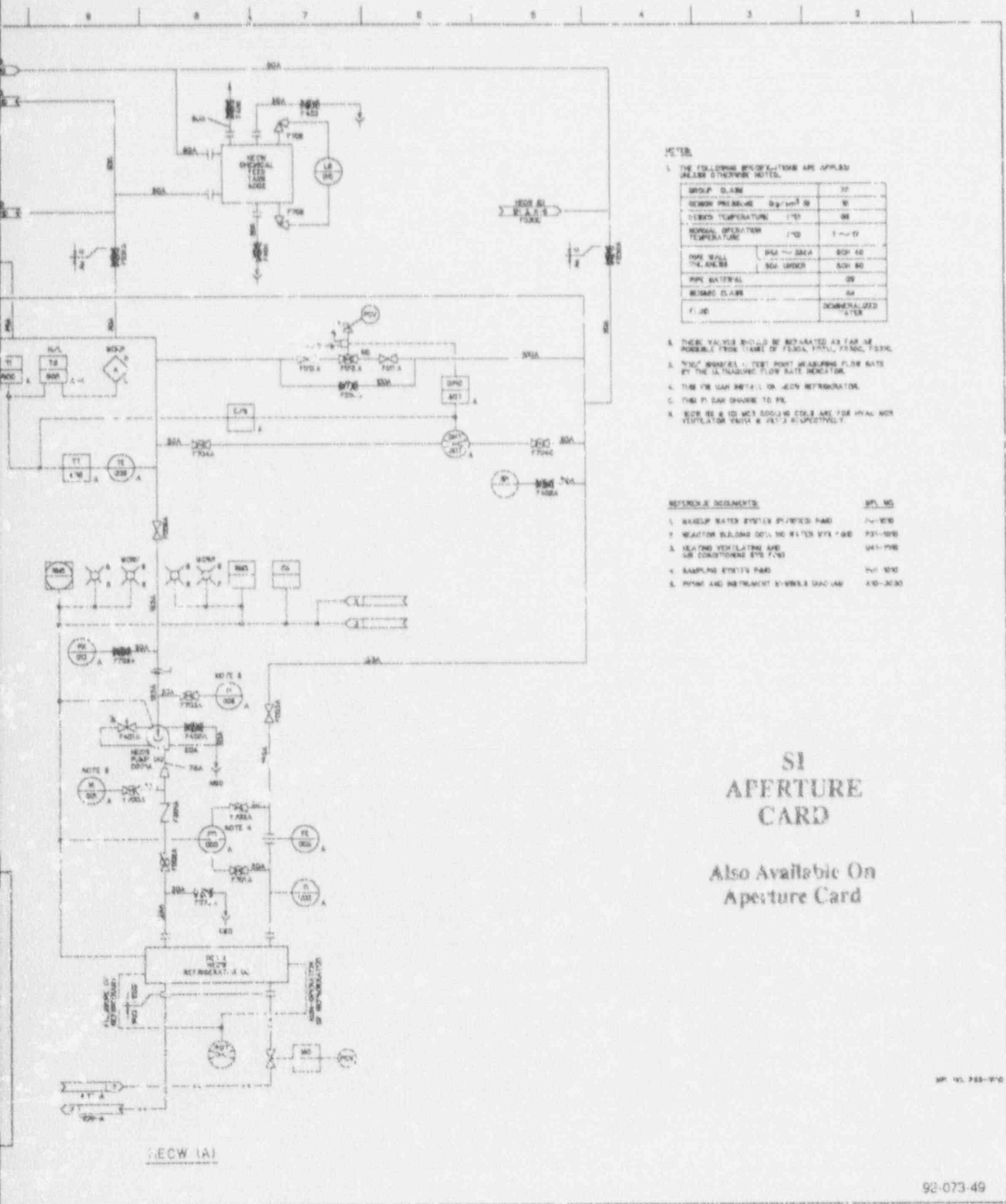
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Figure 9.2-2 HVAC NORMAL COOLING WATER SYSTEM P&ID



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752-100
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NOTES

- THE FOLLOWING SPECIFICATIONS ARE APPLIED UNLESS OTHERWISE NOTED.
- | | |
|------------------------------|---------------------|
| GROUP CLASS | 37 |
| DESIGN PRESSURE | 80 psig |
| DESIGN TEMPERATURE | 170 F |
| NORMAL OPERATION TEMPERATURE | 170 F |
| PIPE SCHEDULE | 60A - 80A 60# 40 |
| | 80A - 1000# 60# 80 |
| PIPE MATERIAL | 304 |
| WELD CLASS | 6A |
| FLUID | DEMINERALIZED WATER |
- THESE VALUES SHOULD BE REDUCED AS FAR AS POSSIBLE FROM TABLE OF DESIGN, PIPING, PIPING.
 - 75% MINIMUM FLOW RATE REQUIRED FOR FLOW BY THE REGULATING FLOW RATE INDICATOR.
 - THE 1/2" DIA. METAL OR ALUMINUM REFRIGERATOR.
 - THE 1/2" DIA. SHOWN TO BE.
 - SEE 80 & 100 W/2 COOLING COILS ARE FOR HYDRA-NIC VENTILATOR WATER & JET 2 RESPECTIVELY.

REFERENCE DOCUMENTS

- | REF. NO. | REF. NO. |
|--|----------|
| 1. BACKUP WATER SYSTEM SPECIFIED PART | 74-100 |
| 2. REACTOR BUILDING COOLING WATER SYSTEM | 74-100 |
| 3. REACTOR BUILDING COOLING WATER SYSTEM | 74-100 |
| 4. SAMPLES SYSTEM PART | 74-100 |
| 5. HYDRA-NIC AND INSTRUMENT SYSTEMS SPECIFIED PART | 74-100 |

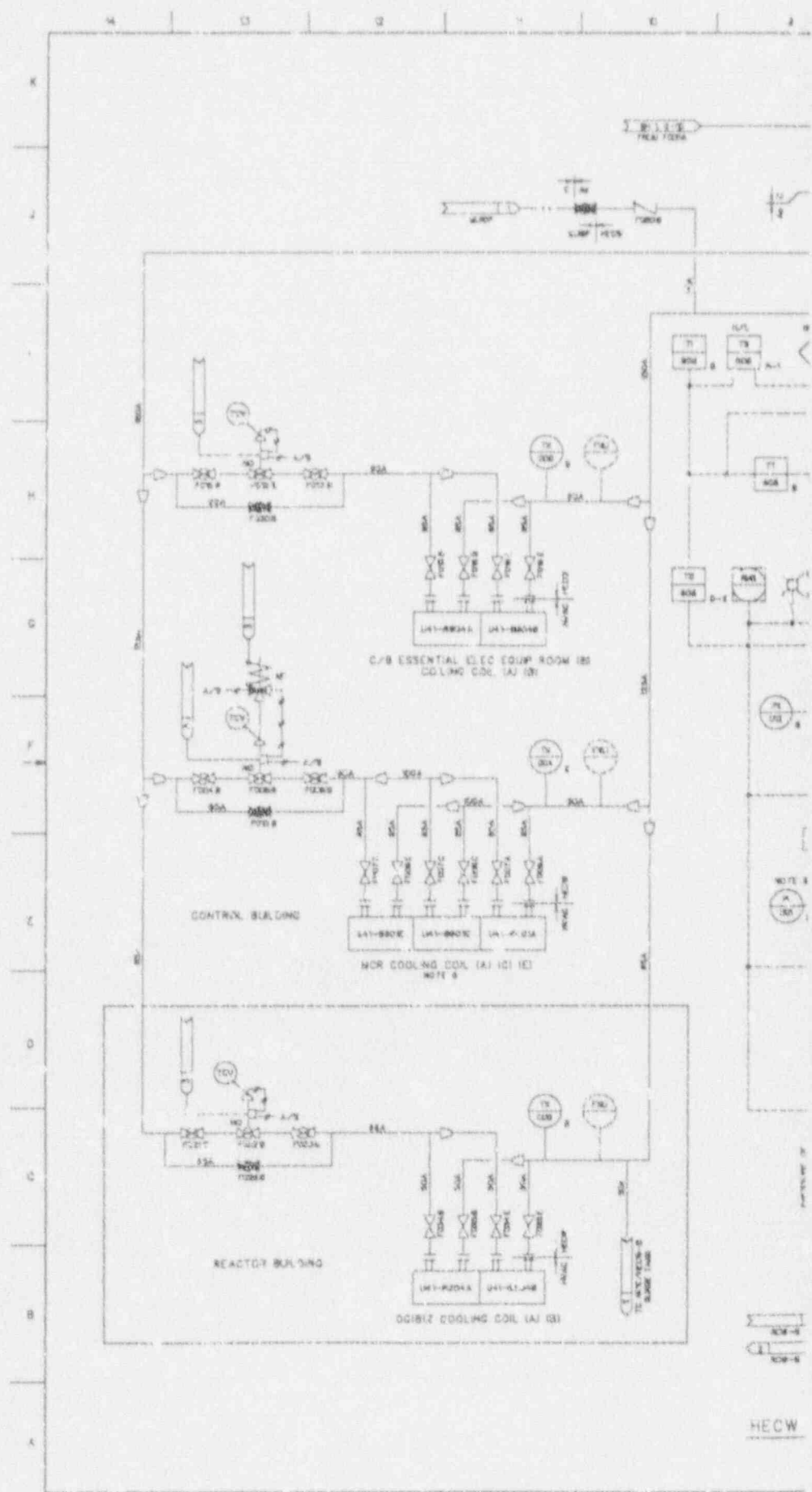
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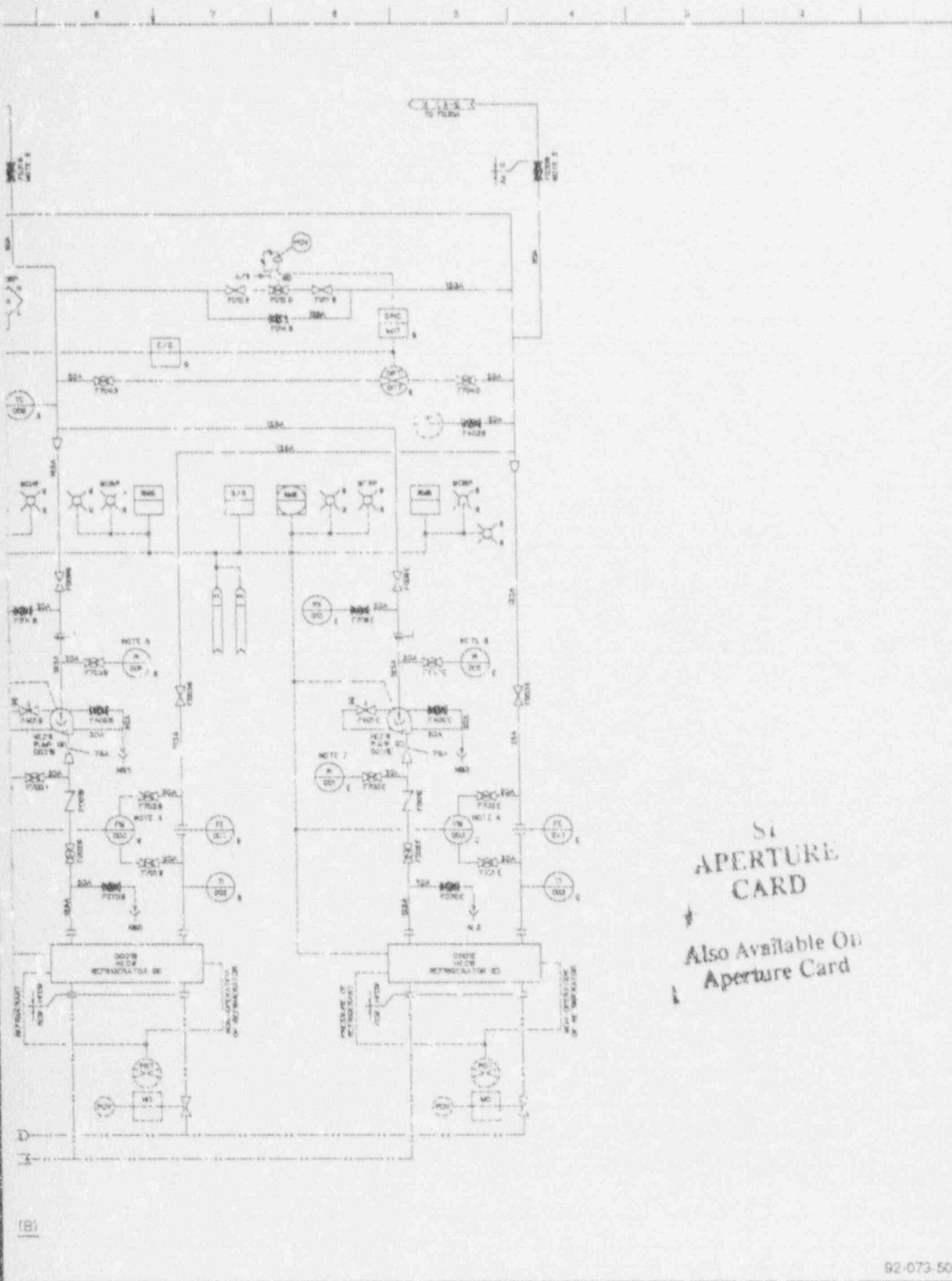
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Figure 9.2-3 HVAC EMERGENCY COOLING WATER SYSTEM P&ID (Sheet 1 of 3)



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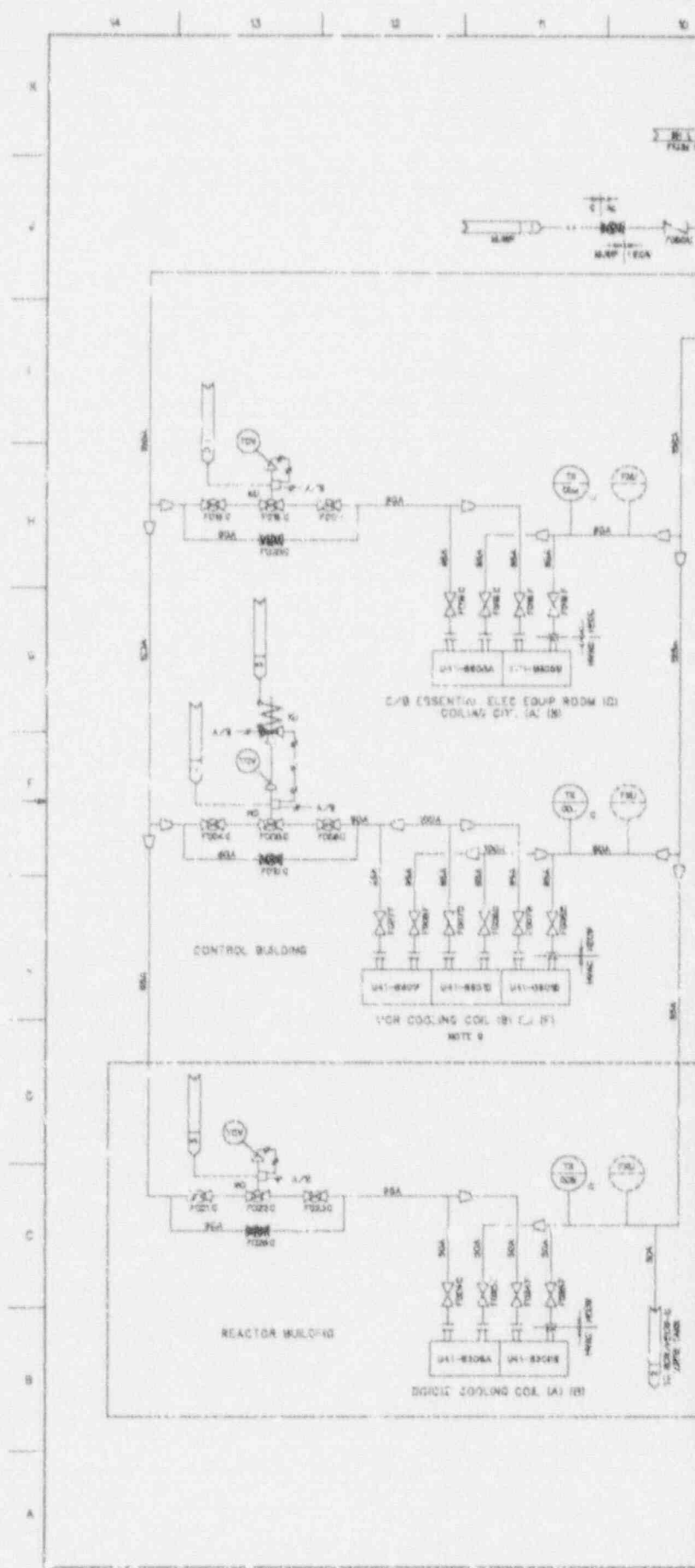


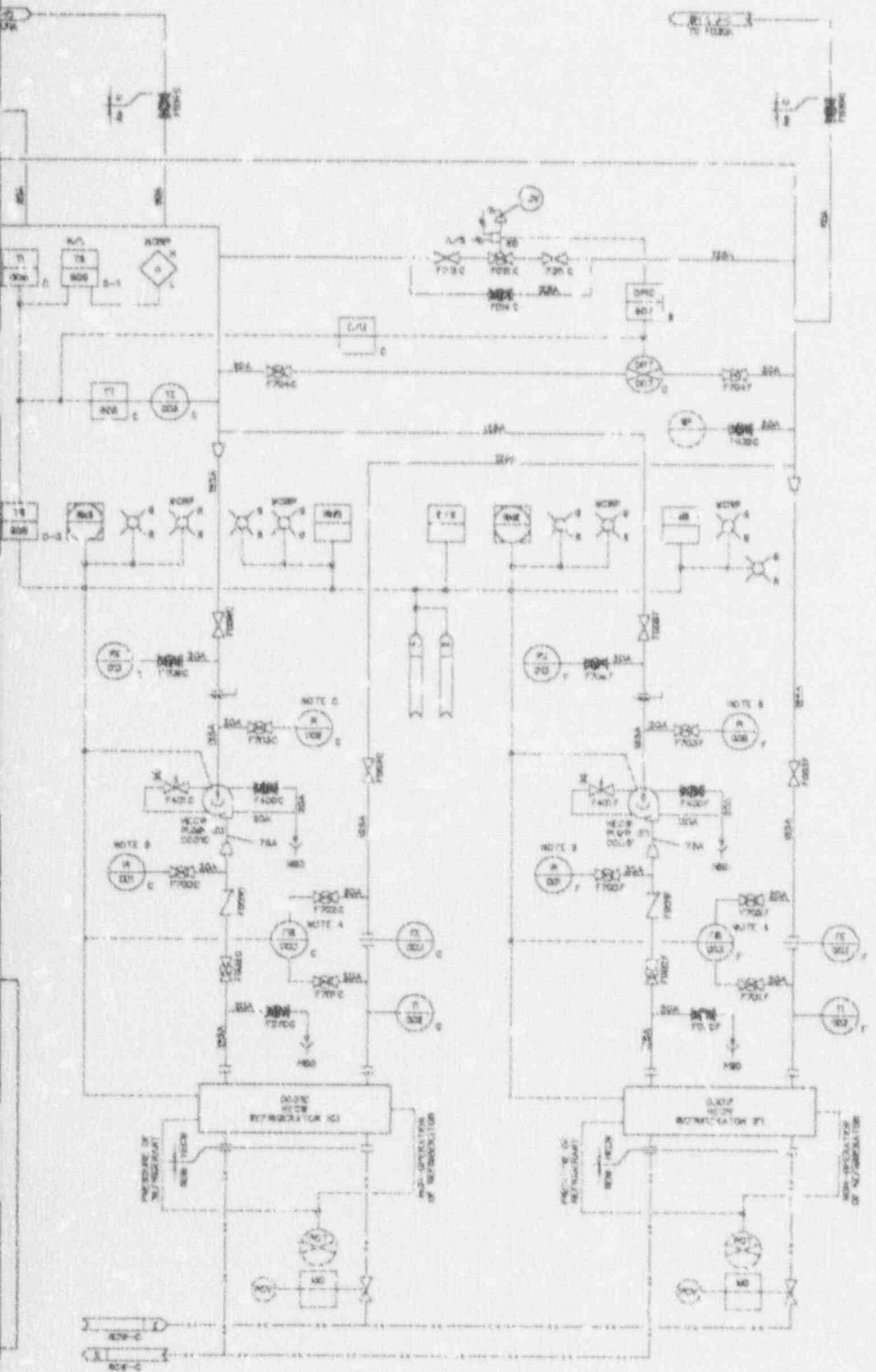
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Figure 9.2-3 HVAC EMERGENCY COOLING WATER SYSTEM P&ID (Sheet 2 of 3)





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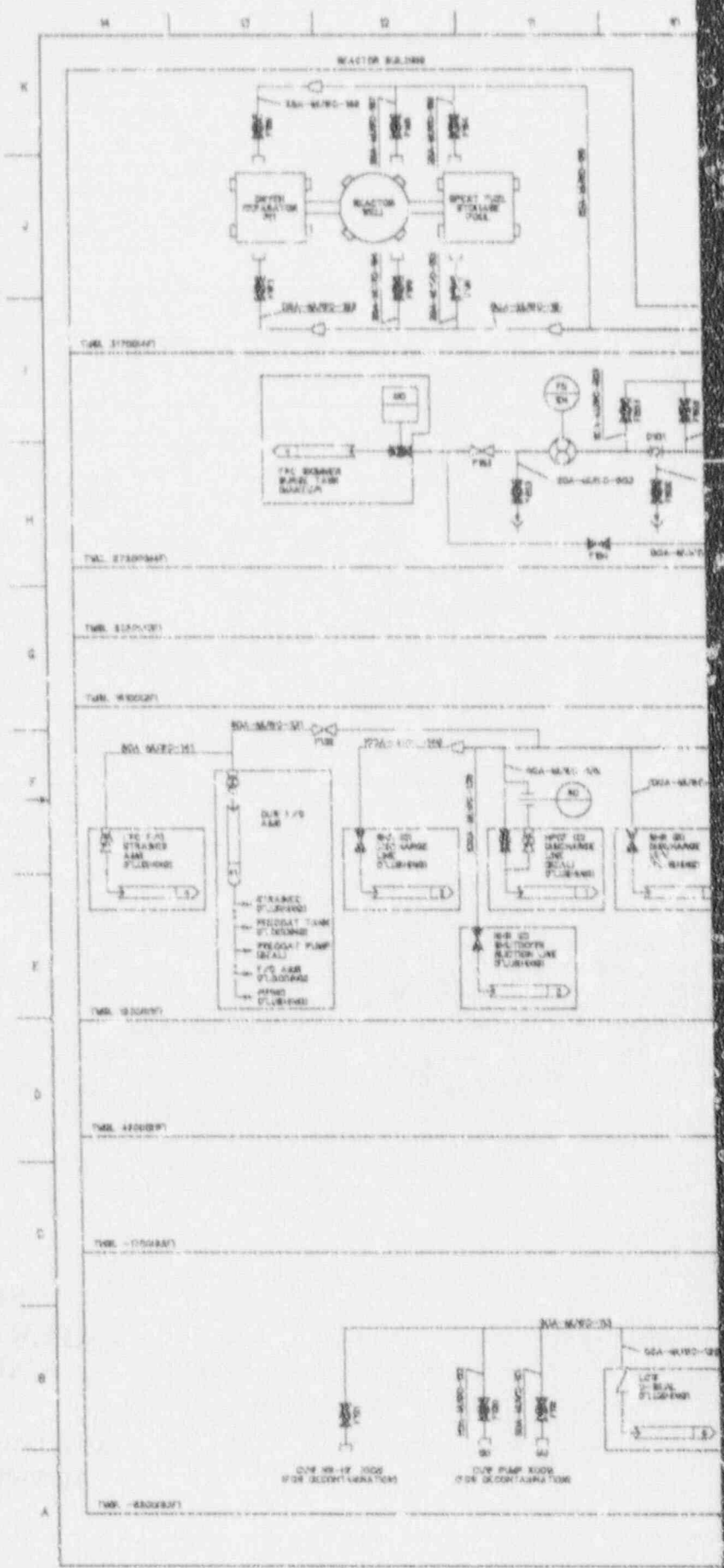
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Figure 9.2-3 HVAC EMERGENCY COOLING WATER SYSTEM P&ID (Sheet 3 of 3)

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REFERENCE DOCUMENTS

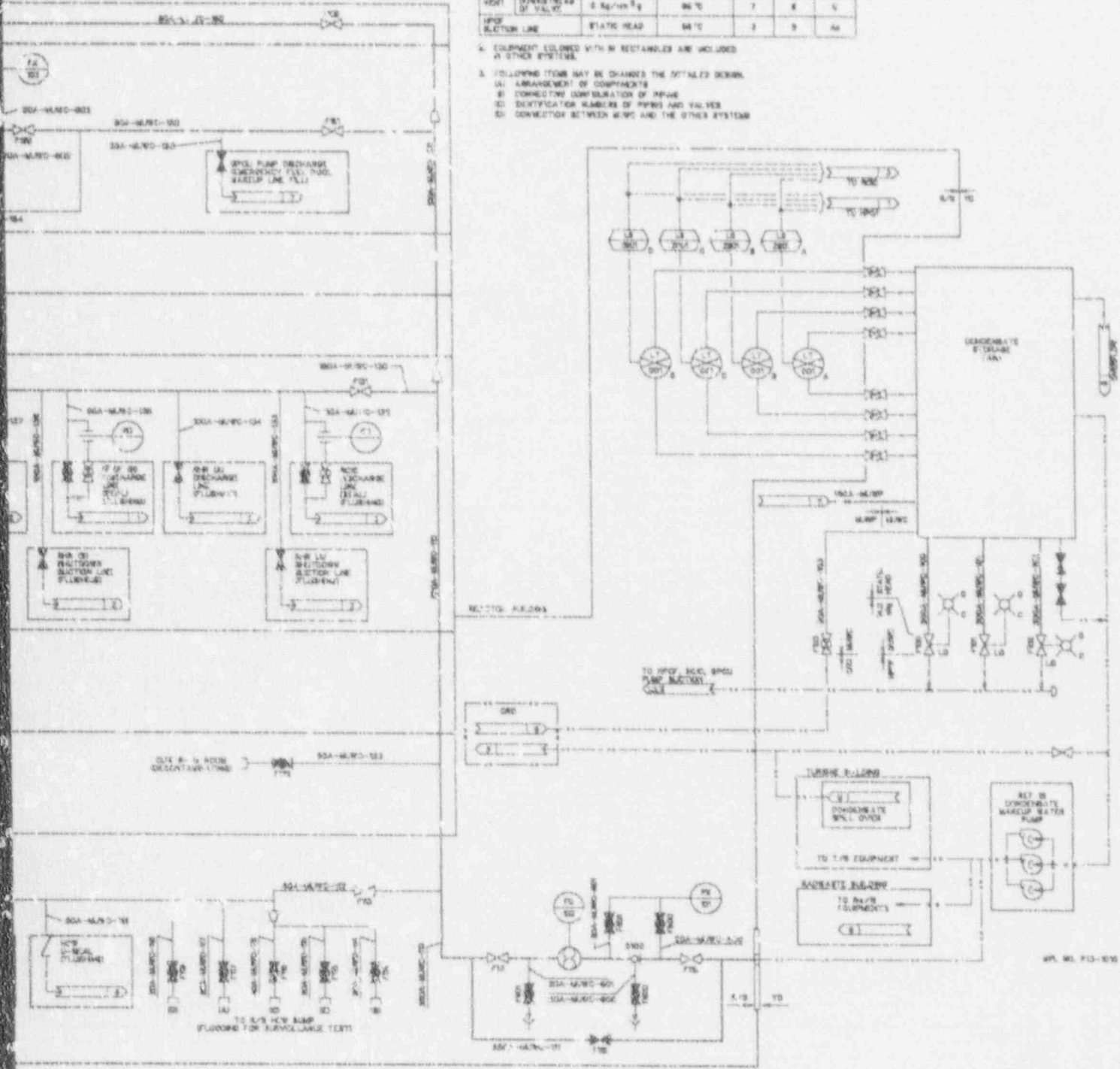
- 1. HIGH PRESSURE CORE FLOODING SYS P&ID 113-1010
- 2. RESIDUAL HEAT REMOVAL SYS P&ID 115-1010
- 3. REACTOR CORE ISOLATION COOLING SYS P&ID 121-1010
- 4. FUEL ROD COOLING AND DRAINING SYS P&ID 141-1010
- 5. REACTOR WATER DRAINING SYS P&ID 151-1010
- 6. RADIOACTIVE WASTE TREATMENT SYSTEMS SYS P&ID 170-1010
- 7. LUBRICATING OIL CLEANUP SYSTEM P&ID 171-1010
- 8. CONDENSATE TO TOWER TREATMENT AIR DECONTAMINATION SYS P&ID 181-1010
- 9. CONTROL ROD DRIVE SYS P&ID 103-1010
- 10. WPMG AND INSTRUMENT SUPPLIES SUPPLY 131-1010
- 11. KATROL WATER SYSTEM SUPPLY P&ID 135-1010
- 12. MAKEUP WATER PREPARATION SYSTEM P&ID WATER-001

NOTE

- 1. DESIGN CONDITIONS FOR PIPES ARE AS FOLLOWS UNLESS SPECIFIED OTHERWISE:
 - (A) MATERIAL AND SCHEDULE
 - TO ALL 2" - 3000 PPM IN CONCRETE 304, SCH 40
 - TO OTHER 2" N/A 304, SCH 40
 - TO OTHER 3" N/A 304, SCH 40
 - (B) RADIOACTIVE CONCENTRATION 1500Ci/gal
 - (C) FLUID WATER
- 2. OTHER SPECIFICATIONS ARE LISTED IN FOLLOWING TABLE

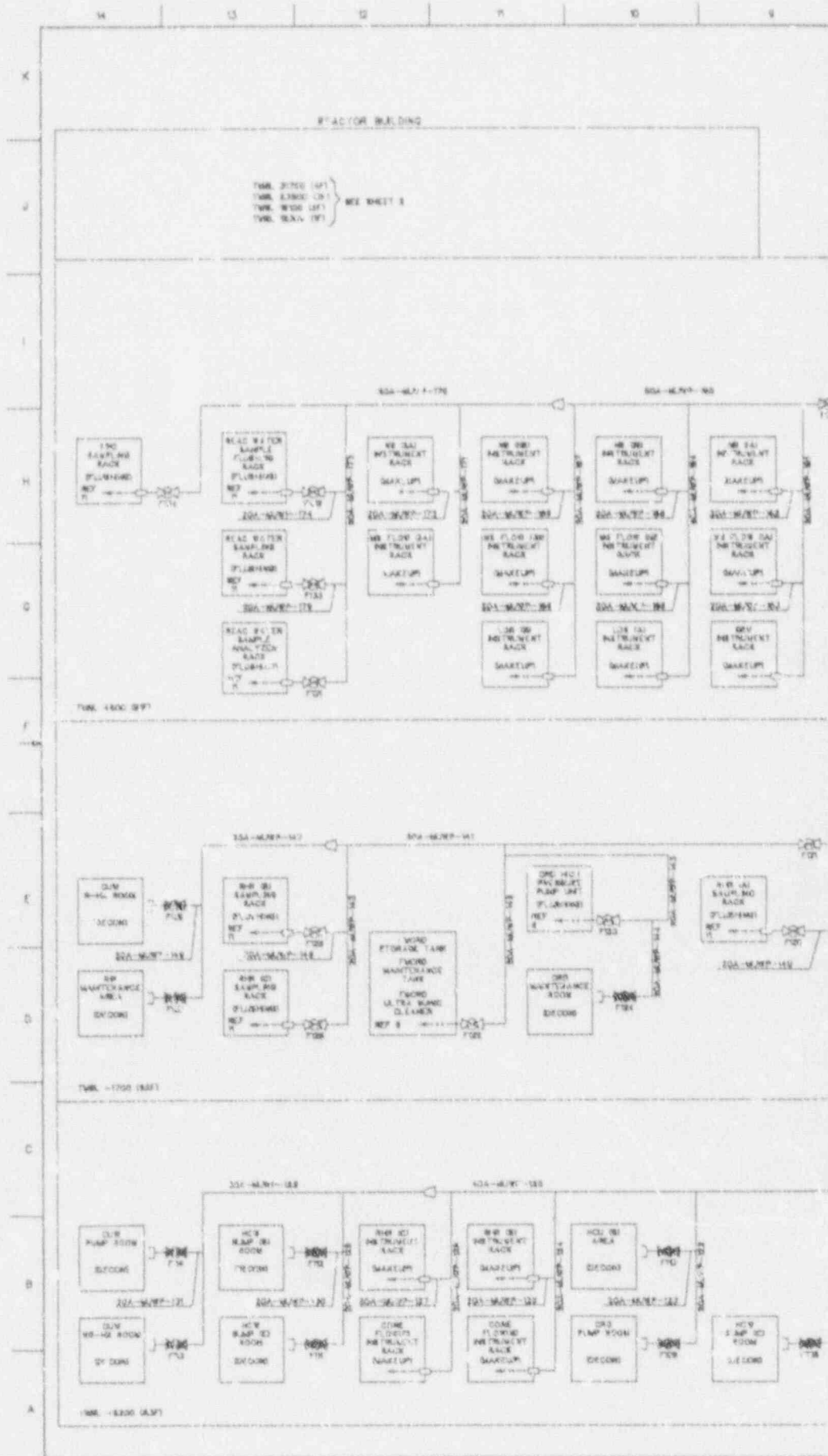
ITEM	MAX OPERATING PRESSURE	MAX OPERATING TEMPERATURE	DRUM CLASS	DC CLASS	DESIGN CLASS
MAKEUP SYS EXCEPT FOR FOLLOWING ITEMS	14.7 psia	90 °F	1	0	3
UPSTREAM OF VALVE	14.7 psia	90 °F	1	0	3
DOWNSTREAM OF VALVE	0 psia	90 °F	2	0	1
HP/CP SUCTOR LINE	STATIC HEAD	90 °F	2	0	4

- 3. EQUIPMENT COLORED WITH AN RECTANGLES ARE INCLUDED IN OTHER SYSTEMS
- 4. FOLLOWING ITEMS MAY BE CHANGED THE INITIAL DESIGN:
 - (A) ARRANGEMENT OF COMPONENTS
 - (B) CONNECTIVE CONFIGURATION OF PIPING
 - (C) IDENTIFICATION NUMBERS OF PIPES AND VALVES
 - (D) CONNECTION BETWEEN WPMG AND THE OTHER SYSTEM



92-073-52

Figure 9.2-4 MAKEUP WATER (CONDENSATE) P&ID



NOTES

1. DESIGN CONDITIONS OF PIPING ARE FOLLOWED UNLESS OTHERWISE SPECIFIED.

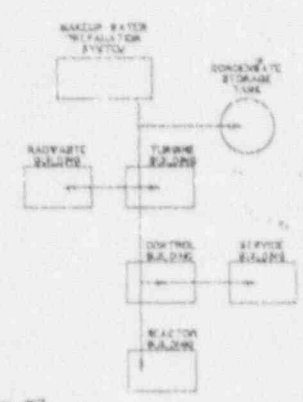
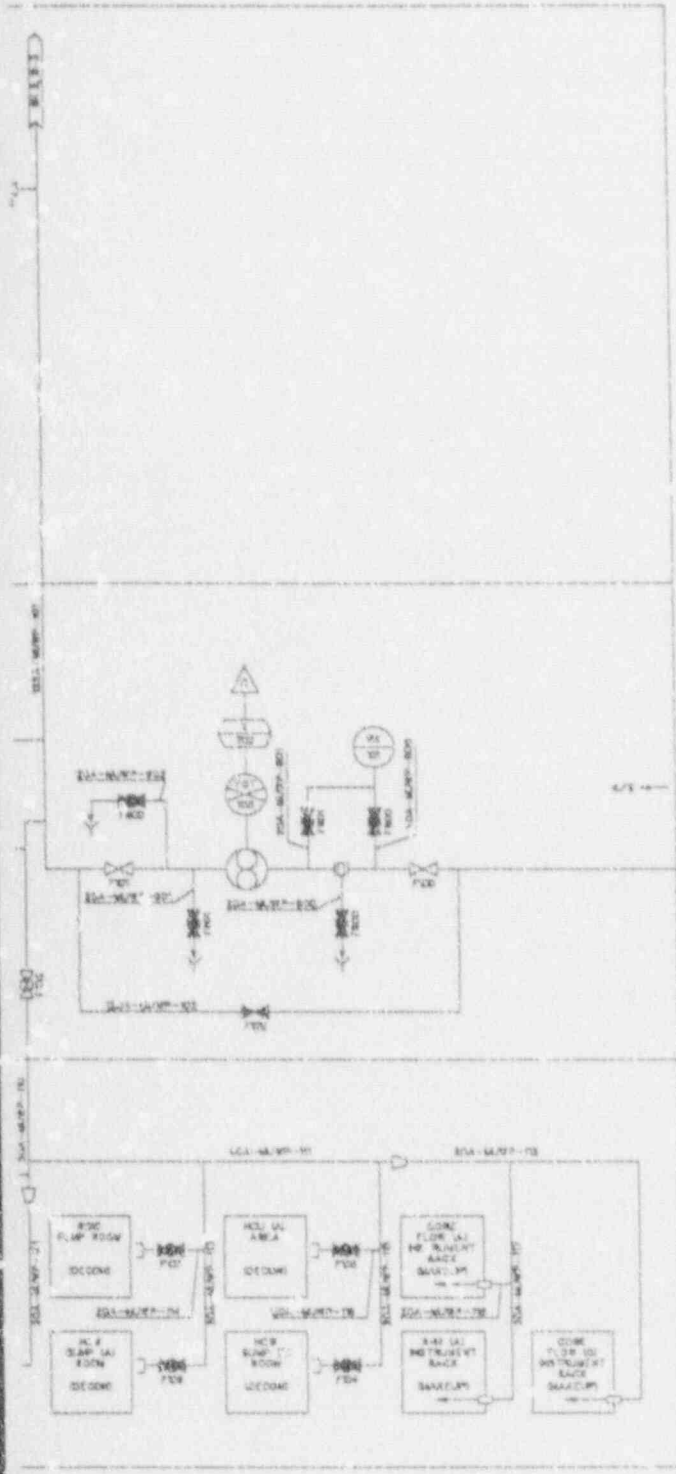
- (A) MATERIAL & WEIGHT : W 80# AS
- (B) RADIOACTIVE CONCENTRATION : 0.5#
- (C) FLUID : WATER
- (D) OTHER SPECIFICATIONS ARE LISTED IN FOLLOWING TABLE.

ITEM	MAX OPERATING PRESSURE	MAX OPERATING TEMP	WT LOSS	DC CLASS	CLASS	CLASS
WUPP SYSTEMS EXCEPT FOR FOLLOWING ITEMS	W.D. 100 psia	300° F	5	3	0	
DRAIN UPSTREAM OF VALVE	W.D. 100 psia	300° F	4	3	0	
DOWNSTREAM OF VALVE	0.1 psia	300° F	7	4	0	
PCV BOUNDARY	W.D. 100 psia	300° F	3	3	4	

- 2. EQUIPMENT ENCLOSED IN RECTANGLE ARE INCLUDED IN OTHER SYSTEMS.
- 3. FOLLOWING ITEMS MAY BE CHANGED DURING DETAILED DESIGN:
 - (A) ARRANGEMENT OF COMPONENTS
 - (B) CONNECTION CONFIGURATION OF PIPING
 - (C) IDENTIFICATION NUMBERS OF PIPING & VALVES
 - (D) CONNECTION BETWEEN WUPP AND THE OTHER SYSTEMS
- 4. MAKEUP WATER TO THIS EQUIPMENT SHALL BE SUPPLIED FROM THE CONNECTION IN SERVICE MAN.

REFERENCE DOCUMENTS

NO.	DESCRIPTION	REF. NO.
1.	REACTOR ROOM SYS P&ID	81-101
2.	R.C. SYS P&ID	041-101
3.	POST ACCIDENT SAMPLING SYS P&ID	101-101
4.	STACK GAS TREATMENT SYS P&ID	102-101
5.	FLAMMABILITY CONTROL SYS P&ID	142-101
6.	DECONTAMINATION SYSTEM P&ID	045-101
7.	REACTOR ROOM COOLING WATER SYS P&ID	101-101
8.	EXHAUST GAS COOLING WATER SYS P&ID	043-101
9.	STACK SYSTEM P&ID	101-101
10.	WASTE WATER SYSTEM (LOWER) P&ID	101-101
11.	SAMPLING SYS P&ID	101-101
12.	WASTE WATER PREPARATION SYS P&ID	101-101
13.	RADIATION SYS P&ID	101-101
14.	CONDENSATE CONDENSER SYS P&ID	101-101
15.	TURBINE COOLING COOLING WATER SYS P&ID	101-101
16.	HEAT EXCHANGER P&ID	101-101
17.	HYD. SYSTEM P&ID	101-101
18.	CONDENSATE PUMP CLEANUP SYS P&ID	101-101
19.	PIPING AND INSTRUMENT SYMBOLS MANUAL	101-101



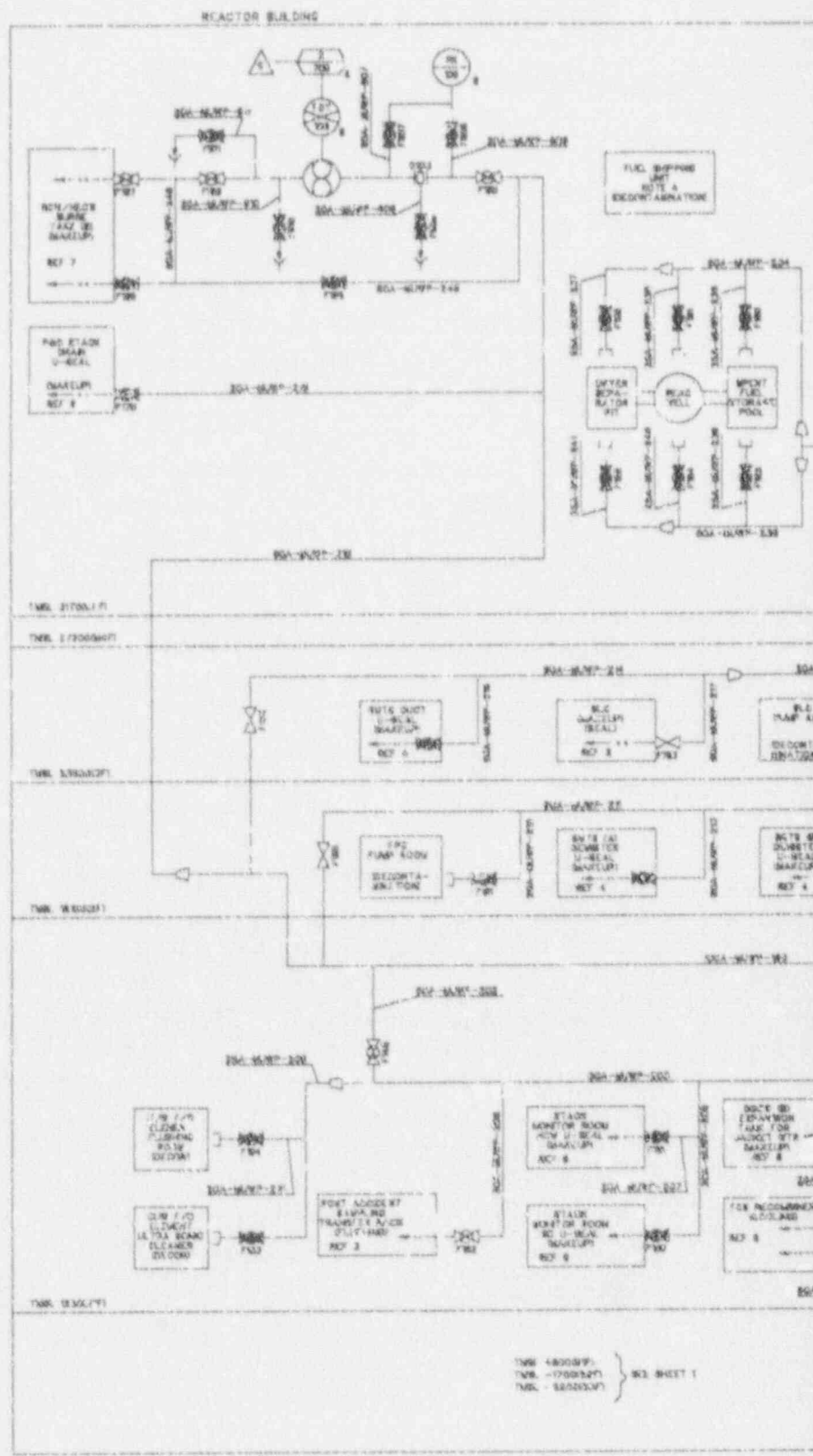
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REF. NO. 101-101

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Figure 9.2-5 MAKEUP WATER (PURIFIED) P&ID (Sheet 1 of 3)

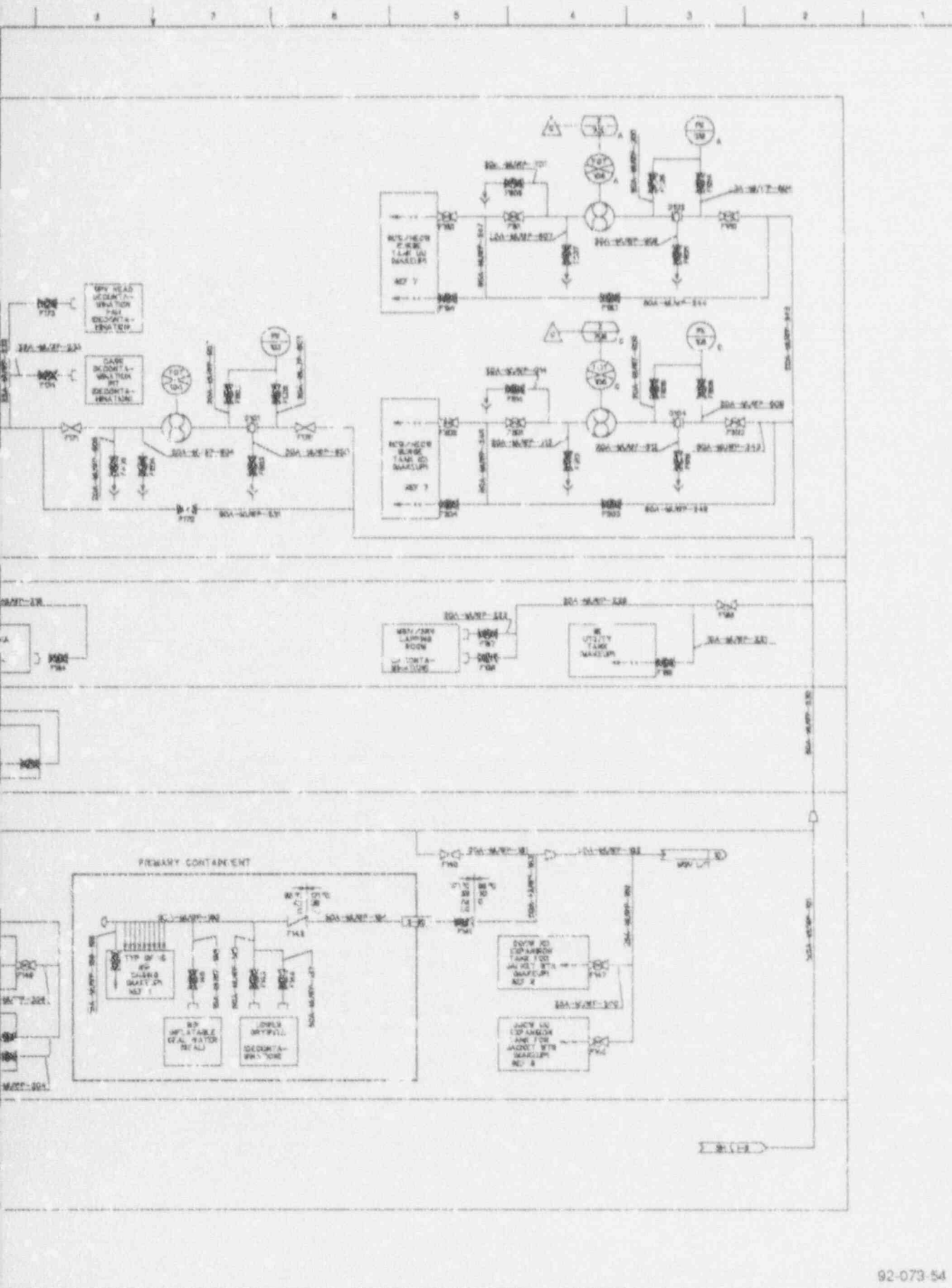
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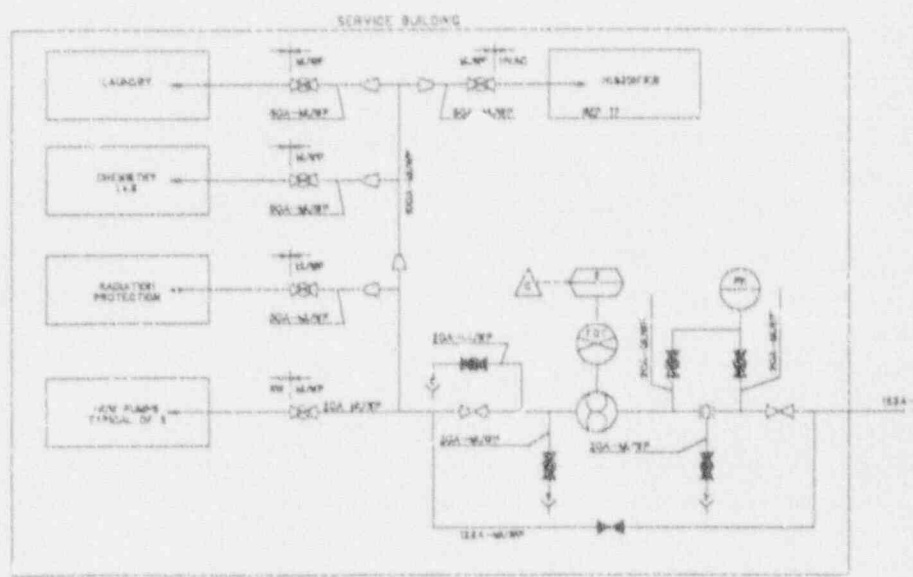
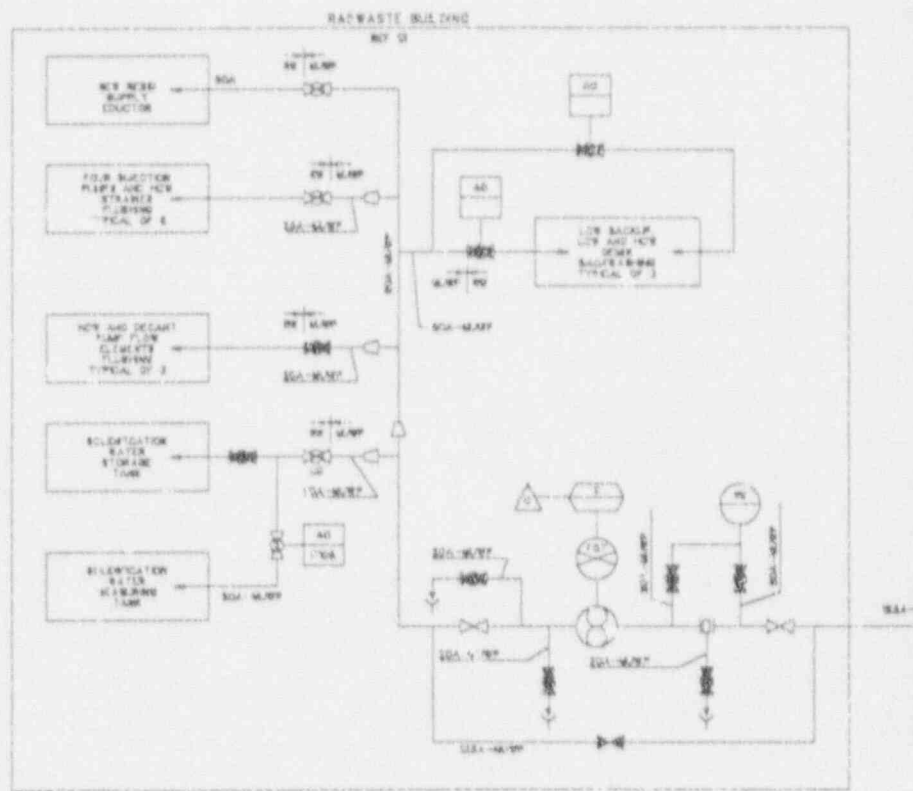
TNS-4000-10
TNS-4000-11
TNS-4000-12 } SHEET 1

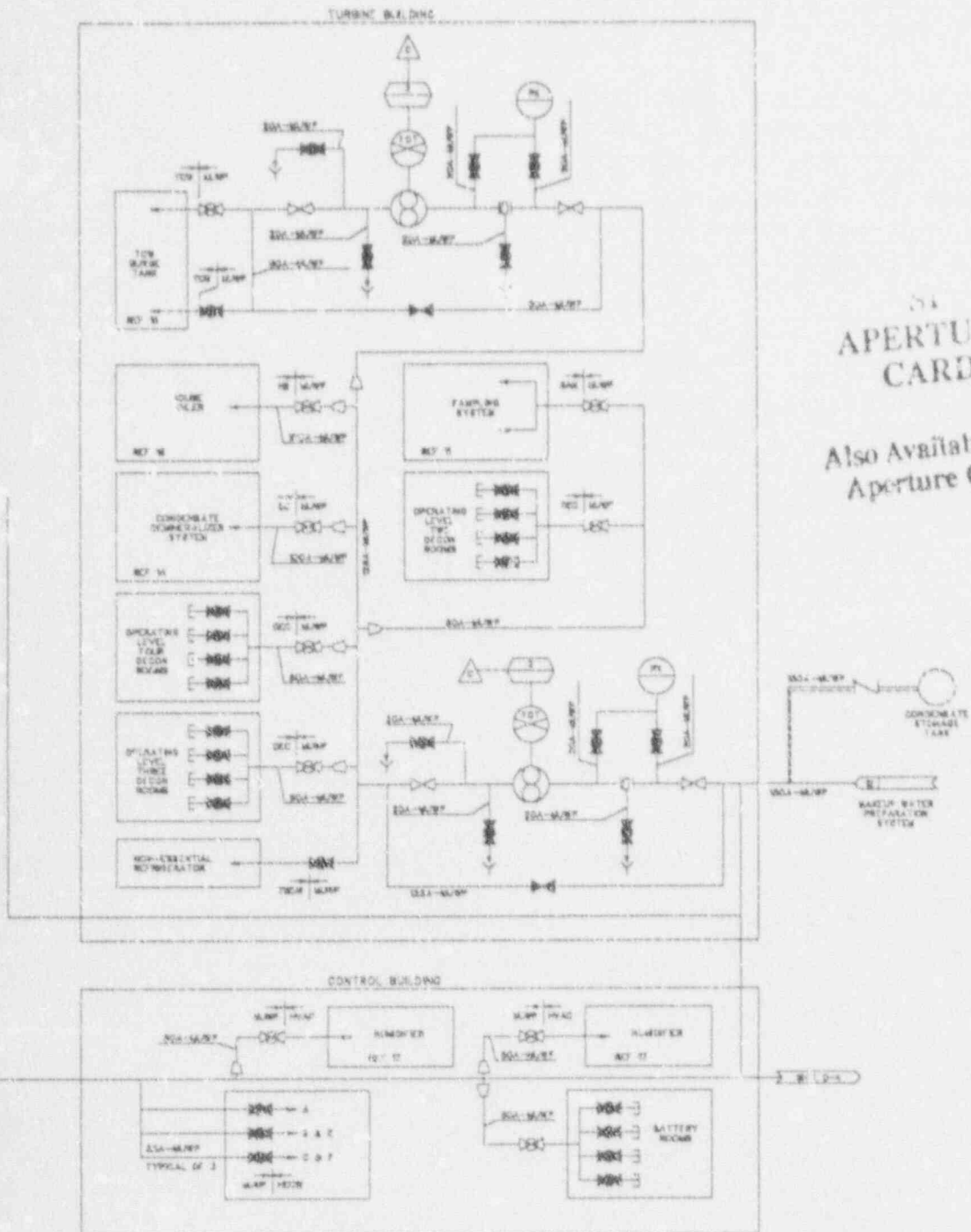


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Figure 9.2-5 MAKEUP WATER (PURIFIED) P&ID (Sheet 2 of 3)

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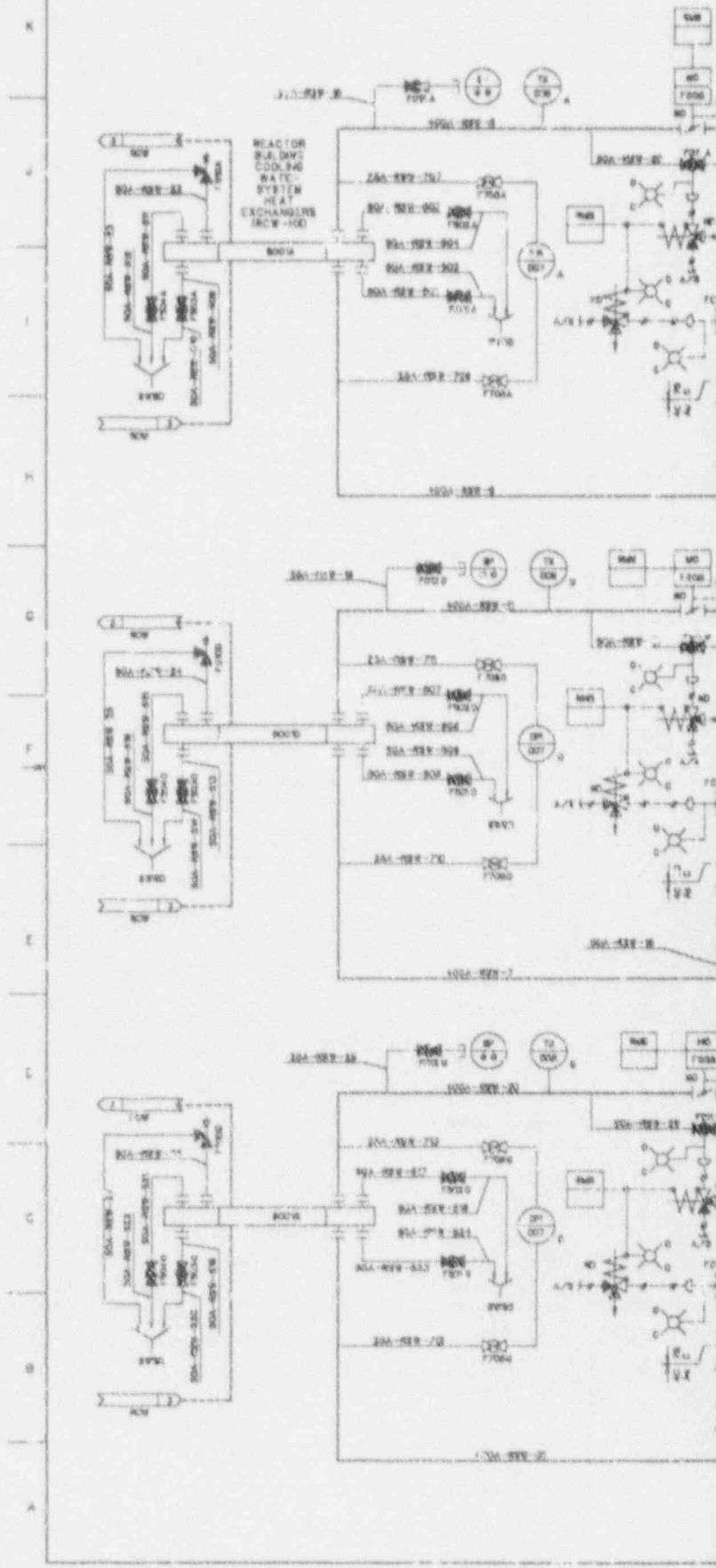


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Figure 9.2-5 MAKEUP WATER (PURIFIED) P&ID (Sheet 3 of 3)

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Handwritten notes in the left margin:

1. 30A-300-20

2. 30A-300-21

3. 30A-300-22

4. 30A-300-23

5. 30A-300-24

6. 30A-300-25

7. 30A-300-26

8. 30A-300-27

9. 30A-300-28

10. 30A-300-29

11. 30A-300-30

12. 30A-300-31

13. 30A-300-32

14. 30A-300-33

15. 30A-300-34

16. 30A-300-35

17. 30A-300-36

18. 30A-300-37

19. 30A-300-38

20. 30A-300-39

21. 30A-300-40

22. 30A-300-41

23. 30A-300-42

24. 30A-300-43

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26. 30A-300-45

27. 30A-300-46

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31. 30A-300-50

32. 30A-300-51

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34. 30A-300-53

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45. 30A-300-64

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56. 30A-300-75

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61. 30A-300-80

62. 30A-300-81

63. 30A-300-82

64. 30A-300-83

65. 30A-300-84

66. 30A-300-85

67. 30A-300-86

68. 30A-300-87

69. 30A-300-88

70. 30A-300-89

71. 30A-300-90

72. 30A-300-91

73. 30A-300-92

74. 30A-300-93

75. 30A-300-94

76. 30A-300-95

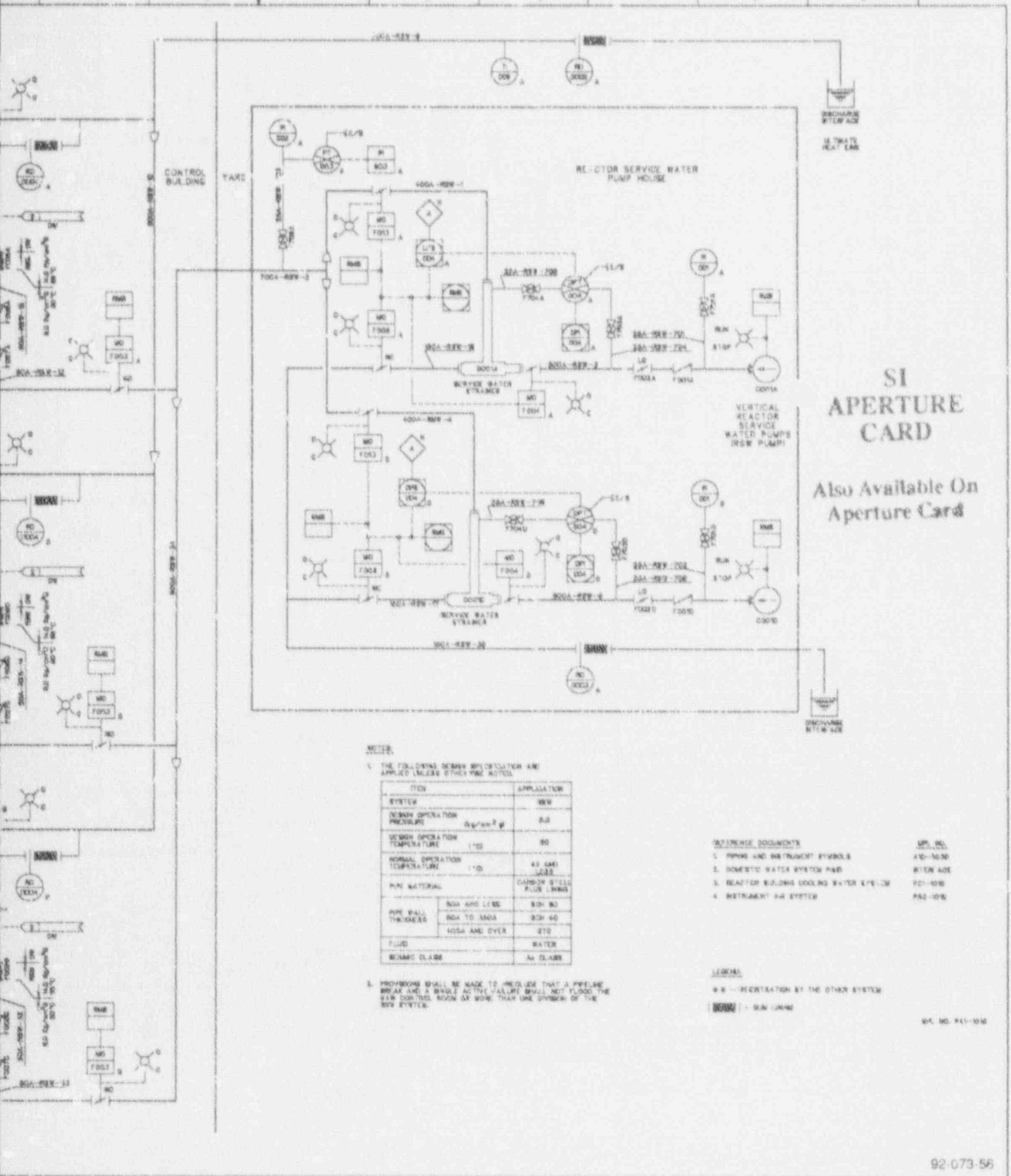
77. 30A-300-96

78. 30A-300-97

79. 30A-300-98

80. 30A-300-99

81. 30A-300-100



NOTES

1. THE FOLLOWING DESIGN SPECIFICATIONS ARE APPLIED UNLESS OTHERWISE NOTED

ITEM	APPLICATION	
SYSTEM	RSW	
DESIGN OPERATION PRESSURE	50 psig	
DESIGN OPERATION TEMPERATURE	80	
NORMAL OPERATION TEMPERATURE	45-50	
PIPE MATERIAL	CARBON STEEL FLUE L/WAG	
PIPE WALL THICKNESS	80# AND LIGS	SCH 80
	100# TO 150#	SCH 40
	150# AND OVER	STD
FLUID	WATER	
SEISMIC CLASS	AS CLASS	

2. PROVISIONS SHALL BE MADE TO PREVENT THAT A PIPELINE BREAK AND A SINGLE ACTIVE VALVE SHALL NOT FLOOD THE MAIN CONTROL ROOM OR MORE THAN ONE SPAN OF THE REACTOR.

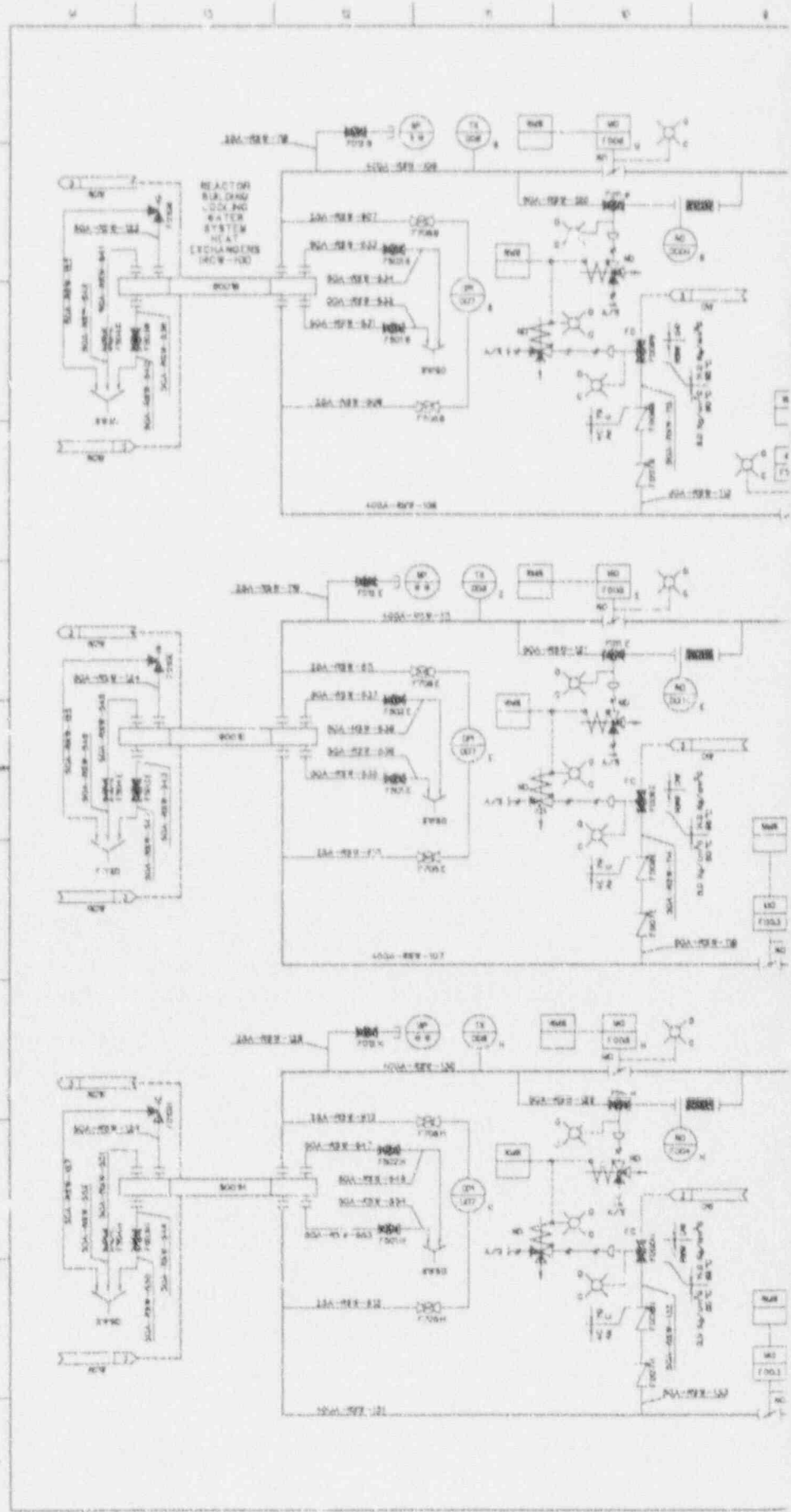
- REFERENCE DOCUMENTS
- 1. PIPING AND INSTRUMENT SYMBOLS SPS-100
 - 2. DOMESTIC WATER SYSTEM P&ID RSW-100
 - 3. REACTOR BUILDING COOLING WATER SYSTEM P&ID RCB-100
 - 4. INSTRUMENT AIR SYSTEM RSI-100

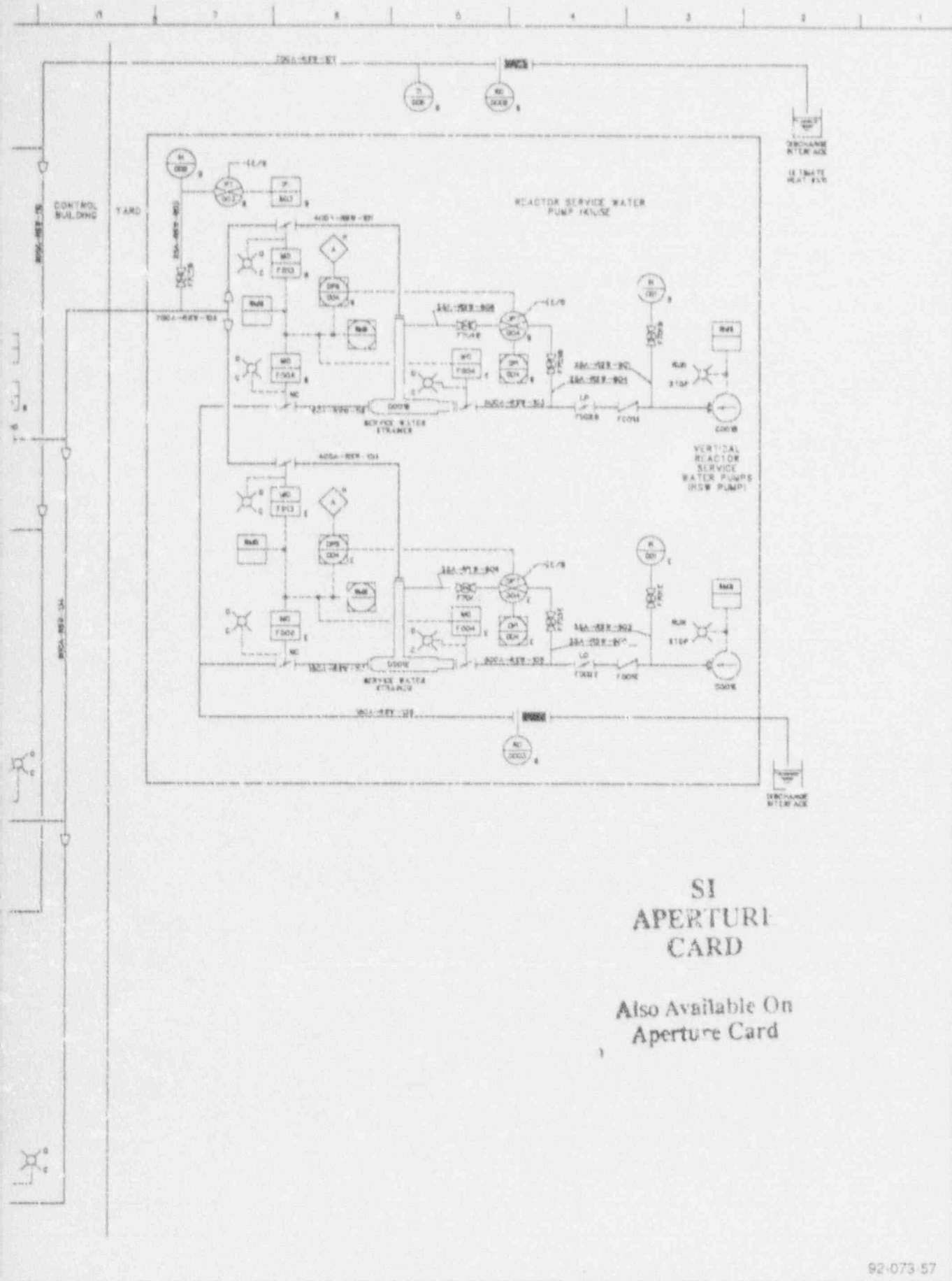
- LEGEND
- RSW - REACTOR SERVICE WATER SYSTEM
 - RSW - MAIN LINE

SP. NO. 941-100

92-073-56

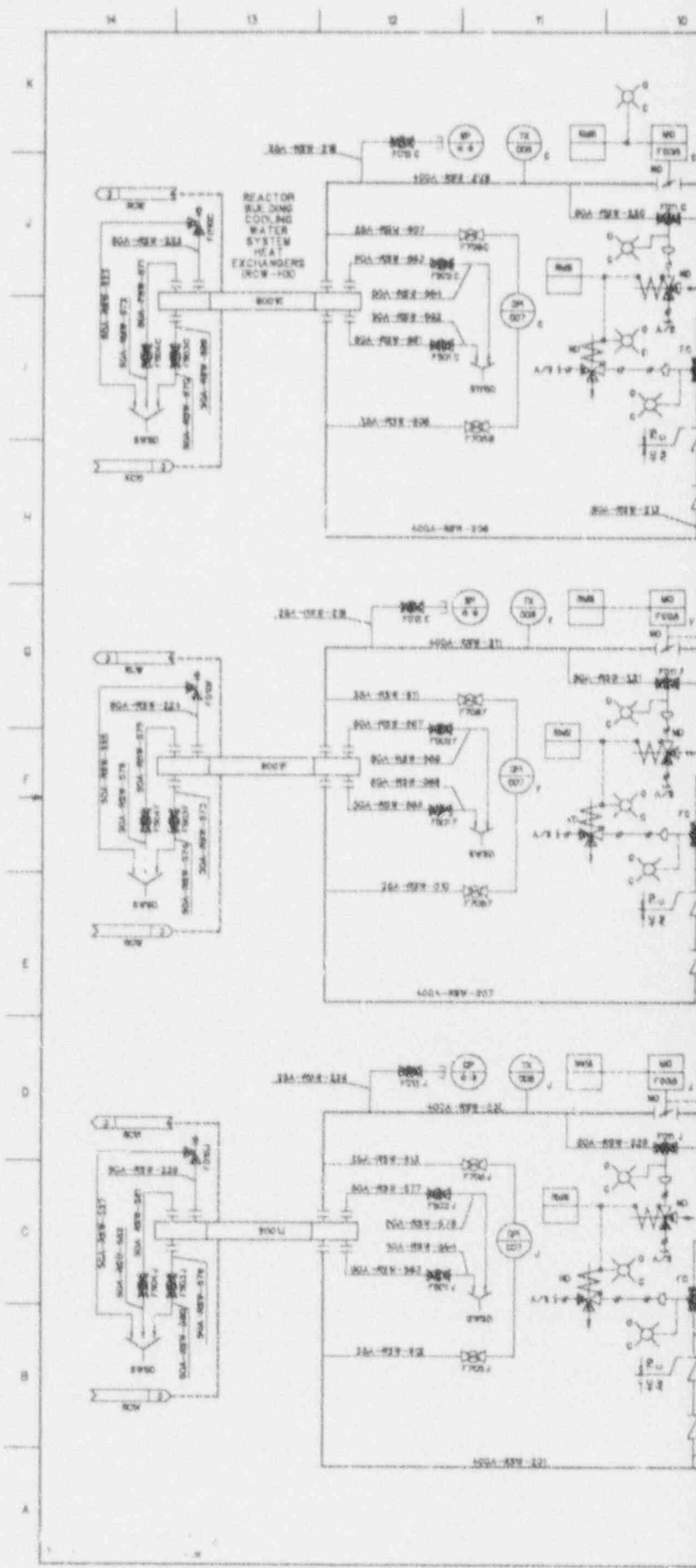
Figure 9.2-7 REACTOR SERVICE WATER P&ID (Sheet 1 of 3)

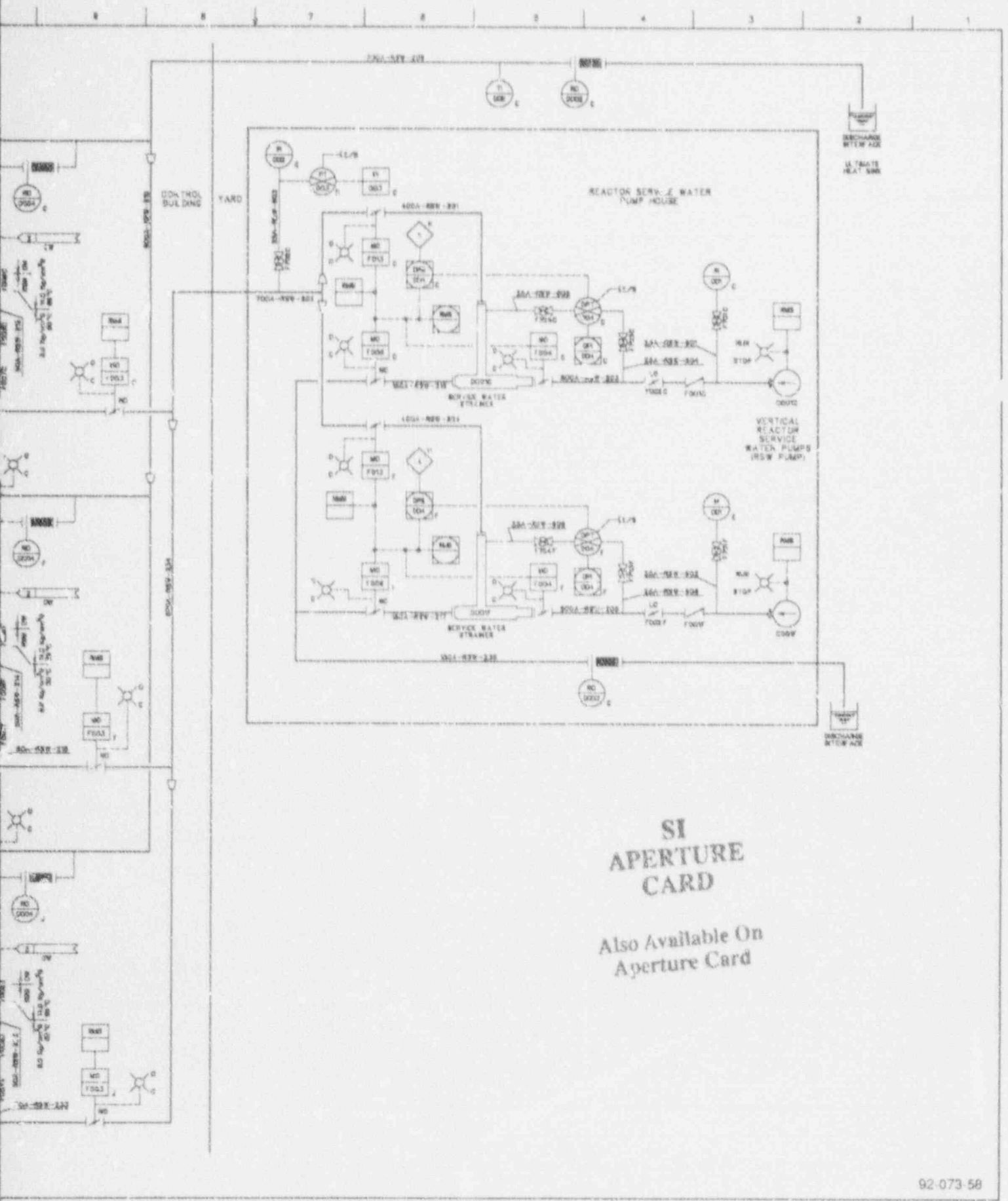




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Figure 9.2-7 REACTOR SERVICE WATER P&ID (Sheet 2 of 3)





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Figure 9.2-7 REACTOR SERVICE WATER P&ID (Sheet 3 of 3)

Amendment 11

9.2-46

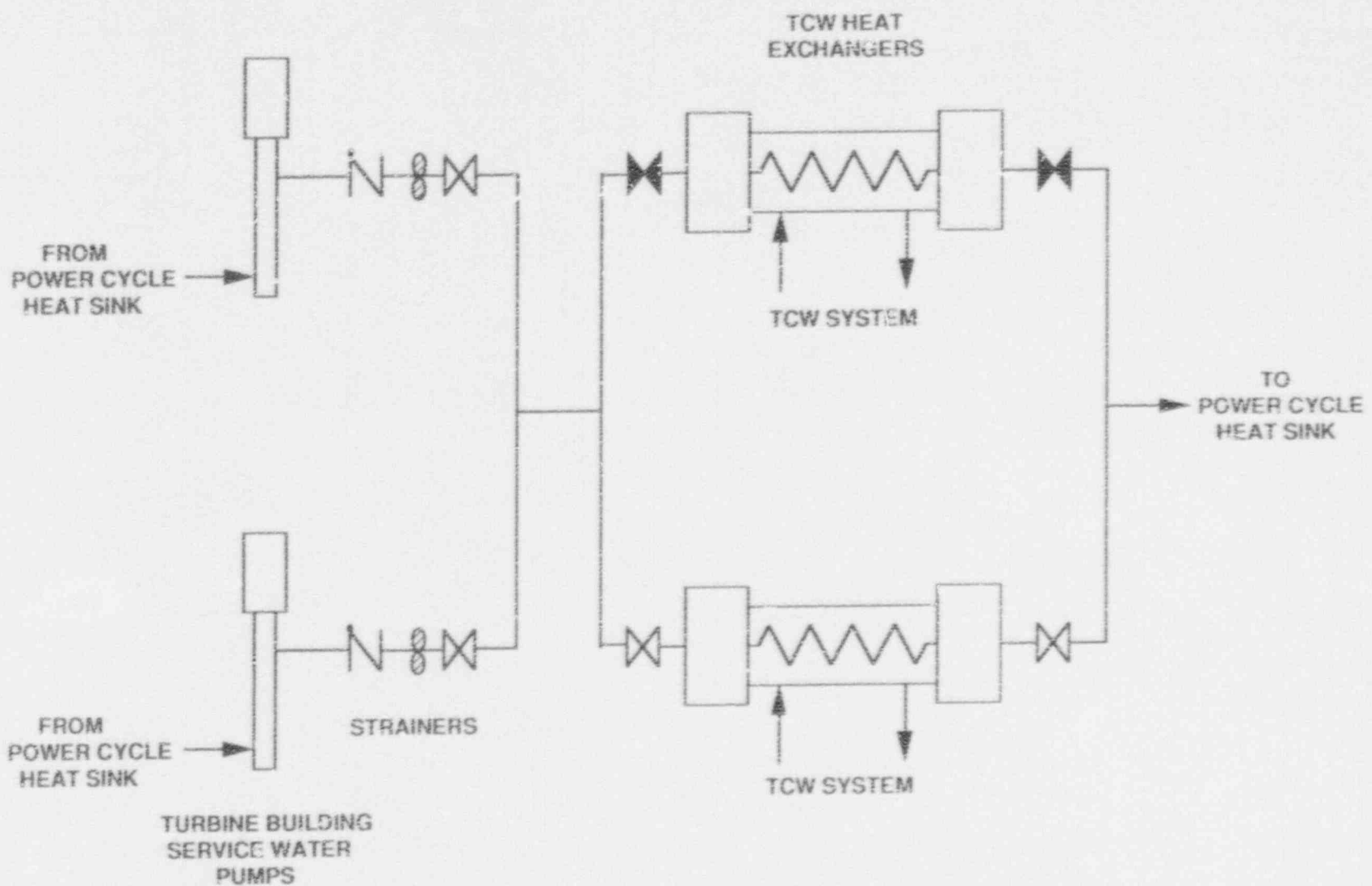
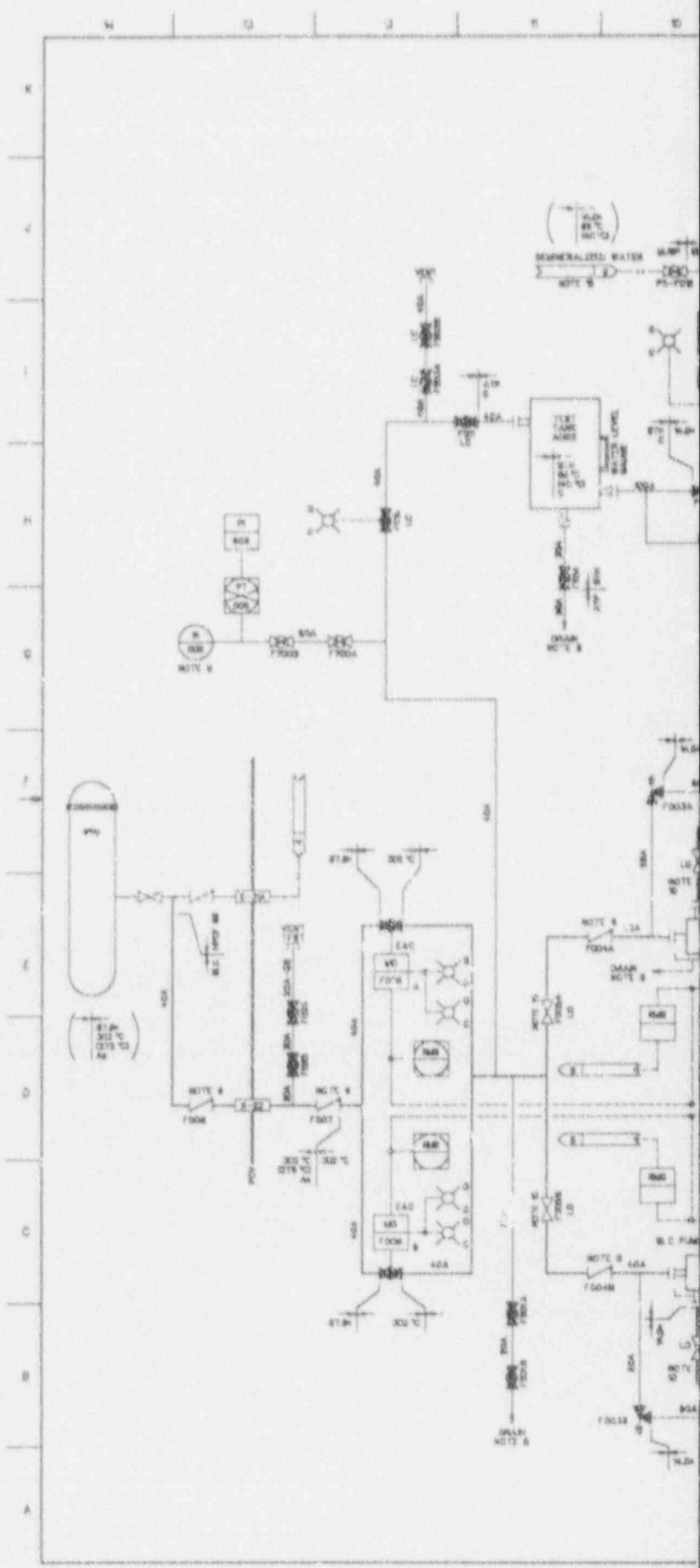
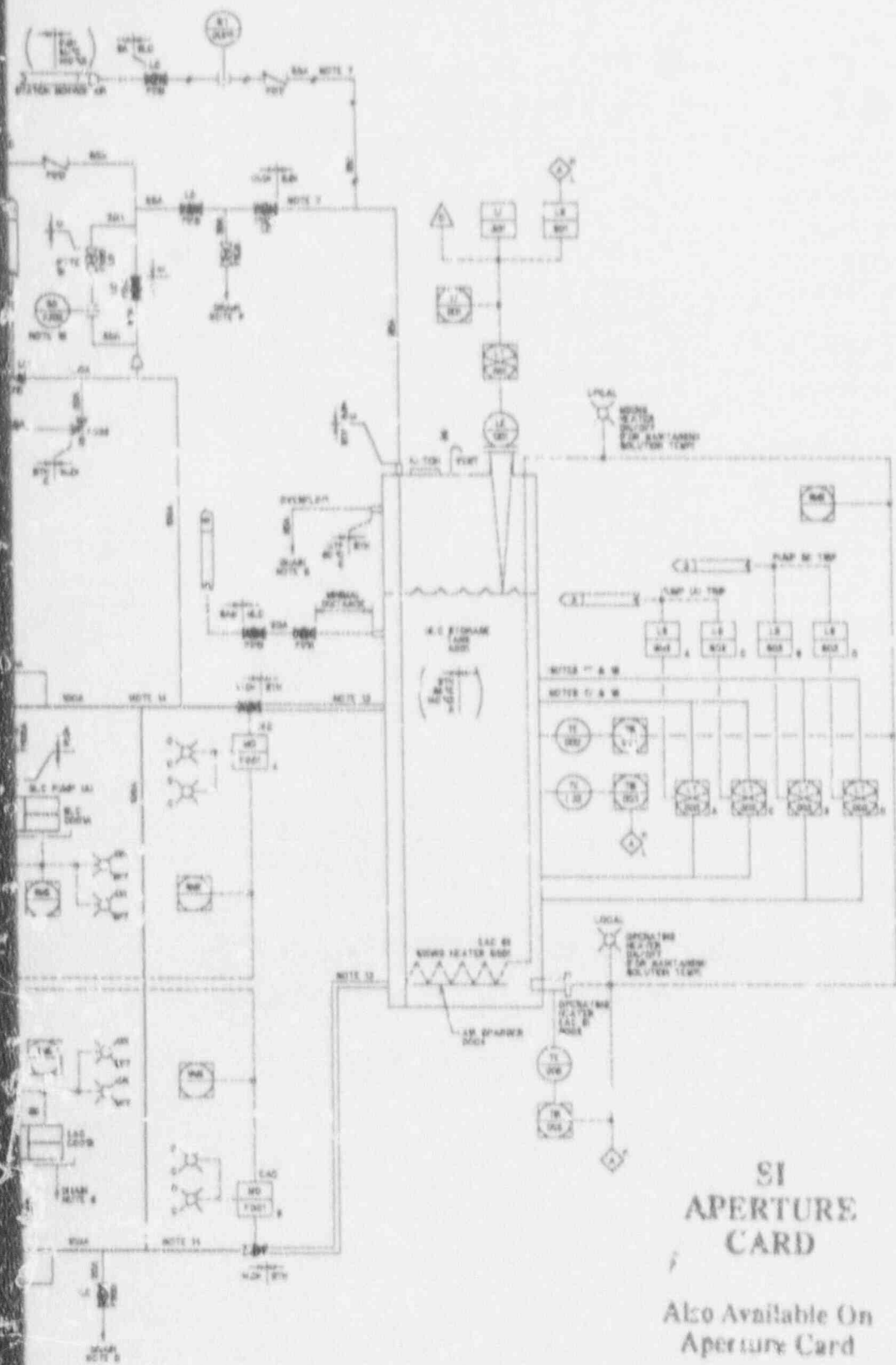


Figure 9.2-8 TURBINE SERVICE WATER SYSTEM





- NOTES:**
1. ALL EQUIPMENT AND INSTRUMENTS ARE PROVIDED BY THE MANUFACTURER'S NOTES.
 2. PUMP AND PUMP VENTS AND TEST TAP SHOULD BE RELIEVED TO THE ATMOSPHERE BY ALL WAYS THAT ARE AVAILABLE AND SERVED BY EQUIPMENT VENTS AND DRAINS.
 3. VALVE OPERABLE NOTES, VALVE POSITION LAMP AND ALARM SHOULD BE INSTALLED IN EACH CASE AND SHALL.
 4. SYSTEM SHOULD BE INSTALLED IN:
 - (A) IN CASE OTHERWISE NOTED, AS FOLLOWS:
- | ITEM | APPLICATION |
|--------------------|-------------|
| WATER STORAGE TANK | 10 |
| WATER STORAGE TANK | 10 |
| WATER STORAGE TANK | 10 |
| WATER STORAGE TANK | 10 |
| WATER STORAGE TANK | 10 |
| WATER STORAGE TANK | 10 |
5. VALVE OPERABLE NOTES, EXPLANATION DIAGRAM OF STANDARD SYMBOLS, AND TEST TAP SHOULD BE INSTALLED IN EACH CASE AND SHALL BE SERVED BY ALL WAYS THAT ARE AVAILABLE AND SERVED BY EQUIPMENT VENTS AND DRAINS.
 6. PUMP AND PUMP VENTS AND TEST TAP SHOULD BE RELIEVED TO THE ATMOSPHERE BY ALL WAYS THAT ARE AVAILABLE AND SERVED BY EQUIPMENT VENTS AND DRAINS.
 7. THE CONNECTION OF INSTRUMENTS AND VALVE SERVICES TO THE TANK SHOULD BE MADE FROM THE TOP OF THE STORAGE TANK TO AVOID RISK OF TANK RUPTURE.
 8. DRAINS SHOULD BE COLLECTED BY A REMOVAL, CONTAINER, OR TANK.
 9. TANKS & TANKS AND TANKS SHOULD BE SPRING-CLOSED VALVES.
 10. TANKS & TANKS AND TANKS SHOULD BE SPRING-CLOSED VALVES.
 11. THE DISTANCE FROM THE TANK AND TEST TAP TO PUMP SECTION SHOULD BE LESS THAN 50 METERS.
 12. VALVE TANK SHOULD BE LOCATED ABOVE THE WATER LEVEL OF THE STORAGE TANK.
 13. VALVE TANK & SHOULD BE CONNECTED DIRECTLY TO THE STORAGE TANK.
 14. RELIEF MATERIAL SHOULD BE PROVIDED TO VALVE TANK & THE W.C. PUMP SECTION ABOVE.
 15. THE OPERATIONAL WATER SUPPLY SHALL HAVE PRESSURE ABOVE THE STATIC PRESSURE OF THE STORAGE TANK. RELIEF VALVE SHOULD BE PROVIDED AT THE STORAGE TANK. THE VALVE IS NORMALLY CLOSED.
 16. THE OPERATIONAL WATER SUPPLY SHALL HAVE PRESSURE ABOVE THE STATIC PRESSURE OF THE STORAGE TANK. RELIEF VALVE SHOULD BE PROVIDED AT THE STORAGE TANK. THE VALVE IS NORMALLY CLOSED.
 17. THE VERTICAL DISTANCE BETWEEN THE TANKS & THE STORAGE TANKS SHALL BE LESS THAN 50 METERS.
 18. INSTRUMENT LINES SHALL BE HEAT TRACED.

EQUIPMENT CODES

CODE	DESCRIPTION	REV. NO.
1	WATER AND INSTRUMENT STORAGE TANK	100-1000
2	STANDBY LIQUID CONTROL SYSTEM	101-1000
3	STANDBY LIQUID CONTROL SYSTEM	101-1000
4	WATER PRESSURE CONTROL SYSTEM	102-1000
5	WATER PRESSURE CONTROL SYSTEM	102-1000
6	WATER PRESSURE CONTROL SYSTEM	102-1000
7	WATER PRESSURE CONTROL SYSTEM	102-1000
8	WATER PRESSURE CONTROL SYSTEM	102-1000

LEGEND:

- STH - STATIC WATER HEAD
- STP - ATMOSPHERIC PRESSURE
- 1 - 1/2" NPT

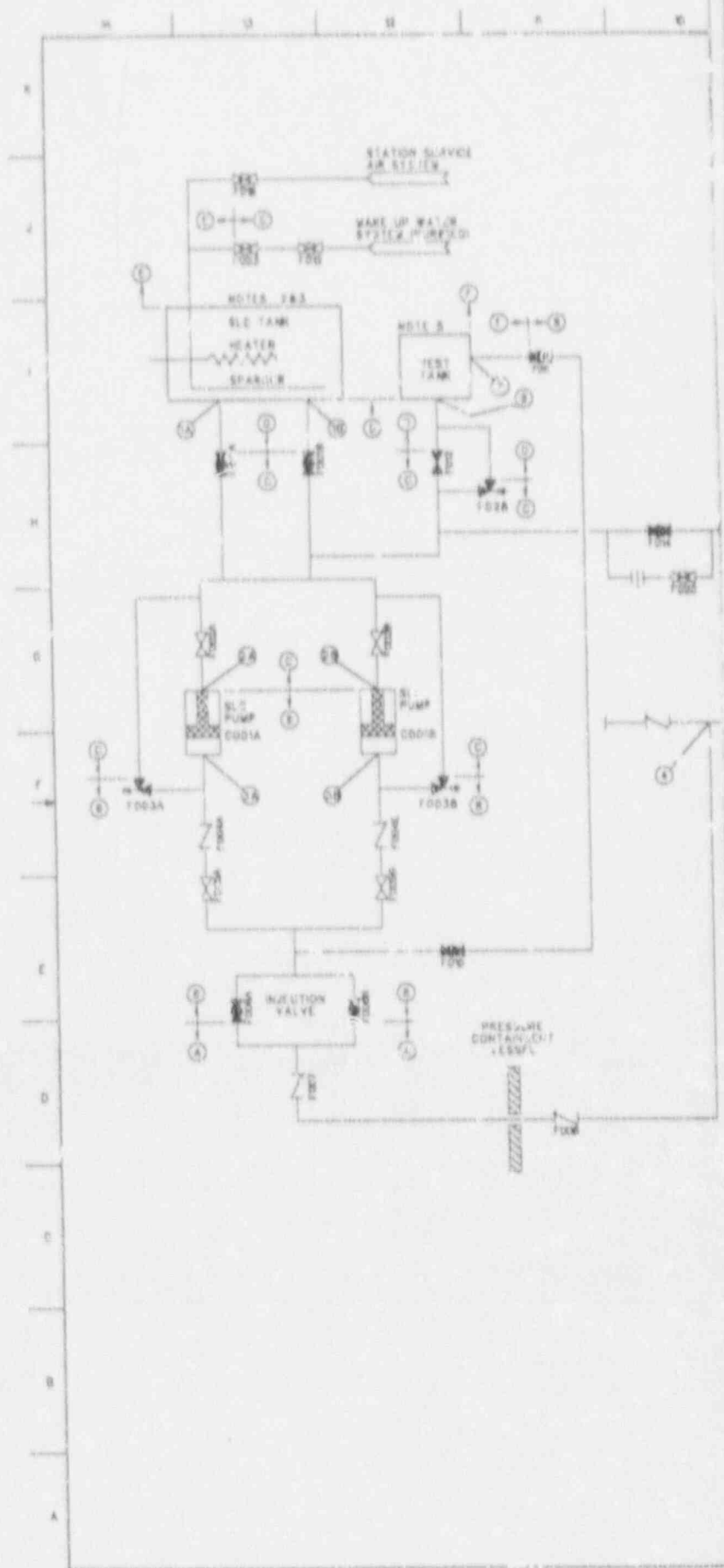
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REV. NO. 041-000

92 074-33

Figure 9.3-1 STANDBY LIQUID CONTROL SYSTEM P&ID



MODE A FEEDER SUCTION MODE NOTE B

LOCATION	1	2	3	4	5	6	7
FLOW (L/min)	188	188	188	188	188	0	0
PRESS (kg/cm ² g)	5TH	-01	RA1 ^a	RA2	RA3	5TH	ATP
TEMP (°C)	30	30	30	30	30	AWT	AWT
MAX ALLOWABLE PRESS LOSS (m)	-0.2 ^a PEAK PRESS 100 kg/cm ² g						

MODE B RCN SUCTION TEST MODE NOTE B

LOCATION	6	7	7	7	1	4	5
FLOW (L/min)	188	188	188	188	0	0	0
PRESS (kg/cm ² g)	5TH	-01	RA1 ^a	ATP	5TH	RA1	RA1
TEMP (°C)	DWT	DWT	DWT	DWT	30	RA1	RA1
MAX ALLOWABLE PRESS LOSS (m)	-0.2 ^a PEAK PRESS 100 kg/cm ² g						

MODE C SUCTION TEST MODE NOTE B

LOCATION	8	1	3	4	5	1	7
FLOW (L/min)	0	188	188	188	188	0	0
PRESS (kg/cm ² g)	5TH	-01	R	R	RA1	5TH	ATP
TEMP (°C)	DWT	DWT	DWT	DWT	30	0	AWT
MAX ALLOWABLE PRESS LOSS (m)	-0.2						

MODE D STANDBY MODE

LOCATION	1	2	4	5	6	7
FLOW (L/min)	0	0	0	0	0	0
PRESS (kg/cm ² g)	5TH	RA1	DWT	RA1	RA1	ATP
TEMP (°C)	30	AWT	AWT	RA1	RA1	AWT
MAX ALLOWABLE PRESS LOSS (m)						

	A	B	C	D	E	F
MAX OPERATING PRESSURE (kg/cm ² g)	87.8	10	14.5	5TH	8.8	ATP
MAX OPERATING TEMPERATURE (°C)	72	88	88	82	88	88

VALVE OPENING/CLOSING CONDITION NOTE B

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	001	002	014	005	008	007	008	011	011	011	011	011	011	014
MODE A	0	0	0	0	0	0	0	X	X	X	X	X	X	X
MODE B	X	0	0	0	0	X	X	X	X	0	0	0	0	0
MODE C	X	0	0	0	0	0	0	X	X	0	0	0	0	0
MODE D	X	0	X	0	X	X	X	X	X	X	X	X	X	X

0: FULL OPEN X: PARTIALLY OPEN - : CLOSE

NOTES

1. [] SHOWS THE VALUE WHICH IS NOT NEEDED IN A BASIC PLANNING OF THE SYSTEM.
2. SOLUTION TEMP IN S.I.C. 1. OR SHALL BE MAINTAINED AT 30.0°C DURING NORMAL PLANT OPERATION.
3. S.I.C. TANK SHALL BE LOCATED SUCH THAT PUMP SUCTION PIPING IS ALWAYS FILLED WITH THE SOLUTION.
4. S.I.C. PUMP SHALL BE ABLE TO INJECT BORON SOLUTION AT REACTOR PRESSURE OF 80.8 kg/cm²g.
5. TEST TANK SHALL BE LOCATED SUCH THAT PUMP SUCTION PIPING IS ALWAYS FILLED WITH WATER.
6. DURING OPERATING MODE A, B OR C, ONLY ONE PUMP IS RUN.

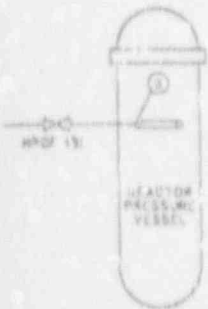
REFERENCE DOCUMENTS

- | | |
|-----------------------------------|----------------------|
| 1. STANDBY LIQUID CONTROL SYS IHD | WPL ITEM NO. 041-010 |
| 2. STANDBY LIQUID CONTROL SYS PAD | 041-010 |

ABBREVIATION

- 5TH: STATIC WATER HEAD
 ATP: ATMOSPHERIC PRESSURE
 AWT: AQUIFER TEMPERATURE
 DWT: SUPPLIED DOWN WATER TEMPERATURE
 DWP: SUPPLIED DOWN WATER PRESSURE
 RA1: REACTOR PRESSURE
 RAT: REACTOR TEMPERATURE

1. USE MAKE UP WATER SYSTEM (PUMPED)

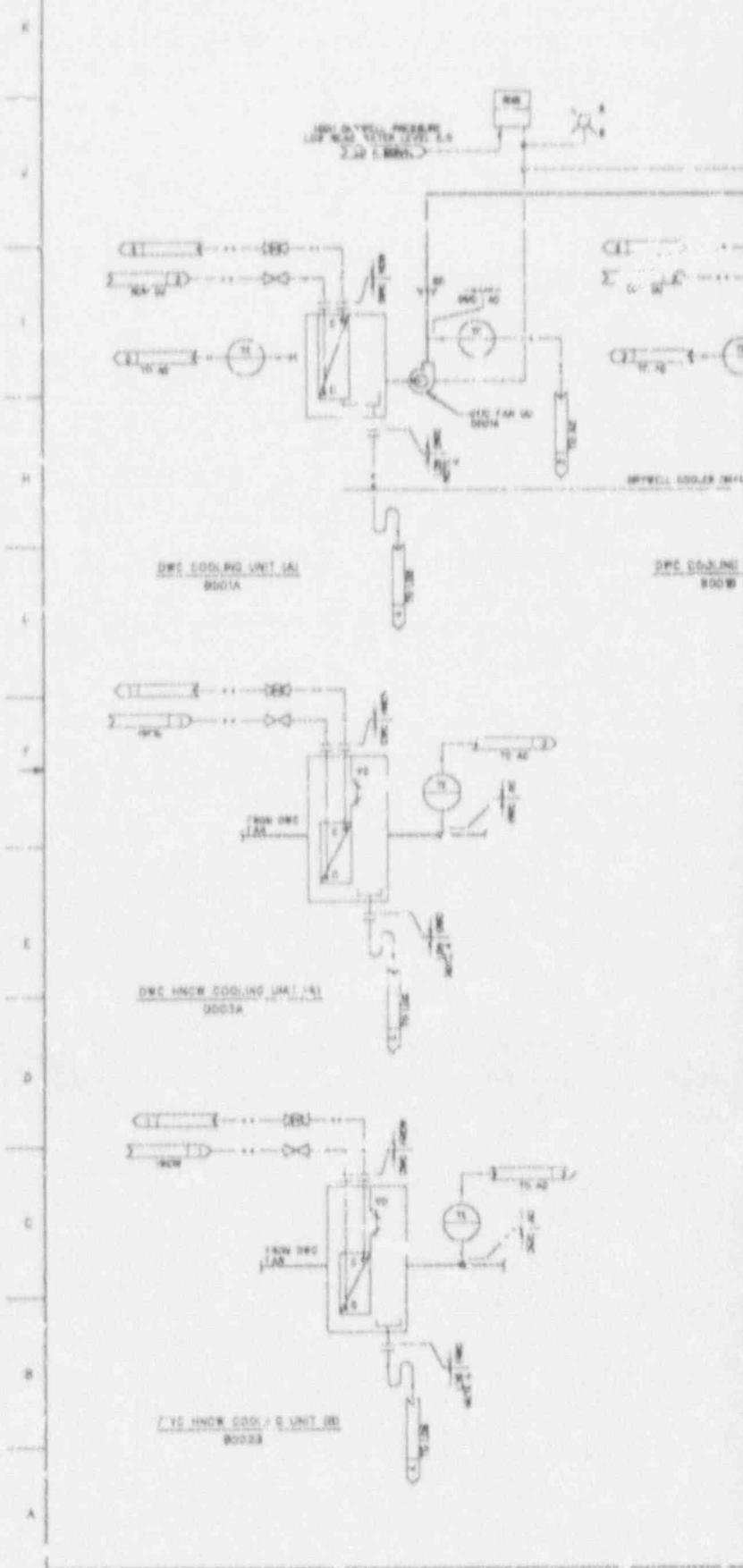


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Figure 9.3-1A STANDBY LIQUID CONTROL SYSTEM PROCESS FLOW DIAGRAM

W U G T O



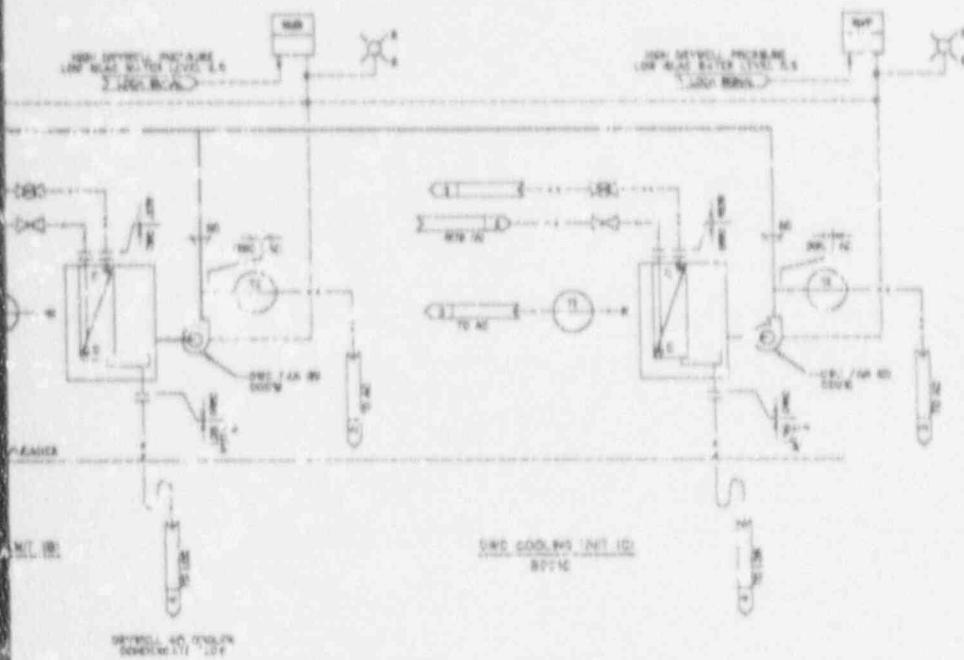
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8001A

DWC COOLING UNIT (B)
8002B

DWC HPCR COOLING UNIT (C)
8003C

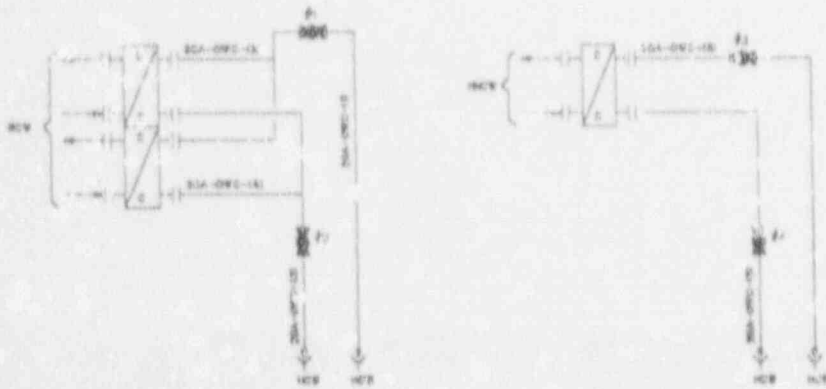
DWC HPCR COOLING UNIT (C)
8003C

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- NOTES**
1. TWO OF DRYWELL AND 1 OF DRYWELL UNDER NORMAL OPERATIONS.
 2. ALL PIPING IS 2" DIA. UNLESS OTHERWISE SPECIFIED.
 3. MOUNTING OF INSTRUMENTS IS AS FOLLOWS:
 PRESSURE GAUGES: 1" DIA.
 FLOW METER: 1" DIA.
 TEMPERATURE: 1" DIA.
 LEVEL: 1" DIA.
 TRANSMITTER: 1" DIA.
 VALVE: 1" DIA.
 INSTRUMENT: 1" DIA.
 4. THE CONSTRUCTION OF THIS SYSTEM SHALL BE IN ACCORDANCE WITH THE APERTURE AND THE APERTURE CARD.

- REFERENCE DOCUMENTS**
- | REF. NO. | DESCRIPTION | REV. NO. |
|----------|--------------------------------------|-----------|
| 1 | THE NORMAL COOLING WATER SYSTEM P&ID | PSA-010 |
| 2 | DRYWELL COOLING WATER SYSTEM P&ID | PSA-011 |
| 3 | ATMOSPHERIC CONTROL SYSTEM P&ID | 113-010 |
| 4 | LEAK DETECTOR & ALARM SYSTEM P&ID | 113-011 |
| 5 | PIPING AND INSTRUMENT SYMBOLS | ASME-11.1 |



DETAILED DRAWING OF COOLING COILS SHOWN IN P&ID LINE
SEE TABLE 1

TABLE 1

COILMENT NO.	PIPING NO.						VALVE NO.			
	P1	D1	D2	D3	D4	D5	P1	P2	P3	P4
COIL-DRY-1A	807	808	809	810	811	812	1001	1002	1003	1004
COIL-DRY-1B	807	808	809	810	811	812	1001	1002	1003	1004
COIL-DRY-2A	807	808	809	810	811	812	1001	1002	1003	1004
COIL-DRY-2B	807	808	809	810	811	812	1001	1002	1003	1004

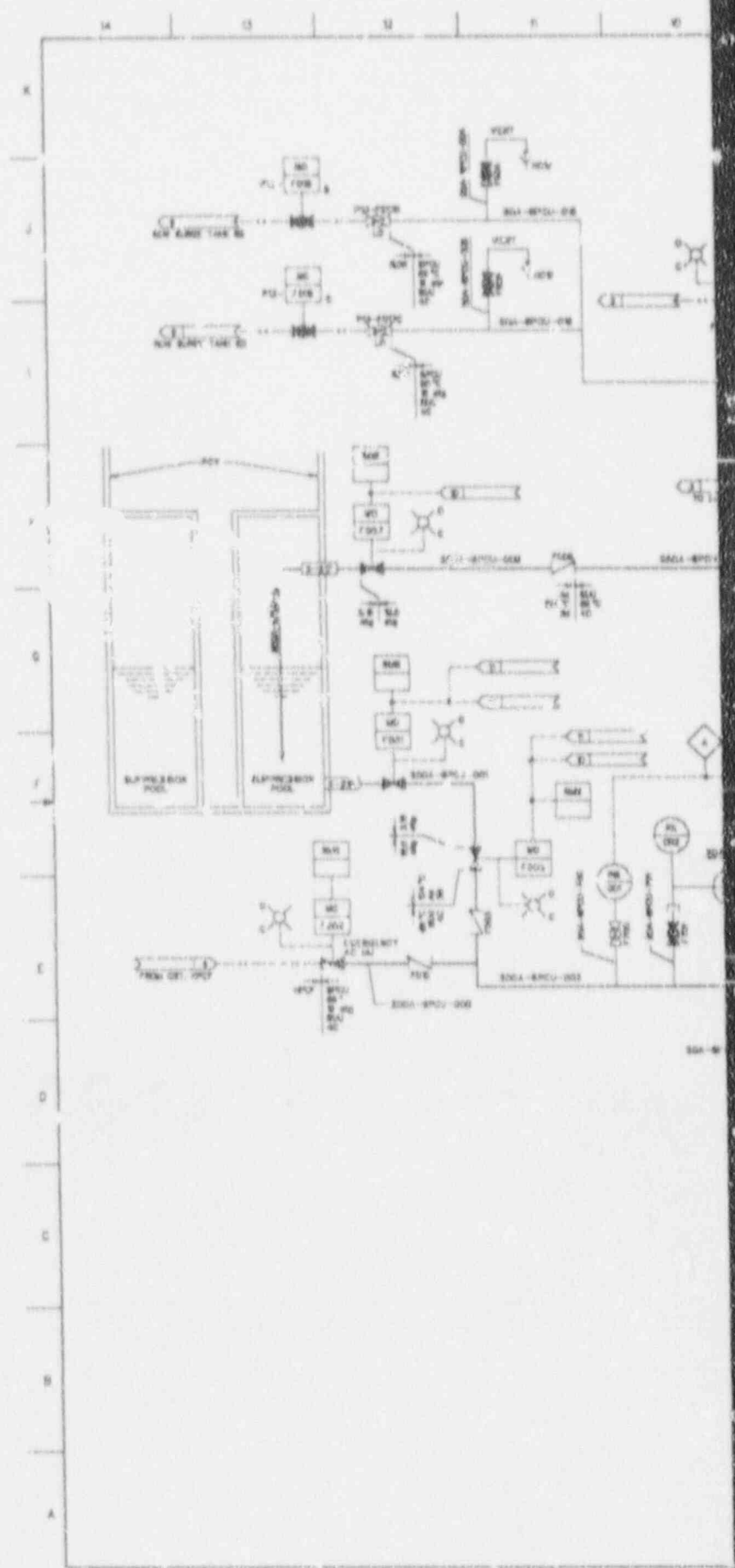
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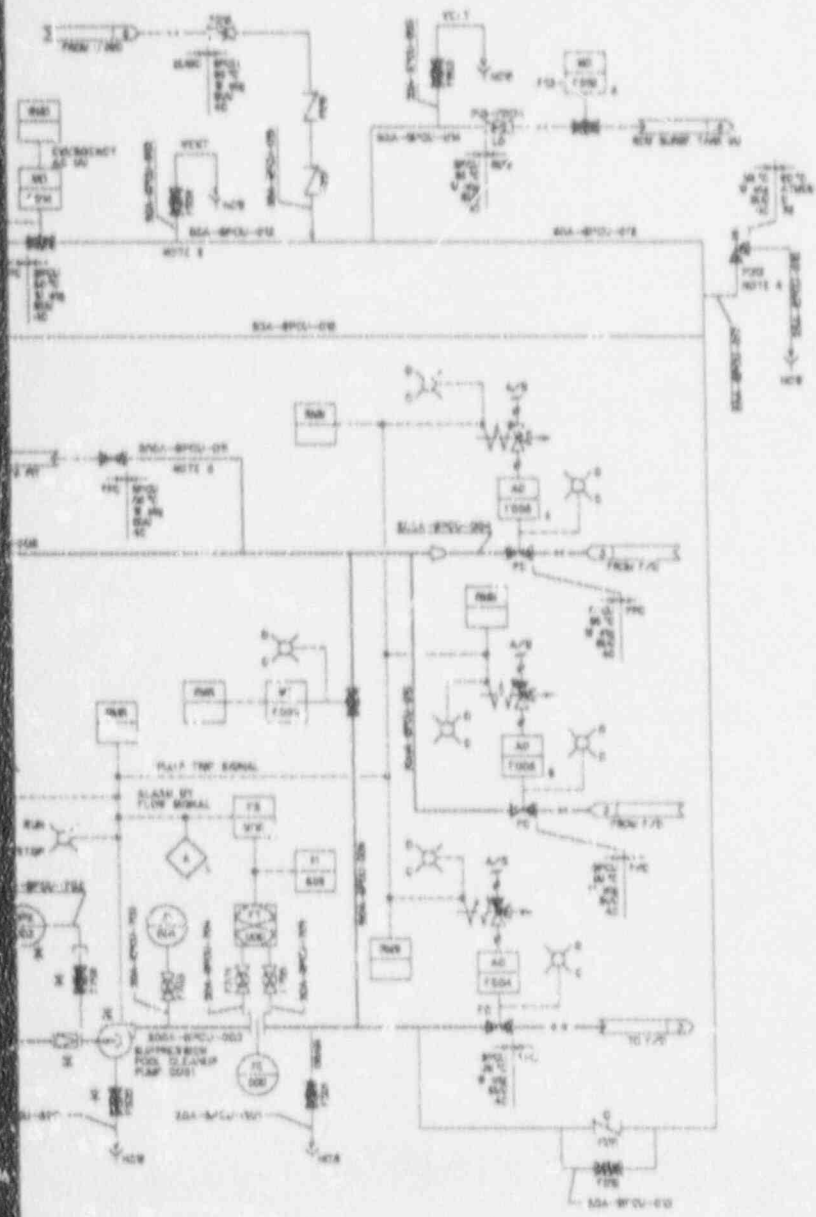
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92-073-63

Figure 9.4-8 DRYWELL COOLING SYSTEM P&ID





NOTES

1. NORMAL CONDITION OF THE SYSTEM IS AS FOLLOWS EXCEPT BY SPECIAL NOTES:
 DESIGN PROGRAM 0.0 kg/cm² g
 DESIGN TEMPERATURE 90 °C
 DESIGN CLASS 1
 DESIGN CLASS 1
 DESIGN CLASS 1
 QUALITY CONTROL CLASS 2
 MATERIALS SS
2. LINE AND VALVE DESIGN CONDITION FOR SPECIAL CASES ARE NOT NECESSARILY ADAPTED TO THIS DESIGN CONDITION.
3. THIS SYSTEM IS DESIGNED FOR FULL POWER OPERATION AT LOSS OF THE NORMAL SALESER FUNCTION.
4. ALARMS GENERATED BY THIS SYSTEM ARE INDICATED ON THE FACE PANEL IN THE MAIN CONTROL ROOM.
5. VALVE DESIGN CONDITION IS DEFINED BY THE MORE SEVERE CONDITION OF VALVE INLET OR OUTLET.
6. ELECTRIC POWER TO THIS SYSTEM IS SUPPLIED FROM CLASS 5E POWER SOURCE THROUGH LAL.
7. RELIEF VALVES SHALL BE INSTALLED AS TO MEET INPUT TO THE CLOSED POPAD ACTION.

REFERENCE DOCUMENTS

REFERENCE DOCUMENTS	REV. NO.
1. PUMP AND INSTRUMENT SYMBOLS D-1048	1-0-1000
2. PROCESS LAYOUT SYSTEM P&ID	201-010
3. P&ID: P&ID: COOLING AND CLEANUP SYSTEM P&ID	841-010
4. P&ID: P&ID: COOLING AND CLEANUP SYSTEM P&ID	871-010
5. SUPPLEMENTARY P&ID: CLEANUP SYSTEM P&ID	171-010
6. P&ID: P&ID: P&ID: COOLING AND CLEANUP SYSTEM P&ID	141-010
7. WASTE WATER SYSTEM LAYOUT P&ID	201-010
8. WASTE WATER SYSTEM LAYOUT P&ID	201-010
9. WASTE WATER SYSTEM LAYOUT P&ID	201-010
10. LEAK DETECTION AND ISOLATION SYSTEM P&ID	131-010
11. ATMOSPHERIC CORROSION SYSTEM P&ID	131-010

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Figure 9.5-1 SUPPRESSION POOL CLEANUP SYSTEM P&ID