EDWIN I. HATCH NUCLEAR PLANT

UNIT 1

CONTAINMENT LEAK RATE TEST PROGRAM

7903090183

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I. INTRODUCTION

Contained in this document is a reevaluation of the Plant Hatch Unit 1 Containment Leak Rate Test Program. The original program for Unit 1 was prepared with the intent of meeting the requirements of 10CFR50, Appendix J, "Reactor Containment Leakage Testing for Water Cooled Power Reactors", dated February 14, 1973. Since that time the Plant Hatch Unit 2 Containment Leak Rate Test Program has been reviewed and approved by the NRC. In order to maintain a continuity of test procedures and interpretation of 10CFR50, Appendix J between the two units, a rereview of the Unit 1 program was conducted. Each primary containment penetration on Unit 1 was compared to its similar penetration on Unit 2 and evaluated under the same guidelines used to develop the Unit 2 program.

II. PROPOSED PLANT MODIFICATIONS

Leakage testing capabilities for each penetration were examined in the as-built condition. Several penetrations have primary containment isolation valves which are presently capable of being leakage rate tested only by pressurizing in a direction opposite to the primary containment pressure. However, their designs do not offer conservatism or justification for testing in the reverse direction. Also identified in the review was an additional penetration whose associated system piping cannot be considered a closed system unless a specific portion of connecting piping is removed. Therefore, modifications are required to enable leakage tests which are in compliance with the requirements of 10CFR50, Appendix J.

A detailed discussion for each of the affected penetrations is provided in this section including proposed plant modifications. It should be noted that the proposed modifications, when compared to Unit 2, were part of the Unit 2 initial design or were made to conform with the requirements of 10CFR50, Appendix J during the Unit 2 licensing process. Therefore, they are needed on Unit 1 to standardize the leakage testing program between the two units.

Penetrations Requiring Modification To Conform to 10CFR50, Appendix J

Penetration X25 - Vent Purge Supply:

Valve T48-F118A is a globe valve pressurized in the reverse direction during leakage testing. The valve cannot be conservatively tested in the reverse direction. A blocking valve and test connection installed as shown on Figure 1 will allow testing of valve T48-F118A in the proper direction. The modification shown in Figure 1 will also allow pressurizing of valves T48-F114 and T48-F322 in the correct direction. This arrangement is beneficial, although the two control valves may be conservatively tested as installed. This modification requires one 2" and one 3/4" ASME Section III Class 2 valves.

Penetration X26 - Vent Purge Return/H_2 & O_2 Analyzer:

This penetration has three control valves not conservatively tested in the reverse direction: T48-F335A and B, and P33-F002. As shown on Figure 2, T48-F335A and B can be tested in the correct direction by installing one blocking valve and a single valve test connection in the common line. P33-F002 has a blocking valve upstream and needs only the addition of a single valve test connection. Two 3/4" and one 2" ASME Section III Class 2 valves are required for these modifications.

Penetration X28A - Recirculation Sample

Valve B31-F019 is a globe valve that cannot be conservatively tested in the reverse direction. As shown on Figure 3, a blocking valve is presently installed but a test connection is required between B31-F019 and the blocking valve. Two 3/4" ASME Section III Class 1 valves are required for this modification.

Penetration X28F - H_2 & O_2 Analyzer:

P33-F003 is a control valve non-conservatively pressurized in the reverse direction. As shown on Figure 4, a blocking valve is presently installed, but a test connection is required between P33-F003 and the blocking valve. One 3/4" ASME Section III Class 2 valve is required for this modification.

Penetration X31F - Recirculation Pump Seal Water:

The present system design does not provide testing capabilities for check valves B31-F013A or B31-F017A. Test connections are required as shown in Figure 5. This modification requires four 3/4" ASME Section III Class 2 valves.

Penetration X45F - ILRT Verification Flow:

The inboard isolation globe valve, T23-F004, cannot be conservatively leakage rate tested by applying pressure in the reverse direction. T23-F004 can be tested in the correct direction by installing a flange on the pipe termination inside the drywell and testing through a blind flange with an installed test connection.

Penetration X46 - Demineralized Water:

The present system design has check valve P21-F372 installed between locked closed manual isolation valves P21-F406 and P21-F353. This arrangement results in the utilization of check valve P21-F372 as an isolation valve. The relative position of valves P21-F372 and P21-F353 should be interchanged and the test connection should be between P21-F353 and P21-F406 as shown in Figure 6. P21-F406 should be tested with pressure in the correct direction by pressurizing through a drywell hose connection. No additional valves are required for this modification.

Penetration X59A - Recirculation Pump Seal Water:

This penetration design is identical to X31F (see Figure 5). Testing capabilities are not provided for check valves B31-F013B or B31-F017A. Test connections are required as shown in Figure 5. This modification requires four 3/4" ASME Section III Class 2 valves.

Penetration X205 - Containment Purge and Inerting:

Globe isolation valve T48-F118B cannot be tested conservatively in the reverse direction. The modification shown in Figure 7 is similar to the one discussed for penetration X25.

Penetration X210 - Radwaste Connection:

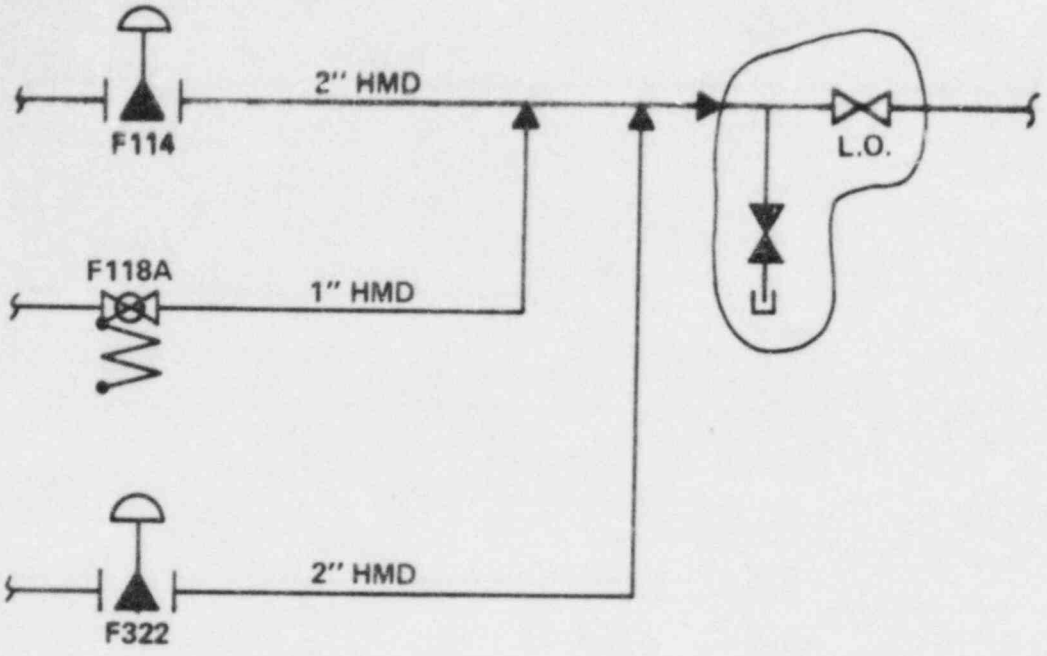
The radwaste (G11) connection should be removed from Core Spray Loop B as shown in Figure 8. The G11 tie-in consists of quality group D piping and valves and does not meet the quality group B requirement for closed systems. Consequently, the Core Spray piping cannot be considered a closed system unless the G11 connection is removed. An identical situation existed on Unit 2 and was corrected by removing and capping the tie-in after it was determined that the line was not required. The same modification is required on Unit 1.

Penetration X217 - H_2 & O_2 Analyzer:

P33-F007 cannot be leakage tested in the correct direction and a reverse pressure test is not conservative. A blocking valve is part of the present system design. Therefore, an installed test connection will provide the required leakage testing capability for this valve (see Figure 9). This modification requires one 3/4" ASME Section III Class 2 valve.

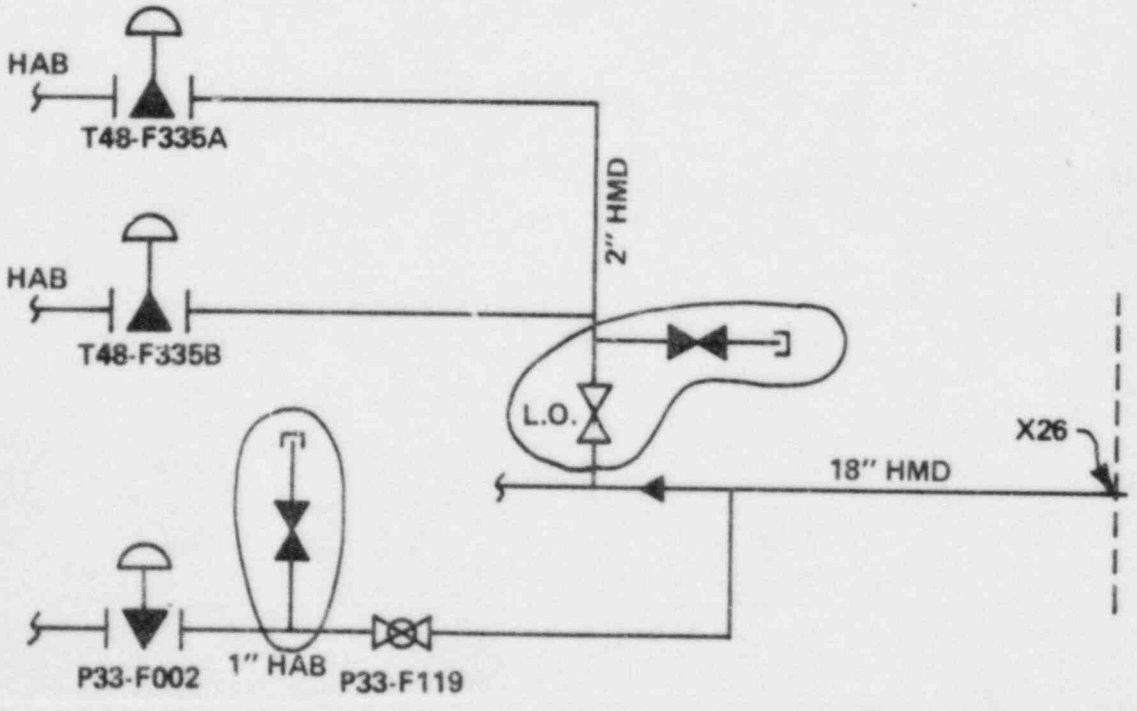
Penetration X220 - Vent Purge Outlet/H_2 & O_2 Analyzer:

Valves T48-F333A/B are control valves that are utilized as primary containment isolation valves. The valves cannot be conservatively tested in the reverse direction and are not presently capable of being tested from the containment direction. The addition of a blocking valve and a test connection as shown in Figure 10 will enable acceptable leakage rate testing of these valves. Isolation valve P33-F006 has a blocking valve installed, but requires the installation of a test connection for leakage rate testing. This modification requires one 2" and two 3/4" ASME Section III, Class 2 valves.



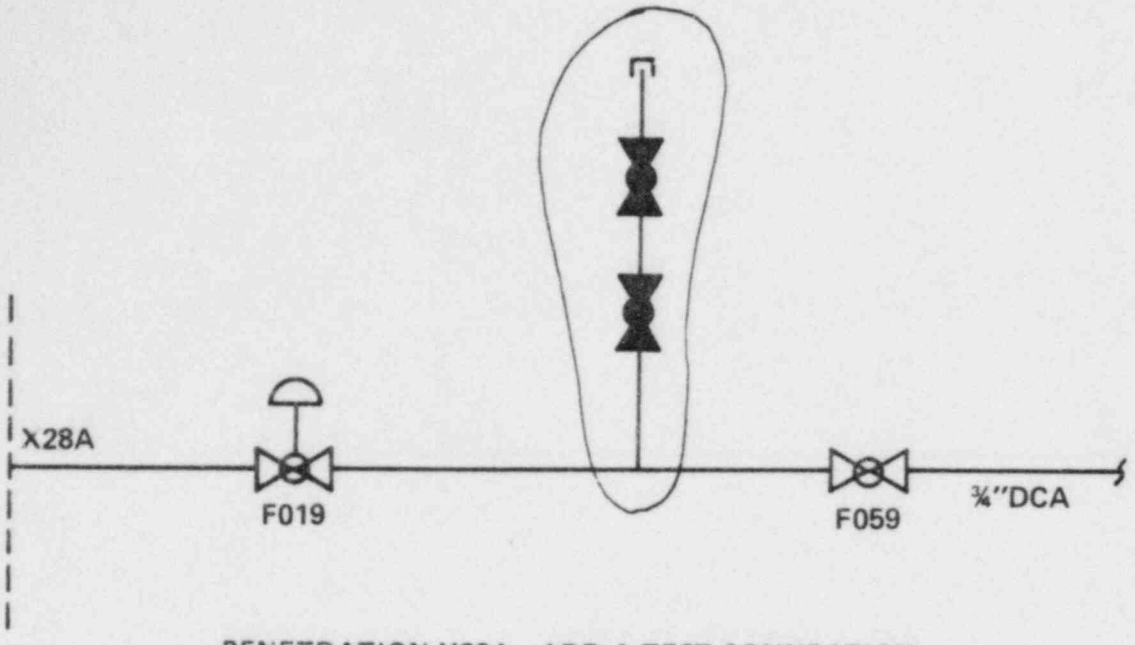
PENETRATION X25: ADD A BLOCKING VALVE AND TEST CONNECTION BETWEEN VALVE T48-F118A AND THE PENETRATION

Figure 1 (Reference H-16000)



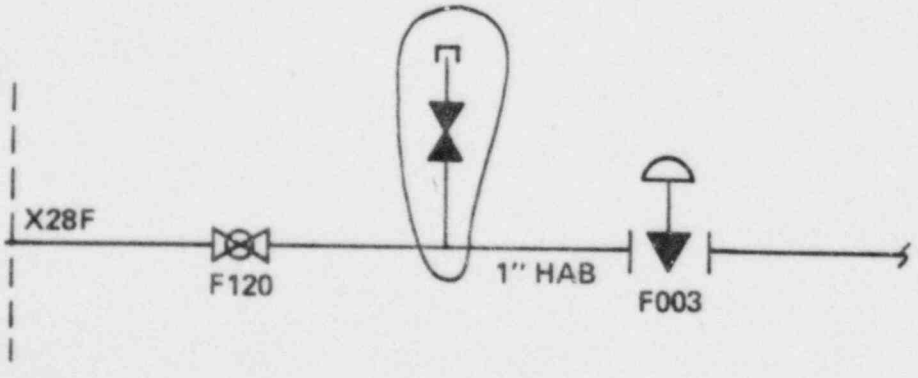
PENETRATION X26: ADD TEST CONNECTIONS AND A BLOCKING VALVE

Figure 2 (Reference H-16024 and H-16276)



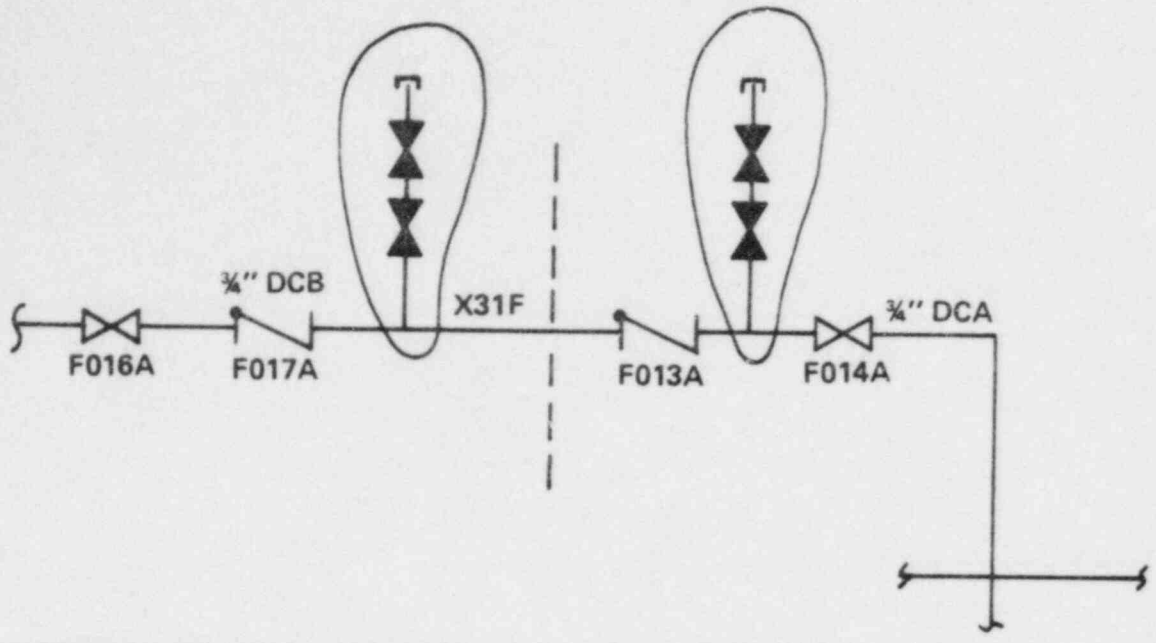
PENETRATION X28A: ADD A TEST CONNECTION

Figure 3 (Reference H-16066)



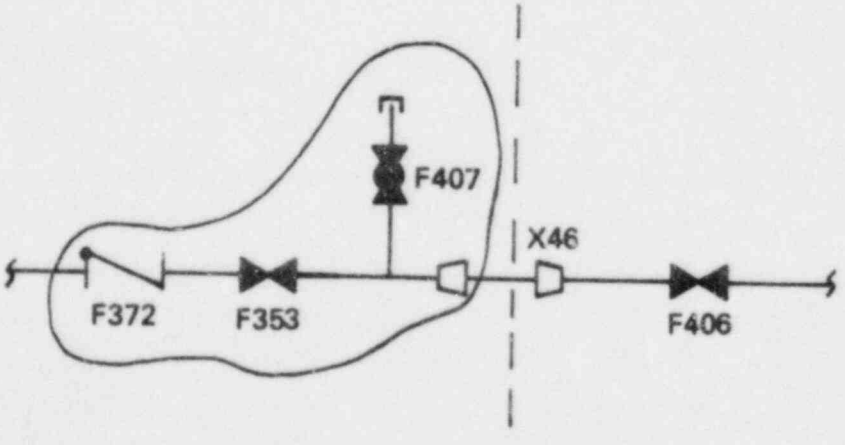
PENETRATION X28F: ADD A TEST CONNECTION

Figure 4 (Reference H-16276)



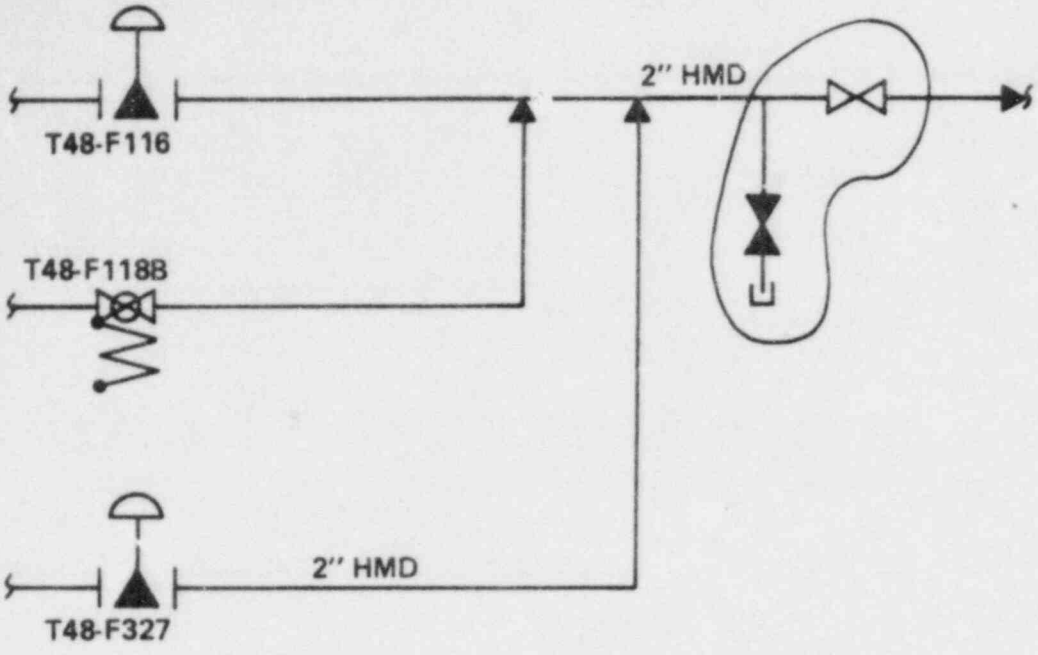
PENETRATION X31F: ADD TEST CONNECTIONS BETWEEN VALVES B31-F017A, B31-F013A, AND B31-F014A. PENETRATION X59A IS IDENTICAL.

Figure 5 (Reference H-16066)



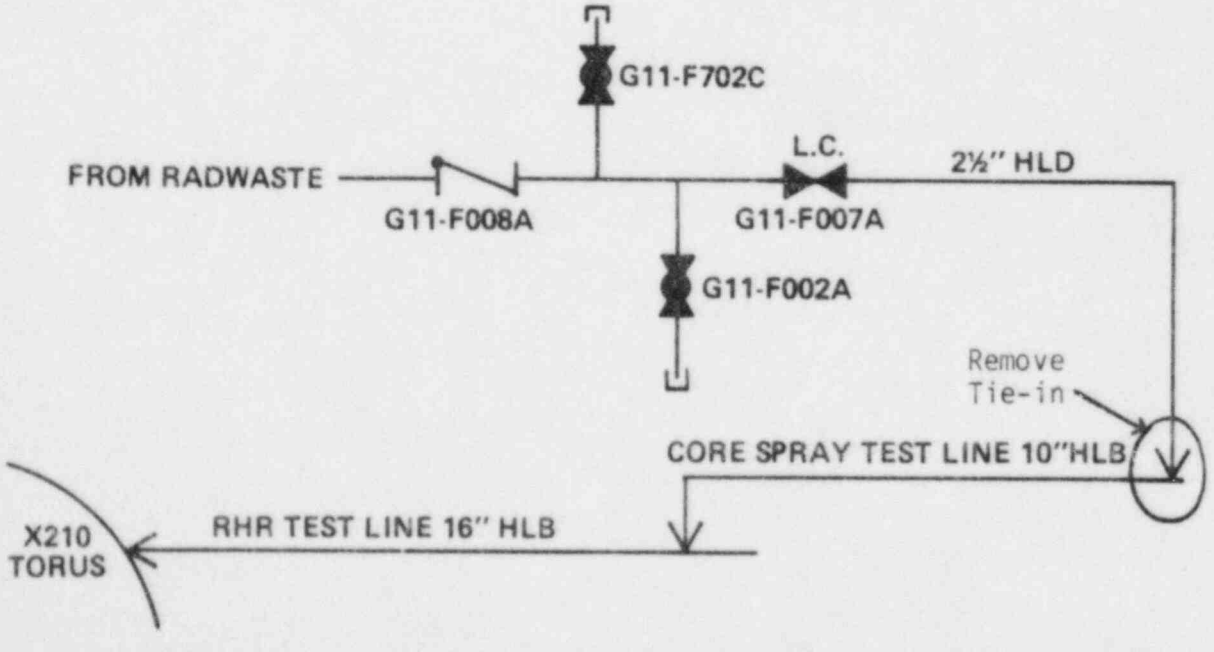
PENETRATION X46: EXCHANGE POSITION OF P21-F353 AND P21-F372 ENSURE TEST CONNECTION IS BETWEEN P21-F353 AND P21-F406.

Figure 6 (Reference H-16015)



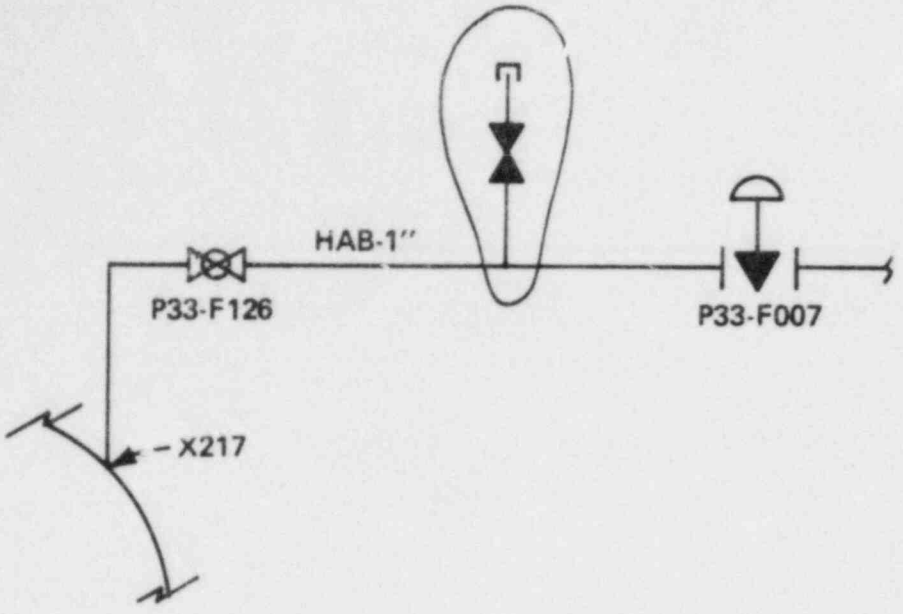
PENETRATION X205: INSTALL A BLOCKING VALVE AND TEST CONNECTION BETWEEN T48-118B AND THE PENETRATION

Figure 7 (Reference H-16000)



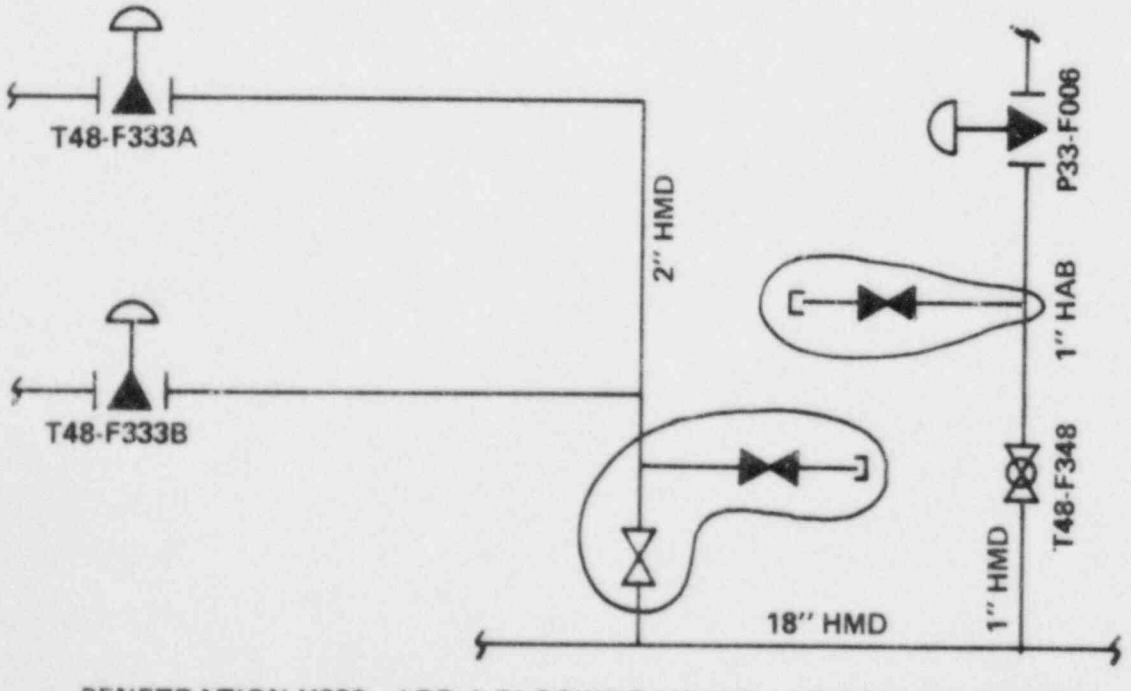
PENETRATION X210: REMOVE AND CAP G11 TIE-IN TO CORE SPRAY

Figure 8 (Reference H-16176 and H-16331)



PENETRATION X217: ADD A TEST CONNECTION BETWEEN P33-F007 AND P33-F126

Figure 9 (Reference H-16276)



PENETRATION X220: ADD A BLOCKING VALVE AND TEST CONNECTION BETWEEN T48-F333A/B AND THE PENETRATION, ADD A TEST CONNECTION BETWEEN T48-F348 AND P33-F006.

Figure 10 (Reference H-16024 and H-16276)

III. PROGRAM DESCRIPTION:

Provided in this section is a penetration leakage rate test list which describes the inboard and outboard isolation barrier for each of the Unit 1 primary containment penetrations. It has been compiled in tabular form similar to Table 3.8-12 in the Unit 2 FSAR. It has also been formulated assuming all of the proposed plant modifications described in Section II have received NRC approval and have been completed. Piping and Instrumentation Drawings are also provided as referenced in the test schedule.

The basis used to establish testing requirements and acceptance criteria for the Unit 1 program is identical to that used on Unit 2. This includes the use of closed systems outside the primary containment as isolation barriers. In most instances, the valve chosen as the primary containment isolation valve for the closed system is the outboard isolation valve.

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
1A	Equipment Hatch	B	Double O Rings	16			
1B	Equipment Hatch	B	Double O Rings	16			
2	Personnel Lock						
	Inner Door	B	Double O Rings	16, 20			
	Outer Door	B	Double O Rings	16, 20			
	Barrel	B	Inner Door		Outer Door		
4	Head Access Hatch	B	Double O Rings	16			
5A-H	Vent Line	B	Expansion Bellows	15			
6	Control Rod Drive Removal Hatch	B	Double O Rings	16			
7A	Main Steam	C	B21-F022A	5,13,14	B21-F028A	13, 14	H-16062
		B	Expansion Bellows	15			
7B	Main Steam	C	B21-F022B	5,13,14	B21-F028B	13, 14	H-16062
		B	Expansion Bellows	15			
7C	Main Steam	C	B21-F022C	5,13,14	B21-F028C	13, 14	H-16062
		B	Expansion Bellows	15			
7D	Main Steam	C	B21-F022D	5,13,14	B21-F028D	13, 14	H-16062
		B	Expansion Bellows	15			
8	Condensate Drain	C	B21-F016	24	B21-F019		H-16062
		B	Expansion Bellows	15			
9A	Primary Feedwater	C	B21-F010B	12	B21-F032B	12	H-16062
					E41-F006	12	H-16332
		B	Expansion Bellows	15			

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
9B	Primary Feedwater	C	B21-F010A	12	B21-F032A	12	H-16062
					E51-F013	12	H-16334
					G31-F039	12	H-16188
		B	Expansion Bellows	15			
10	Steam to RCIC Turbine	C	E51-F007	24	E51-F008		H-16334
		B	Expansion Bellows	15			
11	Steam to HPCI Turbine	C	E41-F002	24	E41-F003		H-16332
		B	Expansion Bellows	15			
12	RHR Suction	C	E11-F008		Closed System	21	H-16329
		B	Expansion Bellows	15			
13A	RHR Return to Recirculation	C	E11-F015A		Closed System	21	H-16330
		B	Expansion Bellows	15			
13B	RHR Return to Recirculation	C	E11-F015B		Closed System	21	H-16329
		B	Expansion Bellows	15			
14	Reactor Water Cleanup Supply	C	G31-F001		G31-F004		H-16188
		B	Expansion Bellows	15			
15	Spare	A					
16A	Core Spray	C	E21-F005A		Closed System	21	H-16331
		B	Expansion Bellows	15			H-16328
16B	Core Spray	C	E21-F005B		Closed System	21	H-16331
		B	Expansion Bellows	15			H-16328
17	RPV Head Spray	C	E11-F023		Closed System	21	H-16329
		B	Expansion Bellows	15			H-16328

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
18	Equipment Drain Pump Discharge	C	G11-F019		G11-F020		H-16176
19	Floor Drain Pump Discharge	C	G11-F003		G11-F004		H-16176
20	Service Water Supply	C	Closed System	19	P41-F049	25, 12	H-16011
21	Service Air	C	P51-F514		P51-F513		H-16013
22	Drywell Pneumatic Supply	C	P70-F004, P70-F005		P70-F020		H-16286
23	RBCCW Supply	C	Closed System	19	P42-F051	25, 12	H-16009
24	RBCCW Return	C	Closed System	19	P42-F052	25, 12	H-16009
25	Vent Purge Supply	C	T48-F307	7	T48-F308, T48-F324, T48-F108		H-16024
		C	T48-F114		T48-F113		H-16000
		C	T48-F118A		T48-F104		
		C	T48-F322		T48-F321		
		B	Butterfly Valve O Rings				
26	Vent Purge Return/H_2 & O_2 Analyzer	C	T48-F319	7	T48-F320		H-16024
		C	T48-F341	5	T48-F340		
		C	T48-F335B		T48-F334B		
		C	T48-F335A		T48-F334A		
		C	P33-F002		P33-F010		H-16276
27A	Spare	A					
27B	Spare	A					

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
27C	Drywell Pressure	A	E11-F043A, E11-F037A	2			H-16330
27D	Drywell Pressure	A	E11-F043C, E11-F037C	2			H-16330
27E	Drywell Pressure	A	T48-F304B	2			H-16024
27F	Spare	A					
28A	Recirculation Sample	C	B31-F019		B31-F020		H-16066
28B	RPV Instrumentation	A	B21-F047B	1			H-16063
28C	RPV Instrumentation	A	B21-F045B	1			H-16063
28D	RPV Instrumentation	A A	B21-F065B B21-F049B	1 1			H-16063 H-16063
28E	RPV Instrumentation	A	B21-F043B	1			H-16063
28F	H_2 & O_2 Analyzer	C	P33-F003		P33-F011		H-16276
29A	Spare	A					
29B	RPV Instrumentation	A	B21-F047A	1			H-16063
29C	RPV Instrumentation	A	B21-F045A	1			H-16063
29D	RPV Instrumentation	A A	B21-F065A B21-F049A	1 1			H-16063 H-16063
29E	RPV Instrumentation	A	B21-F043A	1			H-16063

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
29F	RPV Instrumentation	A	B21-F041	1			H-16063
30A	RPV Instrumentation	A	B21-F055	1			H-16063
30B	RPV Instrumentation	A	B21-F057	1			H-16063
30C	Main Steam Flow	A	B21-F015G	1			H-16062
30D	Main Steam Flow	A	B21-F015H	1			H-16062
30E	HPCI Steam Flow	A	E41-F024B	1			H-16332
30F	HPCI Steam Flow	A	E41-F024D	1			H-16332
31A	Recirculation Loop Instrumentation	A A	B31-F009A B31-F009D	1 1			H-16066 H-16066
31B	Recirculation Loop Instrumentation	A A	B31-F010A B31-F010D	1 1			H-16066 H-16066
31C	Spare	A					
31D	H_2 & O_2 Analyzer	C	P33-F004	6	P33-F012		H-16276
31E	Spare	A					
31F	Recirculation Pump Seal Water	C	B31-F013A		B31-F017A		H-16066
32A	Recirculation Loop Instrumentation	A	B31-F040A	1			H-16066
32B	Recirculation Loop Instrumentation	A	B31-F040C	1			H-16066
32C	Recirculation Loop Instrumentation	A	B31-F057A	1			H-16066

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
32D	Spare	A					
32E	Recirculation Loop Instrumentation	A	B31-F003A	1			H-16066
32F	Recirculation Loop Instrumentation	A	B31-F004A	1			H-16066
33A	Recirculation Loop Instrumentation	A	B31-F011A B31-F011D	1 1			H-16066 H-16066
33B	Recirculation Loop Instrumentation	A A	B31-F012A B31-F012D	1 1			H-16066 H-16066
33C	Spare	A					
33D	Spare	A					
33E	Spare	A					
33F	Spare	A					
34A	Recirculation Loop Instrumentation	A	B31-F040B	1			H-16066
34B	Recirculation Loop Instrumentation	A	B31-F040D	1			H-16066
34C	Recirculation Loop Instrumentation	A	B31-F003B	1			H-16066
34D	Recirculation Loop Instrumentation	A	B31-F004B	1			H-16066
34E	Spare	A					
34F	Recirculation Loop Instrumentation	A	B31-F057B	1			H-16066
35A	Tip Drive	C B	Ball Valve A Double O Ring	16	Shear Vaive A	22	H-16070 H-16070

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
35B	Tip Drive	C B	Ball Valve B Double O Ring	16	Shear Valve B	22	H-16070 H-16070
35C	Tip Drive	C B	Ball Valve C Double O Ring	16	Shear Valve C	22	H-16070 H-16070
35D	Tip Drive	C B	Ball Valve D Double O Ring	16	Shear Valve D	22	H-16070
35E	Tip N_2 Purge	C B	Check Valve Double O Ring	16	Solenoid Valve		H-16070
36	Spare	B	Welded Cap		Welded Cap		
37A-D	CRD Insert	A			Hydraulic Control Unit	23	
38A-D	CRD Withdraw	A			Scram Discharge Header	23	
39A	Containment Spray	C	E11-F016A		Closed System	21	H-16330 H-16328
39B	Containment Spray	C	E11-F016B		Closed System	21	H-16329 H-16328
40A-A	Recirculation Loop Instrumentation	A	B31-F055B	1			H-16066
40A-B	Recirculation Loop Instrumentation	A	B31-F055D	1			H-16066
40A-C	RPV Instrumentation	A	E21-F018A	1			H-16331
40A-D	Spare	A					
40A-E	Recirculation Loop Instrumentation	A	B31-F055E	1			H-16066
40A-F	Recirculation Loop Instrumentation	A	B31-F055G	1			H-16066

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
40B-A	Spare	A					
40B-B	Spare	A					
40B-C	Spare	A					
40B-D	Spare	A					
40B-E	RCIC Steam Flow	A	E51-F044B	1			H-16334
40B-F	RCIC Steam Flow	A	E51-F044D	1			H-16334
40C-A	Spare	A					
40C-B	Spare	A					
40C-C	Spare	A					
40C-D	Spare	A					
40C-E	Spare	A					
40C-F	Drywell Pneumatic Outlet	C	P70-F002		P70-F003		H-16286
40D-A	RPV Instrumentation	A	E21-F018B	1			H-16331
40D-B	Spare	A					
40D-C	Recirculation Loop Instrumentation	A	B31-F055F	1			H-16066
40D-D	Recirculation Loop Instrumentation	A	B31-F055H	1			H-16066
40D-E	Recirculation Loop Instrumentation	A	B31-F055A	1			H-16066

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
40D-F	Recirculation Loop Instrumentation	A	B31-F055C	1			H-16066
41	Spare	A					
42	Standby Liquid Control	C	C41-F007		C41-F006		H-16061
43	Drywell Test and Fill	B	Double O Ring	16			
44	Service Water Return	C	Closed System	19	P41-F050	25, 12	H-16011
45A	HPCI Steam Instrumentation	A	E41-F024A	1			H-16332
45B	HPCI Steam Instrumentation	A	E41-F024C	1			H-16332
45C	Drywell Pressure	A	E11-F043D, E11-F037D	2			H-16329
45D	Drywell Pressure	A	E11-F043B, E11-F037B	2			H-16329
45E	Drywell Pressure	A	T48-F303B	2			H-16024
45F	ILRT Verification Flow	C	T23-F004		T23-F005		H-16060
46	Demineralized Water	C	P21-F406		P21-F353		H-16015
47	Spare	A					
49A	Jet Pump Instrumentation	A	B21-F058A	1			H-16063
49B	Jet Pump Instrumentation	A	B21-F059G	1			H-16063
49C	Jet Pump Instrumentation	A	B21-F059E	1			H-16063
49D	Jet Pump Instrumentation	A	B21-F059A	1			H-16063

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
49E	Jet Pump Instrumentation	A	B21-F059C	1			H-16063
49F	Jet Pump Instrumentation	A	B21-F051A	1			H-16063
50A	Jet Pump Instrumentation	A	B21-F053B	1			H-16063
50B	Jet Pump Instrumentation	A	B21-F059H	1			H-16063
50C	Jet Pump Instrumentation	A	B21-F059F	1			H-16063
50D	Jet Pump Instrumentation	A	B21-F059B	1			H-16063
50E	Jet Pump Instrumentation	A	B21-F059D	1			H-16063
50F	Jet Pump Instrumentation	A	B21-F051B	1			H-16063
51A	Jet Pump Instrumentation	A	B21-F059M	1			H-16063
51B	Jet Pump Instrumentation	A	B21-F053D	1			H-16063
51C	Jet Pump Instrumentation	A	B21-F059U	1			H-16063
51D	Jet Pump Instrumentation	A	B21-F059P	1			H-16063
51E	Jet Pump Instrumentation	A	B21-F059S	1			H-16063
51F	Jet Pump Instrumentation	A	B21-F051D	1			H-16063
52A	Jet Pump Instrumentation	A	B21-F059L	1			H-16063
52B	Jet Pump Instrumentation	A	B21-F053C	1			H-16063

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
52C	Jet Pump Instrumentation	A	B21-F059T	1			H-16063
52D	Jet Pump Instrumentation	A	B21-F059N	1			H-16063
52E	Jet Pump Instrumentation	A	B21-F059E	1			H-16063
52F	Jet Pump Instrumentation	A	B21-F051C	1			H-16063
53A-F	Power Test	A			Welded Cap		
54A	RPV Instrumentation	A	B21-F061	1			H-16063
54B	RPV Instrumentation	A	E21-F018C	1			H-16331
54C	Main Steam Instrumentation	A	B21-F015K	1			H-16062
54D	Main Steam Instrumentation	A	B21-F015J	1			H-16062
54E	RCIC Steam Instrumentation	A	E51-F044A	1			H016334
54F	RCIC Steam Instrumentation	A	E51-F044C	1			H-16334
59A	Recirculation Pump Seal Water	C	B31-F013B		B31-F017B		H-16066
59B	Recirculation Loop Instrumentation	A A	B31-F009C B31-F009B	1 1			H-16066 H-16066
59C	Recirculation Loop Instrumentation	A A	B31-F010B B31-F010C	1 1			H-16066 H-16066
59D	Spare	A					H-16066

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
59E	Recirculation Loop Instrumentation	A	B31-F012B	1			H-16066
		A	B31-F012C	1			H-16066
59F	Recirculation Loop Instrumentation	A	B31-F011B	1			H-16066
		A	B31-F011C	1			H-16066
60A	Spare	A					
60B	Spare	A					
61A	Spare	A					
61B	Spare	A					
62	Spare	A					
100A	Neutron Monitoring	B	Canister	17			
100B	Neutron Monitoring	B	Canister	17			
100C	Spare	A					
100D	Neutron Monitoring	B	Canister	17			
100E	Neutron Monitoring	B	Canister	17			
100F-A	Main Steam Flow	A	B21-F015C	1			H-16062
100F-B	Main Steam Flow	A	B21-F015M	1			H-16062
100F-C	Main Steam Flow	A	B21-F015L	1			H-16062

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
100F-D	Main Steam Flow	A	B21-F015S	1			H-16062
100F-E	Main Steam Flow	A	B21-F015R	1			H-16062
100F-F	Main Steam Flow	A	B21-F015D	1			H-16062
101A-F	Recirculation Pump Power	B	Canister	17			
102A	Indication and Control	B	Canister	17			
102B	Spare	A					
103A	Indication and Control	B	Canister	17			
103B-A	Main Steam Instrumentation	A	B21-F015A	1			H-16062
103B-B	Main Steam Instrumentation	A	B21-F015N	1			H-16062
103B-C	Main Steam Instrumentation	A	B21-F015P	1			H-16062
103B-D	Main Steam Instrumentation	A	B21-F015F	1			H016062
103B-E	Main Steam Instrumentation	A	B21-F015E	1			H016062
103B-F	Main Steam Instrumentation	A	B21-F015B	1			H016062
104A,B,C	CRD Rod Position Indication	B	Canister	17			
104D, E	Spare	A					
104F,G,H	CRD Rod Position Indication	B	Canister	17			
105A	600 Volt Power	B	Canister	17			

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
105B	Spare	A					
105C	600 Volt Power	B	Canister	17			
105D	Spare	A					
106A	Spare	A					
106B	Thermocouples	B	Canister	17			
107A, B	Spare	A					
108A	Grounding Rod	A	Welded				
108B	Grounding Rod	A	Welded				
200A	Torus Access Hatch	B	Double O Rings	16			
200B	Torus Access Hatch	B	Double O Rings	16			
201A-H	Drywell to Torus Vent Lines	B	Expansion Bellows	15			
202	Control and Indication	B	Canister	17			
203	RCIC Pump Suction	C	E51-F003	7, 12	E51-F031	12	H-16334
204A	RHR Pump Suction	C	E11-F004A, F030A	12	Closed System	21	H-16330
204B	RHR Pump Suction	C	E11-F004B, F030B	12	Closed System	21	H-16329
204C	RHR Pump Suction	C	E11-F004C, F030C	12	Closed System	21	H-16330

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
204D	RHR Pump Suction	C	E11-F004D, F030D	12	Closed System	21	H-16329
205	Containment Purge and Inerting	A	T48-F302	2			H-16024
		A	T48-F303A	2			
		A	T48-F301	2			
		C	T48-F311	7	T48-F328B		
		C	T48-F310	7	T48-F328A		
		C	T48-F309	7	T48-F324		
		C	T48-F116		T48-F115		
		C	T48-F118B		T48-F104		
		C	T48-F327		T48-F325		
		B	Butterfly Valve O Rings	16			
206A	Torus Water Level	A	T48-F331B	2			H-16024
		A	E41-F109	2			H-16332
206B	Torus Water Level	A	T48-F331A	2			H-16024
		A	E41-F110	2			H-16332
206C	Torus Water Level	A	T48-F330B	2			H-16024
		A	E41-F107	2			H-16332
206D	Torus Water Level	A	T48-F330A	2			H-16024
		A	E41-F108	2			H-16332
206E-H	Spare	A					
207	HPCI Pump Suction	C	E41-F051	7, 12	E41-F042	12	H-16332
208A	Core Spray Pump Suction	C	E21-F001A	12	Closed System	21	H-16331
208B	Core Spray Pump Suction	C	E21-F001B	12	Closed System	21	H-16331

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
209A-D	Torus Water Temperature	A	Welded Thermowells				
210A	RHR/Core Spray Test Line	C	E11-F028A	11	Closed System	21	H-16330
		C	E11-F007A	3, 11	Closed System	21	H-16331
		C	E11-F011A	3, 11	E11-F026A, Closed System	11, 21	H-16334
		C	E11-F103A	10	Closed System	21	
		C	E11-F055A	9	Closed System	21	
		C	Thermal Relief	9	Closed System	21	
		C	E11-F029	9	Closed System	21	
		C	E11-F025A	9	Closed System	21	
		C	E21-F015A	5, 11	Closed System	21	
		C	E21-F036A	10, 11	Closed System	21	
		C	E51-F019	4, 11	E51-F021	11	
210B	RHR/Core Spray Test Line	C	E11-F028B	11	Closed System	21	H-16329
		C	E11-F007B	3, 11	Closed System	21	H-16331
		C	E11-F011B	3, 11	E11-F026B, Closed System	11, 21	
		C	E11-F103B	10	Closed System	21	H-16176
		C	E11-F055B	9	Closed System	21	H-16182
		C	Thermal Relief	9	Closed System	21	
		C	E11-F025B	9	Closed System	21	H-16332
		C	E21-F015B	5, 11	Closed System	21	
		C	E11-F097	9	Closed System	21	
		C	E21-F036B	10, 11	Closed System	21	
		C	E41-F012	4, 11	E41-F046	11	
211A	Torus Spray	C	E11-F028A		Closed System	21	H-16330

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
211B	Torus Spray	C	E11-F028B		Closed System	21	H-16329
212	RCIC Turbine Exhaust	C	E51-F001	8, 11	E51-F040	11	H-16334
213	RCIC Turbine Vacuum Pump Discharge	C	E51-F002	8, 11	E51-F028	11	H-16334
214	HPCI Turbine Exhaust	C	E41-F021	8, 11	E41-F049	11	H-16332
215	HPCI Exhaust Drain	C	E41-F022	8, 11	E41-F040	11	H-16332
216A-D	Torus Air Temperature	A	Welded Thermowell				
217	H_2 & O_2 Analyzer	C	P33-F007		P33-F015		H-16276
218A, B	Construction Drain	B	Flange, Double O Rings	16			
220	Vent Purge Outlet	A	T48-F304A	2			
		C	T48-F333A		T48-F332A		H-16024
		C	T48-F333B		T48-F332B		
		C	T48-F318	7	T48-F326		
		C	T48-F339	5	T48-F338		
		C	P33-F006		P33-F014		H-16276
221A	Spare	A					
221B	Spare	A					
221C	RCIC Turbine Exhaust Vacuum Breaker	C	E51-F105	24	E51-F104		H-16334
222A	HPCI Turbine Exhaust Vacuum Breaker	C	E41-F111	24	E41-F104		H-16332
222B	Spare	A					
223A A-F	Control Air for Vacuum Breaker	C	Air Cylinder	18	T48-F342 G-L	4	H-16024

CONTAINMENT LEAK RATE TEST PROGRAM

Penetration No.	Description	Type Test	Inboard Isolation Barrier	Notes	Outboard Isolation Barrier	Notes	P & ID No.
223B A-F	Control Air for Vacuum Breaker	C	Air Cylinder	18	T48-F342 A-F	4	H-16024

NOTES

1. Seismic Category I instrument line with an orifice and excess-flow check valve (EFCV). The EFCV is subjected to operability testing in accordance with the Technical Specifications. This line does not isolate during a LOCA and can leak only if the line or instrument should rupture.

2. Instrument line does not communicate with the reactor coolant pressure boundary. The isolation valve is manually operated and the design satisfies the requirements of Regulatory Guide 1.11, with backfit supplement, for plants which have had a Construction Permit hearing prior to December 30, 1969. Type C testing is not required by 10CFR50, Appendix J. The lines are subjected to pressure during the Type A test.

3. Gate valve tested in the reverse direction.

4. Globe valve tested in the reverse direction.

5. Globe valve tested in the reverse direction. Conservative test: test pressure tends to unseat the disc. (See Figures 11 and 12)

6. Control valve tested in the reverse direction. Conservative test: test pressure tends to unseat the disc. (See Figure 13)

7. Butterfly valve tested in the reverse direction. Same seating surface is tested when test pressure is applied from either direction. (See Figures 14 and 15)

8. Stop check valve pressurized in the reverse direction. Test pressure tends to lift the disc from the seat; therefore, the reverse pressure test is conservative. (See Figure 16)

9. Isolation barrier is the discharge side of a relief valve. The relief valve is tested in the inlet direction; conservative test since containment pressure tends to seat the disc and test pressure tends to unseat it.

10. Untestable globe or check valve; leakage prevented by a closed system.

11. Valve is sealed from the primary containment atmosphere because its line terminates below the water level of the torus. Leakage is not included in the 0.60 L_a Types B and C tests local leakage totals.

12. System remains water filled post LOCA. Isolation valves are tested with water at a pressure of 1.10 P_a. Leakage is not included in the 0.60 L_a Types B and C tests local leakage totals.

13. Tested at one-half P_a.

14. MSIV leakage rate shall not exceed 11.5 scfh for any valve. Leakage is not included in 0.60 L_a acceptance criteria for Type B and C tests.

15. Penetration has a double-ply, bellows-type seal which will be tested by pressurizing between the two plies through a test connection.

16. Penetration is sealed by a blind flange or door with double O-ring seals. These seals are leakage rate tested by pressurizing between the O-rings.

17. Electrical penetrations are tested by pressurizing between the seals through a valved test connection.

18. The inboard isolation barrier is the vacuum breaker exercising cylinder. The barrier is provided by seals on the air-operated piston. The exercising cylinder, although not Quality Group B, was specified by the vacuum breaker vendor to be qualified to the postulated post-LOCA environment. The cylinder is designed to operate with an air pressure of 95 to 100 psig, which is significantly higher than the post-LOCA containment pressure and is Type C leakage rate tested.

19. The inboard isolation barrier is a closed system inside primary containment. The closed system is subject to the in-service inspection requirements of ASME Section XI for Nuclear Class 3 piping. The system remains water filled post-LOCA and is, therefore, pressurized with water to 1.10 Pa during the Type C test. In accordance with 10CFR50, Appendix J, Paragraph III.C.3, the leakage is excluded from the 0.60 L_a criteria. Leakage acceptance criteria are based upon maintaining a 30-day inventory of water.

20. The personnel air lock door seals shall be tested at 10 psig; the barrel shall be tested at P_a. The lock barrel test leakage rate shall not exceed 0.05 L_a.

21. The outboard isolation barrier is a closed system outside primary containment. The closed system is subject to the in-service inspection requirements of the ASME Code Section XI for Nuclear Class 2 piping, which requires that any visible leakage be repaired. The system is filled with water and operating at a pressure greater than P_a, post-LOCA. Leakage is not included in the .60 L_a Types B and C local leakage totals.

22. The operation of the TIP drive shear valve is described in FSAR Section 5.2.3.5.2. Since the shear valve isolates the TIP tubing by shearing the tube and drive cable and by jamming the sheared ends of the tubing into a teflon coating on the shear valve disc, the valve can not be Type C tested without destroying the drive tube. Therefore, the TIP shear valves are not Type C tested. However, each lot of valves are sample leakage tested by the manufacturer prior to delivery. Failure of a single valve to meet the 10^{-2}cc/sec leakage criteria set for the leakage test results in the rejection of the entire

lot. Explosive charges, which operate the shear valves, are in-service inspected in accordance with the requirements of ASME Section XI.

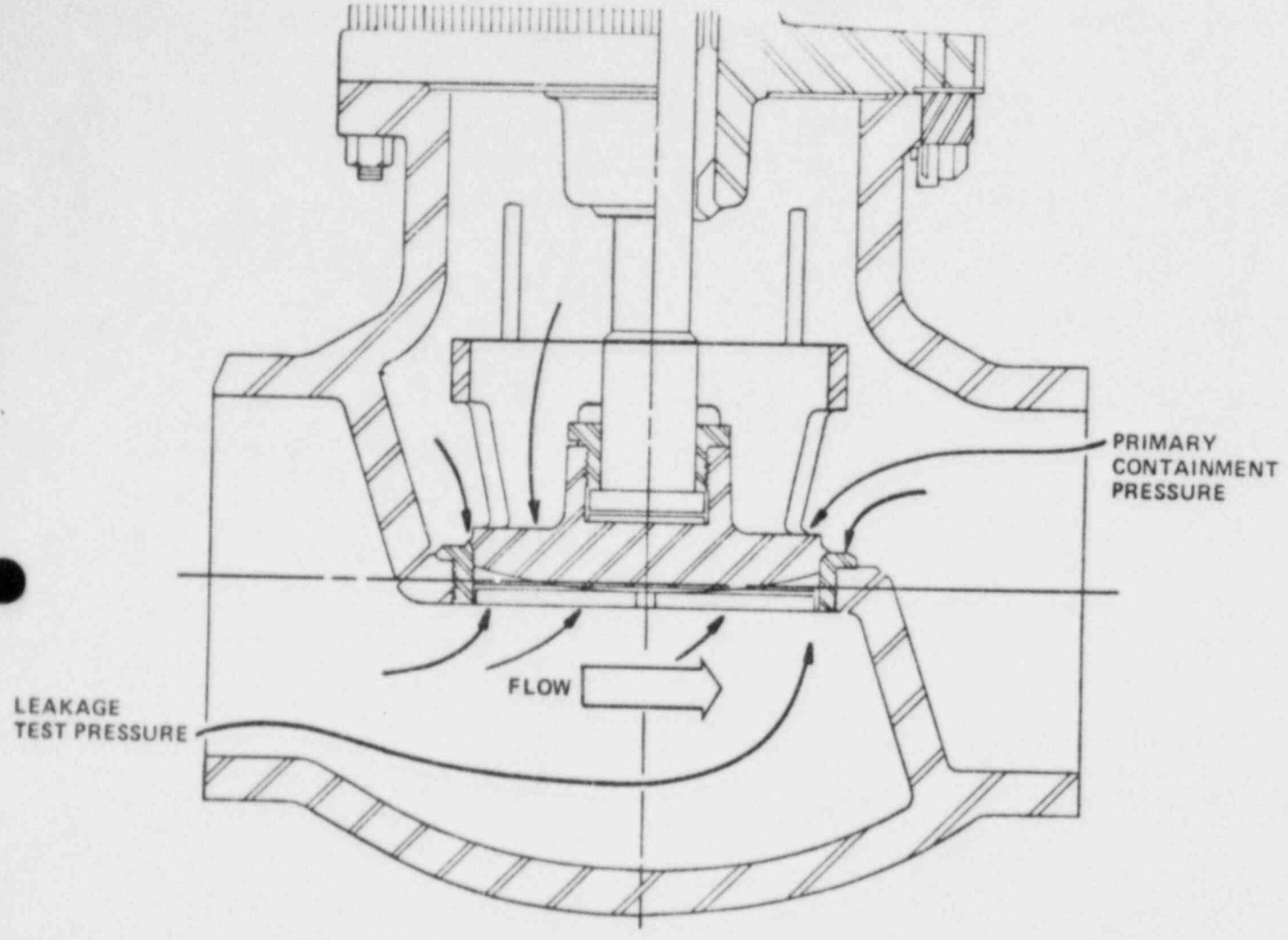
23. The design of the CRD insert and withdraw lines is discussed in FSAR Section 5.2.3.5.1. The design of these lines does not facilitate Type C testing as described in 10CFR50, Appendix J. However, adequate leakage monitoring of the CRD lines is provided by normal plant operating procedures and the Type A leakage rate tests. Since the insert and withdraw lines are pressurized to at least reactor operating pressure by the cooling water flow during normal plant operation, leakage from these lines would be immediately evident.

    The hydralic control units are installed on El. 130' of the reactor building, a relatively high traffic area. In addition, the HNP-2 Daily Rounds procedure requires that an operator make a visual inspection for leakage in the CRD hydraulic area of the reactor building at least once per shift and that he record the inspection.

    The RPV and the nonseismic portions of the CRD system are vented during the performance of the Type A test. Therefore, leakage from the insert and withdraw lines will be included in the total Type A test leakage.

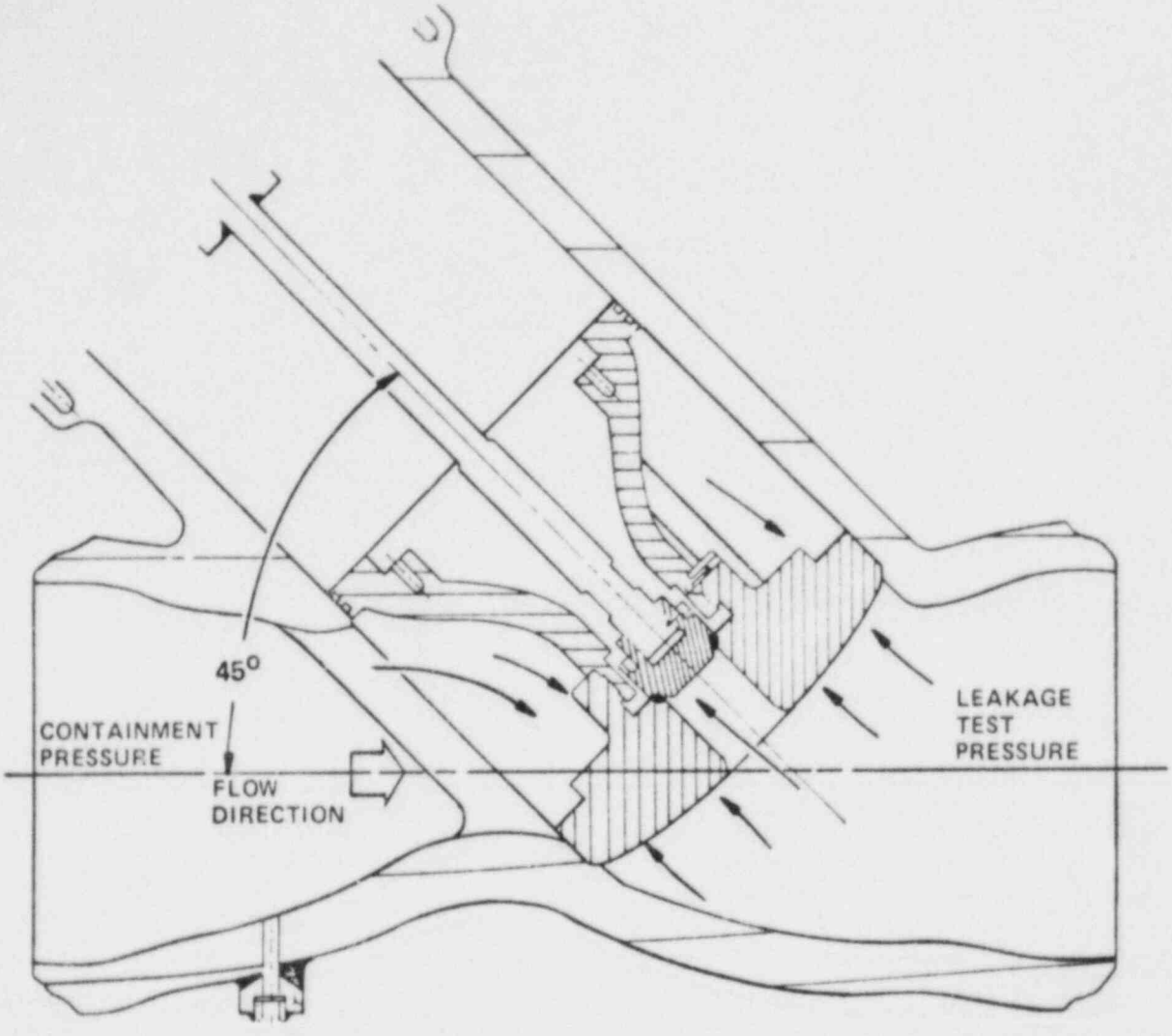
24. Gate valve tested in the reverse direction. A generic leakage test is performed for this valve since the opposite seat is tested on the outboard valve. Both isolation valves are the same design and, therefore, have similar leakage characteristics. This valve is also subjected to Pa during the Type A test. Piping outboard of the second primary containment isolation valve is seismic Category I, Quality Group B.

25. Local leakage rate test required in accordance with Appendix J, Art. III.A.1.d. However, leakage is not included in the 0.60 L_a Types B and C test acceptance criteria.



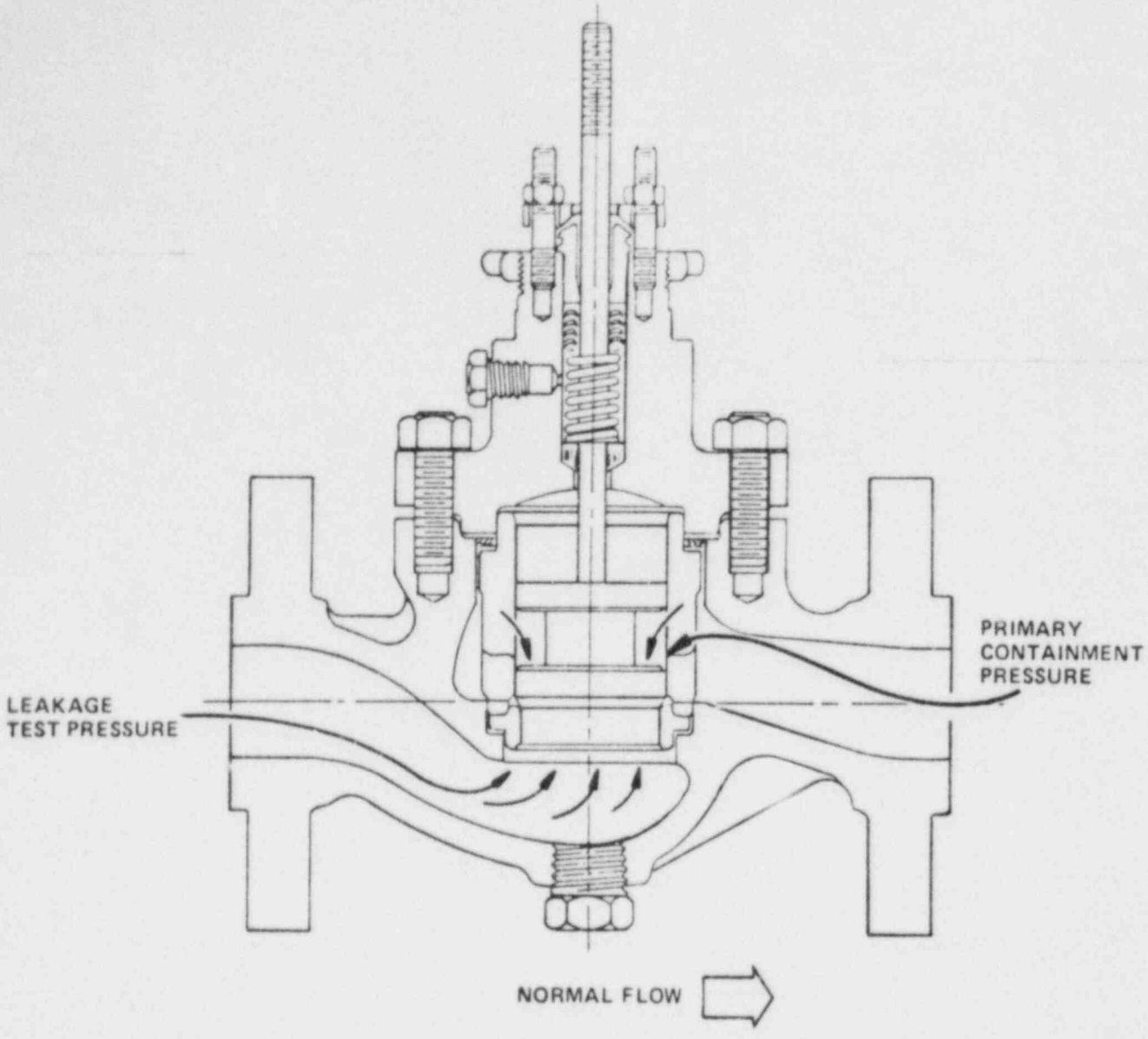
FORCES CAUSED BY THE APPLICATION OF LEAKAGE TEST PRESSURE UNDER THE VALVE DISC ACT AGAINST THE SEATING FORCE CREATED BY THE STEM ACTING ON THE DISC. FORCES DUE TO CONTAINMENT PRESSURE ACT ON TOP OF THE DISC AND ARE ADDITIVE TO THE SEATING FORCES OF THE STEM AGAINST THE DISC AND TEND TO SEAT THE VALVE MORE TIGHTLY.

Figure 11 Globe Valve: Applicable To Valves E21-F015A, B and T48-F339, 341



FORCES DUE TO THE LEAKAGE TEST PRESSURE ACT AGAINST THE SEATING FORCES OF THE VALVE. AS THE VALVE IS DESIGNED TO USE UPSTREAM PRESSURE TO PROVIDE A TIGHT SEAT, PRESSURE FORCES FROM THE CONTAINMENT DIRECTION WILL TEND TO SEAT THE VALVE.

Figure 12 Main Steam Isolation Globe Valve
Applicable to Valves B21-F022 A,B,C,D



THE SUBJECT VALVES ARE OF THE UNBALANCED FLOW TO OPEN DESIGN; THEREFORE, WITH AN OBSERVED PRESSURE DROP IN THE REVERSE FLOW DIRECTION, AN ADDITIONAL SEATING LOAD WILL BE EXPERIENCED DUE TO THE HIGHER PRESSURE AT THE OUTLET OF THE VALVE BEING REGISTERED ON TOP OF THE VALVE PLUG, THUS SUPPLYING A FORCE IN THE DOWNWARD DIRECTION. THEREFORE, PRIMARY CONTAINMENT PRESSURE WILL TEND TO SEAT THE VALVE MORE TIGHTLY, WHEREAS TEST PRESSURE APPLIED ON THE SIDE OPPOSITE CONTAINMENT ACTS AGAINST THE SEATING FORCES.

Figure 13 Control Valve, Applicable to Valve P33-F004

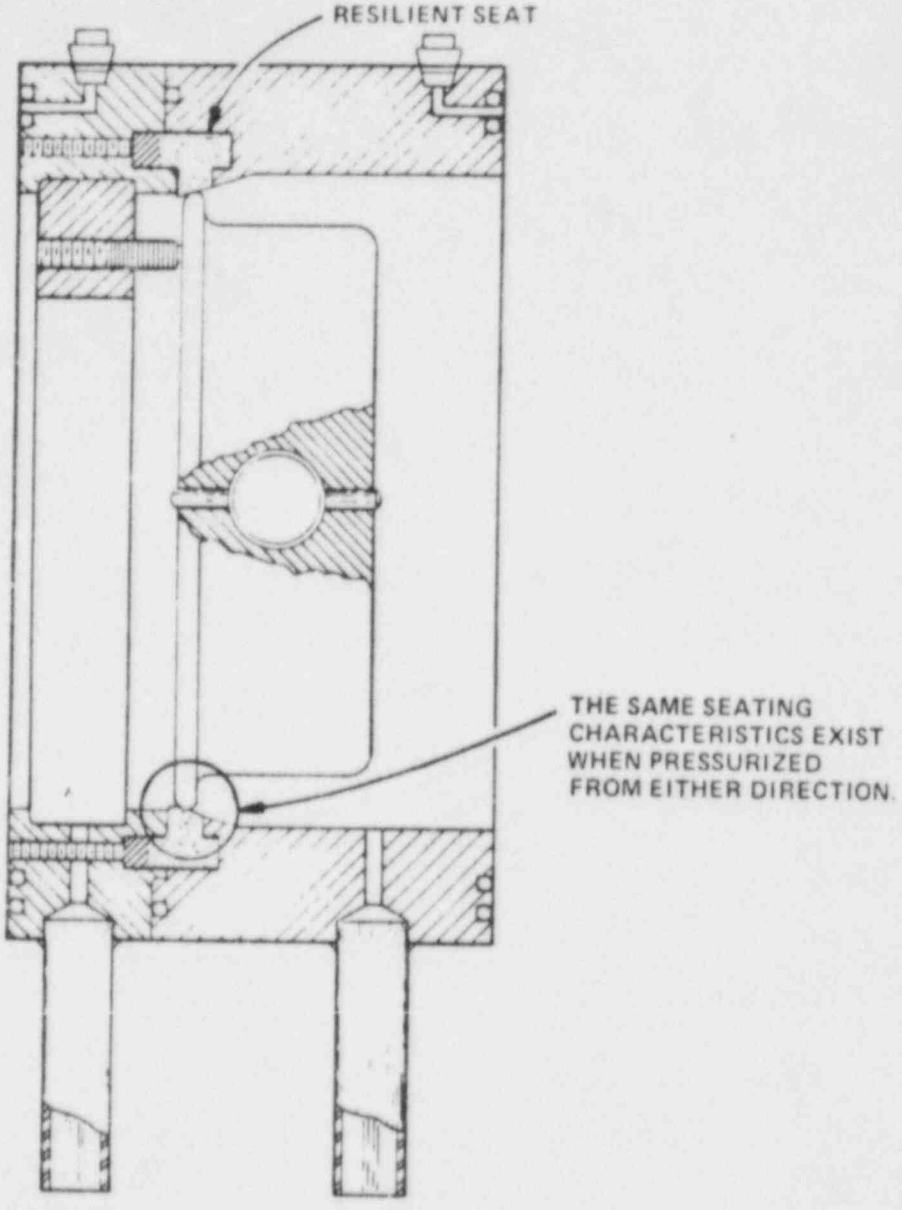


Figure 14 Butterfly Valve, Applicable to Valves T48-F307, F309, F310, F311 F318, and F319.

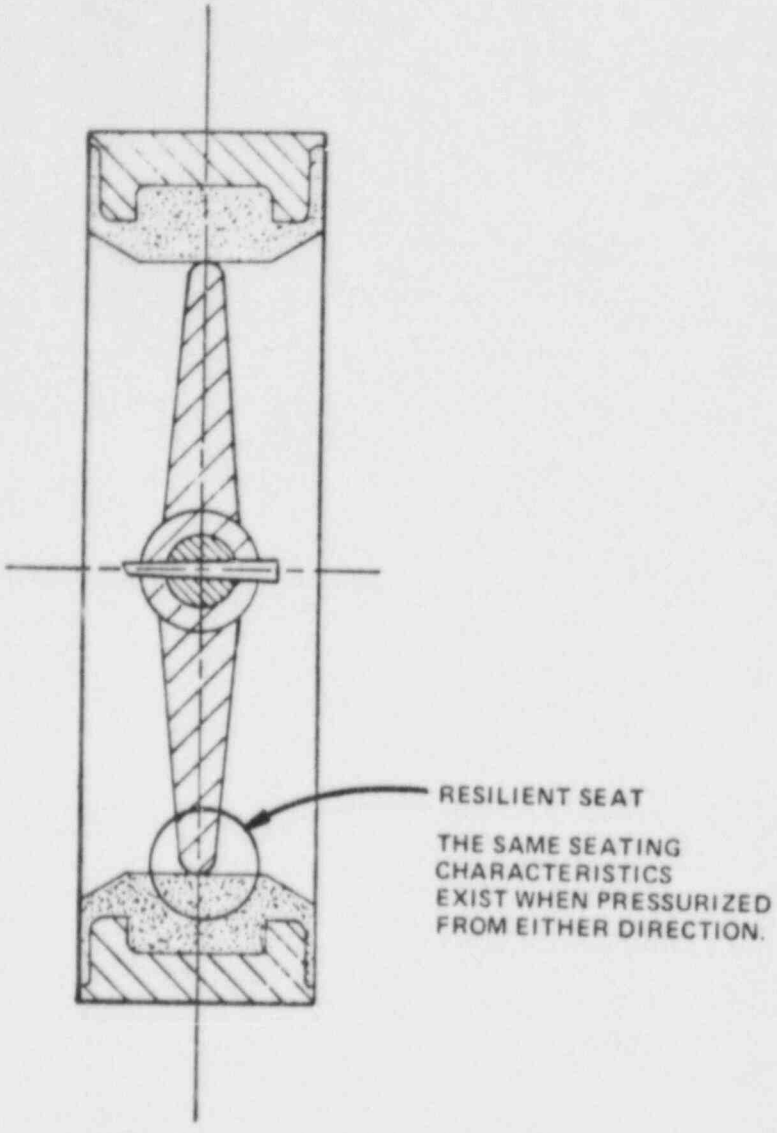


Figure 15 Butterfly Valve, Applicable To Valves E41-F051 and E51-F003

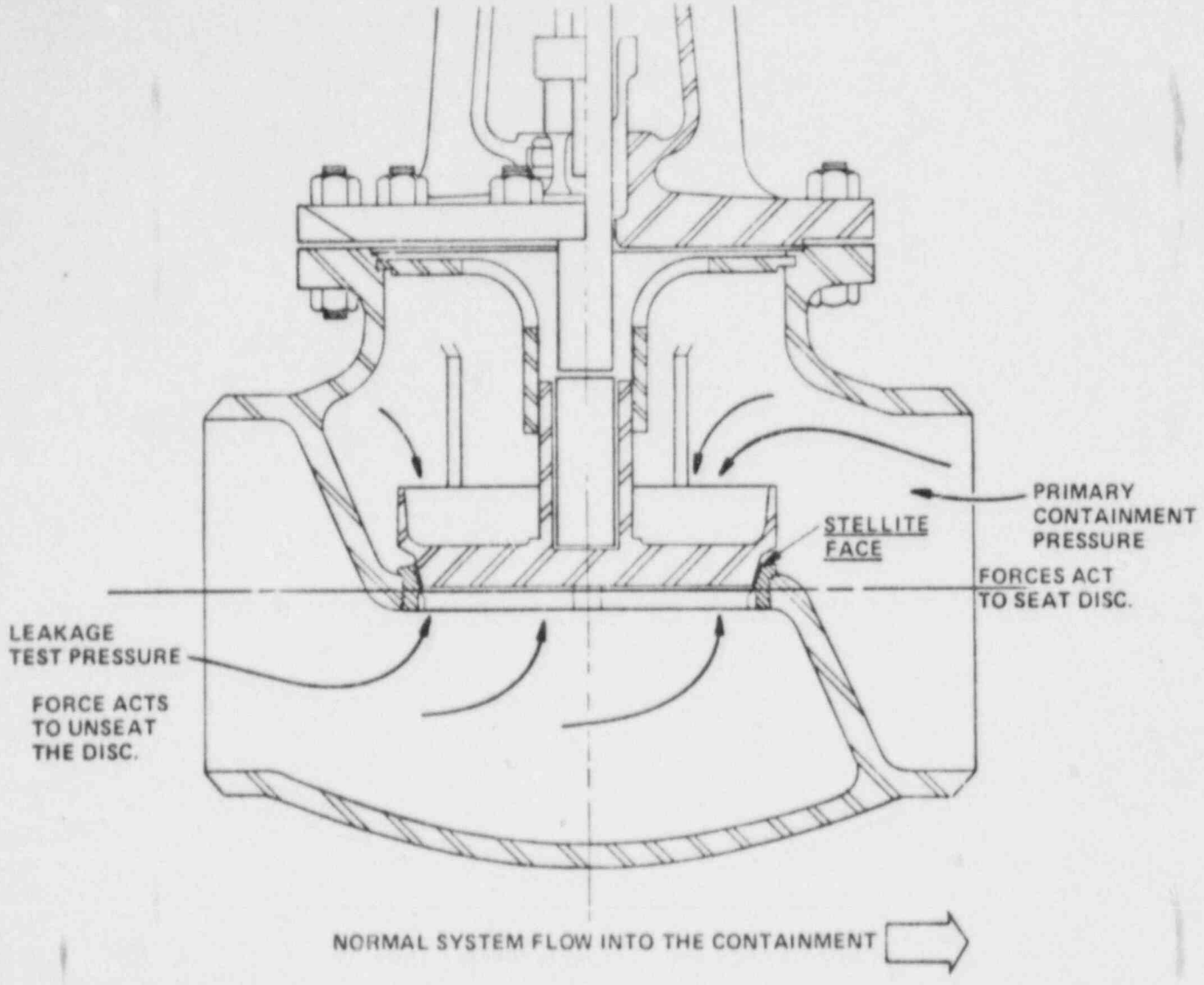
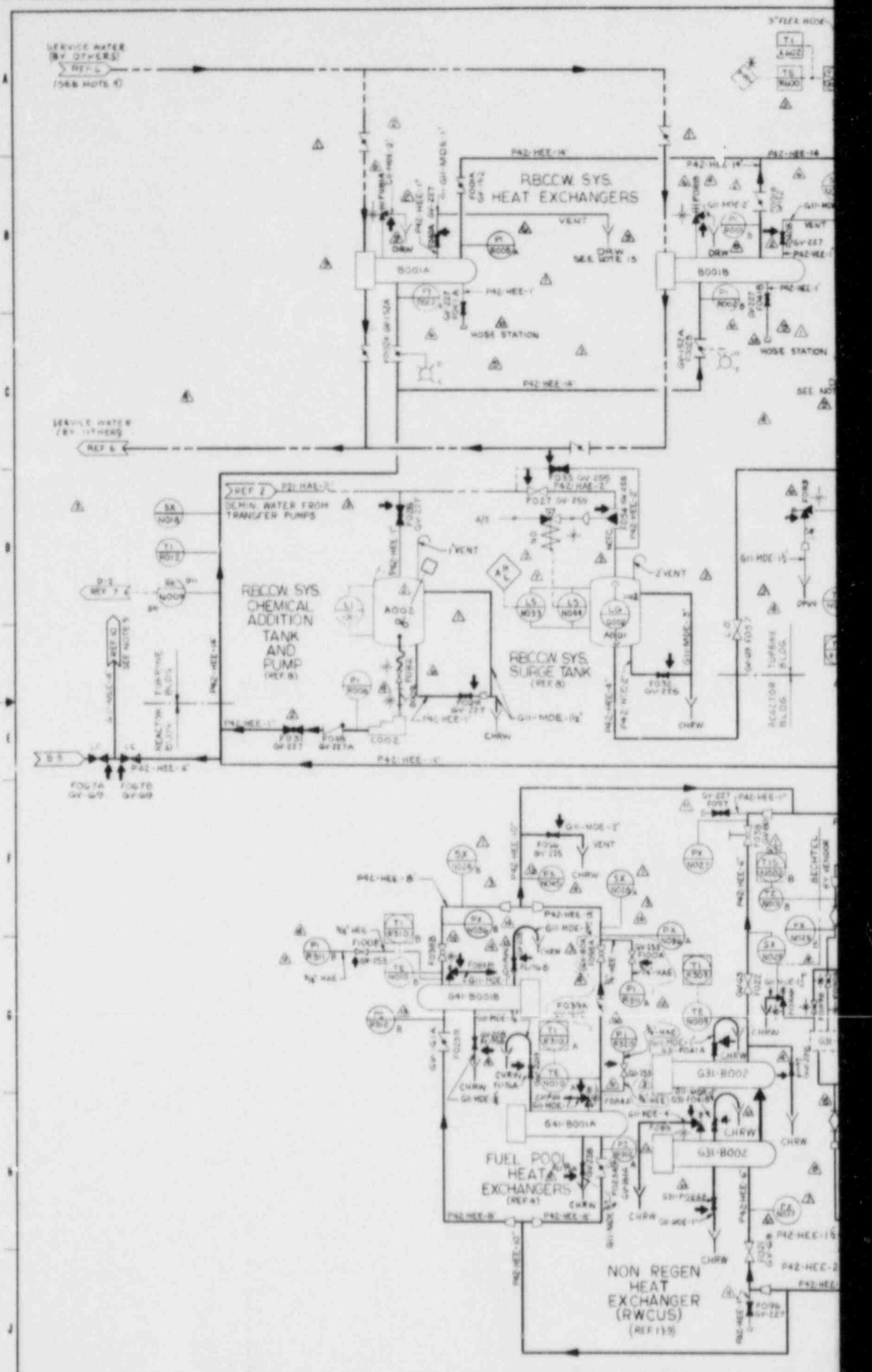
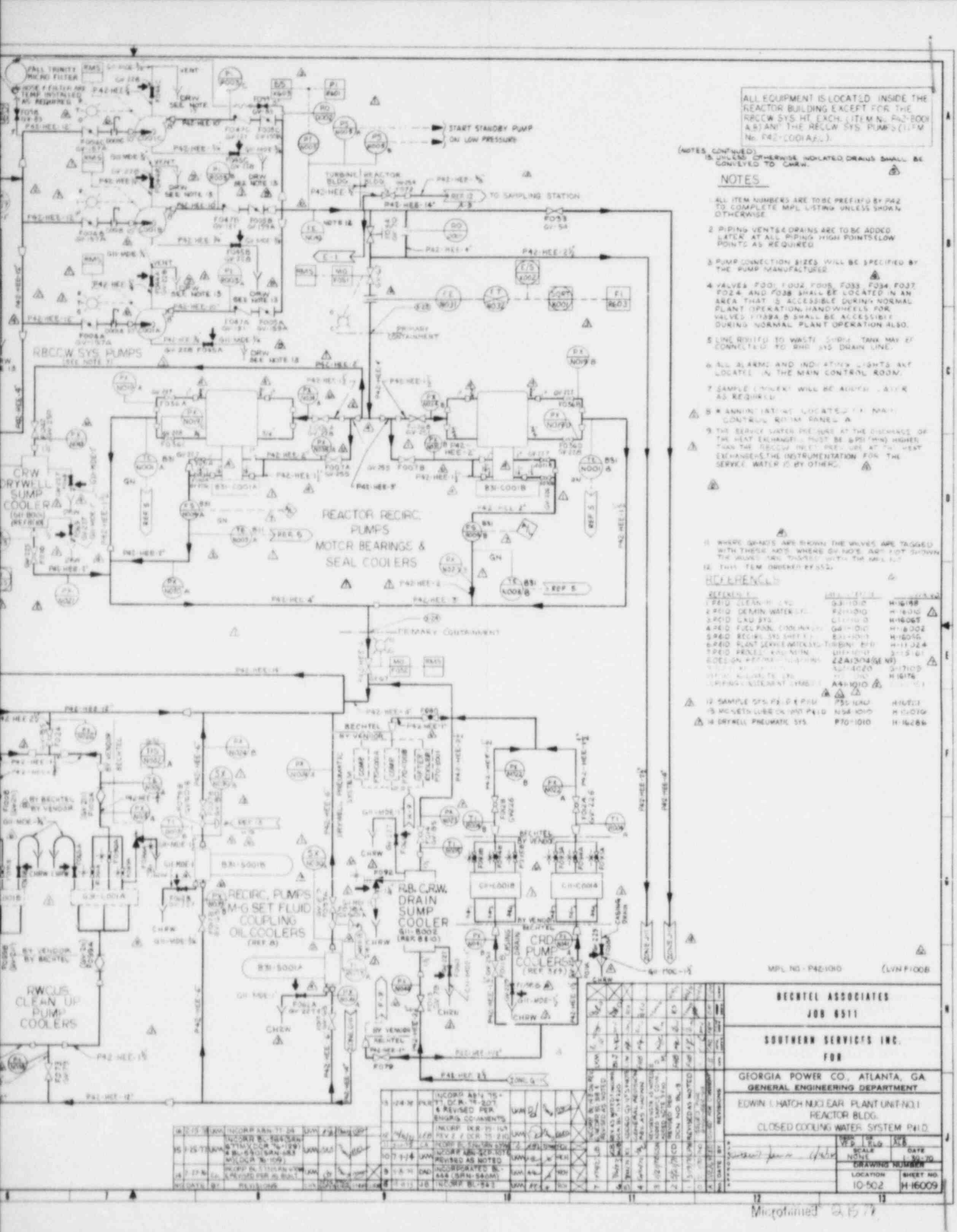


Figure 16 Stop Check Valve, Applicable To
Valves E51-F001, F002 and E41-F021,F022


SERVICE WATER (BY OTHERS)
REF 6
(SEE NOTE 4)
P42-HEE-14
RBCCW SYS. 3 HEAT EXCHANGERS
VENT
P42-HEE-1
HOSE STATION
P42-HEE-14
SERVICE WATER (BY OTHERS)
REF 6
REF 2
P21-HAS-2
DEMIN. WATER FROM TRANSFER PUMPS
RBCCW SYS. CHEMICAL ADDITION TANK AND PUMP (REF 8)
RBCCW SYS. SURGE TANK (REF 8)
VENT
P42-HEE-15
P42-HEE-4
FUEL POOL HEAT EXCHANGERS (REF 4)
NON REGEN HEAT EXCHANGER (RWCUS) (REF 119)
P42-HEE-18
P42-HEE-2



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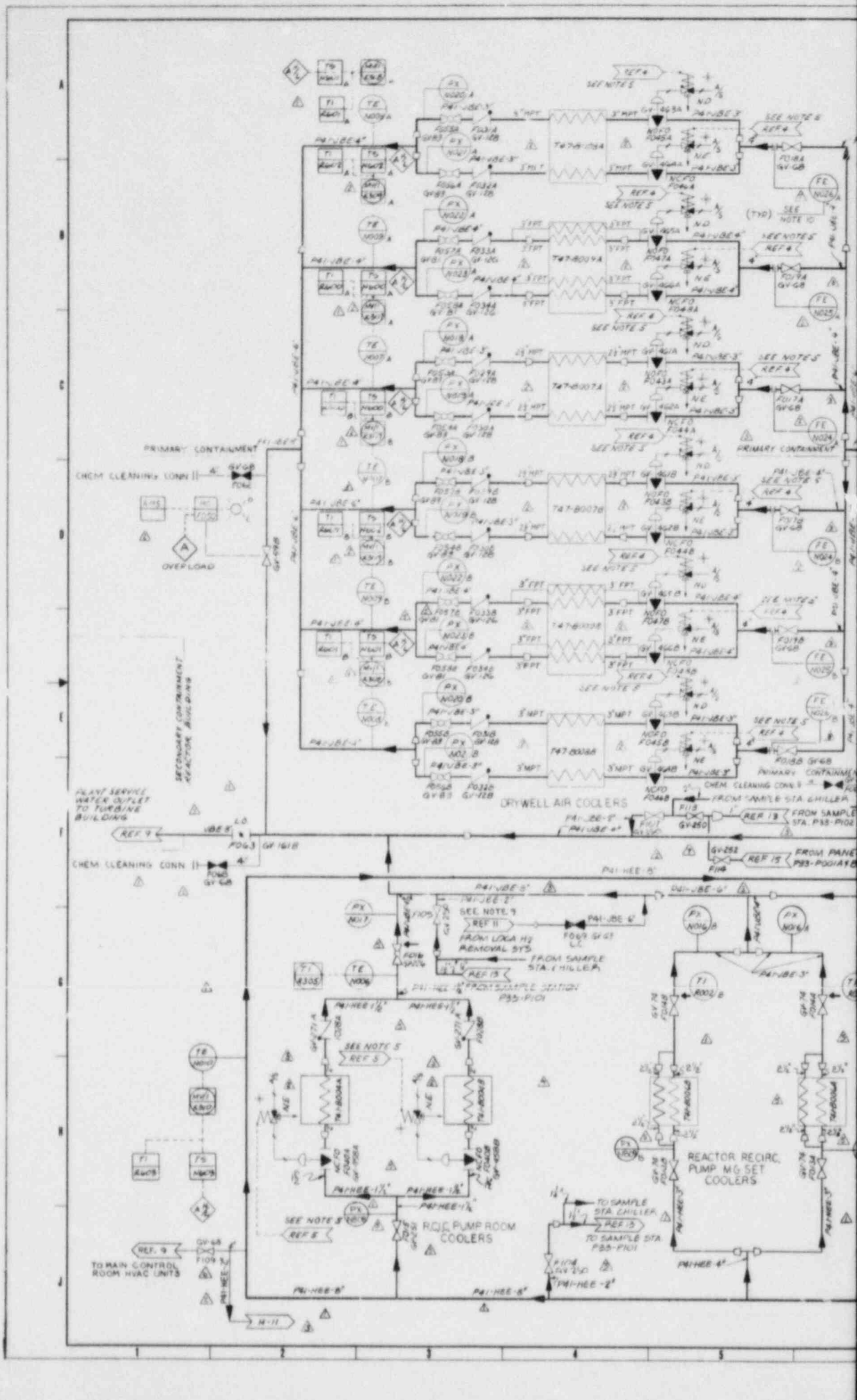
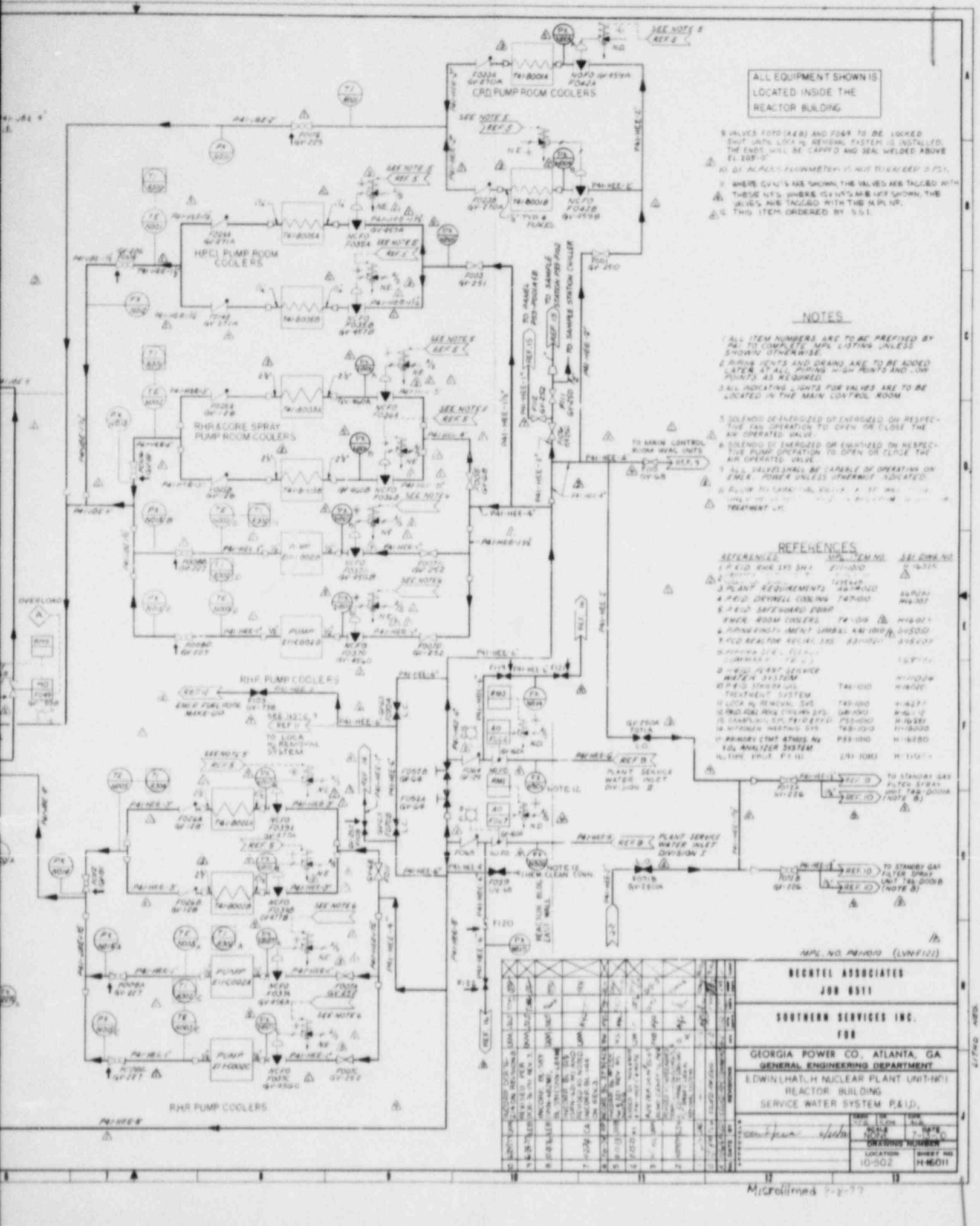
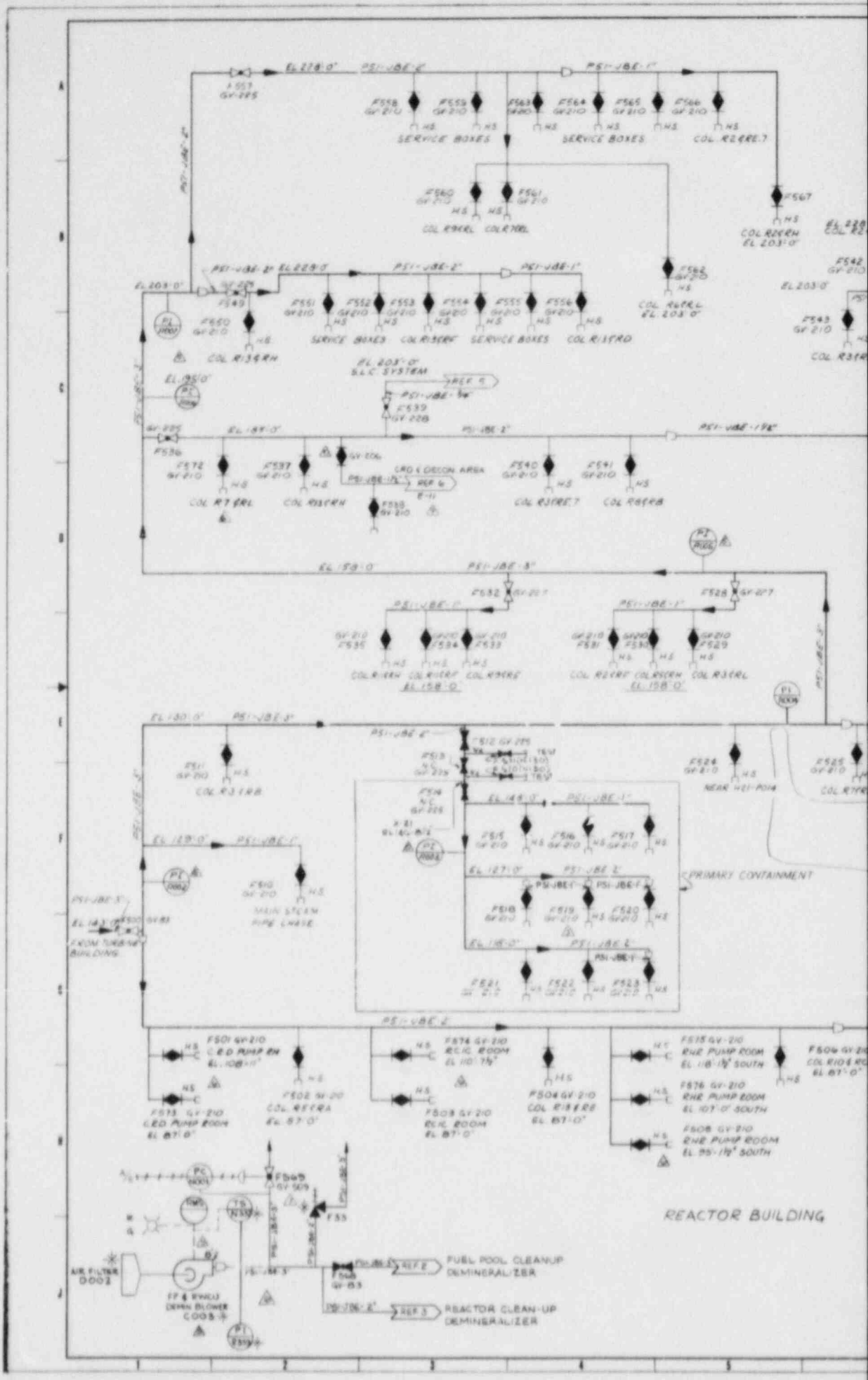
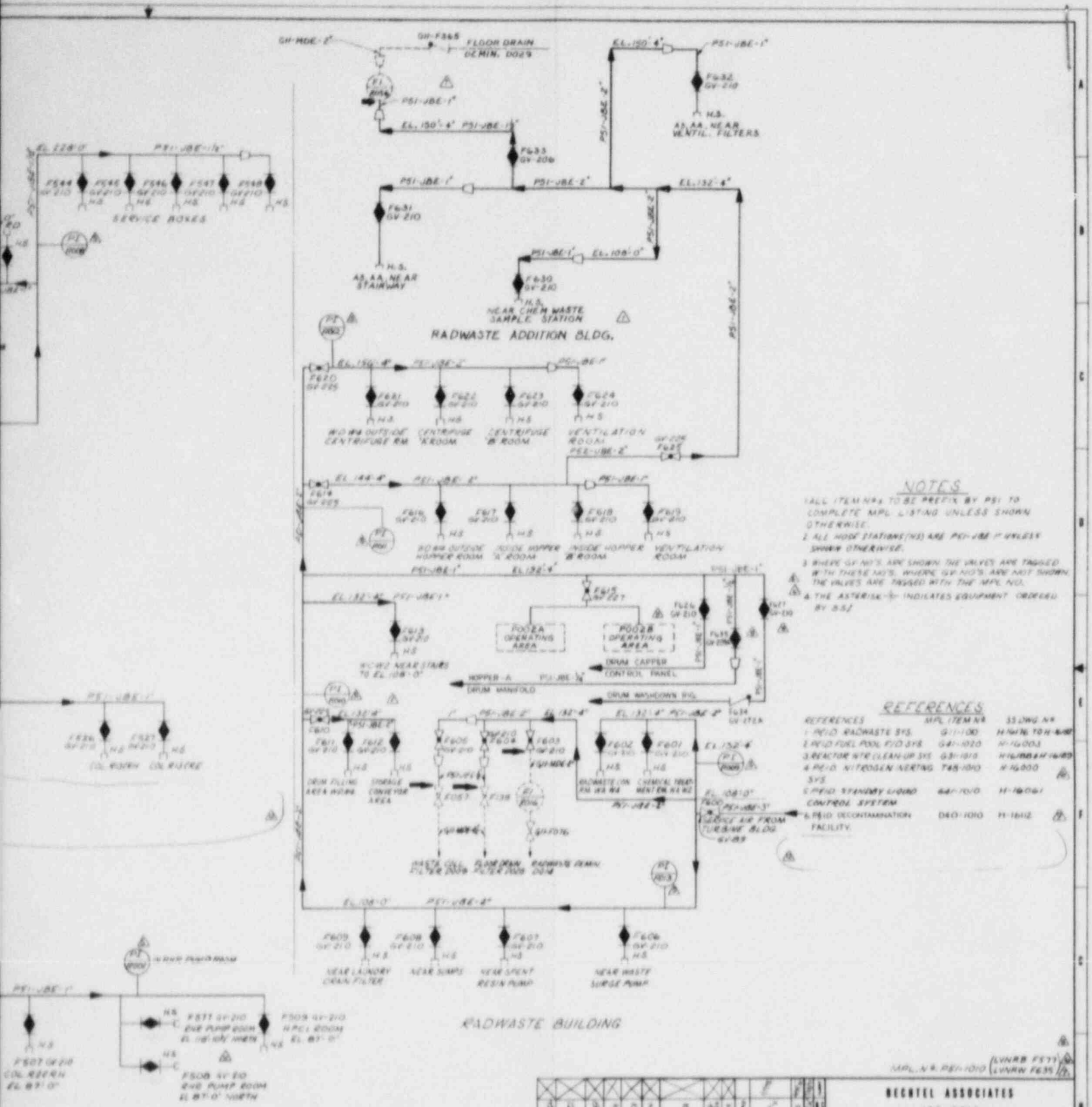

PRIMARY CONTAINMENT
CHEM CLEANING CONN
OVERLOAD
SECONDARY CONTAINMENT REACTOR BUILDING
PLANT SERVICE WATER OUTLET TO TURBINE BUILDING
CHEM CLEANING CONN
TO MAIN CONTROL ROOM HVAC UNITS
DRYWELL AIR COOLERS
FROM SAMPLE STA CHILLER
FROM SAMPLE STA P33-P102
FROM PANEL P33-P001A&B
FROM LOCA H2 REMOVAL SYS
FROM SAMPLE STA CHILLER
FROM SAMPLE STA P33-P101
R.C.I.C. PUMP ROOM COOLERS
REACTOR RECIRC. PUMP M-G SET COOLERS
TO SAMPLE STA CHILLER
TO SAMPLE STA P33-P101
SEE NOTE 5
SEE NOTE 9
SEE NOTE 10
(TYP)


ALL EQUIPMENT SHOWN IS LOCATED INSIDE THE REACTOR BUILDING
NOTES
REFERENCES
CRD PUMP ROOM COOLERS
HPCI PUMP ROOM COOLERS
RHR&CORE SPRAY PUMP ROOM COOLERS
RHR PUMP COOLERS
RHR PUMP COOLERS
TO MAIN CONTROL ROOM HVAC UNITS
TO STANDBY GAS FILTER SPRAY UNIT T46-D001A (NOTE 8)
TO STANDBY GAS FILTER SPRAY UNIT T46-D001B (NOTE 8)
PLANT SERVICE WATER INLET DIVISION II
PLANT SERVICE WATER INLET DIVISION I
TO SAMPLE STATION CHILLER
TO SAMPLE STATION PED PNL
TO PANEL P33-P001A1B
TO LOCA H2 REMOVAL SYSTEM
EMER FUEL POOL MAKE-UP
REACTOR BLDG. (EL. 185') WALL
CHEM CLEAR CONN.
OVERLOAD
BECHTEL ASSOCIATES
JOB 6511
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT
EDWIN I. HATCH NUCLEAR PLANT UNIT-NO1
REACTOR BUILDING
SERVICE WATER SYSTEM P&I.D.
DRAWING NUMBER
LOCATION 10-502
SHEET NO. H-16011
Microfilmed 7-7-77


EL 228'-0"
PSI-JBE-4"
PSI-JBE-1"
SERVICE BOXES
COL R2ERE-7
COL R2ERH
EL 203'-0"
EL 229'-0"
PSI-JBE-2"
PSI-JBE-1"
COL R2ERL
EL 203'-0"
SERVICE BOXES
COL R3ERH
SERVICE BOXES
COL R3ERD
COL R3ERH
EL 203'-0"
S.L.C. SYSTEM
EL 195'-0"
EL 189'-0"
PSI-JBE-2"
PSI-JBE-1"
COL R7ERL
COL R3ERH
LRG & DRSCN AREA
COL R3ERE-7
COL R6ERB
EL 158'-0"
PSI-JBE-3"
PSI-JBE-1"
PSI-JBE-1"
COL R3ERH
COL R3ERF
COL R3ERE
COL R2ERF
COL R3ERH
COL R3ERL
EL 158'-0"
EL 150'-0"
PSI-JBE-3"
PSI-JBE-4"
COL R3ERB
EL 129'-0"
PSI-JBE-1"
MAIN STEAM PIPE CHASE
FROM TURBINE BUILDING
EL 149'-0"
PSI-JBE-1"
EL 127'-0"
PSI-JBE-2"
PSI-JBE-1"
PSI-JBE-1"
EL 116'-0"
PSI-JBE-2"
PSI-JBE-1"
PRIMARY CONTAINMENT
NEAR H21-P014
COL R7ERE
PSI-JBE-2"
C.R.D. PUMP RM
EL 108'-11"
C.R.D. PUMP ROOM
EL 87'-0"
COL R2ERA
EL 87'-0"
R.C.I.C. ROOM
EL 110'-1½"
R.C.I.C. ROOM
EL 87'-0"
COL R1ERE
EL 87'-0"
RHR PUMP ROOM
EL 118'-1½" SOUTH
RHR PUMP ROOM
EL 103'-0" SOUTH
RHR PUMP ROOM
EL 95'-1½" SOUTH
COL R10ERC
EL 87'-0"
REACTOR BUILDING
AIR FILTER
D002
SP & RWCU
DRAIN BLOWER
C003
FUEL POOL CLEANUP
DEMINERALIZER
REACTOR CLEAN-UP
DEMINERALIZER



NOTES

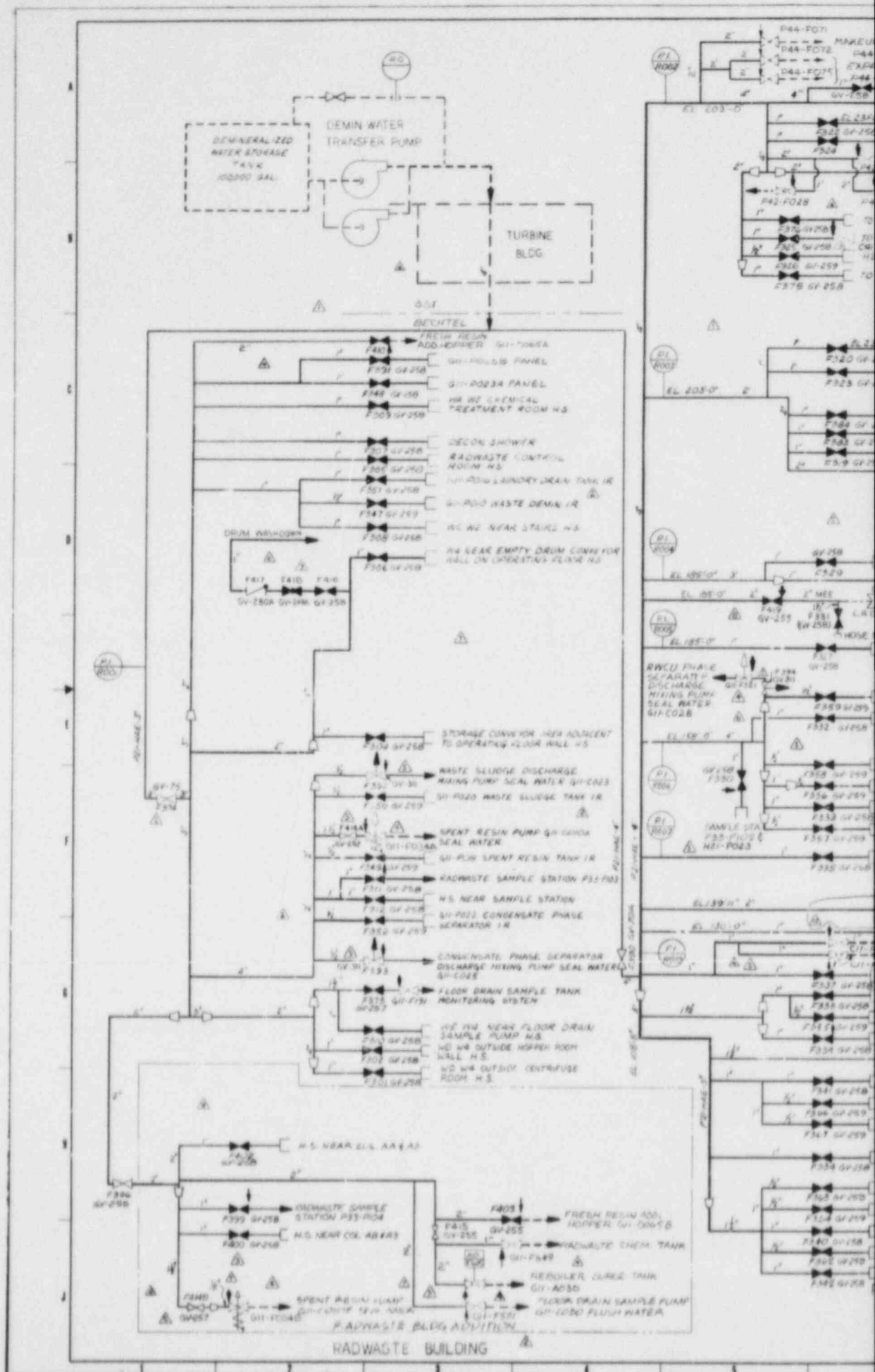
1. ALL ITEM NO's TO BE PREFIX BY PSI TO COMPLETE MPL LISTING UNLESS SHOWN OTHERWISE.
2. ALL HOSE STATIONS (HS) ARE PSI-JBE-1" UNLESS SHOWN OTHERWISE.
3. WHERE GV NO'S ARE SHOWN THE VALVES ARE TAGGED WITH THESE NO'S. WHERE GV NO'S ARE NOT SHOWN THE VALVES ARE TAGGED WITH THE MPL NO.
4. THE ASTERISK (*) INDICATES EQUIPMENT ORDERED BY S.S.I.

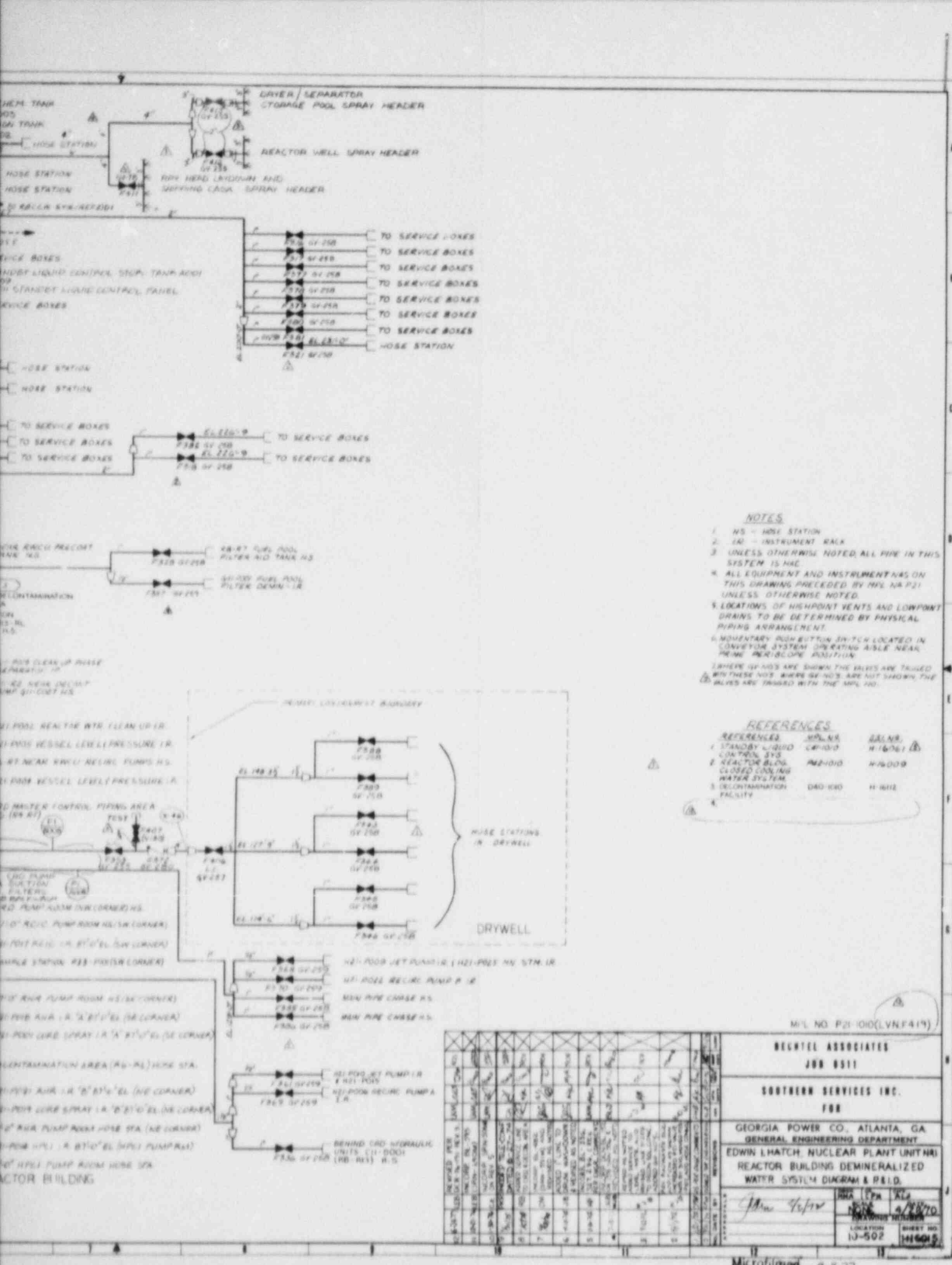
REFERENCES

REFERENCES	MPL ITEM NO.	SS DWG NO.
1. P&I D. RADWASTE SYS.	G11-100	H-16016 TO H-16017
2. P&I D. FUEL POOL F.D. SYS.	G41-1020	H-16003
3. REACTOR SITE CLEAN-UP SYS.	G31-1010	H-16018 & H-16019
4. P&I D. NITROGEN INERTING SYS.	T48-1010	H-16000
5. P&I D. STANDBY LIQUID CONTROL SYSTEM	B41-1010	H-16061
6. P&I D. DECONTAMINATION FACILITY.	D40-1010	H-16012

MPL NO. P51-1010 (LVNRB F577) (LVNRW F635)

BECHTEL ASSOCIATES	
JOB 6511	
SOUTHERN SERVICES INC.	
FOR	
GEORGIA POWER CO., ATLANTA, GA.	
GENERAL ENGINEERING DEPARTMENT	
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1	
REACTOR & RADWASTE BUILDINGS	
SERVICE AIR SYSTEM DIAG.	
DRAWING NUMBER	
LOCATION 10-502	SHEET NO. H-16013


DEMIN WATER TRANSFER PUMP
DEMINERALIZED WATER STORAGE TANK 150000 GAL
TURBINE BLDG
BECHTEL
RADWASTE BLDG ADDITION
RADWASTE BUILDING



NOTES

1. NS = HOSE STATION
2. IR = INSTRUMENT RACK
3. UNLESS OTHERWISE NOTED, ALL PIPE IN THIS SYSTEM IS HAC.
4. ALL EQUIPMENT AND INSTRUMENT NAS ON THIS DRAWING PRECEDED BY MFL NA P21 UNLESS OTHERWISE NOTED.
5. LOCATIONS OF HIGHPOINT VENTS AND LOWPOINT DRAINS TO BE DETERMINED BY PHYSICAL PIPING ARRANGEMENT.
6. MOMENTARY PUSH BUTTON SWITCH LOCATED IN CONVEYOR SYSTEM OPERATING AISLE NEAR PRIME PERISCOPE POSITION.

⚠ WHERE GF NO'S ARE SHOWN THE VALVES ARE TAGGED WITH THESE NOS. WHERE GF NO'S ARE NOT SHOWN, THE VALVES ARE TAGGED WITH THE MFL NO.

REFERENCES

REFERENCES	MFL NR	GE NR
1. STANDBY LIQUID CONTROL SYS.	CP-100	H-16061 ⚠
2. REACTOR BLDG. CLOSED COOLING WATER SYSTEM	PM2-100	H-16009
3. DECONTAMINATION FACILITY	DA0-100	H-16112
4.		

⚠ MFL NO. P21-100(LVN.F419)

BECHTEL ASSOCIATES	
JOB 0511	
SOUTHERN SERVICES INC.	
FOR	
GEORGIA POWER CO., ATLANTA, GA.	
GENERAL ENGINEERING DEPARTMENT	
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1	
REACTOR BUILDING DEMINERALIZED WATER SYSTEM DIAGRAM & P&I.D.	
DRN. RKA / CHK. CPK / APP. RLG	
DATE 4/28/70	
DRAWING NUMBER	
LOCATION 13-502	SHEET NO. 1 of 1

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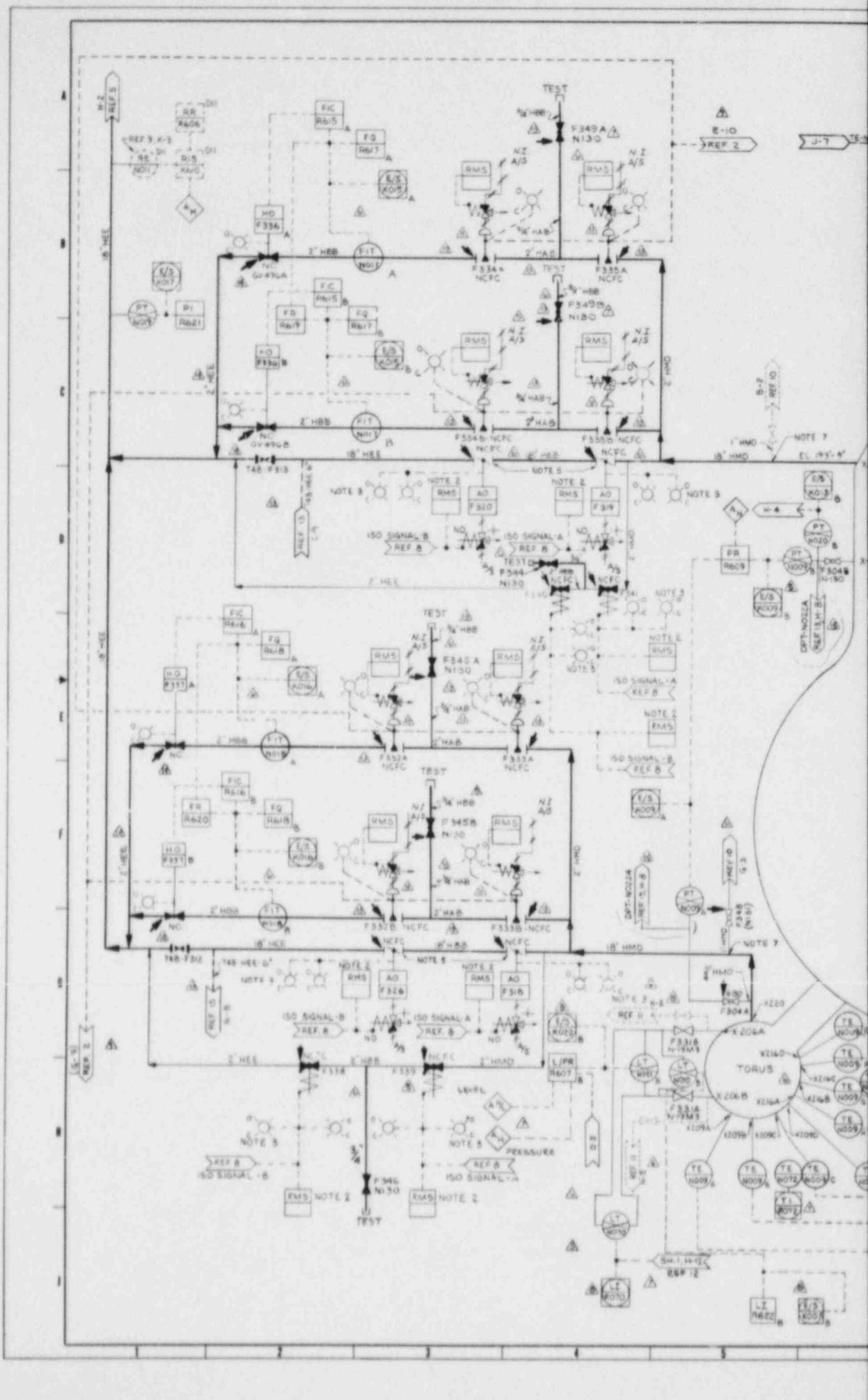
TORUS
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NOTE 1
NOTE 2
NOTE 3
NOTE 5
NOTE 7
REF 2
REF 8
REF 12
REF 15
ISO SIGNAL-A
ISO SIGNAL-B
PRESSURE
LEVEL
F349A N130
F349B N130
F348 A N130
F348B N130
F346 N130
F304A
F304B
F331A N-19M3
F331B N-19M3
F334
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F336A
F336B
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F332A NCFC
F332B NCFC
F334A NCFC
F334B NCFC
F335A NCFC
F335B NCFC
F336A NCFC
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GV-49GA
GV-49GB
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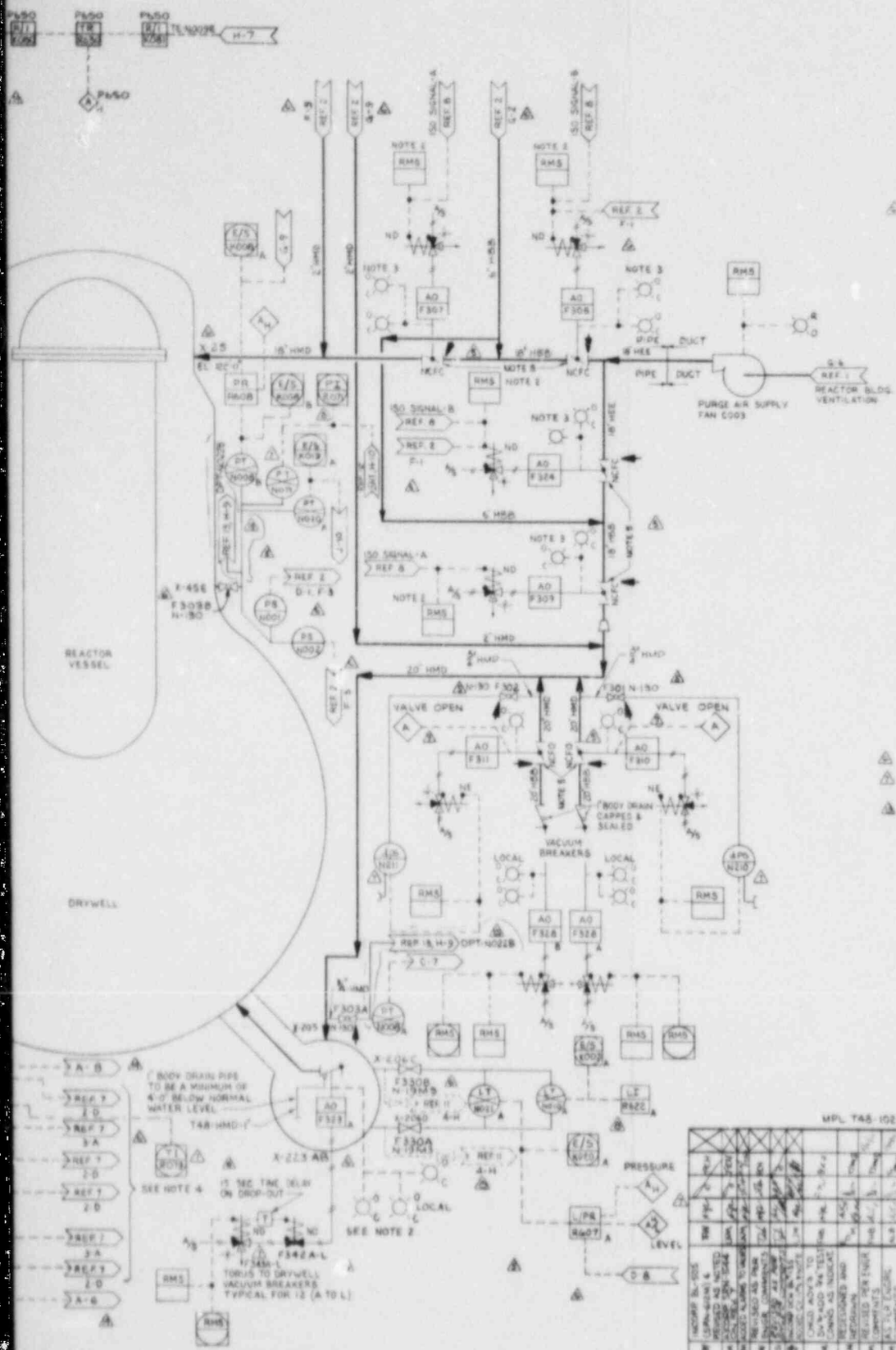


NOTES

1. EQUIPMENT AND INSTRUMENT NOS. ON THIS DWG. PRECEDED BY T48; EXAMPLE: T48-C003 EXCEPT AS INDICATED. SEE NOTES 2 & 3.
2. SWITCHES AND LIGHTS INDICATED BY THIS NOTE ARE PART OF THE P.C.I.S. SYSTEM (PRIMARY CONTAINMENT ISOLATION SYSTEM) MPL C61 AND ARE MOUNTED ON BENCHBOARD H11-P601 & H11-P602.
3. INDICATING LIGHTS LOCATED ON GRAPHIC DISPLAY ON BENCHBOARD H11-P601.
4. TEMPERATURE ELEMENTS ARE INPUT TO A RECORDER SHOWN ON REF. 7
5. 1" LEAKOFF CONNECTION ON VALVE TO BE USED FOR LOCAL LEAK RATE TESTING.
6. WHERE SW NO'S ARE SHOWN THE VALVES ARE TAGGED WITH THESE NO'S. WHERE SW NO'S. ARE NOT SHOWN, THE VALVES ARE TAGGED WITH THE M.P.L NO.
7. SAMPLE POINT CONNECTION ON VENT PURGE OUTLET LINE IS TO BE LOCATED AS CLOSE TO THE TORUS AND DRYWELL AS POSSIBLE; PROBABLY AT THE BOTTOM OF THE 20"x18" REDUCER ON THE DRYWELL SIDE OF THE LINE.

REFERENCES

	REFERENCE	MPL NO.	S.S. NO.
1.	REACTOR BUILDING VENTILATION FLOW DIAG.	T41-1040	H-16006
2.	NITROGEN INERTING SYSTEM P&I.D.	T48-1010	H-16000
3.	PIPING & INSTRUMENT SYMBOLS	A41-1010 QA	S-15051
4.	RHR SYS. P&I.D.	E11-1010	H-16529
5.	STANDBY GAS TREATMENT SYSTEM	T46-1010	H-16020
6.	REACTOR BUILDING VENTILATION P&I.D.	T41-1020	H-16005
7.	DRYWELL COOLING SYSTEM P&I.D.	T47-1010	H-16007
8.	PRIMARY CONTAINMENT ISOLATION SYSTEM	C61-1040	H-17801-805
9.	PROCESS RADIATION MONITORING SYSTEM	D11-1010	S-17790
10.	HYDROGEN ANAL. SYS. P&I.D.	P33-1010	H-16276
11.	HPCI SYS. P&I.D.	E41-1010	H-16332 H-16333
12.	RCIC SYS. P&I.D.	E51-1010	H-16334
13.	DRYWELL TO TORUS DIFFERENTIAL PRESSURE SYSTEM P&I.D.	T48-1050	H-16158

NO.	DATE	BY	REVISIONS	QA
15	4/8/77	WM	NCORP BL-618 (SRN-9020) LDCR 77-114	UKM
14	4/1/77	WPKR	INCORP TELECON DATED 4-1-76 (DCR 74-119	UKM
13	3/22/76	CA	ADDED TORUS TO DRYWELL ΔP SYS. ISOLATION VALVES (RELOCATED (4) 2" BYPASS & CAD SYS TIE-INS (REVISED PER ENGRS. COMMENTS	UKM
12	10-31-75	CA	INCORP SRN-SUM ON REV. 8	UKM

BECHTEL ASSOCIATES
JOB 6511

SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

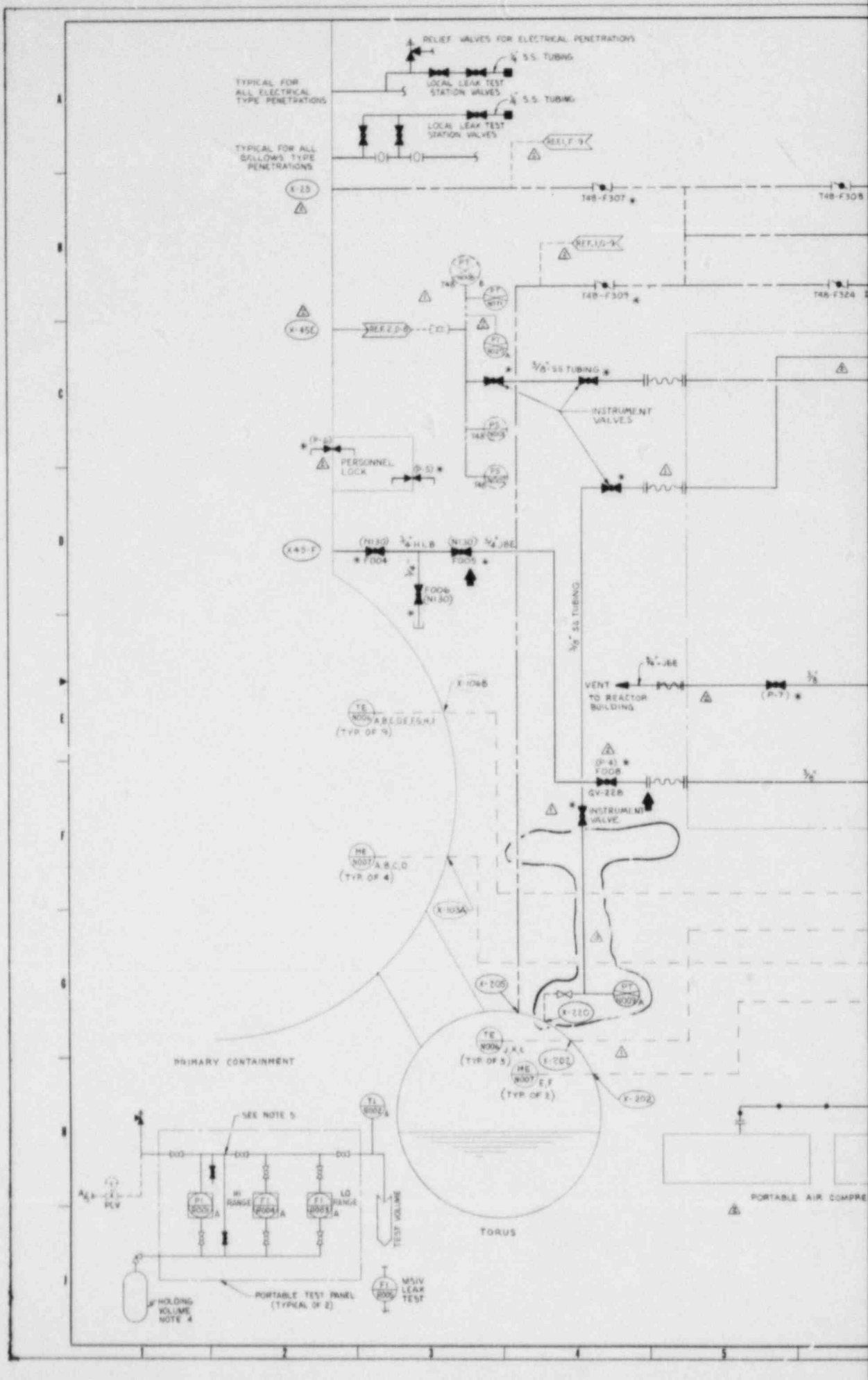
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
PRIMARY CONTAINMENT PURGE & INERTING SYSTEM P&I.D.

SCALE	DATE
NONE	4-1-75

DRAWING NUMBER
LOCATION 10-502
SHEET NO. H-16024

MICROFILMED 4-8-77

LITHO NEG.


RELIEF VALVES FOR ELECTRICAL PENETRATIONS
TYPICAL FOR ALL ELECTRICAL TYPE PENETRATIONS
¼" S.S. TUBING
LOCAL LEAK TEST STATION VALVES
TYPICAL FOR ALL BELLOWS TYPE PENETRATIONS
X-23
T48-F307
T48-F308
T48-F309
T48-F324
X-45C
⅜" SS TUBING
INSTRUMENT VALVES
PERSONNEL LOCK
X-45F
¾" HLB
¾" JBE
F004
F005
F006 (N130)
⅜" SS TUBING
VENT TO REACTOR BUILDING
X-106B
TE N005 A,B,C,D,E,F,G,H,J (TYP OF 9)
(P-4) F008
GV-228
INSTRUMENT VALVE
HE N007 A,B,C,D (TYP OF 4)
X-103A
X-205
X-220
PT N007A
TE N006 J,K,L (TYP OF 3)
X-202
HE N007 E,F (TYP OF 2)
PRIMARY CONTAINMENT
TORUS
SEE NOTE 5
PCV
PI 8005A
HI RANGE
PI 8004A
PI 8003A
LO RANGE
TI 8002A
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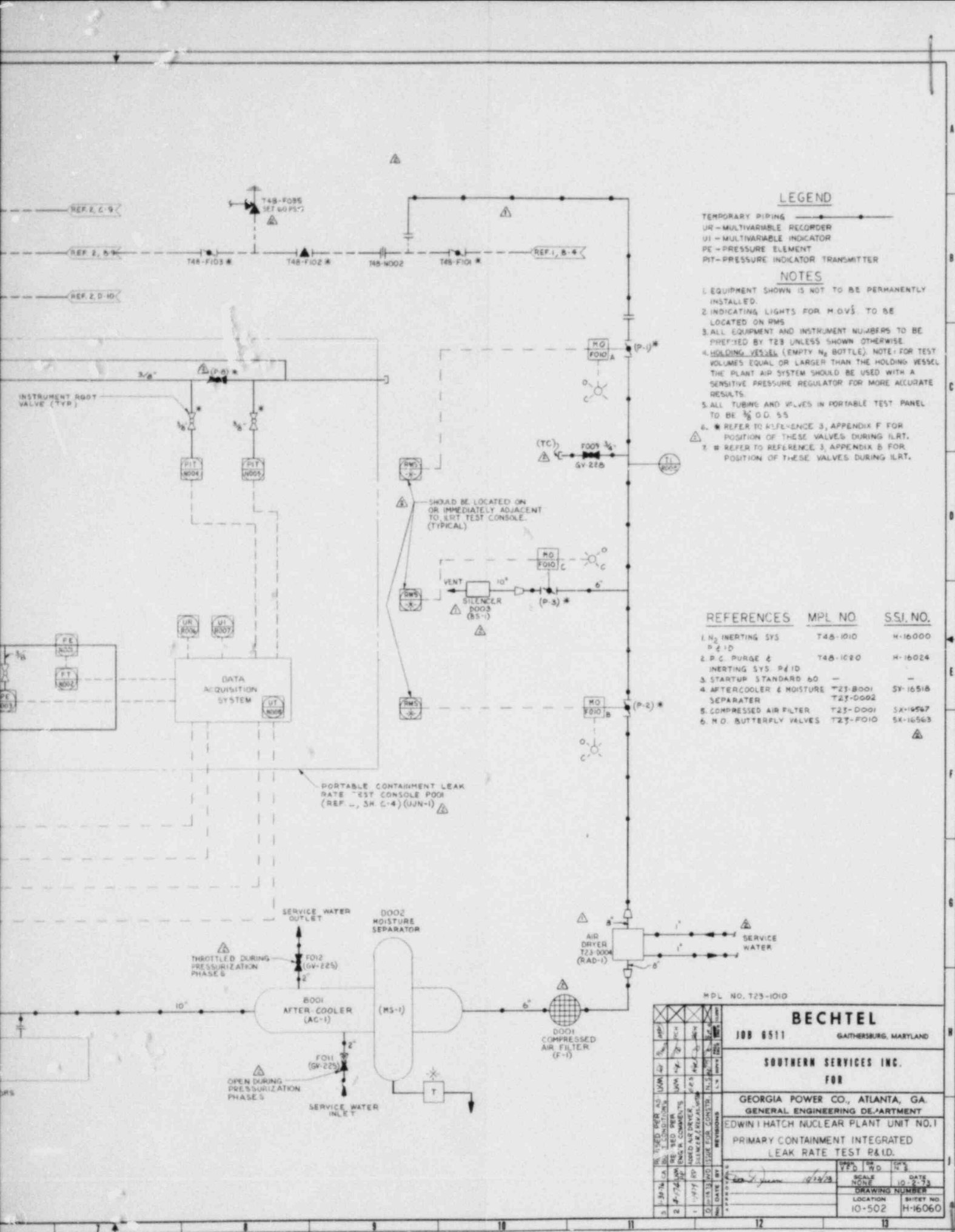
HOLDING VOLUME NOTE 4
PORTABLE TEST PANEL (TYPICAL OF 2)
FI 2005
MSIV LEAK TEST
PORTABLE AIR COMPRE



LEGEND

TEMPORARY PIPING
UR – MULTIVARIABLE RECORDER
UI – MULTIVARIABLE INDICATOR
PE – PRESSURE ELEMENT
PIT – PRESSURE INDICATOR TRANSMITTER

NOTES

1. EQUIPMENT SHOWN IS NOT TO BE PERMANENTLY INSTALLED.
2. INDICATING LIGHTS FOR M.O.V'S. TO BE LOCATED ON RMS.
3. ALL EQUIPMENT AND INSTRUMENT NUMBERS TO BE PREFIXED BY T23 UNLESS SHOWN OTHERWISE.
4. HOLDING VESSEL (EMPTY N_2 BOTTLE). NOTE: FOR TEST VOLUMES EQUAL OR LARGER THAN THE HOLDING VESSEL THE PLANT AIR SYSTEM SHOULD BE USED WITH A SENSITIVE PRESSURE REGULATOR FOR MORE ACCURATE RESULTS.
5. ALL TUBING AND VALVES IN PORTABLE TEST PANEL TO BE 3/8 O.D. SS
6. * REFER TO REFERENCE 3, APPENDIX F FOR POSITION OF THESE VALVES DURING ILRT.
7. # REFER TO REFERENCE 3, APPENDIX B FOR POSITION OF THESE VALVES DURING ILRT.

REFERENCES

	MPL NO.	S.S.I. NO.
1. N_2 INERTING SYS P&ID	T48-1010	H-16000
2. P.C. PURGE & INERTING SYS. P&ID	T48-1020	H-16024
3. STARTUP STANDARD 60	—	—
4. AFTERCOOLER & MOISTURE SEPARATER	T23-B001 T23-D002	SX-16518
5. COMPRESSED AIR FILTER	T23-D001	SX-19567
6. M.O. BUTTERFLY VALVES	T23-F010	SX-16563

BECHTEL	JOB 6511 GAITHERSBURG, MARYLAND
SOUTHERN SERVICES INC.	
FOR	
GEORGIA POWER CO., ATLANTA, GA.	GENERAL ENGINEERING DEPARTMENT
EDWIN I HATCH NUCLEAR PLANT UNIT NO.1	
PRIMARY CONTAINMENT INTEGRATED LEAK RATE TEST P&I.D.	
DRAWN V.P.D. / DR W.D. / CHK'D H.S.	
SCALE NONE / DATE 10-2-73	
DRAWING NUMBER	
LOCATION 10-502 / SHEET NO. H-16060	

REVISIONS

NO.	DATE	BY	
1	2-28-74	WD	REVISED PER AS BUILT CONDITIONS
2	2-15-74	WD	REVISED PER ENG'R COMMENTS
3	3-13-74	WD	ADDED AIR DRYER, SILENCER, & VALVES
4	4-30-74	WD	ISSUE FOR CONSTR.

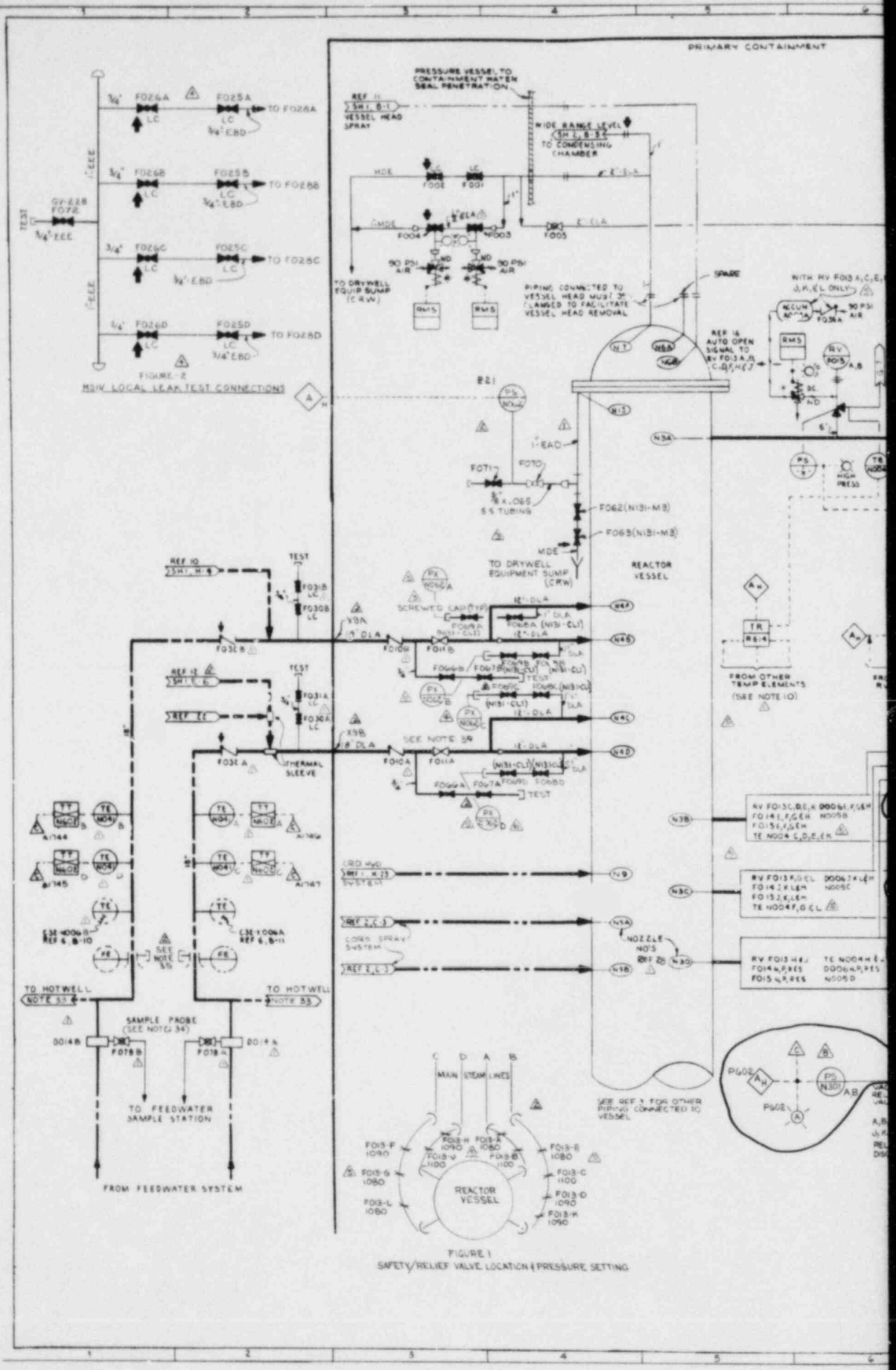
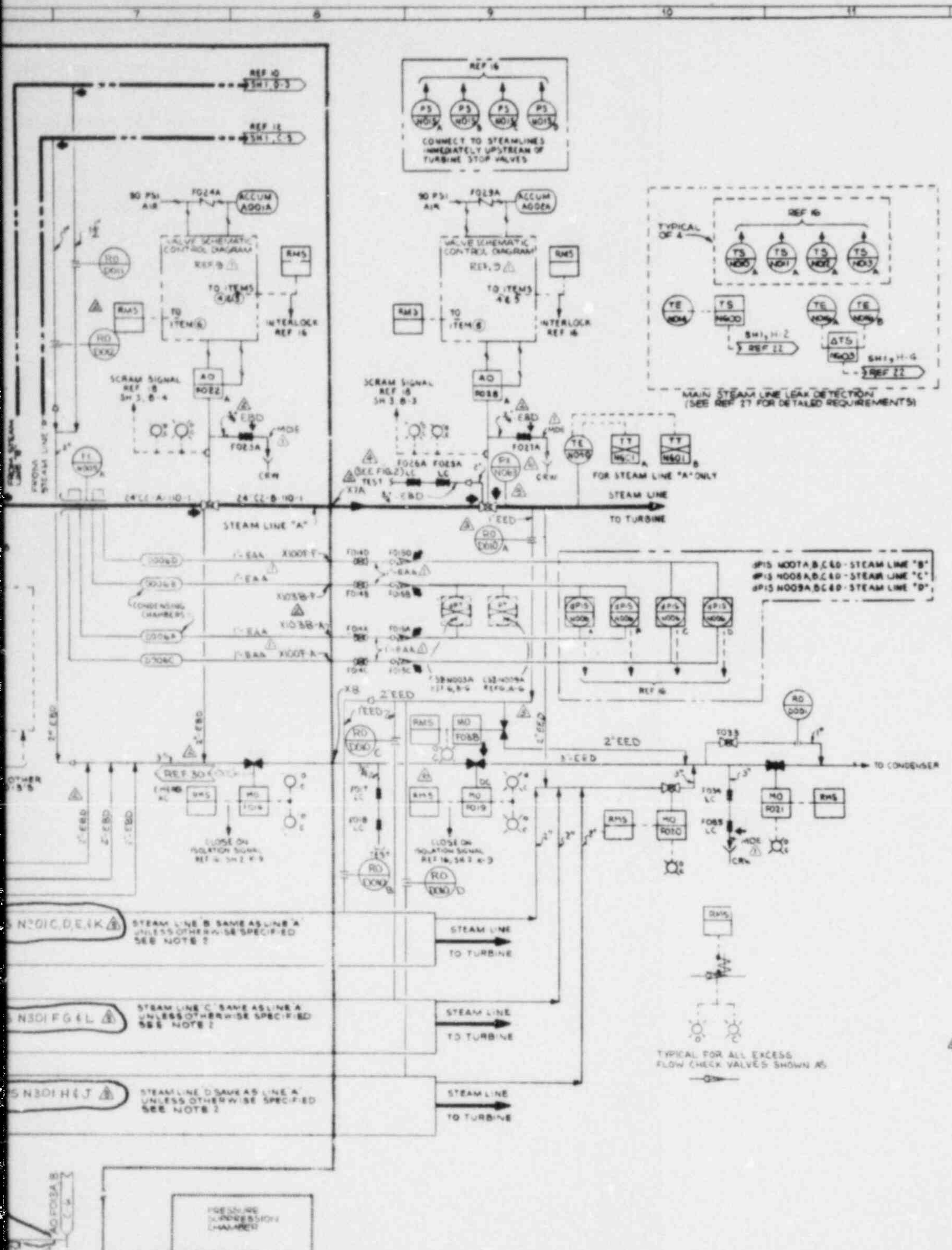


FIGURE 1
SAFETY/RELIEF VALVE LOCATION & PRESSURE SETTING



PRESSURE TEMPERATURE INDEX REFERENCE NO 23					
P-T INDEX	DESIGN PSIG	DESIGN °F	PEAK PSIG	PEAK °F	MIN °F
1	1115	560	1337	583	406
2	1115	560	1337	583	70
3	0	212	—	—	—
4	448	457	535	477	—
5	1475	575	1475	575	40
6					
7	1146	560	1325	560	70
8	1116	560	1337	583	40

NOTES:

1. ALL EQUIPMENT & INSTRUMENTS ARE PRECEDED BY MPL NO. B21 UNLESS OTHERWISE NOTED.
2. STEAM LINES, ENCLOSED IN BOXES SHALL HAVE PART NOS. CORRESPONDING TO ITS RESPECTIVE LINE NO. UNLESS OTHERWISE NOTED.
   EXAMPLE: XXXB IS ON LINE "B"
   XXXC IS ON LINE "C"
3. WHERE GW NUMBERS ARE SHOWN THE VALVES ARE TAGGED WITH THESE NUMBERS. WHERE GW-NUMBERS ARE NOT SHOWN THE VALVES ARE TAGGED WITH THE MPL NUMBER.
4. HIGH POINT VENTS AND LOW POINT DRAINS ARE TO BE PROVIDED WHERE NECESSARY AS PROVIDED BY PHYSICAL ROUTING OF PIPE.
5. INDICATED LEVEL TRIP SETTINGS VERSUS ACTUAL LEVEL INSIDE DRYER SEAL SKIRT IS BASED UPON:
   A. CALIBRATION OF DEVICES AT 1000 PSIG REACTOR DOME PRESSURE AND 135°F DRYWELL AMBIENT TEMPERATURE.
   B. ΔP + DRYER PRESSURE DROP AT RATED LOAD = 10" HOT WATER.
   C. CARRY-UNDER CORRECTION (BASED ON 0.3% BY WEIGHT CARRY-UNDER) = 5.5% DENSITY.
   D. FEEDWATER LEVEL SENSOR ERROR BAND ± 2% RANGE.
   E. SAFEGUARDS LEVEL SENSOR ERROR BAND ± 3% RANGE.
6. T/C JUNCTION BOX LOCALLY MOUNTED (BY OTHERS) EACH T/C JUNCTION BOX TO HAVE OWN SET OF TERMINALS.
7. △
8. AN EXPANSION LEG SHALL BE PROVIDED IN INSTRUMENT SENSING LINE BETWEEN POT (PART D002) AND THE WATER-TIGHT PENETRATION SEAL THROUGH BOTTOM OF REACTOR WELL. THE EXPANSION LEG & PIPING INSTALLATION SHALL BE DESIGNED TO ALLOW FOR MAXIMUM CHANGE OF VESSEL LENGTH WITH TEMPERATURE TO AVOID OVERSTRESSING THE PIPING OR THE SEAL OR DAMAGE TO THE INSULATION AROUND THE VESSEL.
9. FOR LOCATION & IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INSTRUMENT.

(NOTES CONT'D ON SHT. 2)

REFERENCES

1. CONTROL ROD DRIVE HYDRAULIC SYS P&ID		C11-1010	H-16065
2. CORE SPRAY SYSTEM P&ID		E21-1010	H-16331
3. REACTOR RECIRCULATION SYS P&ID	SHT 1	B31-1010	H-16066
	SHT 2 & SHT 3		H-16067&68
4. PIPING & INSTRUMENT SYMBOLS		A41-1010	S15851
5. REACTOR VESSEL PURCHASE PART DWG.	SHT 1-6	B11-A001	S-15713-24
6. FEEDWATER CONTROL SYSTEM IED		C32-1010	S-15201
7. NEUTRON MONITORING SYS IED	SHT 1-2	C51-1010	S-15162-63
8. STANDBY LIQUID CONTROL SYS P&ID		C41-1010	H-16061
9. ISOLATION VALVE PURCH PART DWG		B21-F022/F028	H-15247
10. HPCI SYSTEM P&ID	SHT 1	E41-1010	S-16332
	SHT 2		H-16333
11. RHR SYSTEM P&ID	SHT 1	E11-1010	H-16329
	SHT 2		H-16330
12. RCIC SYSTEM P&ID	SHT 1	E51-1010	H-16334
	SHT 2		H-16335
13. HPCI SYSTEM FCD	SHT 1-5	E41-1030	S-[illegible]
14. RHR SYSTEM FCD	SHT 1-5	E11-1030	S-15324-28
15. RCIC SYSTEM FCD	SHT 1-4	E51-10[illegible]	[illegible]
16. NUCLEAR BOILER SYSTEMS FCD	SHT 1-8	B21-10[illegible]	[illegible]
17. CORE SPRAY SYSTEM FCD		E21-1030	S-15133
18. REACTOR PROTECTION SYSTEM IED	SHT 1-3	C71-1010	S-15063-65
19. PROCESS INSTRUMENT PIPING & TUBING INSTALL. SPECIFICATION		A61-4070	S-
20. PLANT REQUIREMENTS		A61-4020	S-
21. REACTOR RECIRCULATION SYSTEM FCD	SHT 1-5	B31-1020	S-15204-08
22. REACTOR WATER CLEANUP SYSTEM P & ID	SHT 1	G31-1010	H-16188
	SHT 2		H-16189
23. PRESSURE INTEGRITY OF PIPING & EQUIPMENT PRESSURE PARTS		A61-4030	S-15102
24. NUCLEAR BOILER SYSTEM PROCESS DIAG		B21-1020	S-15045
25. NUCLEAR BOILER SYSTEM DESIGN SPEC.		B21-4020	S-15118
26. FEEDWATER CONTROL SYSTEM DESIGN SPEC.		C32-4010	S-15202
27. NUCLEAR BOILER LEAK DETECTION DESIGN SPEC.		A61-4040	S-15530
28. REACTOR SYSTEM OUTLINE	SHT 1-2	A61-2050	S-15056-57
29. REACTOR ASSEMBLY	SHT 1-2	B11-2010	S-15588-89
30. DRYWELL VALVE & EQUIP. DRAINAGE SYS. P.&I.D.			H-16199

THIS DWG. DEVELOPED FROM G.E. DWG. NO. 729E616BA REV. 5 SHT. 1.

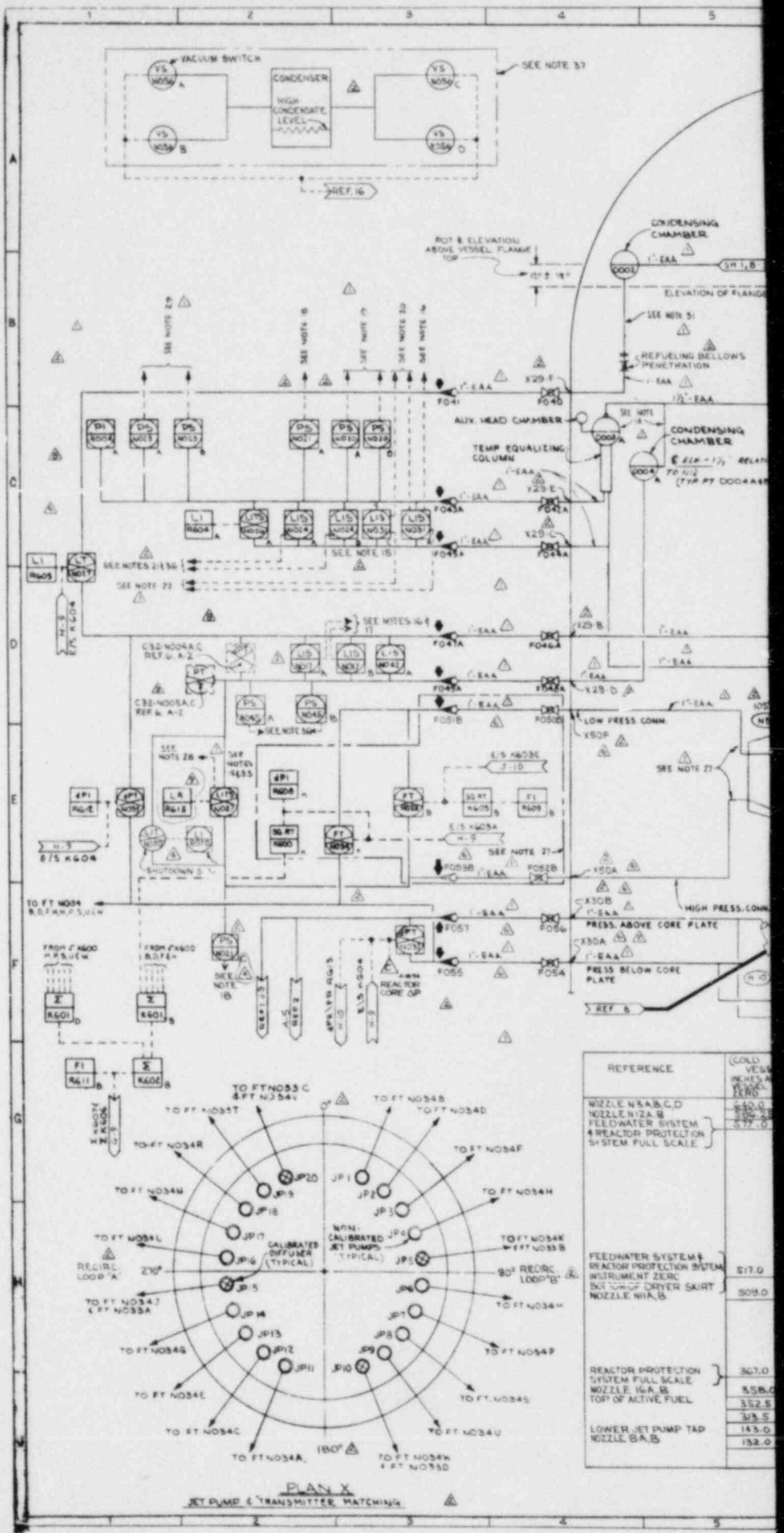
(MPL. NO. B21-1010)

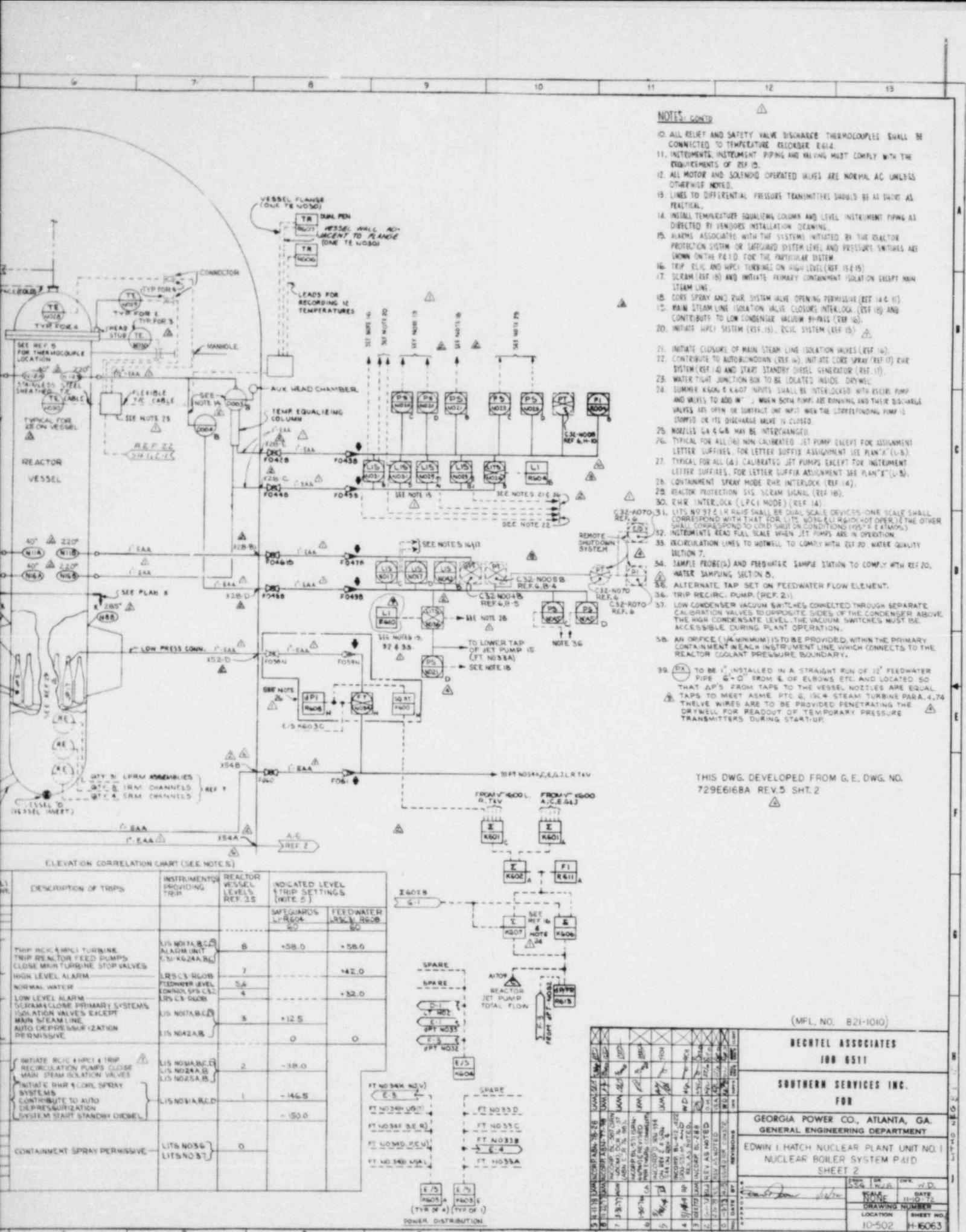
BECHTEL ASSOCIATES
JOB 6511

SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
NUCLEAR BOILER SYSTEM P.&I.D.
SHEET 1

DR. W.J.B. CHK. W.D.
SCALE NONE DATE 11-11-72
DRAWING NUMBER
LOCATION 10-502 SHEET NO. H-16062


VACUUM SWITCH
CONDENSER
HIGH CONDENSATE LEVEL
SEE NOTE 37
REF. 16
CONDENSING CHAMBER
ELEVATION OF FLANGE
SEE NOTE 31
REFUELING BELLOWS PENETRATION
AUX. HEAD CHAMBER
TEMP EQUALIZING COLUMN
LOW PRESS. CONN.
HIGH PRESS. CONN.
PRESS. ABOVE CORE PLATE
PRESS BELOW CORE PLATE
REACTOR CORE ΔP
SHUTDOWN
REF. 5
REFERENCE
NOZZLE N5A,B,C,D
NOZZLE N12A,B
FEEDWATER SYSTEM & REACTOR PROTECTION SYSTEM FULL SCALE
FEEDWATER SYSTEM & REACTOR PROTECTION SYSTEM INSTRUMENT ZERO
517.0
TOP OF DRYER SKIRT NOZZLE N11A,B
509.0
REACTOR PROTECTION SYSTEM FULL SCALE
NOZZLE N6A,B
TOP OF ACTIVE FUEL
352.5
345.5
LOWER JET PUMP TAP NOZZLE B4A,B
143.0
132.0
PLAN X
JET PUMP & TRANSMITTER MATCHING



NOTES: CONT'D

10. ALL RELIEF AND SAFETY VALVE DISCHARGE THERMOCOUPLES SHALL BE CONNECTED TO TEMPERATURE RECORDER R614.
11. INSTRUMENTS, INSTRUMENT PIPING AND VALVING MUST COMPLY WITH THE REQUIREMENTS OF ZSF 15.
12. ALL MOTOR AND SOLENOID OPERATED VALVES ARE NORMAL AC UNLESS OTHERWISE NOTED.
13. LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICAL.
14. INSTALL TEMPERATURE EQUALIZING COLUMN AND LEVEL INSTRUMENT PIPING AS DIRECTED BY VENDORS INSTALLATION DRAWING.
15. ALARMS ASSOCIATED WITH THE SYSTEMS INITIATED BY THE REACTOR PROTECTION SYSTEM OR SAFEGUARD SYSTEM LEVEL AND PRESSURE SWITCHES ARE SHOWN ON THE P&I D. FOR THE PARTICULAR SYSTEM.
16. TRIP RCIC AND HPCI TURBINES ON HIGH LEVEL (REF. 15 & 15)
17. SCRAM (REF 18) AND INITIATE PRIMARY CONTAINMENT ISOLATION EXCEPT MAIN STEAM LINE.
18. CORE SPRAY AND RHR SYSTEM VALVE OPENING PERMISSIVE (REF 14 & 15).
19. MAIN STEAM LINE ISOLATION VALVE CLOSURE INTERLOCK (REF 18) AND CONTRIBUTE TO LOW CONDENSER VACUUM BY-PASS (REF 16).
20. INITIATE HPCI SYSTEM (REF. 15), RCIC SYSTEM (REF 15)
21. INITIATE CLOSURE OF MAIN STEAM LINE ISOLATION VALVES (REF 14).
22. CONTRIBUTE TO AUTOBLOWDOWN (REF. 14), INITIATE CORE SPRAY (REF 17) RHR SYSTEM (REF 14) AND START STANDBY DIESEL GENERATOR (REF. 17).
23. WATER TIGHT JUNCTION BOX TO BE LOCATED INSIDE DRYWELL.
24. SUMMER K606 & K607 INPUTS SHALL BE INTERLOCKED WITH RECIRC PUMP AND VALVES TO ADD 0% WHEN BOTH PUMPS ARE RUNNING AND THEIR DISCHARGE VALVES ARE OPEN OR SUBTRACT ONE INPUT WHEN THE CORRESPONDING PUMP IS STOPPED OR ITS DISCHARGE VALVE IS CLOSED.
25. NOZZLES GA & GB MAY BE INTERCHANGED.
26. TYPICAL FOR ALL (16) NON CALIBRATED JET PUMP EXCEPT FOR ASSIGNMENT LETTER SUFFIXES. FOR LETTER SUFFIX ASSIGNMENT SEE PLAN "X" (L-5).
27. TYPICAL FOR ALL (4) CALIBRATED JET PUMPS EXCEPT FOR INSTRUMENT LETTER SUFFIXES. FOR LETTER SUFFIX ASSIGNMENT SEE PLAN "X" (L-5).
28. CONTAINMENT SPRAY MODE RHR INTERLOCK (REF 14).
29. REACTOR PROTECTION SYS. SCRAM SIGNAL (REF 18).
30. RHR INTERLOCK (LPCI MODE) (REF 14).
31. LITS N037 & LR R615 SHALL BE DUAL SCALE DEVICES-ONE SCALE SHALL CORRESPOND WITH THAT FOR LITS N036 & LI R610 (NOT OPER.) & THE OTHER SHALL CORRESPOND TO COLD SHUT DN CONDITIONS (195°F & ATMOS.)
32. INSTRUMENTS READ FULL SCALE WHEN JET PUMPS ARE IN OPERATION.
33. RECIRCULATION LINES TO HOTWELL TO COMPLY WITH ZSF 20. WATER QUALITY SECTION 7.
34. SAMPLE PROBE(S) AND FEEDWATER SAMPLE STATION TO COMPLY WITH REF 20, WATER SAMPLING SECTION 8.
35. ALTERNATE TAP SET ON FEEDWATER FLOW ELEMENT.
36. TRIP RECIRC. PUMP. (REF. 21)
37. LOW CONDENSER VACUUM SWITCHES CONNECTED THROUGH SEPARATE CALIBRATION VALVES TO OPPOSITE SIDES OF THE CONDENSER ABOVE THE HIGH CONDENSATE LEVEL. THE VACUUM SWITCHES MUST BE ACCESSIBLE DURING PLANT OPERATION.
38. AN ORIFICE (1/4 MINIMUM) IS TO BE PROVIDED, WITHIN THE PRIMARY CONTAINMENT IN EACH INSTRUMENT LINE WHICH CONNECTS TO THE REACTOR COOLANT PRESSURE BOUNDARY.
39. (PX) TO BE 1" INSTALLED IN A STRAIGHT RUN OF 12" FEEDWATER PIPE 6'-0" FROM 6 OF ELBOWS ETC. AND LOCATED SO THAT ΔP'S FROM TAPS TO THE VESSEL NOZZLES ARE EQUAL. TAPS TO MEET ASME PTC 6, 1904 STEAM TURBINE PARA. 4.74 TWELVE WIRES ARE TO BE PROVIDED PENETRATING THE DRYWELL FOR READOUT OF TEMPORARY PRESSURE TRANSMITTERS DURING START-UP.

THIS DWG. DEVELOPED FROM G. E. DWG. NO. 729E616BA REV. 5 SHT. 2

ELEVATION CORRELATION CHART (SEE NOTE 5)

DESCRIPTION OF TRIPS	INSTRUMENTS PROVIDING TRIP	REACTOR VESSEL LEVELS REF. 25	INDICATED LEVEL & TRIP SETTINGS (NOTE 5) SAFEGUARDS LI R604	FEEDWATER LR R615, R608
			60	60
TRIP RCIC & HPCI TURBINE TRIP REACTOR FEED PUMPS CLOSE MAIN TURBINE STOP VALVES	LIS N037A,B,C,D ALARM UNIT C32-K624A,B,C	8	+58.0	+58.0
HIGH LEVEL ALARM	LRS C32-R608	7		+42.0
NORMAL WATER	FEEDWATER LEVEL CONTROL SYS C32	5,6		
LOW LEVEL ALARM	LRS C32-R608	4		+32.0
SCRAM/CLOSE PRIMARY SYSTEMS ISOLATION VALVES EXCEPT MAIN STEAM LINE	LIS N037A,B,C,D	3	+12.5	
AUTO DEPRESSURIZATION PERMISSIVE	LIS N042A,B		0	0
INITIATE RCIC & HPCI & TRIP RECIRCULATION PUMPS CLOSE MAIN STEAM ISOLATION VALVES	LIS N036A,B,C,D LIS N024A,B LIS N025A,B	2	-38.0	
INITIATE RHR & CORE SPRAY SYSTEMS CONTRIBUTE TO AUTO DEPRESSURIZATION SYSTEM START STANDBY DIESEL	LIS N038A,B,C,D	1	-146.5 -150.0	
CONTAINMENT SPRAY PERMISSIVE	LITS N036 LITS N037	0		

(MFL. NO. 821-1010)

BECHTEL ASSOCIATES
JOB 6511

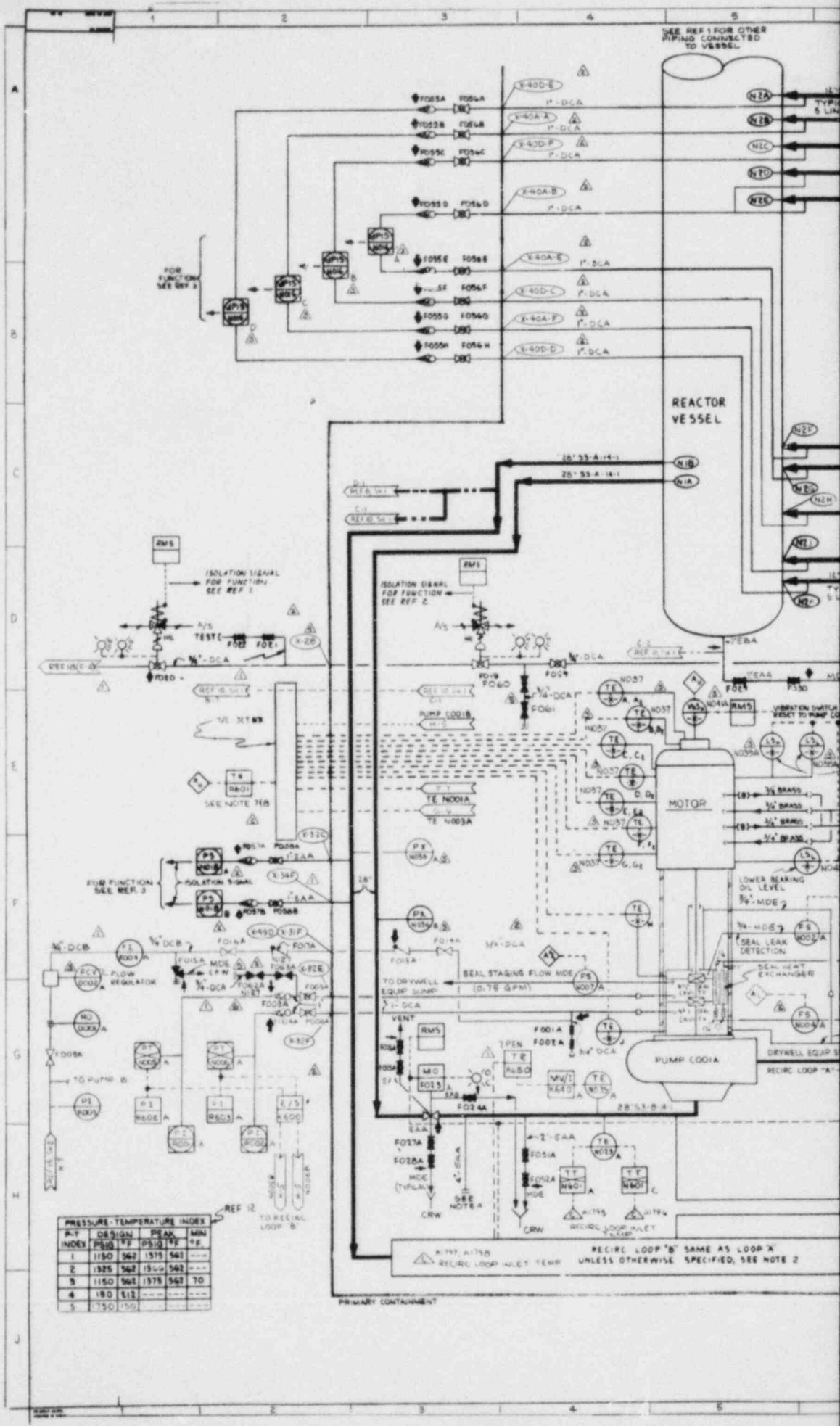
SOUTHERN SERVICES INC.
FOR

GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
NUCLEAR BOILER SYSTEM P&ID
SHEET 2

SCALE	DR.	CHK.
NONE	N.A.	N.D.
DRAWING NUMBER		DATE 11-10-72
LOCATION 10-502		SHEET NO. 1-16063

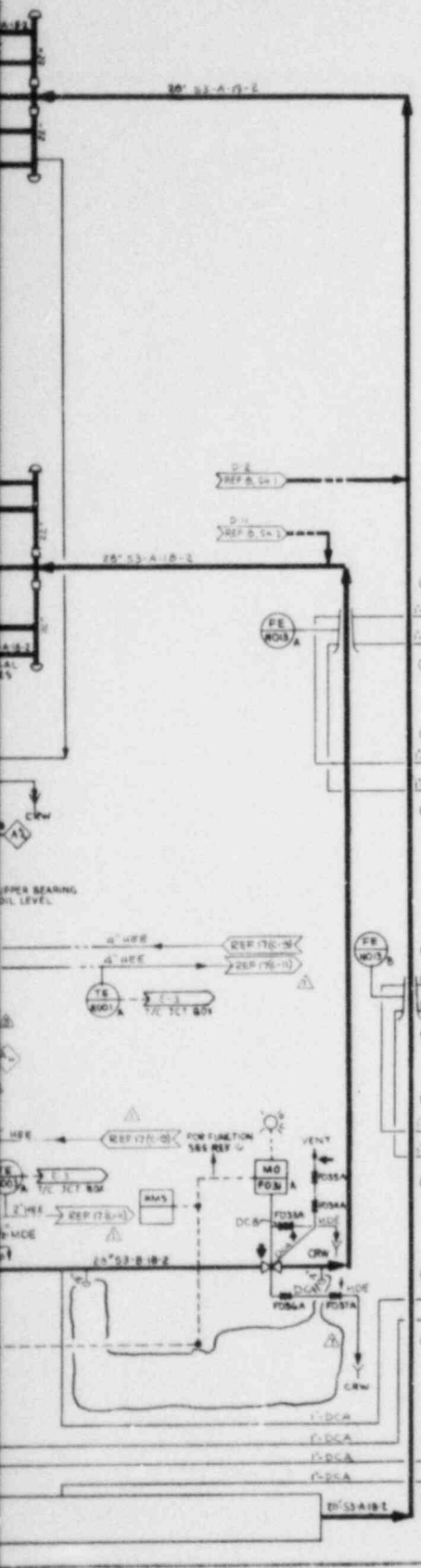
4-11-73



PRESSURE - TEMPERATURE INDEX					
P-T INDEX	DESIGN PSIG	°F	PEAK PSIG	°F	MIN °F
1	1150	562	1375	562	---
2	1325	562	1546	562	---
3	1150	562	1375	562	70
4	150	512	---	---	---
5	750	150	---	---	---

REFERENCES: (CON'T)
19. DRYWELL VALVE & EQUIP. DRAINAGE SYS. P&ID

SSI. NO. H-16199



REFERENCES

		MPL NO.	SSI NO.
1. NUCLEAR BOILER SYSTEM P&ID	UNIT 1	B21-1010	H-16063
	UNIT 2		H-16148
2. NUCLEAR BOILER SYSTEM P&ID		B21-1020	22514
3. RESIDUAL HEAT REMOVAL SYSTEM P&ID, SHT. 2		E11-1020	52W095
4. PRESSURIZED GASEOUS SYSTEM P&ID		G32-1010	22588
5. NEUTRON MONITORING SYSTEM P&ID		C51-1010	22584
6. REACTOR RECIRCULATION SYSTEM P&ID		B31-1020	
7. REACTOR RECIRCULATION SYSTEM P&ID, SH. 2		B31-1030	22515
8. RESIDUAL HEAT REMOVAL SYSTEM P&ID	UNIT 1	E11-1010	H-16139
	UNIT 2		H-16330
9. REACTOR BOILING SYSTEM P&ID	UNIT 2	B21-1040	H-16067
10. REACTOR WATER CLEAN-UP SYSTEM P&ID	UNIT 1	G31-1010	H-16155
	UNIT 2		H-16329
11. PIPING AND INSTRUMENT SYMBOLS		A61-1010	21801
12. PRESSURE INTEGRITY OF PIPING AND EQUIP. PRESSURE PARTS SPEC.		A61-1030	22512
13. PROCESS INSTRUMENT PIPING & TUBING INSTALLATION SPECIFICATION		A61-4070	22523
14. RADWASTE SYSTEM P&ID	UNITS 1+2	G31-1010	H-16151-H-16152
15. CONTROL ROD DRIVE HYD. SYS. P&ID		C11-1010	H-16060
16. PIPING SPEC.			SS-6909-1
17. RB CCW SYS., P&ID		P42-1010	H-16008
18. SAMPLING SYS. P&ID & PRD		P33-1010	H-16281

NOTES:

1. ALL EQUIPMENT & INSTRUMENTS ARE PREFIXED BY SYSTEM NO. B31 UNLESS OTHERWISE NOTED.
2. RECIRCULATION LOOP ENCLOSED IN BOX SHALL HAVE PART NUMBERS CORRESPONDING TO ITS RESPECTIVE LINE OR LOOP NUMBER UNLESS OTHERWISE NOTED. EXAMPLE: 1203 IS ON LINE 3.
3. INSTRUMENT LINE VALVING MUST COMPLY WITH INSTRUMENT PIPING STANDARDS REF. 13.
4. DETERMINATION CONNECTION TO BE READILY ACCESSIBLE FOR CONVENIENT & RAPID CONNECTION OF TEMPORARY PIPING.
5. WHERE OV NUMBERS ARE USED THE VALVES WILL BE TAGGED WITH THESE NUMBERS. WHERE OV NUMBERS ARE NOT USED THE VALVES WILL BE TAGGED WITH THE MPL NUMBER.
6. CLOSED COOLING WATER SYSTEM TO AND FROM THE RECIRCULATION PUMP SHALL BE CAPABLE OF CONTINUOUS OPERATION DURING PERIODS OF DRYWELL ISOLATION.
7. WHERE THERMOCOUPLES FOR PUMP & MOTOR ARE DESIGNATED t_1, t_2 ETC. t_2 IS A SPARE ELEMENT.
8. LIST OF PUMP & MOTOR AUXILIARY INSTRUMENTATION (FOR NOS 201 TO 3, SEE TABULATION ON SHT. 2 (A-10)
   - TE/t_1, t_2 - THRUST BEARING, UPPER FACE
   - TE/t_3, t_4 - THR. BEARING, LOWER FACE
   - TE/t_5, t_6 - UPPER GUIDE BEARING
   - TE/t_7, t_8 - MOTOR WINDING "A"
   - TE/t_9, t_{10} - MOTOR WINDING "B"
   - TE/t_{11}, t_{12} - MOTOR WINDING "C"
   - TE/t_{13}, t_{14} - LOWER GUIDE BEARING
   - TE/t_{15}, t_{16} - NO. 2 SEAL CAVITY
   - TE/t_{17}, t_{18} - NO. 1 SEAL CAVITY
   - TE/t_{19} - MOTOR BEARING OIL COOLING WATER DISCHARGE
   - TE/t_{20} - SEAL CAVITY COOLING WATER DISCHARGE
   - $LS_{t_{21}}$ - MOTOR LOWER BEARING OIL LOW LEVEL SWITCH
   - $VE_{t_{22}}$ - MOTOR VIBRATION SWITCH
   - $LS_{t_{23}}$ - MOTOR UPPER BEARING OIL HIGH LEVEL SWITCH
   - $LS_{t_{24}}$ - MOTOR UPPER BEARING OIL LOW LEVEL SWITCH
   - $TS_{t_{25}}$ - PUMP SEAL COOLING WATER LOW FLOW SWITCH

   ALL THERMOCOUPLES ARE TO BE WIRED OUT THROUGH DRYWELL TO C/E JUNCTION BOX.
9. ALL MOTOR OPERATED AND AIR OPERATED GLOBE VALVES ARE AS UNLESS OTHERWISE NOTED.
10. THESE DEVICES SHALL BE PART OF AND MOUNTED ON PANEL PART NO. P003 (PROTECTION & MOD. RELAY CABINET).
11. MG SET DRIVE MOTOR PROTECTIVE RELAYS & METERING SHALL BE FURNISHED BY BYRON AND MOUNTED ON THE MOTOR SWITCHGEAR CUBICLE.
12. VOLTAGE REGULATOR SHALL BE SUPPLIED AS PART OF PART NO. 2001 BUT SHALL BE INSTALLED, AS PART OF PART NO. P003.
13. THIS TYPE OF ALARM REPRESENTS A PERMISSIVE CONDITION WHICH THE CONDITIONS INSIDE THEIR ARE SATISFIED.
14. THIS LIMITER BYPASS IS FOR PUMP NPSH PROTECTION, BOTH OPENING & CLOSING THIS BYPASS SHALL BE TIME DELAYED 15 SECONDS.
15. THE MASTER CONTROLLER SWITCHES THEY SIGNAL OR THAT AUTOMATIC SET POINT ADJUSTMENT (FOR FAST INITIAL RESPONSE TO LOAD CHANGE). IN THE TURBINE CONTROL CAN FUNCTION ONLY WHEN THE MASTER CONTROLLER IS IN THE AUTOMATIC MODE.
16. EQUIPMENT RATINGS ARE ESTIMATED AND PRELIMINARY. ACTUAL VALUES ARE TO BE DETERMINED AT TIME OF EQUIPMENT PROCUREMENT.
17. THESE SPEED LIMITERS REDUCE RECIRCULATION FLOW, IF ANY FEEDWATER PUMP IS NOT RUNNING AND THE LEVEL IN THE REACTOR VESSEL IS BELOW THE LOW LEVEL ALARM POINT.
18. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT DATA SHEET LISTED IN BPL FOR EACH INSTRUMENT.
19. THE DESIGN PRESSURE AND TEMPERATURE RATINGS FOR THE RECIRC. PIPING AND EQUIP ARE SHOWN IN REF. 12 & 14.
20. EQUIPMENT IN THESE BLOCKS IS TO BE GROUPED FOR ISOLATION AND SEPARATION WITHIN THE PANEL AS INDICATED.
21. LOCATE BRANCH CONNECTION AS CLOSE AS POSSIBLE AFTER THE GLOBE VALVES. THE EXCESS FLOW CHECK VALVES ARE TO BE INSTALLED AS CLOSE AS POSSIBLE AFTER THE BRANCH CONNECTION.
22. CLOSED COOLING WATER TO THE MOTOR BEARING IS TO SERVE BOTH THE UPPER MOTOR BEARING & THE LOWER MOTOR BEARING. THE RETURN FLOWS ARE JOINED UPSTREAM OF THE TEMPERATURE ELEMENT.
23. LINES WITH G.E. LINE CLASS DESIGNATIONS (I.E. 28"-S3-A-18-2) ARE FURNISHED BY G.E. AND ARE TO BE INSTALLED PER REF. 12.

THIS DWG. DEVELOPED FROM G.E. DWG 729E603 BA REV G (MPL NO. B31-1010)

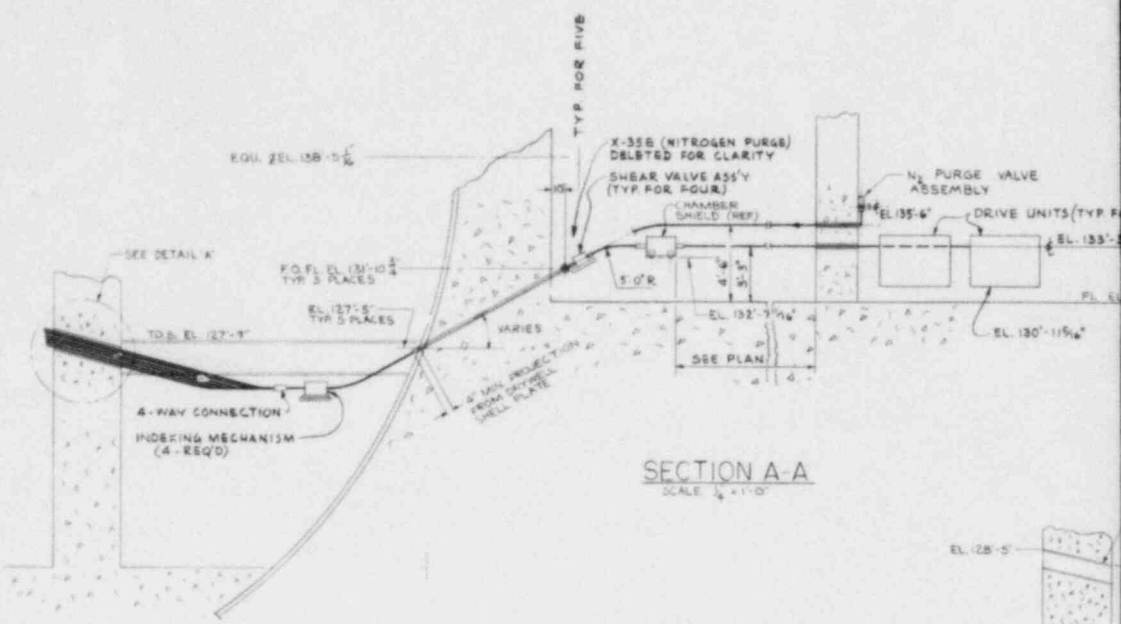
BECHTEL ASSOCIATES
JOB 6511

SOUTHERN SERVICES INC.
FOR

GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

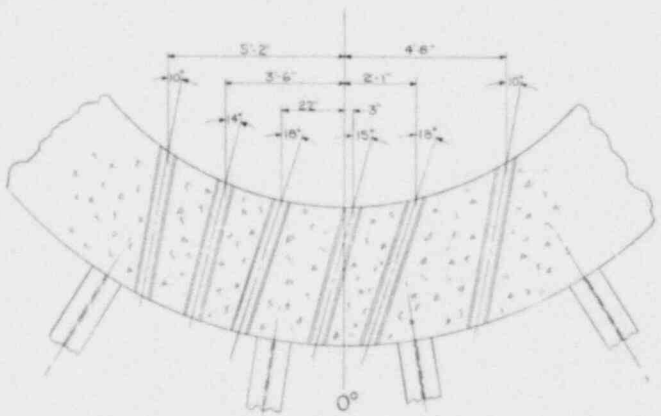
EDWIN I HATCH NUCLEAR PLANT UNIT NO. 1
REACTOR RECIRCULATION SYSTEM P&ID
SHEET NO. 1

DESIGN	DR. M.J.D.	CHK.
SCALE NONE		DATE
DRAWING NUMBER		
LOCATION 10-502		SHEET NO. H-16066

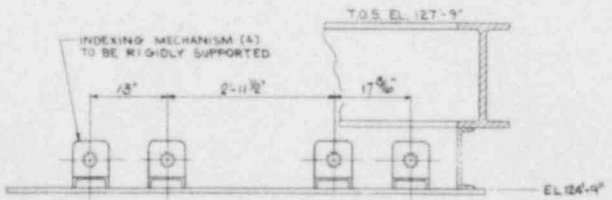


SECTION A-A
SCALE 1/4" = 1'-0"

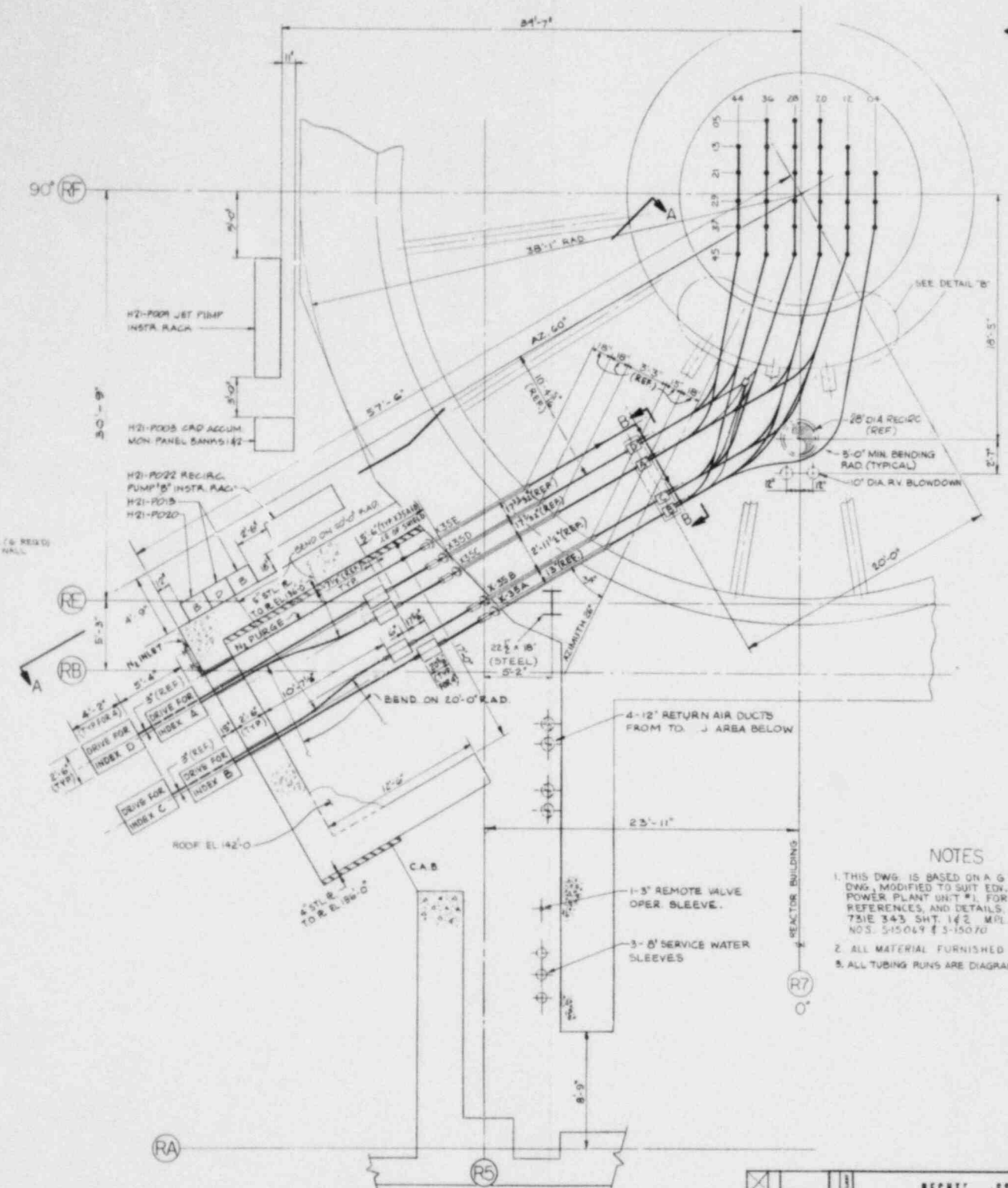
DETAIL
SCALE 1/4" = 1'-0"



DETAIL B
SCALE 1/2" = 1'-0"



SECTION B-B
SCALE 1/2" = 1'-0"



PARTIAL PLAN AT EL 131'-6"

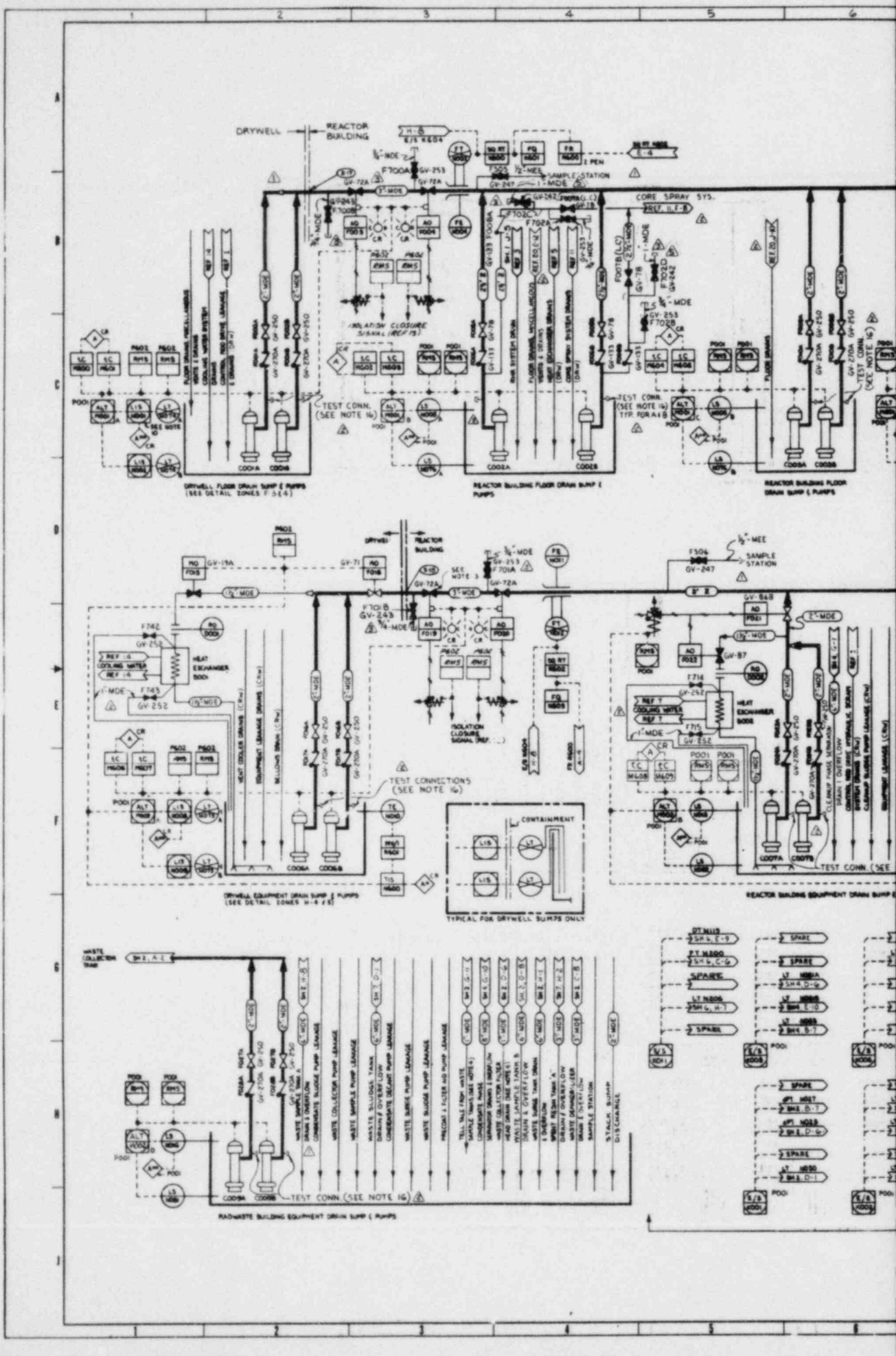
SCALE 1/4"=1'-0"

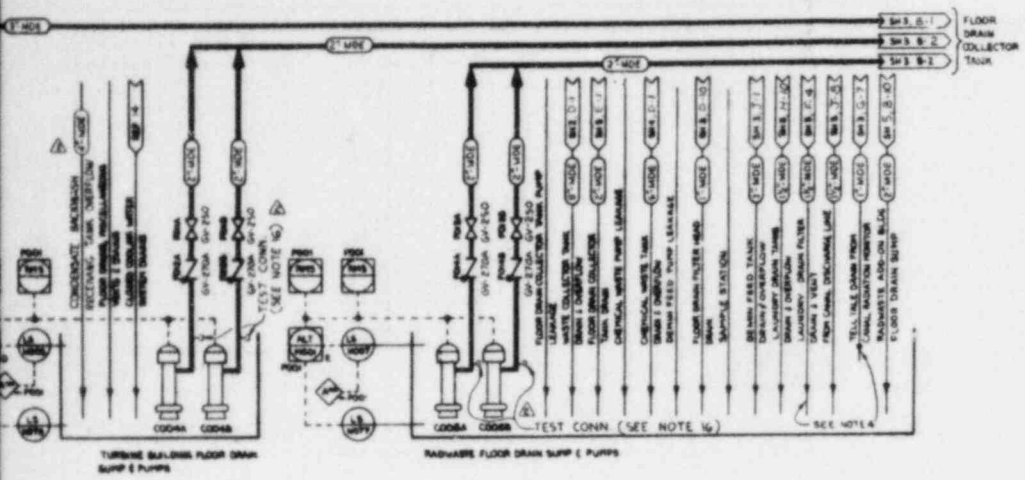
NOTES

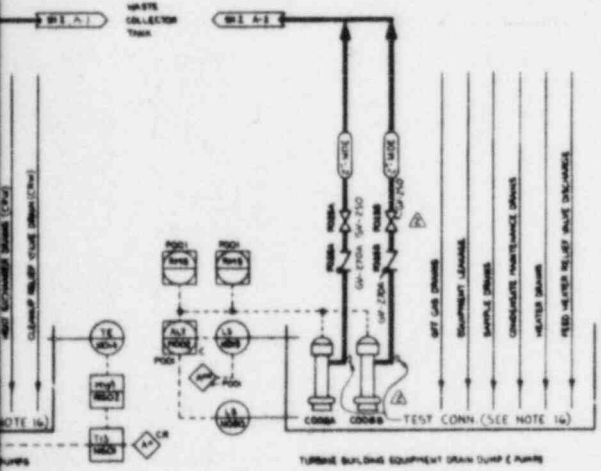
1. THIS DWG. IS BASED ON A G.E. STANDARD PLANT DWG., MODIFIED TO SUIT EDW...H. HATCH NUCLEAR POWER PLANT UNIT #1. FOR ALL GENERAL NOTES, REFERENCES, AND DETAILS, SEE G.E. DWG. NO. 731E 343 SHT. 1 & 2. MPL. NO. C51-2010 SS NOS. 5-15049 & 5-15070
2. ALL MATERIAL FURNISHED BY G.E.
3. ALL TUBING RUNS ARE DIAGRAMMATICALLY SHOWN.

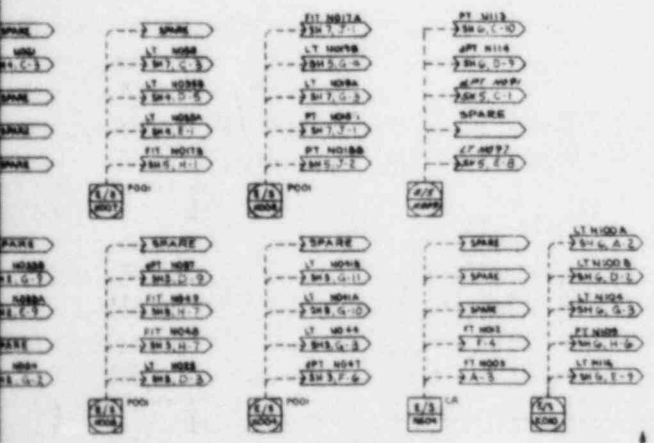
BECHT' ASSOCIATES	JOB 6511
SOUTHERN SERVICES INC.	FOR
GEORGIA POWER CO., ATLANTA, GA.	GENERAL ENGINEERING DEPARTMENT
EDWIN I HATCH NUCLEAR PLANT UNIT NO.1	TRAVERSING IN-CORE PROBE SYSTEM
DRAWN BD	CHK'D 778
SCALE AS NOTED	DATE 1-5-70
DRAWING NUMBER	
LOCATION 10-502	SHEET NO. H-16070

Microfilmed 9-8-72


DRYWELL
REACTOR BUILDING
SAMPLE STATION
CORE SPRAY SYS.
TEST CONN. (SEE NOTE 14)
TEST CONNECTIONS (SEE NOTE 14)
CONTAINMENT
TYPICAL FOR DRYWELL SUMPS ONLY
TEST CONN (SEE NOTE 14)
SPARE







THIS DWG DEVELOPED FROM G.E. DWG 729E614BA SHEET 1 REV. 3

NOTES CONTINUED:

16. TEST CONNECTIONS ARE TO BE PLUGGED AND PLUGS WELDED, FOLLOWING PRE-OPERATIONAL TESTING OF THIS SYSTEM.
17. FOR DETAILED INFORMATION, SEE REF. 19 THIS DWG.
18. CATION FLOC & ANION FLOC MIXING TANKS, VALVES & EDUCTORS SUPPLIED BY CONDENSATE POLISHING SYSTEM CONTRACTOR.

NOTES:

1. ALL EQUIPMENT & INSTRUMENTS ARE PREFIXED BY SYSTEM NO. G11 UNLESS OTHERWISE NOTED.
3. ALL AIR OPERATED VALVES ARE SHOWN IN FAIL AND NORMAL MODE.
4. INCOMING PIPING TO SUMPS SHALL TERMINATE BELOW LOW WATER LEVEL TO PROVIDE A WATER SEAL UNLESS OTHERWISE SHOWN. OFF GAS LINE DRAINS SHALL BE SEALED AS ABOVE OR WITH LOOP SEALS SUFFICIENT TO PREVENT OFF GASES FROM ENTERING SUMP.
5. ALL MOTOR AND SOLENOID OPERATED VALVES, CENTRIFUGES AND PUMPS SHALL BE PROVIDED WITH ONE SET OF STATUS INDICATING LIGHTS ADJACENT TO THE REMOTE MANUAL SWITCH. ADDITIONAL LIGHTS ARE NOTED.
6. INTERLOCK TO PREVENT OPENING BOTH VALVES AT THE SAME TIME.
7. USED DURING PRESTARTUP ONLY. TO BE REMOVED AFTER STARTUP.
8. TANK VENTS AND SUMP VENTS SHALL BE PIPED TO BUILDING VENT SYSTEM, 12" FROM ROOM EXHAUST.
9. EQUIPMENT DRAINS & SEALS SHALL BE ROUTED TO EQUIPMENT DRAIN OR FLOOR DRAIN SYSTEM IN ACCORDANCE WITH DESIGN SPEC. FOR RADIOACTIVE DRAIN SYSTEM AND WILL NOT FLOW FREELY ACROSS THE FLOOR.
10. ONE SUMP PUMP WILL START AUTOMATICALLY ON HIGH LEVEL. THE SECOND PUMP WILL START AUTOMATICALLY ON HIGH-HIGH LEVEL AND BOTH WILL STOP AUTOMATICALLY ON LOW LEVEL.
11. FEED DILUTION ON HIGH TORQUE. FLUSH ON HIGH-HIGH TORQUE & HIGH HOPPER LEVEL.
12. OVERFLOW LINES FROM CLOSED TOP TANKS WILL HAVE A TWO FOOT WATER SEAL FILLED BY A CONDENSATE LINE OR WILL BE SUBMERGED IN THE COLLECTING SUMP TO PREVENT VENTING THROUGH THE OVERFLOW.
13. SINGLE ALARMS AND INDICATING LIGHTS ARE LOCATED IN THE RADWASTE CONTROL ROOM UNLESS OTHERWISE INDICATED.
14. FOR SAMPLING LINES SEE REF. 7.
15. SEE NOTE 7

REFERENCE		MPL NO.	ISI NO.
1. CONTROL ROD DRIVE HYDRAULIC SYSTEM P & ID		G11-1010	H-16065
2. PROCESS RADIATION MON. FCD	SHT 1	G11-1010	H-
3. RESIDUAL HEAT REMOVAL SYSTEM P & ID	SHT 1	E11-1010	H-16329
	SHT 2		H-16330
4. RADWASTE SYSTEM FCD		G11-1030	
5. REACTOR WATER CLEANUP SYS P & ID	SHT 1	G33-1010	H-16188
	SHT 2		H-16189
6. PRESSURE INTEGRITY SPECIFICATION		N21-1020	S
7. PLANT REQUIREMENTS		A51-1020	
8. PIPING AND INSTRUMENT SYMBOLS		A61	S1851
9. RADWASTE SYSTEM P.D.		G11-1020	S
10. RADWASTE SYSTEM DES. SPEC.		G11-1010	S
11. CORE SPRAY SYSTEM P & ID		E21-1010	H-16331
12. NUCLEAR BOILER SYSTEM FCD		B21-1030	S
13. FUEL POOL COOLING SYS. P & ID		G41-1010	H-16002
14. REACTOR BLDG. C.T.W. SYS. P&ID.		P82-1010	H-16009
15. RADWASTE BLDG. ADD. SUPPORT SYS.		G11-1040 & 1050	H-16517
16. REACTOR & RADWASTE DRAINAGE DIAG.		T45-1020	H-16018
17. FUEL POOL FILTER/DEMIN. SYS. P&ID.		G41-1020	H-16003
18. PIPING & INSTRUMENTATION DIAGRAM		G11-9090	SX-16188
RADWASTE PACKAGING SYSTEM.			
19. RADWASTE HEAT TRACING ELEMENTARY DIAGRAM		G11-P030	H-19548
20. LEAK DETECTION SYSTEM		T45-1030	H-16039
21. WASTE GAS TREATMENT BLDG. SUPPORT SYSTEMS P&ID		N62-1015	H-16540

MPL Nº G11-1010

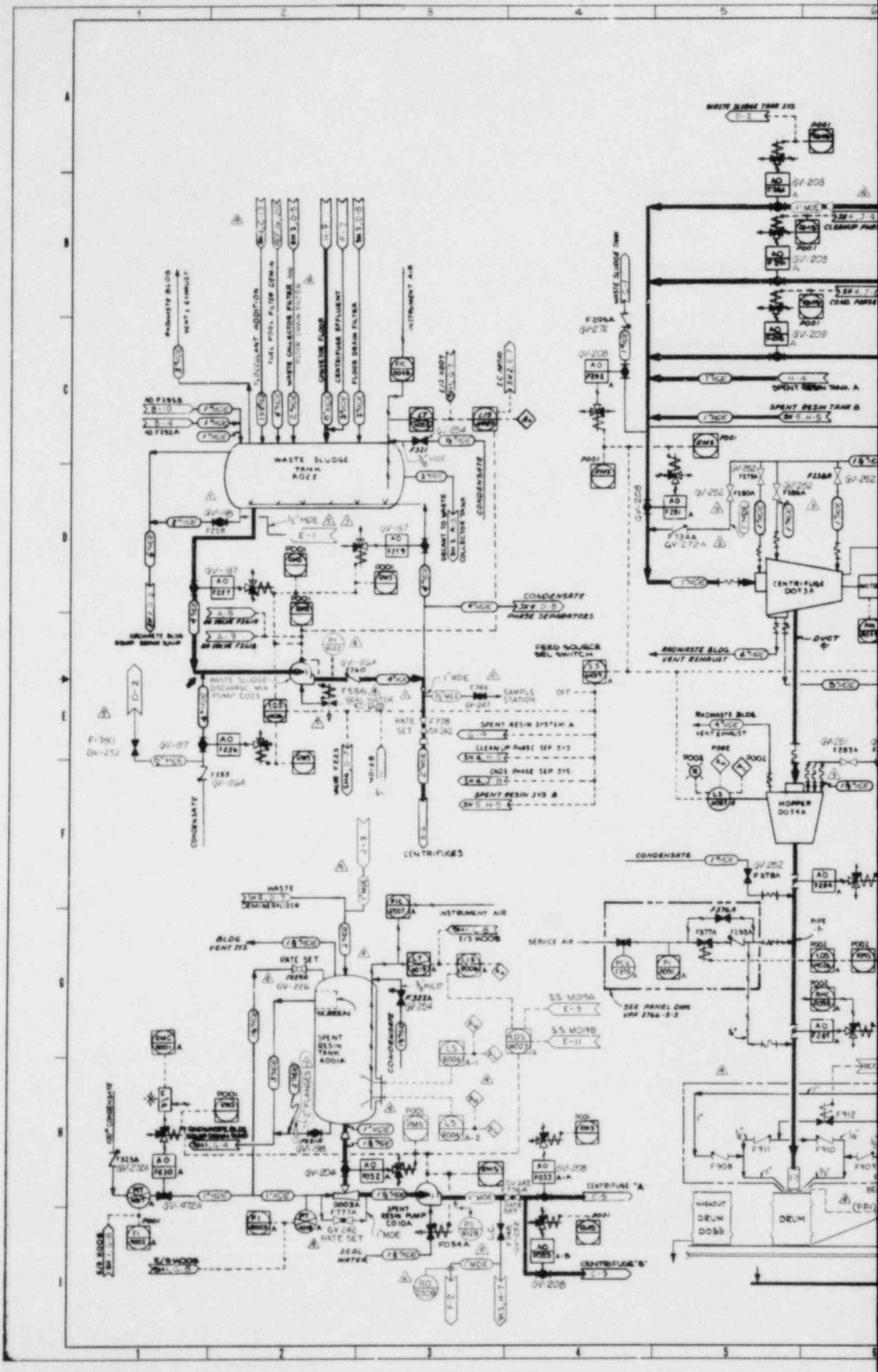
BECHTEL ASSOCIATES
JOB 6511

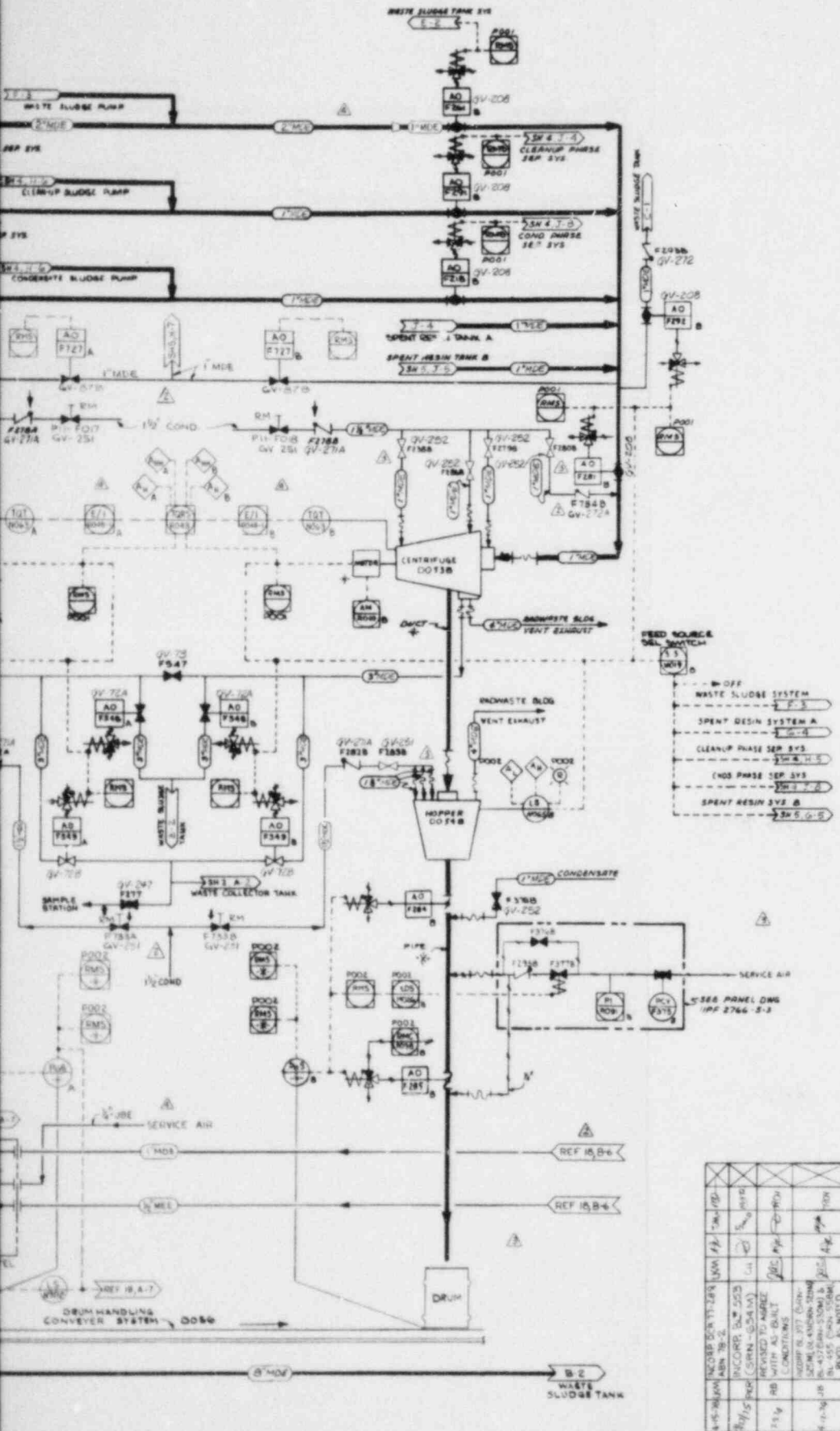
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT
EDWIN I. HATCH NUCLEAR PLANT UNIT Nº 1
RADWASTE SYSTEM P&ID
SHEET Nº 1

DRWN	DES	CHK
	PLS	

SCALE NONE | DATE 12-19-72

DRAWING NUMBER
LOCATION 10-502 | SHEET NO. H-16176


WASTE SLUDGE TANK A022
CENTRIFUGE D053A
HOPPER D054A
SPENT RESIN TANK A001A
SPENT RESIN PUMP C010A
CENTRIFUGE "A"
CENTRIFUGE "B"
DRUM
SPENT RESIN SYS. A
SPENT RESIN SYS. B
CLEAN UP PHASE SEP SYS.
ONDS PHASE SEP SYS.
CONDENSATE
INSTRUMENT AIR
SERVICE AIR
SAMPLE STATION
CENTRIFUGES
SEE PANEL DWG VPX 2764-5-3



THIS DWG. DEVELOPED FROM G.E. DWG. 729E6148A SHEET 5 REV. 3

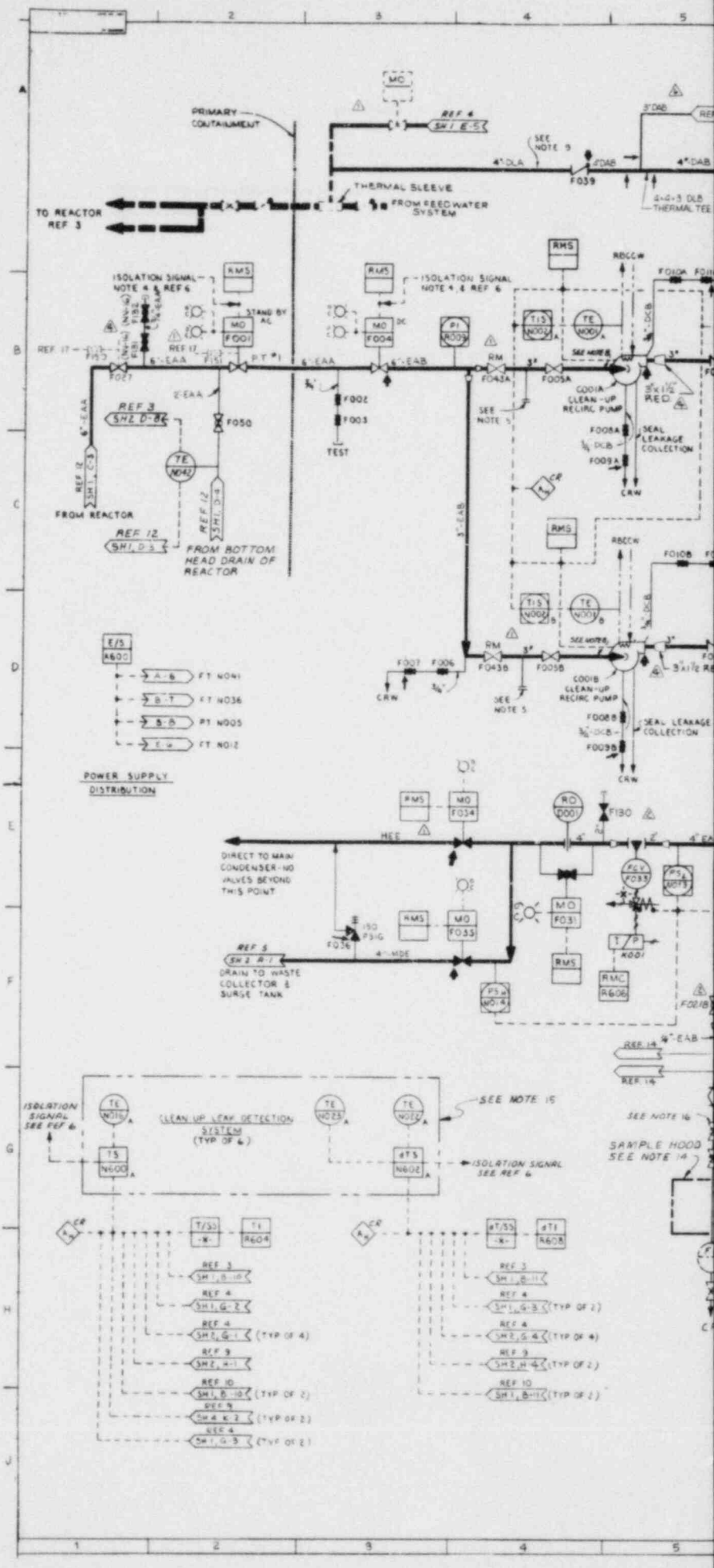
MPL Nº G11-1010

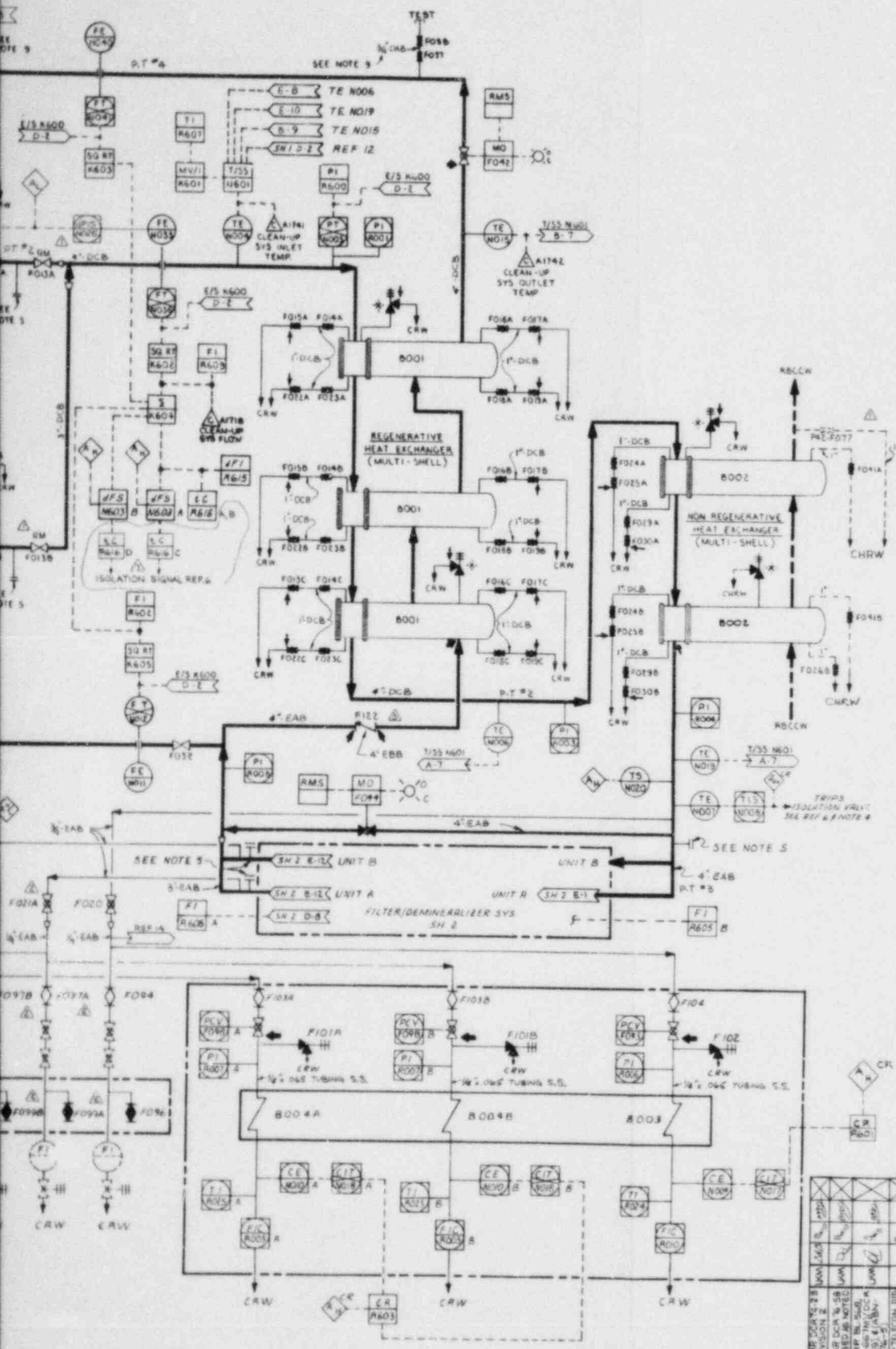
7	4-15-86	JWM	NCR#BSR-11-249 ABN 18-2							
6	3-13-86	RB	INCORP. DCN 503 (SRN-GSA1) REVISED TO AGREE WITH AS-BUILT CONDITIONS							
5	3-13-86	RB								
4	11-14-85	JJR								
3	10-31-85	JJR	INCORP. RI-355, 361, 362 & REV. AS NOTED							
2	7-31-85	JJR	REVISED AS NOTED PER DCN # 1405 & CASE SEC							
1	3-27-85	RMS	ISSUED FOR CONSTR							
0	8-27-84	RMS								
NO.	DATE	BY	REVISIONS	CHKD	APPD	DES	DRN	TRACED	CHKD	APPD

BECHTEL ASSOCIATES
JOB 6511

SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT
EDWIN I. HATCH NUCLEAR PLANT UNIT Nº1
RADWASTE SYSTEM P&ID
SHEET Nº. 7

DESIGN JWP	QA R&D	CHK. BC	
SCALE NONE		DATE 12-20-72	
DRAWING NUMBER			
LOCATION 10-502		SHEET NO. H-16182	


PRIMARY CONTAINMENT
TO REACTOR REF 3
THERMAL SLEEVE
FROM FEEDWATER SYSTEM
ISOLATION SIGNAL NOTE 4 & REF 6
STAND BY AC
FROM REACTOR
REF 12
FROM BOTTOM HEAD DRAIN OF REACTOR
CLEAN-UP RECIRC PUMP
SEAL LEAKAGE COLLECTION
POWER SUPPLY DISTRIBUTION
DIRECT TO MAIN CONDENSER-NO VALVES BEYOND THIS POINT
DRAIN TO WASTE COLLECTOR & SURGE TANK
CLEAN-UP LEAK DETECTION SYSTEM (TYP OF 6)
SEE NOTE 15
SEE NOTE 16
SAMPLE HOOD SEE NOTE 14
ISOLATION SIGNAL SEE REF 6



REFERENCES

		MPL NO.	SSI NO.
1. REACTOR WATER CLEANUP SYS PD		G31-1030	[illegible]
2. PLANT REQUIREMENTS		A61-4020	
3. NUCLEAR BOILER SYSTEM P & ID	SHT 1	B21-1010	H-16062
	SHT 2		H-16063
4. RCIC SYSTEM P & ID	SHT 1	E51-1010	H-16334
	SHT 2		H-16335
5. RADWASTE SYS P & ID	SHTS 1-[illegible]	G11-1010	H-16[illegible] THRU H-16[illegible]
6. REACTOR WATER CLEANUP SYSTEM FCD		G31-1020	
7. PIPING & INSTRUMENT SYMBOLS		A41-1010	[illegible]
8. PROCESS INSTRUMENT PIPING & TUBING INSTALLATION SPEC.		A42-4010	[illegible]
9. HPCI SYSTEM P & ID	SHT 1	E41-1010	H-16332
	SHT 2		H-16333
10. RHR SYSTEM P & ID	SHT 1	E11-1010	H-16329
	SHT 2		H-16330
11. PRESSURE INTEGRITY OF PIPING AND EQUIPMENT PRESSURE PARTS		A61-4030	[illegible]
12. REACTOR RECIRC SYSTEM P & ID	SHT 1-3	B31-1010	H-16[illegible] THRU H-16[illegible]
13. REACTOR WATER CLEANUP SYS DESIGN SPEC		G31-4010	[illegible]
14. LIQUID SAMPLING SYS.		P33-2010	H-19281
15. COND. STOR. & TRANS. SYS.		P11-1010	H-16016
16. FUEL POOL FILT/DEMIN. SYS.			H-16003
17. DRYWELL VALVE & EQUIP DRAINAGE SYS P&ID			H-1699
18. CONTROL ROD DRIVE SYS.		C11-1010	H-16064

NOTES:

1. ALL EQUIPMENT AND INSTRUMENTS ARE PRECEDED BY MPL NO. G31 UNLESS OTHERWISE NOTED.
2. WHERE GV-NUMBERS ARE SHOWN THE VALVES ARE TAGGED WITH THESE NUMBERS; WHERE GV-NUMBERS ARE NOT SHOWN, THE VALVES ARE TAGGED WITH THE MPL NUMBER.
3. VENT, DRAIN & RELIEF VALVE DISCHARGE SYSTEMS DRAIN TO CRW, CHRW OR DRG WHERE APPLICABLE.
4. MOTOR OPER. ISOLATION VALVES CLOSE ON ANY OF THE FOLLOWING SIGNALS:
   - (A) HIGH TEMP FOLLOWING NON REG HEAT EXCHANGER (ONLY F004)
   - (B) STANDBY LIQUID CONTROL SYS ACTUATION (ONLY F004)
   - (C) LOW REACTOR WATER LEVEL
   - (D) HIGH ΔTEMP - LEAK DETECTION
   - (E) HIGH ΔFLOW - LEAK DETECTION
   - (F) HIGH AMBIENT TEMP - LEAK DETECTION
5. CHEMICAL CLEANING AND DECONTAMINATION CONNECTIONS SHALL BE PROVIDED TO GIVE OPTIMUM DECONTAMINATION. CONNECTIONS SHALL BE ARRANGED TO PROVIDE DECONTAMINATION OF ONE PIECE OF EQUIPMENT SEPARATELY FROM ALL OTHER EQUIPMENT. (I.E. FILTER-DEMINERALIZER VALVE MANIFOLD, SEPARATELY FROM THE FILTER-DEMINERALIZER, HEAT EXCHANGER ETC.).
6. NON-REGENERATIVE HEAT EXCHANGER SHELL VALVES & PIPING DESIGNED TO RBCCW SYSTEM CONDITIONS.
7. HIGH POINT VENTS AND LOW POINT DRAINS ARE TO BE PROVIDED WHERE NECESSARY AS PROVIDED BY PHYSICAL ROUTING OF PIPE.
8. TEMPORARY STRAINER SCREENS SHALL BE PROVIDED ON THE SUCTION SIDE OF ALL PUMPS IN ACCORDANCE WITH REFERENCE 2, SECTION 5.
9. PIPING TO BE DESIGNED FOR SAME PRESSURE & TEMP AS MAIN FEED PIPING.
10. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS, SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INSTRUMENT.
11. WHERE TWO VALVES ARE INDICATED IN A DOUBLE BLOCK ARRANGEMENT ON VENTS AND DRAINS, BOTH VALVES SHALL BE THE SAME RATING AND COMPATIBLE WITH UPSTREAM SYSTEM SERVICE SPECIFICATIONS.
12. AIR OPERATED VALVES SHOWN IN FILTERING PROCESS STATUS, ARE FAIL CLOSE ON LOSS OF AIR PRESSURE TO VALVE OPERATOR OR LOSS OF ELECTRICAL POWER TO THE VALVE PILOT, EXCEPT HOLDING VALVE F071 WHICH FAILS OPEN.
13. USE NORMAL AC POWER FOR ELECTRICAL DEVICES AND ELECTRIC POWERED VALVES UNLESS OTHERWISE NOTED.
14. THE SAMPLE HOODS SHALL CONTAIN THE TERMINAL (SAMPLE SINK) FOR THE SAMPLES. AIR SHALL FLOW INTO THE SAMPLE HOODS AND SHALL EFFECTIVELY PROTECT PERSONEL FROM RADIATION.
15. TWO SENSOR SYSTEMS PER ROOM.
16. SAMPLE STATIONS MUST COMPLY WITH WATER SAMPLING REQUIREMENTS (SEE REF.2, SECT. 8). EQUIPMENT SHOWN IN PHANTOM IS SUGGESTED DESIGN.

PRESSURE TEMPERATURE INDEX
SEE REF. 7 & 11

P-T INDEX	DESIGN PSIG	DESIGN °F	PEAK PSIG	PEAK °F	MIN °F
1	1150	562	1175	562	70
2	1500	563	1567	563	
3	1300	150	1553	150	
4	(SEE NOTE 9)			448	40
5	150	150	150	150	

THIS DWG. DEVELOPED FROM G.E. DWG. NO 731E898 SH. 1, REV. 5

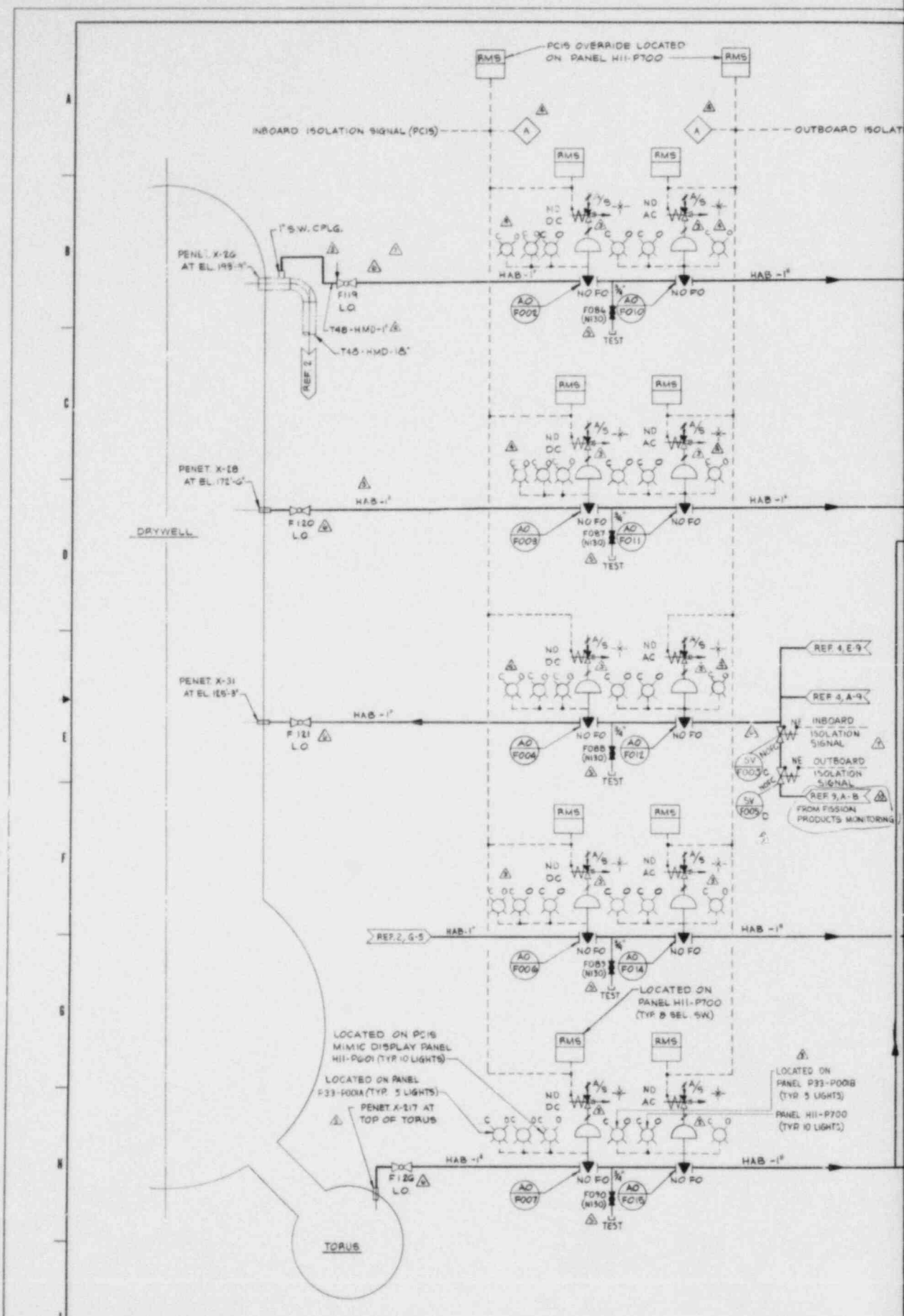
MPL Nº G31-1010

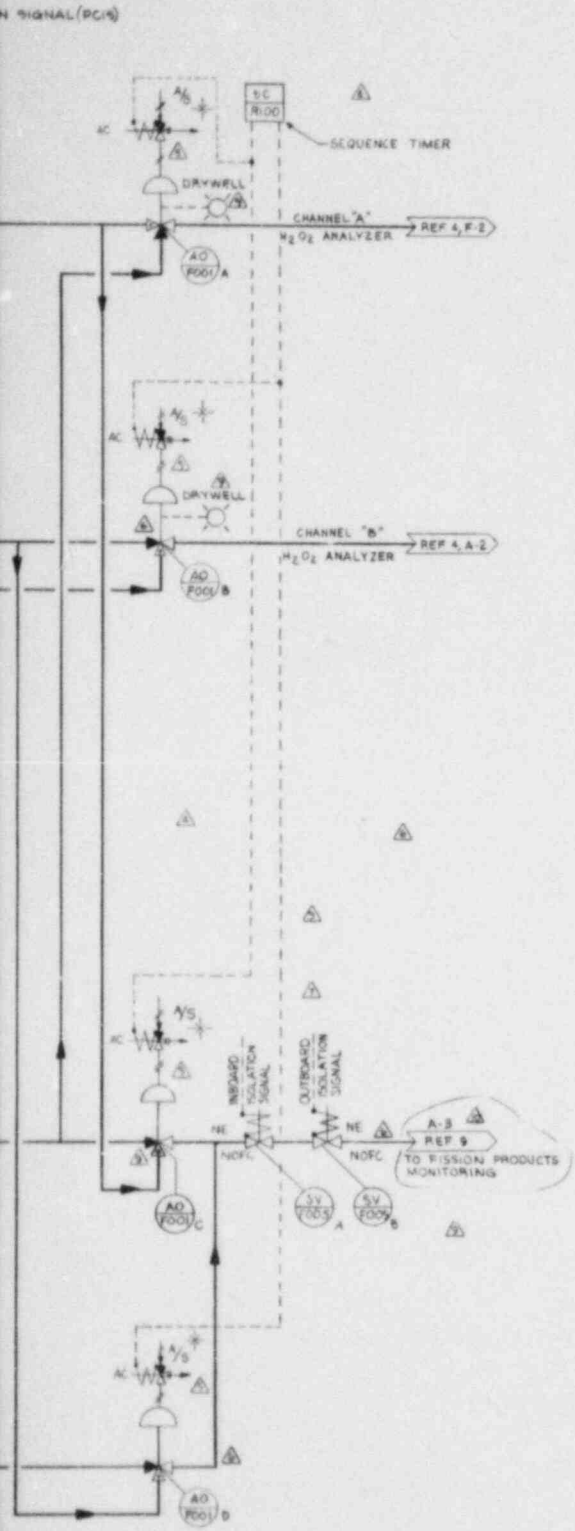
BECHTEL ASSOCIATES
JOB 6511

SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
REACTOR WATER CLEAN-UP SYSTEM
P&ID SHEET 1

LOCATION 10-502
DRAWING NUMBER H-16188


PCIS OVERRIDE LOCATED ON PANEL H11-P700
RMS
INBOARD ISOLATION SIGNAL (PCIS)
OUTBOARD ISOLAT
A
ND DC
ND AC
A/S
1" S.W. CPLG.
PENET. X-26 AT EL. 193'-9"
F119 LQ
T48-HMD-1"
T48-HMD-18"
REF 2
HAB-1"
NO FO
AO F002
FO84 (N130)
AO F010
TEST
PENET. X-28 AT EL. 172'-6"
F120 LQ
AO F008
FO87 (N130)
AO F011
DRYWELL
PENET. X-31 AT EL. 126'-8"
F121 LQ
AO F004
FO88 (N130)
AO F012
REF 4, E-9
REF 4, A-9
INBOARD ISOLATION SIGNAL
OUTBOARD ISOLATION SIGNAL
SV F003
SV F005
REF 9, A-8
FROM FISSION PRODUCTS MONITORING
REF. 2, G-5
AO F006
FO83 (N130)
AO F014
LOCATED ON PANEL H11-P700 (TYP 8 SEL. SW.)
LOCATED ON PCIS MIMIC DISPLAY PANEL H11-P601 (TYP 10 LIGHTS)
LOCATED ON PANEL P33-F003A (TYP. 5 LIGHTS)
PENET X-217 AT TOP OF TORUS
LOCATED ON PANEL P33-P008 (TYP 5 LIGHTS)
PANEL H11-P700 (TYP 10 LIGHTS)
F126 LQ
AO F007
FO90 (N130)
AO F015
TORUS



NOTES

1. ALL EQUIPMENT & INSTRUMENT NUMBERS ARE TO BE PRECEDED BY MPL. P33 UNLESS OTHERWISE NOTED. EXAMPLE: P33-A001.
2. REDUNDANT MODES:
   A) ENERGIZE F001 A,C; DE-ENERGIZE F001 B,D
   B) ENERGIZE F001 B,D; DE-ENERGIZE F001 A,C
3. OPERATION: MODES WILL ALTERNATE AT 24HR INTERVALS
4. SOLENOID VALVES F001 A,B,C,D SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO THE H_2O_2 ANALYZER AND FISSION PRODUCTS MONITORING PANELS.
5. RETURN LINES SHOULD "TEE" TOGETHER AS CLOSE AS POSSIBLE TO THE H_2O_2 ANALYZER AND FISSION PRODUCTS MONITORING PANELS.
6. ROUTING OF THESE GAS SAMPLE LINES IS AS SHOWN ON REFERENCES 5,6,7,8.

REFERENCES

REFERENCE	MPL NO.	S.S.N.R.
1. PIPING & INSTRUMENT SYMBOLS	A41-1010	S-18091
2. PRIMARY CONT. PURGE & INERTING SYSTEM	T48-1010	H-16024
3. PRIMARY CONT. FISSION PRODUCTS MONITORING SYS.	D11-P010, -P011	S2-16927
4. H_2O_2 ANALYZER SYSTEM P&ID FOR PANEL NOS. P33-P001A & B	P33-1010	H-16280
5. SAMPLE LINE ROUTINGS REACTOR & RADW. BLDGS. BELOW EL. 130'-0"		H-16553
6. SAMPLE LINE ROUTINGS REACTOR & RADW. BLDGS. EL. 130'-0"		H-16554
7. SAMPLE LINE ROUTINGS REACTOR & RADW. BLDGS. EL. 158'-0"		H-16556
8. SAMPLE LINE ROUTINGS REACTOR & RADW. BLDGS. EL. 185'-0"		H-16557
9. FISSION PRODUCTS MONITORING SYS. P&ID		H-16274

MPL. NO. P33-1010

REVISIONS	BY	CHKD	APPD
10 12-6-78 UNIT 2 ADDED PER SRN-564-C & ABN QCR 77-100	JAM		
9 9-19-77 UNIT 2 ADDED PER SRN-564-C & ABN QCR 77-78	JAM		
8 3-3-77 REVISED AS NOTED & UNIT 2 ADDED PER SRN-564-C REVISION 7	JAM		
7 8-8-74 REVISED PER ENGR. COMMENTS, SRN-564-C'S WERE INCORP ON REV 6	JAM	JB	
6 6-5-74 REVISED PER ENGR. COMMENTS		JB	
5 11-1-73 REVISED PER ENGR. COMMENTS		JB	
4 9-28-73 REVISED AS NOTED	MCA		
3 8-15-73 REVISED AS NOTED	DM		
2 8-1-73 REVISED AS NOTED	MD		
1 6-18-73 ISSUED FOR BIDDING	DEB		
NO. DATE	BY		

BECHTEL ASSOCIATES
JOB 6511

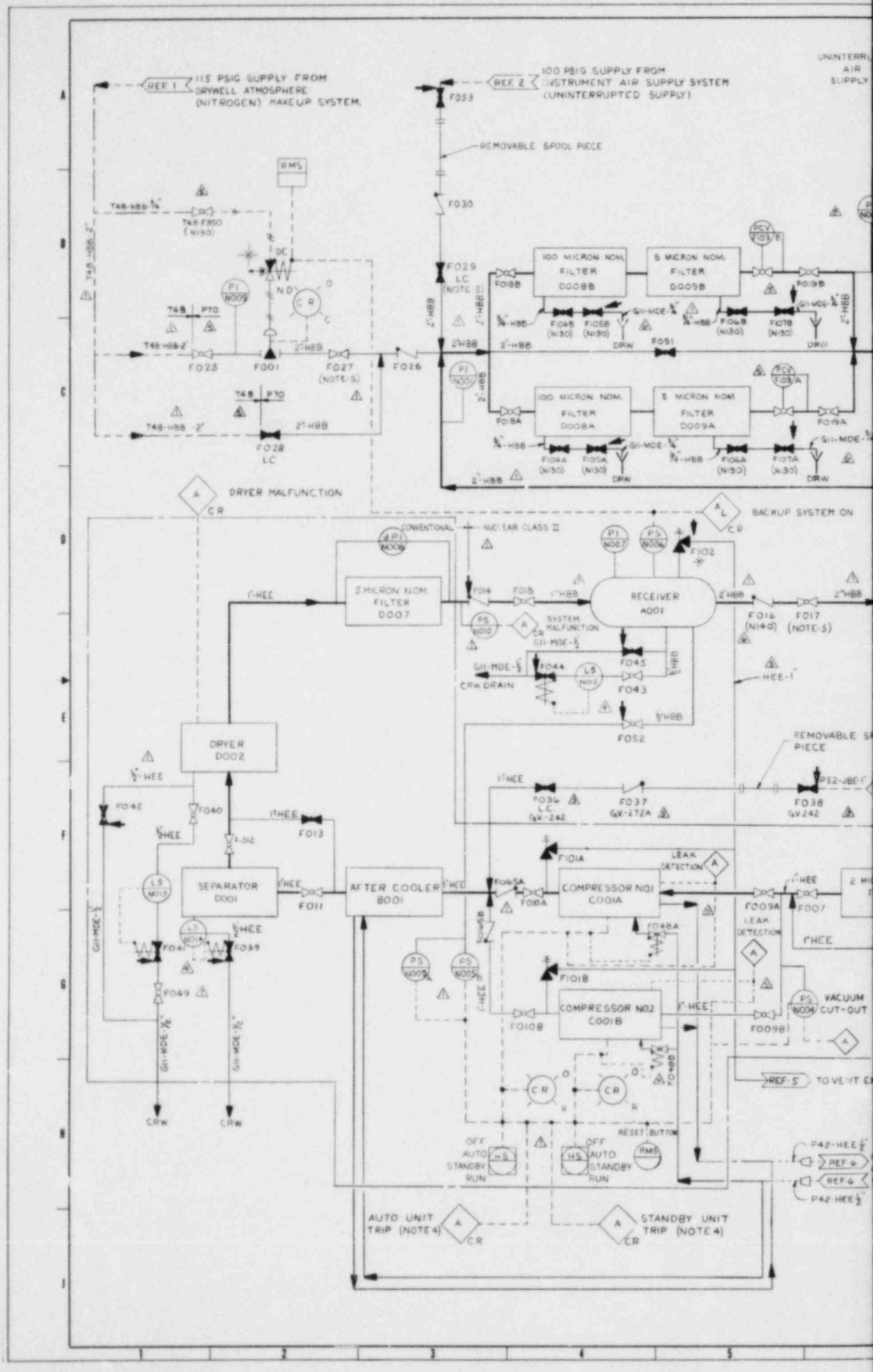
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

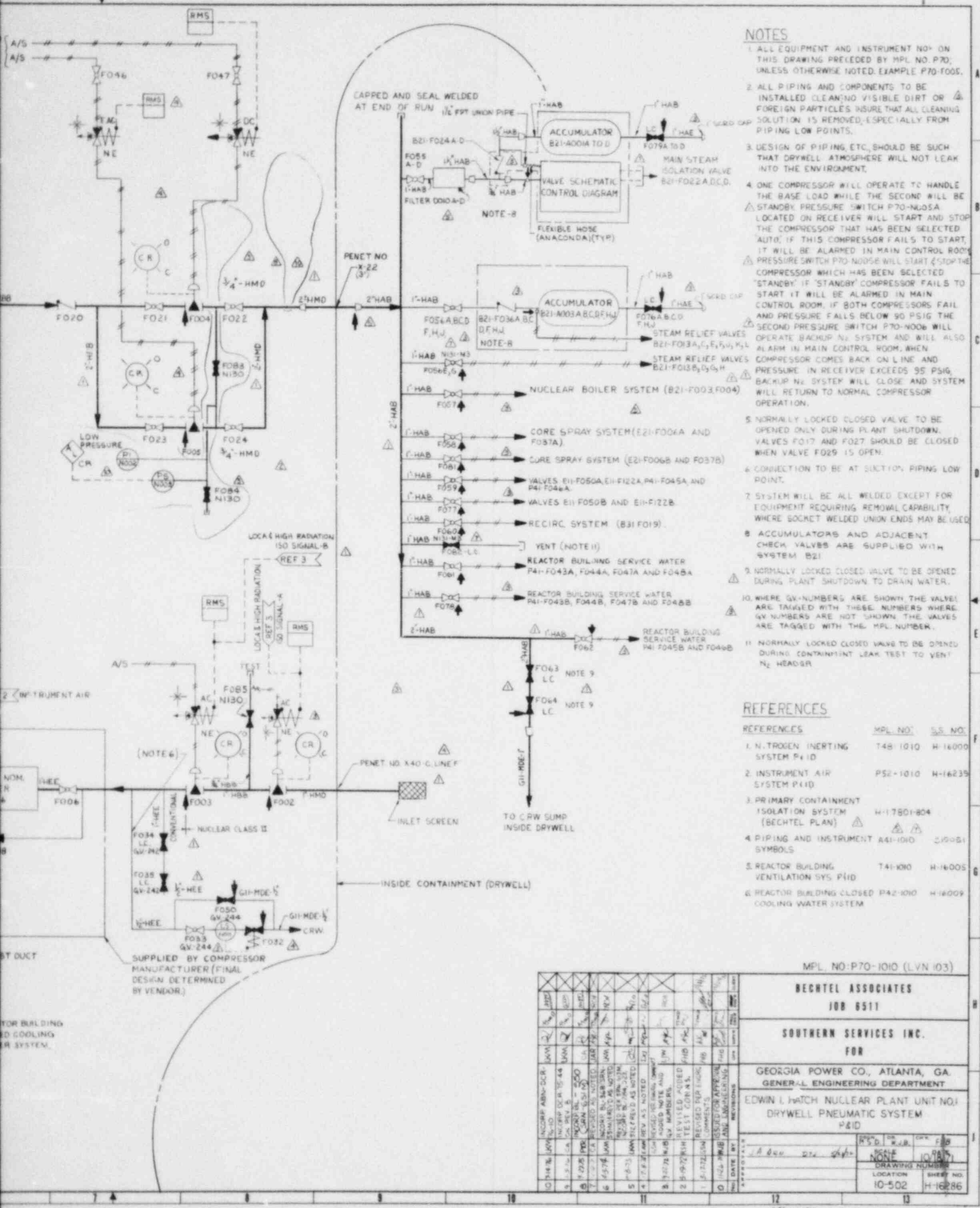
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
PRIMARY CONTAINMENT ATMOSPHERE
H_2 & O_2 ANALYZER SYSTEM P & I.D. SHEET NO.1

DRN. P.R.H. | CHKD. | APPD.
SCALE NONE
DATE 6/29/73
DRAWING NUMBER
LOCATION 10-502
SHEET NO. H16276

LITHO NEG

2-15-78


REF 1
115 PSIG SUPPLY FROM DRYWELL ATMOSPHERE (NITROGEN) MAKEUP SYSTEM.
REF 2
100 PSIG SUPPLY FROM INSTRUMENT AIR SUPPLY SYSTEM (UNINTERRUPTED SUPPLY)
UNINTERR AIR SUPPLY
F053
REMOVABLE SPOOL PIECE
F030
RMS
T48-HBB-¾"
T48-F350 (N130)
T48-HBB-2"
T48 P70
T48-HBB-2"
F025
F001
2"-HBB
F027 (NOTE 5)
F026
T48 P30
T48-HBB-2"
2"-HBB
F028 LC
F029 LC (NOTE 5)
100 MICRON NOM. FILTER D008B
5 MICRON NOM. FILTER D009B
F018B
F019B
PCV F103B
F048 (N130)
F058 (N130)
F068 (N130)
F078 (N130)
GII-MDE-¾"
DRW
F051
100 MICRON NOM. FILTER D008A
5 MICRON NOM. FILTER D009A
F018A
F019A
PCV F103A
F048A (N130)
F058A (N130)
F068A (N130)
F078A (N130)
GII-MDE-½"
DRN
A CR
DRYER MALFUNCTION
A L CR
BACKUP SYSTEM ON
CONVENTIONAL
NUCLEAR CLASS II
dP1 N008
P1 N007
PS N006
F102
5 MICRON NOM. FILTER D007
F014
F015
1"-HEE
2"-HBB
RECEIVER A001
F016 (N140)
F017 (NOTE 5)
PS N010
A CR
SYSTEM MALFUNCTION
GII-MDE-½"
CRW DRAIN
F044
LS N012
F045
F043
½"-HBB
F052
HEE-1"
DRYER D002
½"-HEE
F042
F040
¾"-HEE
1"-HEE
F013
¾-HEE
F012
SEPARATOR D001
LS N011
LS N014
F041
F039
F049
GII-MDE-½"
GII-MDE-¾"
CRW
AFTER COOLER B001
F011
F036 LC GV-242
F037 GV-272A
F038 GV242
REMOVABLE SPOOL PIECE
P52-JBE-1"
F101A
LEAK DETECTION
COMPRESSOR NO1 C001A
F009A
F007
F048A
F018A
PS N005
PS N005
F101B
COMPRESSOR NO2 C001B
F010B
F009B
PS N004
VACUUM CUT-OUT
REF 5
TO VENT EX
CR
CR
RESET BUTTON
OFF AUTO STANDBY RUN
HS
OFF AUTO STANDBY RUN
HS
RMS
P42-HEE-½"
REF 6
REF 4
P42-HEE-½"
AUTO UNIT TRIP (NOTE 4)
A CR
STANDBY UNIT TRIP (NOTE 4)
A CR



NOTES

1. ALL EQUIPMENT AND INSTRUMENT NOS. ON THIS DRAWING PRECEDED BY MPL. NO. P70; UNLESS OTHERWISE NOTED. EXAMPLE P70-F005.
2. ALL PIPING AND COMPONENTS TO BE INSTALLED CLEAN; NO VISIBLE DIRT OR FOREIGN PARTICLES. INSURE THAT ALL CLEANING SOLUTION IS REMOVED, ESPECIALLY FROM PIPING LOW POINTS.
3. DESIGN OF PIPING, ETC., SHOULD BE SUCH THAT DRYWELL ATMOSPHERE WILL NOT LEAK INTO THE ENVIRONMENT.
4. ONE COMPRESSOR WILL OPERATE TO HANDLE THE BASE LOAD WHILE THE SECOND WILL BE STANDBY. PRESSURE SWITCH P70-N005A LOCATED ON RECEIVER WILL START AND STOP THE COMPRESSOR THAT HAS BEEN SELECTED 'AUTO'. IF THIS COMPRESSOR FAILS TO START, IT WILL BE ALARMED IN MAIN CONTROL ROOM. PRESSURE SWITCH P70-N005B WILL START & STOP THE COMPRESSOR WHICH HAS BEEN SELECTED 'STANDBY'. IF 'STANDBY' COMPRESSOR FAILS TO START IT WILL BE ALARMED IN MAIN CONTROL ROOM. IF BOTH COMPRESSORS FAIL AND PRESSURE FALLS BELOW 90 PSIG THE SECOND PRESSURE SWITCH P70-N006 WILL OPERATE BACKUP N_2 SYSTEM AND WILL ALSO ALARM IN MAIN CONTROL ROOM. WHEN COMPRESSOR COMES BACK ON LINE AND PRESSURE IN RECEIVER EXCEEDS 95 PSIG, BACKUP N_2 SYSTEM WILL CLOSE AND SYSTEM WILL RETURN TO NORMAL COMPRESSOR OPERATION.
5. NORMALLY LOCKED CLOSED VALVE TO BE OPENED ONLY DURING PLANT SHUTDOWN. VALVES F017 AND F027 SHOULD BE CLOSED WHEN VALVE F029 IS OPEN.
6. CONNECTION TO BE AT SUCTION PIPING LOW POINT.
7. SYSTEM WILL BE ALL WELDED EXCEPT FOR EQUIPMENT REQUIRING REMOVAL CAPABILITY, WHERE SOCKET WELDED UNION ENDS MAY BE USED.
8. ACCUMULATORS AND ADJACENT CHECK VALVES ARE SUPPLIED WITH SYSTEM B21.
9. NORMALLY LOCKED CLOSED VALVE TO BE OPENED DURING PLANT SHUTDOWN TO DRAIN WATER.
10. WHERE GV-NUMBERS ARE SHOWN THE VALVES ARE TAGGED WITH THESE NUMBERS WHERE GV NUMBERS ARE NOT SHOWN, THE VALVES ARE TAGGED WITH THE MPL NUMBER.
11. NORMALLY LOCKED CLOSED VALVE TO BE OPENED DURING CONTAINMENT LEAK TEST TO VENT N_2 HEADER.

REFERENCES

REFERENCES	MPL. NO.	S.S. NO.
1. NITROGEN INERTING SYSTEM P&ID	T48-1010	H-16000
2. INSTRUMENT AIR SYSTEM P&ID	PS2-1010	H-16235
3. PRIMARY CONTAINMENT ISOLATION SYSTEM (BECHTEL PLAN)	H-1T801-804	
4. PIPING AND INSTRUMENT SYMBOLS	A41-1010	2J0081
5. REACTOR BUILDING VENTILATION SYS. P&ID	T41-1010	H-16005
6. REACTOR BUILDING CLOSED COOLING WATER SYSTEM	P42-1010	H-16009

MPL. NO: P70-1010 (L.V.N. 103)

BECHTEL ASSOCIATES
JOB 6511

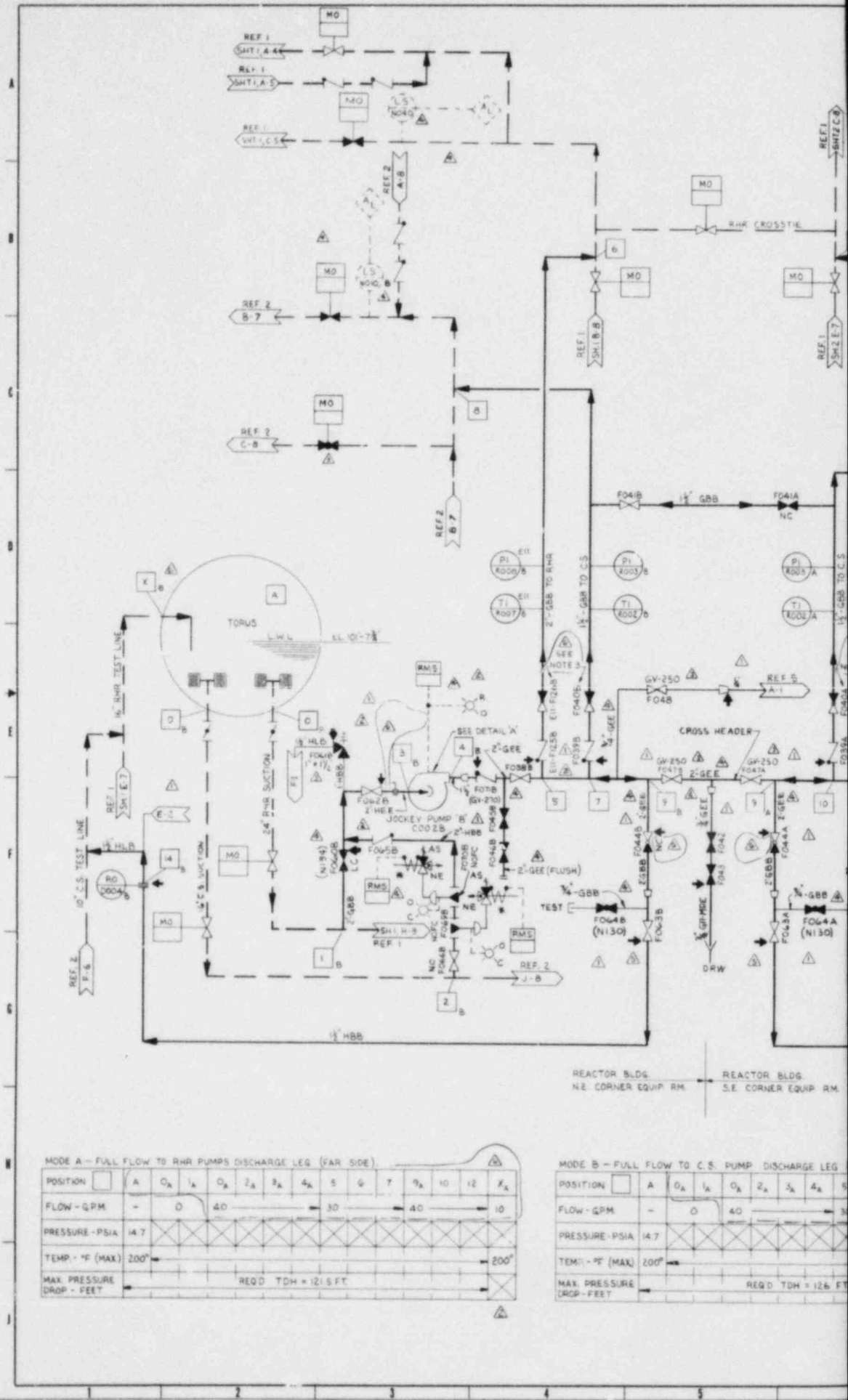
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

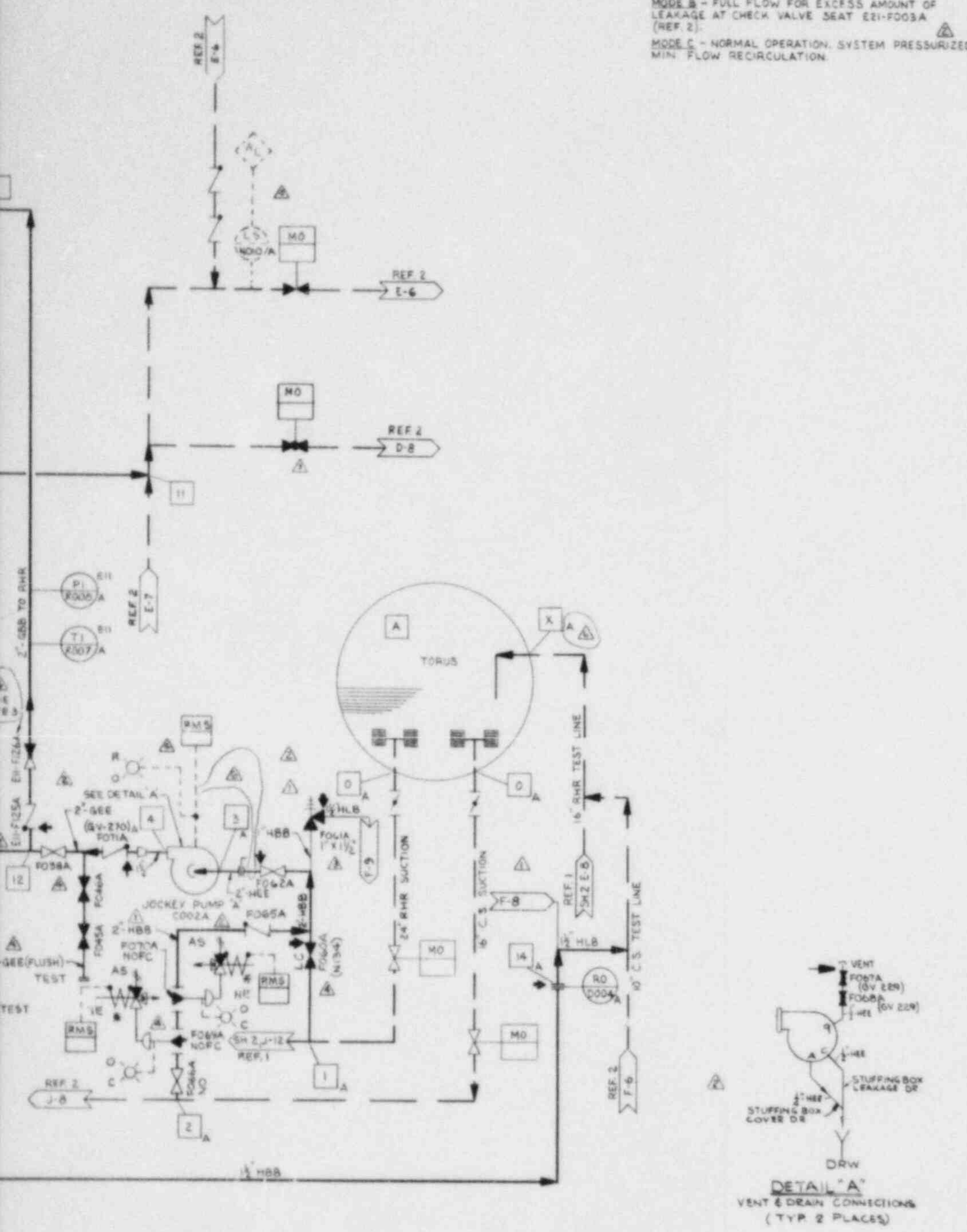
EDWIN I. HATCH NUCLEAR PLANT UNIT NO.1
DRYWELL PNEUMATIC SYSTEM
P&ID

DRAWN	DES.	CHK.
R.S.D.	W.J.B.	F.B.

SCALE: NONE
DRAWING NUMBER: 10-502
SHEET NO.: H-16286
REV. (10 W 7)

Microfilmed


TORUS
L.W.L.
EL 101'-7½"
RHR CROSSTIE
CROSS HEADER
JOCKEY PUMP 'B'
C002B
SEE DETAIL 'A'
SEE NOTE 3
TEST
DRW
REACTOR BLDG. N.E. CORNER EQUIP. RM.
REACTOR BLDG. S.E. CORNER EQUIP. RM.
MODE A — FULL FLOW TO RHR PUMPS DISCHARGE LEG (FAR SIDE)
POSITION
FLOW - G.P.M.
PRESSURE - PSIA
TEMP. - °F (MAX.)
MAX. PRESSURE DROP - FEET
REQ'D TDH = 121.5 FT.
MODE B — FULL FLOW TO C.S. PUMP DISCHARGE LEG
REQ'D TDH = 126 FT



MODES

MODE A – FULL FLOW FOR EXCESS AMOUNT OF LEAKAGE AT CHECK VALVE SEATS E11-F031A OR C (REF. 1, SH. 1&2).

MODE B – FULL FLOW FOR EXCESS AMOUNT OF LEAKAGE AT CHECK VALVE SEAT E21-F003A (REF. 2).

MODE C – NORMAL OPERATION. SYSTEM PRESSURIZED, MIN. FLOW RECIRCULATION.

GENERAL NOTES

1. ALL EQUIPMENT AND INSTRUMENT NUMBERS ARE TO BE PRECEDED BY MPL-E21 UNLESS OTHERWISE NOTED. EXAMPLE E21-C002A.
2. FOR WEIGHT & MATERIAL OF PIPE, VALVES & FITTINGS SEE MATERIAL SPEC SS-6909-1.
3. ALL CHECK & GLOBE STOP CHECK VALVES MUST BE LOCATED CLOSE TO THE CROSS HEADER.
4. JOCKEY PUMP DRAINS & VENTS TO DRW
5. PUMP C002A IS RUNNING & C002B IS ON STANDBY
6. ALL HIGH POINT VENTS ARE ¾ AND ALL LOW POINT DRAINS ARE 1" UNLESS NOTED OTHERWISE.

PROCESS FLOW NOTES

1. FOR PUMP $NPSH_{AVAIL}$ CALCULATIONS:
   MAX. TORUS WATER TEMP. = 200°F
   TORUS PRESS. = 14.7 PSIA
2. MIN. $NPSH_{AVAIL}$ CALCULATED ≥ 7 FT.
3. VALVES WILL BE THROTTLED TO MAINTAIN DESIGN FLOWS.
4. WHEN THE CORE SPRAY SYSTEM IS AT TEST MODE THEN SUCTION TO JOCKEY PUMP WILL BE THROUGH 0_B, 1_B, 3_B.
6. THE JOCKEY PUMPS ARE TO PROVIDE A MINIMUM OF 10 PSIG PRESSURE IN THE MAIN PUMP DISCH. LEGS IN ADDITION TO HEAD PRESSURE FROM WATER COLUMN.
7. THE RESTRICTING ORIFICES ARE DESIGNED TO DROP THE DISCH. HEAD TO A LOW TORUS PRESSURE (15.7 PSIA)
8. RELIEF VALVES F061 A&B SET PRESSURE SHALL BE 100 PSIG.
10. CAP SUCTION LINE FROM RHR SUCTION AND SPOOL THROUGH SUCTION LINE FROM CORE SPRAY SUCTION UNTIL VALVES F060 A&B, F065 A&B, AND F066 A&B ARE DELIVERED.
11. PUMPS C002A & B SHALL OPERATE ON EMERGENCY A-C PUMPS

REFERENCES

REFERENCE	MPL NO.	S.S.I. NO.
1. R.H.R. SYS. P&ID	E11-1010 SH. 1	H-16329
	SH. 2	H-16330
2. CORE SPRAY SYS. P&ID	E21-1010	H-16331
3. RHR SYS PROCESS DIA.	E11-1020	S-15326-15328
4. CORE SPRAY PROCESS DIA.	E21-1020	S-15117
5. SAMPLING SYSTEM P&ID & PFD	P33-1010	H-16281
6. PUMP SEAL DWG.	E21-C002A&B	SX-15816
7. JOCKEY PUMP INSTR. MANUAL	E21-C002A&B	SX-15110
8. JOCKEY PUMP OUTLINE	E21-C002A&B	SX-15109
9. PIPING & INST. SYMBOLS	A41-1010	S-15051

LEGEND

— — — EXISTING PIPING FOR E11-1010 AND/OR E21-1010

——— PIPING FOR JOCKEY PUMP SYSTEM.

(...AR SIDE).

	7	8	9_A	10	12	X_A
→			40		→	10
X	X	X	X	X	X	X
→					→	200°
→					→	X

MODE C – RECIRC. TO TORUS (NO FLOW TO PUMP DISCH. LEGS) NEAR SIDE

POSITION	A	0_A	1_A	0_A	2_A	3_A	4_A	9_A	10	12	14_A	X_A
FLOW - G.P.M.	—	0		10 →								
PRESSURE - PSIA	14.7	X	X	X	X	X	X	X	X	X	X	15.7
TEMP. °F (MAX)	200° →											200°
MAX. PRESSURE DROP - FEET	TDH = 130 FT											

MPL NO. E21-1050 LVN-F126

BECHTEL ASSOCIATES
JOB 6511

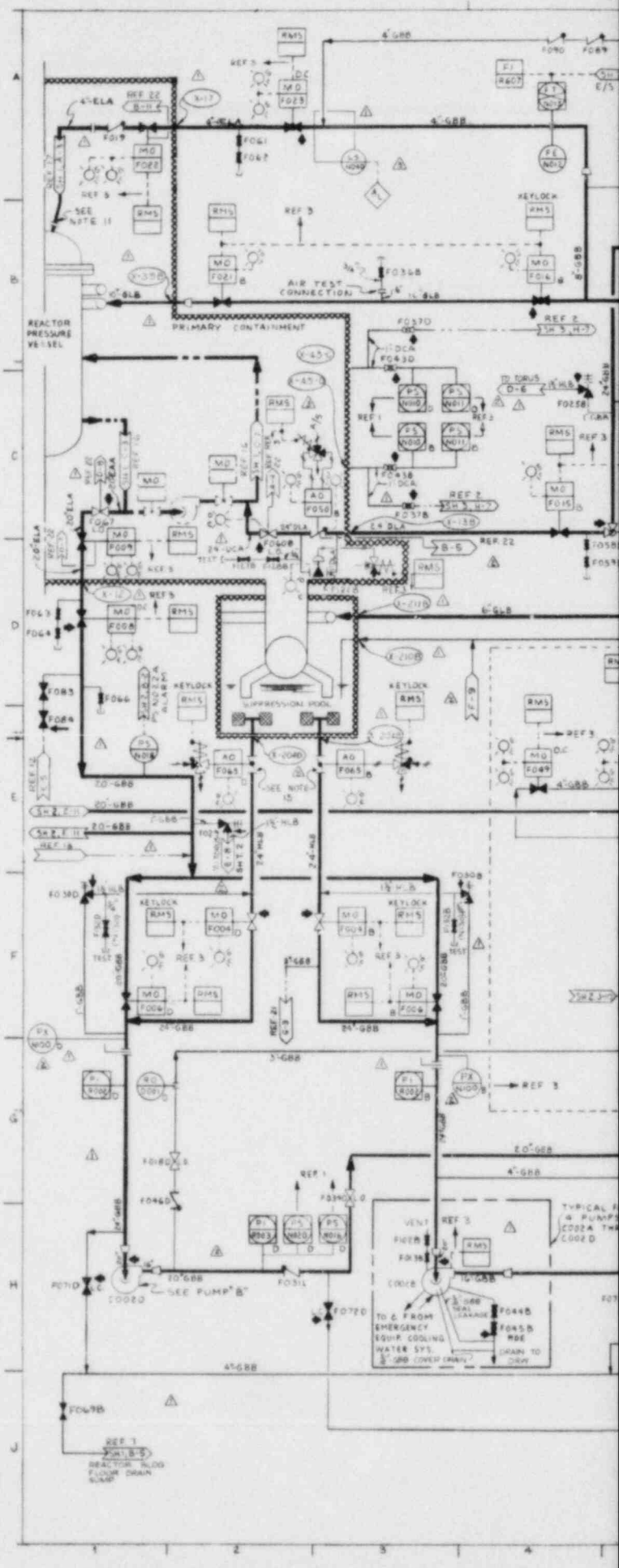
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

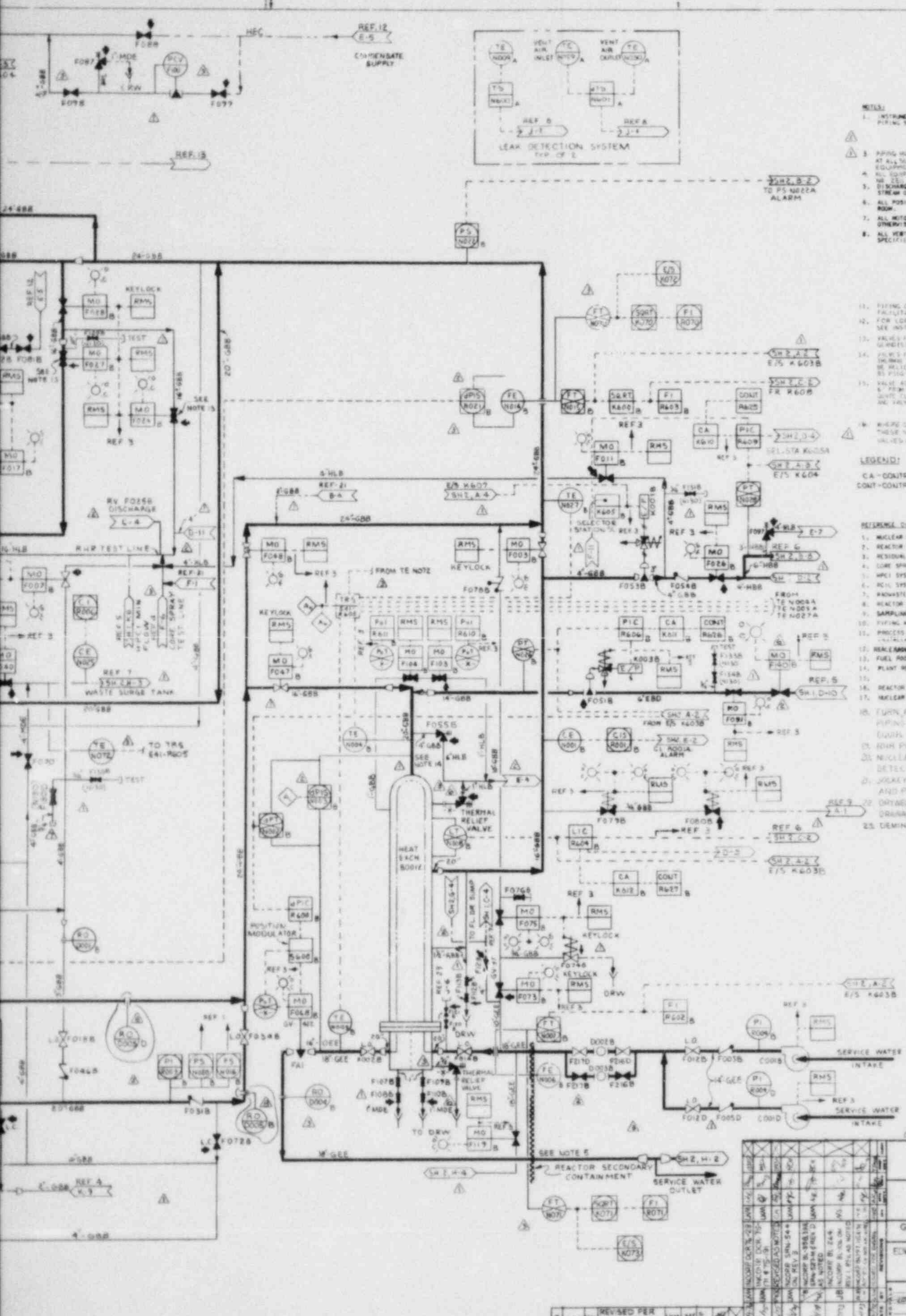
EDWIN I HATCH NUCLEAR PLANT UNIT NO. 1
JOCKEY PUMP SYSTEM P&ID & PROCESS FLOW DIAGRAM

SCALE NONE
DATE 2/4/72
DRAWING NUMBER
LOCATION 10-502
SHEET NO. H-16328

LITHO NEG

Microfilmed 9-9-7


REACTOR PRESSURE VESSEL
PRIMARY CONTAINMENT
AIR TEST CONNECTION
SUPPRESSION POOL
KEYLOCK
SEE NOTE 11
SEE NOTE 15
SEE PUMP "B"
TO & FROM EMERGENCY EQUIP COOLING WATER SYS.
REACTOR BLDG FLOOR DRAIN SUMP
TO TORUS D-6
REF 1
REF 2
REF 3
REF 5
REF 22
RMS
MO
AO
PS
PI
FE
FT
FI
4"-GBB
6"-GLB
20"-GBB
24"-GLB
3"-GBB
4"-GLB
1
2
3
4
A
B
C
D
E
F
G
H
J



NOTES:

1. INSTRUMENT LINE VALVING MUST COMPLY WITH INSTRUMENT PIPING STANDARDS REFERENCE 11.
3. PIPING HIGH POINT VENTS & LOW POINT DRAINS ARE TO BE ADDED AT ALL SYSTEM HIGH POINTS OR LOW POINTS NOT SERVED BY EQUIPMENT VENTS & DRAINS.
4. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY MPL NO. E11 UNLESS OTHERWISE NOTED.
5. DISCHARGE LINES FOR COOLING WATER TO BE ROUTED UPSTREAM OF SERVICE WATER RADIATION MONITORS.
6. ALL POSITION INDICATING LIGHTS ARE LOCATED IN CONTROL ROOM.
7. ALL MOTOR OPERATED VALVES ARE A.C. OPERATED UNLESS OTHERWISE NOTED.
8. ALL VENTS AND DRAINS ARE 3/4" UNLESS OTHERWISE SPECIFIED.
11. PIPING CONNECTED TO VESSEL HEAD MUST BE FLANGED TO FACILITATE VESSEL HEAD REMOVAL.
12. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INST.
13. VALVES F027 & F024 TO BE INSTALLED WITH PACKING GLAND(S) ON UPSTREAM SIDE OF DISC.
14. VALVES F025, F029, F035 SHALL BE [illegible] & F097 SHALL BE THERMAL RELIEF VALVES. VALVES F037 & F055 SHALL BE RELIEF VALVES WITH PRESSURE SET POINTS OF 85 PSIG AND 450 PSIG RESPECTIVELY.
15. VALVE AT F103 SHALL BE LOCATED A MAXIMUM OF 6' FROM THE NOZZLE OF THE TORUS WITH ADEQUATE CLEARANCES FOR OPERATION OF THE VALVE AND VALVE OPERATOR.
16. WHERE GV NO'S ARE SHOWN THE VALVES ARE TAGGED WITH THESE NO'S. WHERE GV NO'S ARE NOT SHOWN, THE VALVES ARE TAGGED WITH THE MPL NO.

LEGEND:

CA - CONTROL AMPLIFIER
CONT - CONTROLLER

REFERENCE DOCUMENTS:	MPL NO.	BECHTEL OR SSI NO.
1. NUCLEAR BOILER SYSTEM FCD	B21-1032	S-15267
2. REACTOR PROTECTION SYSTEM IED	C71-1010	S-15065
3. RESIDUAL HEAT REMOVAL FCD	E11-1030	S-15326
4. CORE SPRAY P&ID	E21-1010	H-16331
5. HPCI SYSTEM P&ID	E41-1010	H-16332
6. RCIC SYSTEM P&ID	E51-1010	H-16334
7. RADWASTE SYSTEM P&ID	G11-1010	[illegible]
8. REACTOR WATER CLEANUP SYS P&ID	G31-1010	[illegible]
9. SAMPLING SYS. P&ID AND PFD	P33-1010	H-16281
10. PIPING AND INSTRUMENT SYMBOLS	A41-1010	S-15051
11. PROCESS INSTRUMENTATION & TUBING INSTALLATION SPECIFICATIONS	A61-4070	S-15426
12. [illegible]	P11-1010	H-16016
13. FUEL POOL COOLING SYS P&ID	G41-1013	H-16002
14. PLANT REQUIREMENTS	A61-4080	S-17109
15.		
16. REACTOR RECIRC. SYS P&ID	B31-1010	[illegible]
17. NUCLEAR BOILER SYS P&ID	B21-1010	[illegible]
18. FURN, FABR, DEL., & ERECT. PIPING & SETTING OF MECH. EQUIP.		SS-6003-H
19. RHR PROCESS DATA	E11-1020	S-15304
20. NUCLEAR BOILER LEAK DETECTION SYS. DESIGN SPEC.	A61-4040	S-15530
21. JOCKEY PUMP SYS. P&ID AND PFD	E21-1050	H-16328
22. DRYWELL VALVE & EQUIP DRAINAGE SYS. P&ID	T45-1010	H-16[illegible]
23. DEMIN. WTR. SYS. P&ID	P21-1010	H-16015

THIS DRAWING DEVELOPED FROM G.E. DWG. NO. 729E602BA SHT. 1 REV. 7; S.S.I NO. S-15204

MPL NO. E11-1010

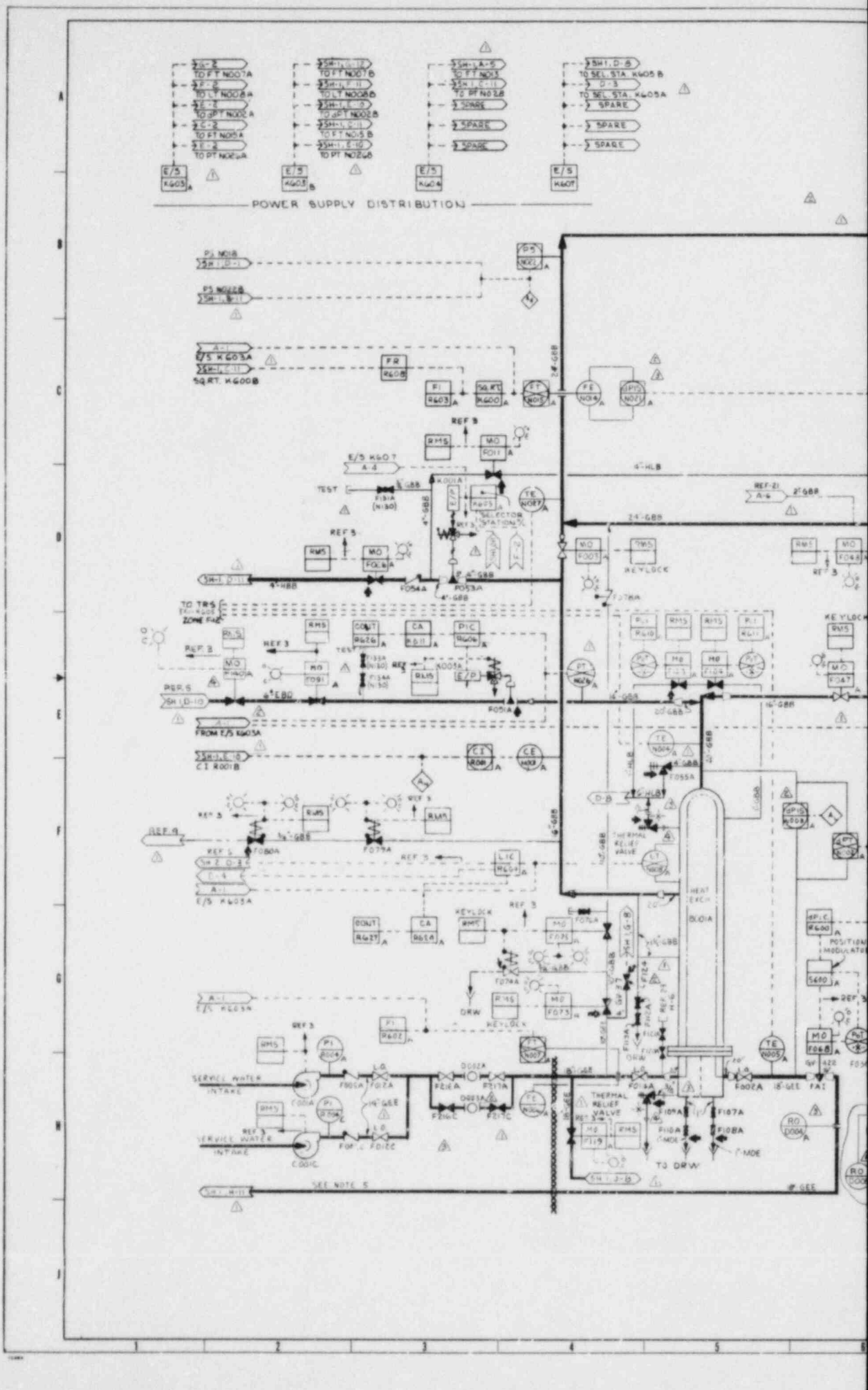
BECHTEL ASSOCIATES
JOB 6511

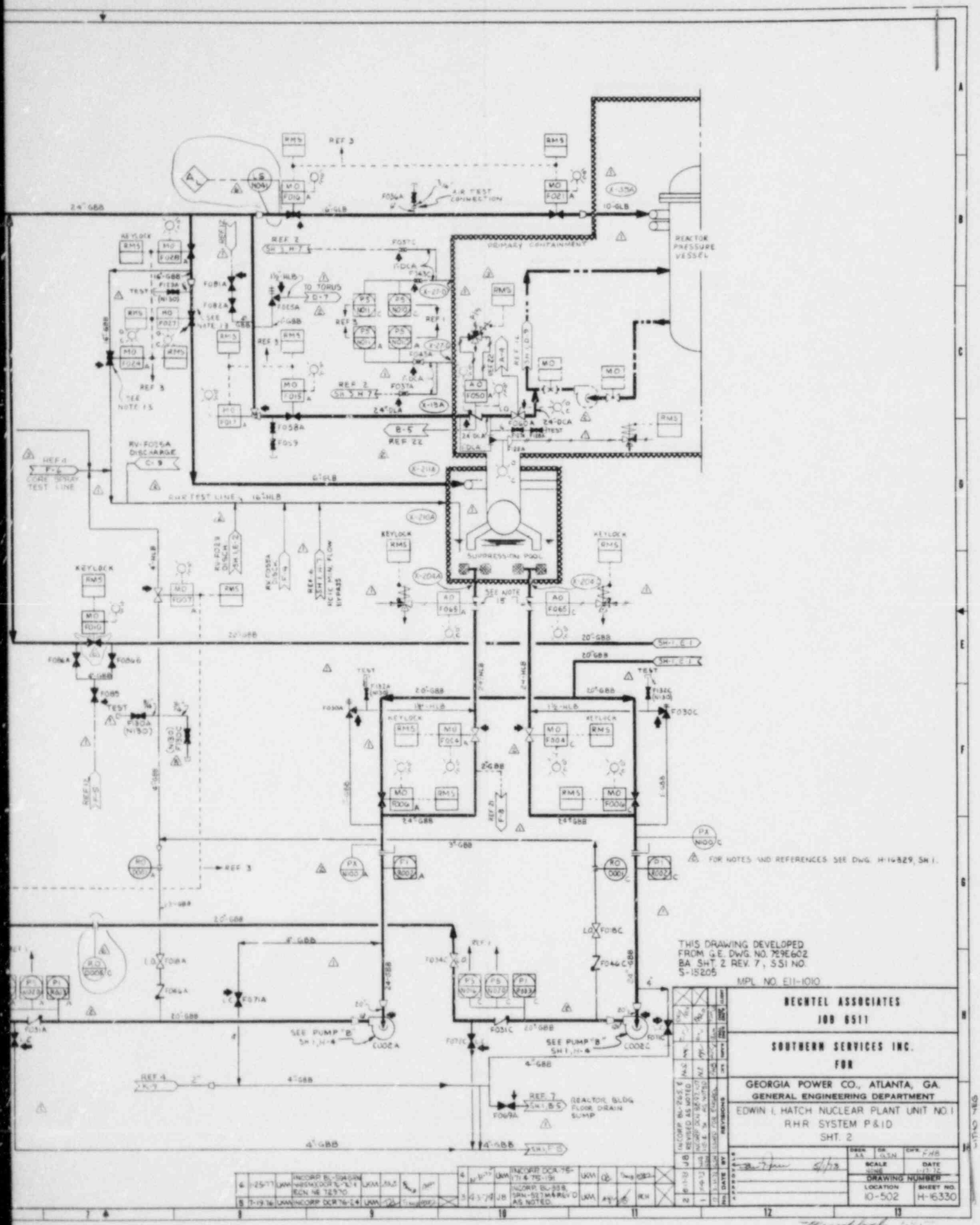
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT

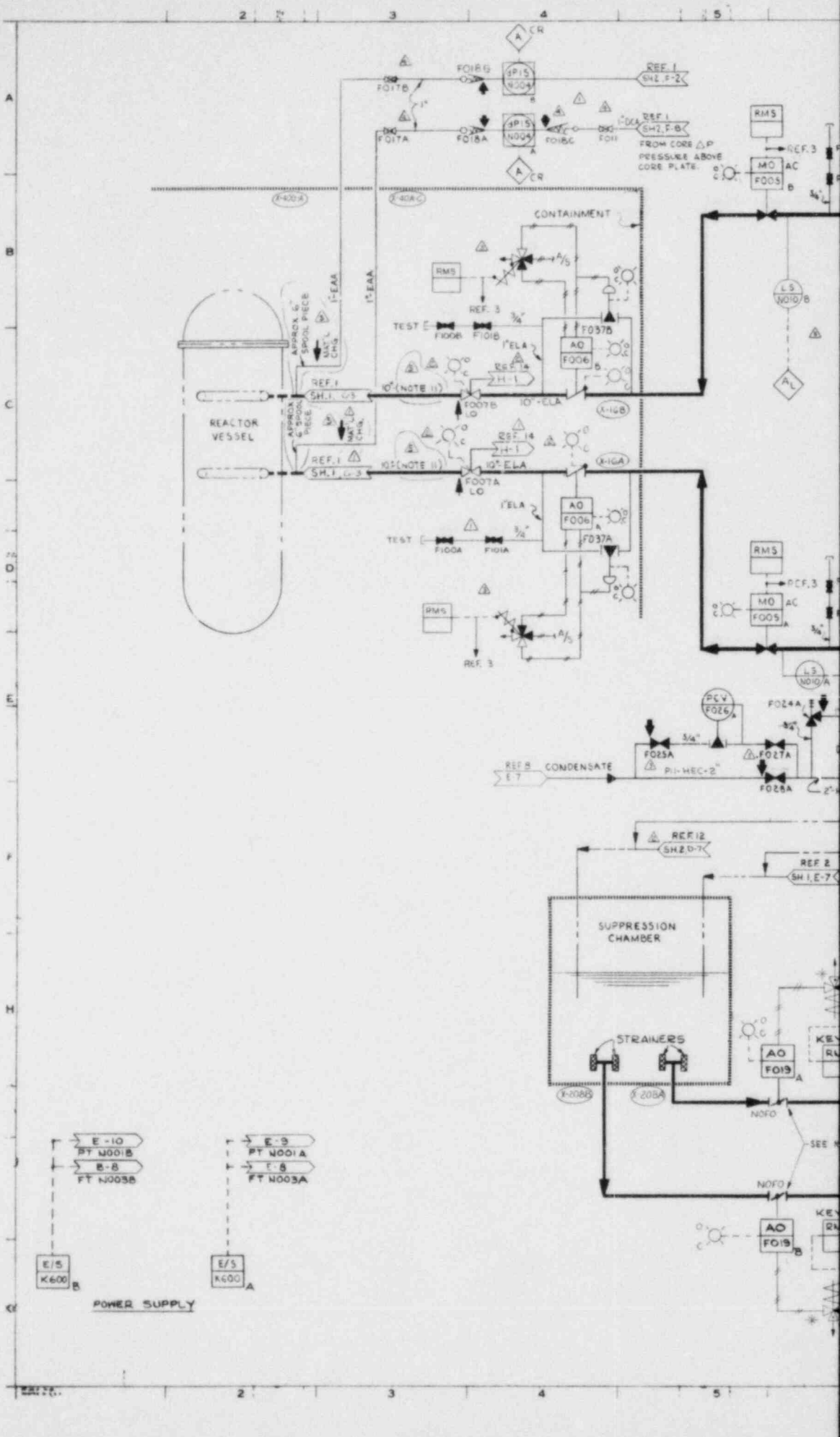
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
R.H.R. SYSTEM P&ID
SHT. 1

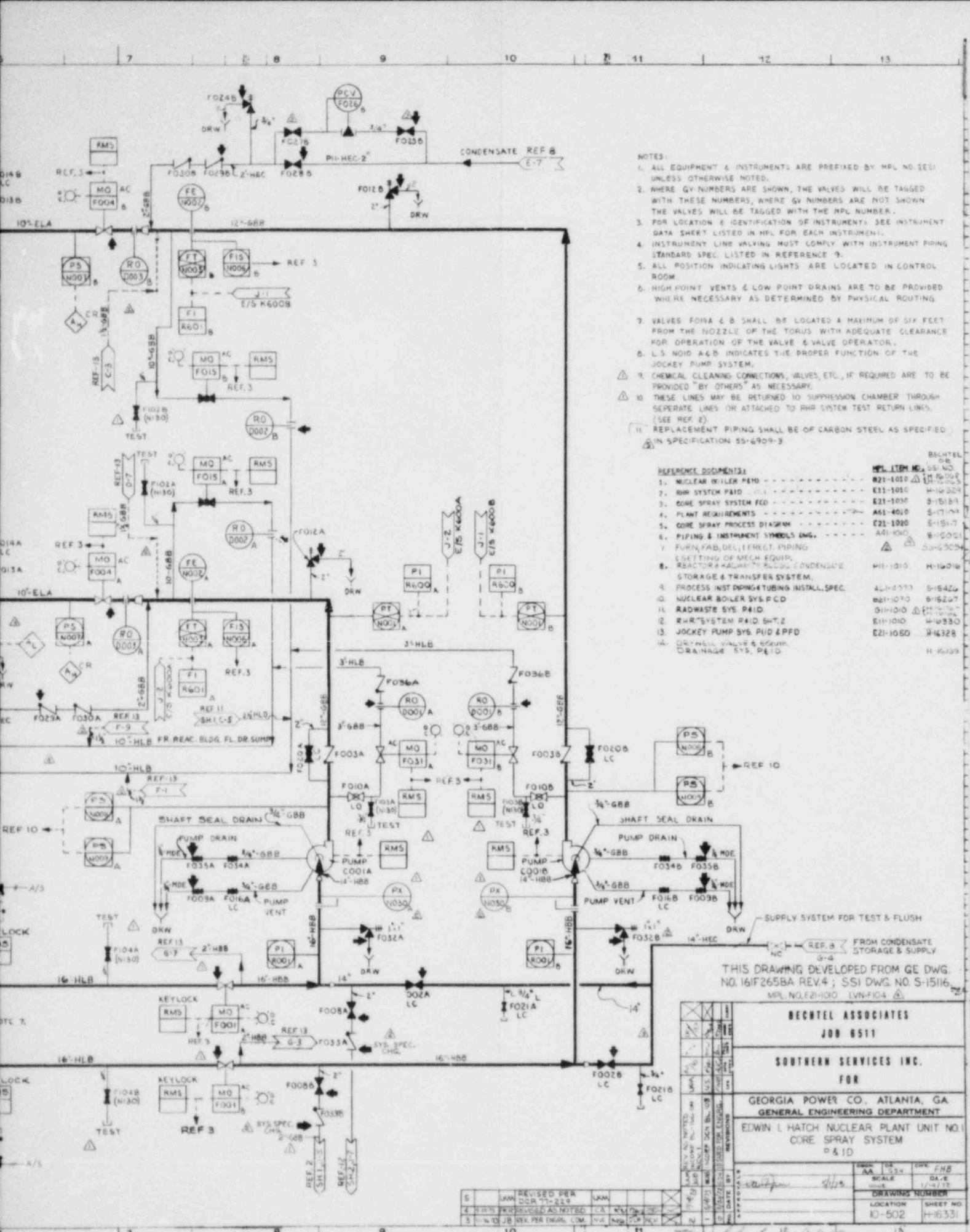
SCALE: NONE
DRAWING NUMBER
LOCATION: 10-502
SHEET NO.: H-16329

NO.	DATE	BY	REVISIONS
8	3-2-79	LMM	REVISED PER ECN NE 72910


POWER SUPPLY DISTRIBUTION
TO FT N007A
TO LT N008A
TO dPT N002A
TO FT N015A
TO PT N012A
TO FT N007B
TO LT N008B
TO dPT N002B
TO FT N015B
TO PT N012B
TO FT N013
TO PT N028
SPARE
TO SEL. STA. K605B
TO SEL. STA. K605A
E/S K603A
E/S K603B
E/S K604
E/S K607
SQ.RT. K600B
SELECTOR STATION
KEYLOCK
THERMAL RELIEF VALVE
HEAT EXCH
B.L.O.I.A
POSITIONER MODULATOR
SERVICE WATER INTAKE
TO DRW
SEE NOTE 5
FROM E/S K603A
CI R001B
TO TRS
REF 3
REF 9
REF 21


REACTOR PRESSURE VESSEL
PRIMARY CONTAINMENT
SUPPRESSION POOL
TO TORUS
AIR TEST CONNECTION
RV-F055A DISCHARGE
RHR TEST LINE
SEE PUMP "B" SH 1, H-4
REACTOR BLDG FLOOR DRAIN SUMP
FOR NOTES AND REFERENCES SEE DWG. H-16829, SH 1.
THIS DRAWING DEVELOPED FROM G.E. DWG. NO. 729E602 BA SHT 2 REV. 7, SSI NO. 5-15205
MPL NO. E11-1010
RECHTEL ASSOCIATES
JOB 6511
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
RHR SYSTEM P&ID
SHT. 2
DRAWING NUMBER
LOCATION 10-502
SHEET NO. H-16330


REACTOR VESSEL
CONTAINMENT
SUPPRESSION CHAMBER
STRAINERS
RMS
REF. 3
REF. 1
REF. 2
REF. 12
REF. 14
REF. 8
CONDENSATE
TEST
MO AC F005 A
MO AC F005 B
AO F004 A
AO F004 B
AO F019 A
AO F019 B
PCV F026
LS N010 A
LS N010 B
AL
FROM CORE ΔP PRESSURE ABOVE CORE PLATE
E-10 PT N001B
B-8 FT N003B
E-9 PT N001A
F-8 FT N003A
E/S K600 B
E/S K600 A
POWER SUPPLY
SEE NOTE



NOTES:

1. ALL EQUIPMENT & INSTRUMENTS ARE PREFIXED BY MPL NO. (E21) UNLESS OTHERWISE NOTED.
2. WHERE GV NUMBERS ARE SHOWN, THE VALVES WILL BE TAGGED WITH THESE NUMBERS, WHERE GV NUMBERS ARE NOT SHOWN THE VALVES WILL BE TAGGED WITH THE MPL NUMBER.
3. FOR LOCATION & IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INSTRUMENT.
4. INSTRUMENT LINE VALVING MUST COMPLY WITH INSTRUMENT PIPING STANDARD SPEC. LISTED IN REFERENCE 9.
5. ALL POSITION INDICATING LIGHTS ARE LOCATED IN CONTROL ROOM.
6. HIGH POINT VENTS & LOW POINT DRAINS ARE TO BE PROVIDED WHERE NECESSARY AS DETERMINED BY PHYSICAL ROUTING.
7. VALVES FO19A & B SHALL BE LOCATED A MAXIMUM OF SIX FEET FROM THE NOZZLE OF THE TORUS WITH ADEQUATE CLEARANCE FOR OPERATION OF THE VALVE & VALVE OPERATOR.
8. L.S. N010 A & B INDICATES THE PROPER FUNCTION OF THE JOCKEY PUMP SYSTEM.
9. CHEMICAL CLEANING CONNECTIONS, VALVES, ETC., IF REQUIRED ARE TO BE PROVIDED "BY OTHERS" AS NECESSARY.
10. THESE LINES MAY BE RETURNED TO SUPPRESSION CHAMBER THROUGH SEPERATE LINES OR ATTACHED TO RHR SYSTEM TEST RETURN LINES. (SEE REF. 2).
11. REPLACEMENT PIPING SHALL BE OF CARBON STEEL AS SPECIFIED IN SPECIFICATION SS-6909-3.

REFERENCE DOCUMENTS:

	MPL ITEM NO.	BECHTEL DR. SS. NO.
1. NUCLEAR BOILER P&ID	B21-1010	M-16008
2. RHR SYSTEM P&ID	E11-1010	M-16029
3. CORE SPRAY SYSTEM P&ID	E21-1030	S-15189
4. PLANT REQUIREMENTS	A61-4020	S-17[illegible]
5. CORE SPRAY PROCESS DIAGRAM	E21-1020	S-15[illegible]
6. PIPING & INSTRUMENT SYMBOLS DWG.	A41-1040	S-[illegible]
7. TURN, FAB, DEL, ERECT, PIPING (SETTING OF MECH EQUIP)		SS-6909-3
8. REACTOR & RADWASTE BLDG. CONDENSATE STORAGE & TRANSFER SYSTEM.	M11-1010	M-16016
9. PROCESS INST PIPING & TUBING INSTALL. SPEC.	A41-0333	S-15426
10. NUCLEAR BOILER SYS. P&ID	B21-1010	S-16267
11. RADWASTE SYS. P&ID	G11-1010	M-16[illegible]
12. RHR SYSTEM P&ID SHT. 2	E11-1010	M-16330
13. JOCKEY PUMP SYS. P&ID & PFD	E21-1050	M-16328
14. DRYWELL VALVE & EQUIP. DRAINAGE SYS. P&ID		M-16139

THIS DRAWING DEVELOPED FROM GE DWG. NO. 161F265BA REV. 4 ; SSI DWG. NO. S-15116.

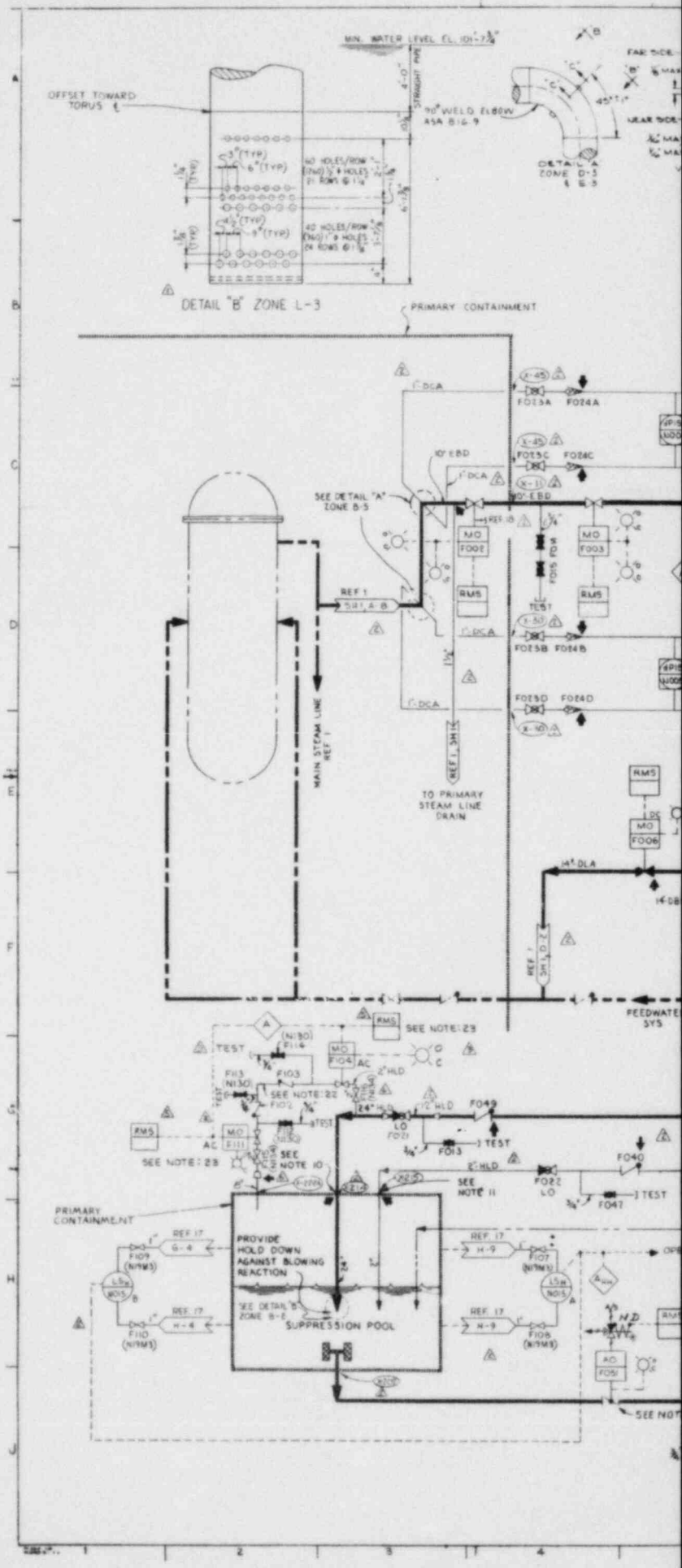
MPL NO. E21-1010 LVN-F104

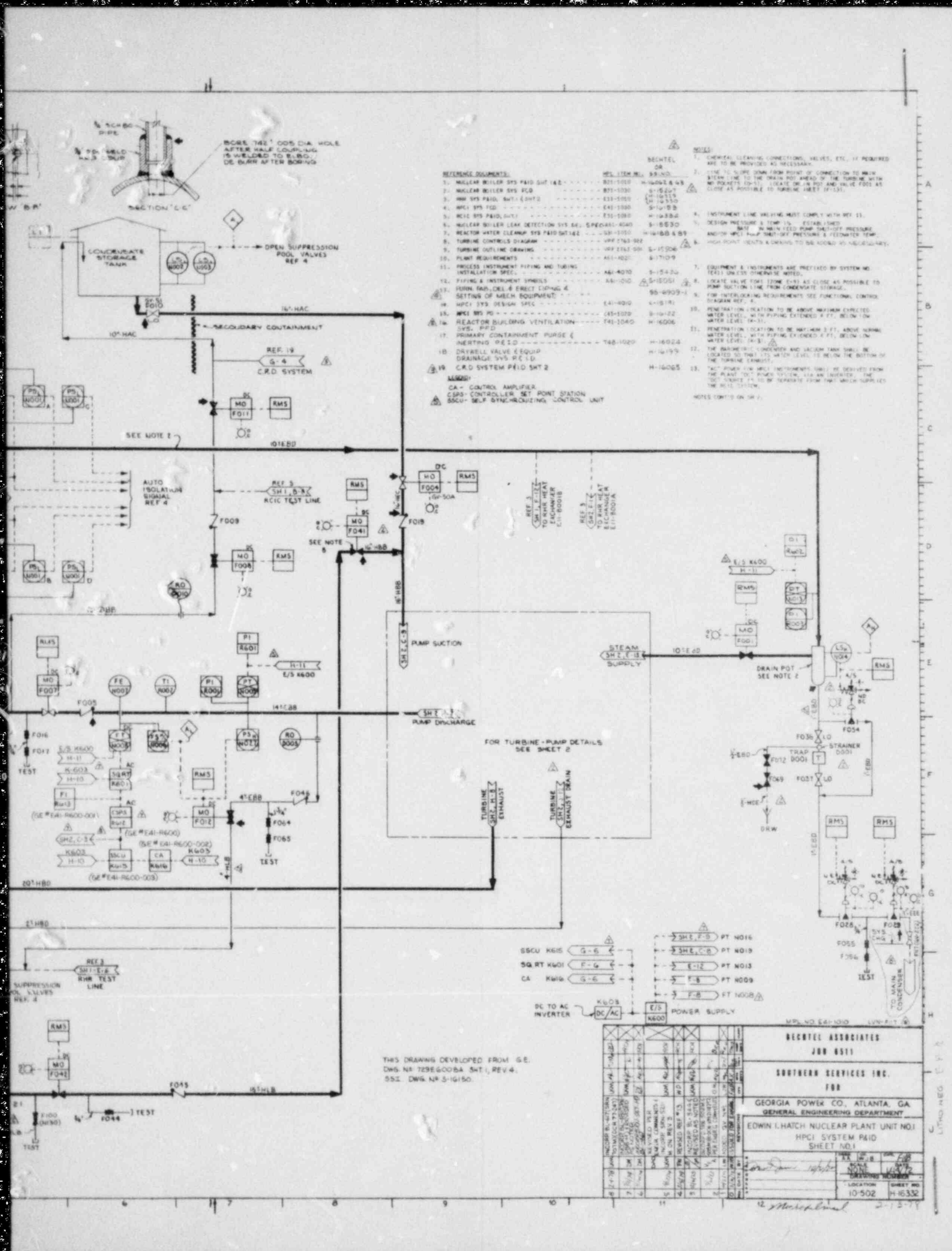
BECHTEL ASSOCIATES		
JOB 6511		
SOUTHERN SERVICES INC.		
FOR		
GEORGIA POWER CO., ATLANTA, GA.		
GENERAL ENGINEERING DEPARTMENT		
EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1		
CORE SPRAY SYSTEM		
P & I D		
DRAWN AA	CK SJH	CHK FHB
SCALE NONE	DATE 1/14/77	
DRAWING NUMBER		
LOCATION 10-502	SHEET NO. H-16331	

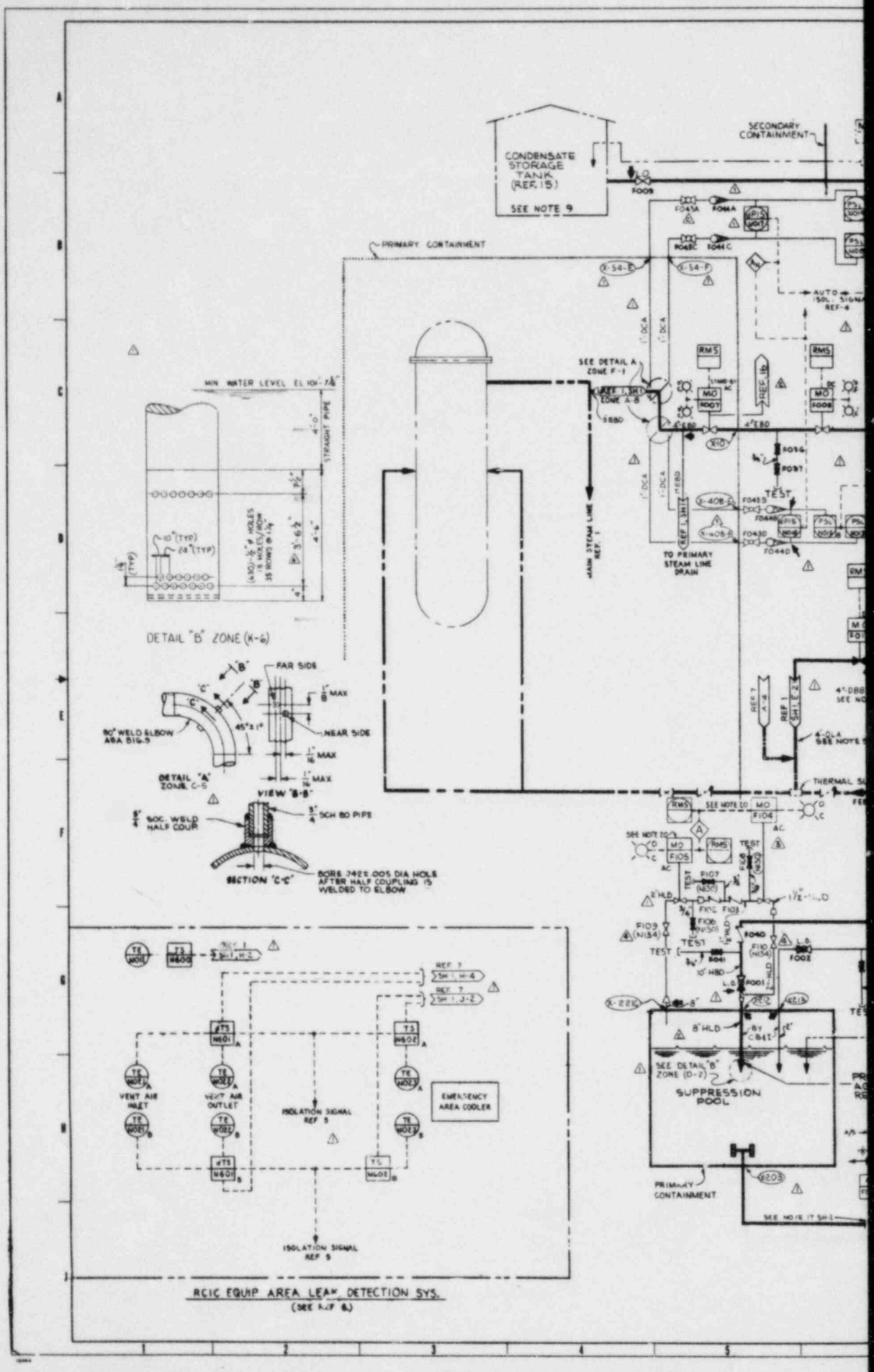
NO.	DATE	BY	REVISIONS
5	10/26/76	UKM	REVISED PER DCR 77-229
4	9-9-75	PKR	REVISED AS NOTED
3	4-10-75	JB	REV. PER ENGRS. COM.
2	12-6-74	NGB	ISSUED FOR ENGRG.
1	10-4-74	NGB	ISSUED FOR ENGRG.
0	8-16-74	NGB	ISSUED FOR ENGRG.

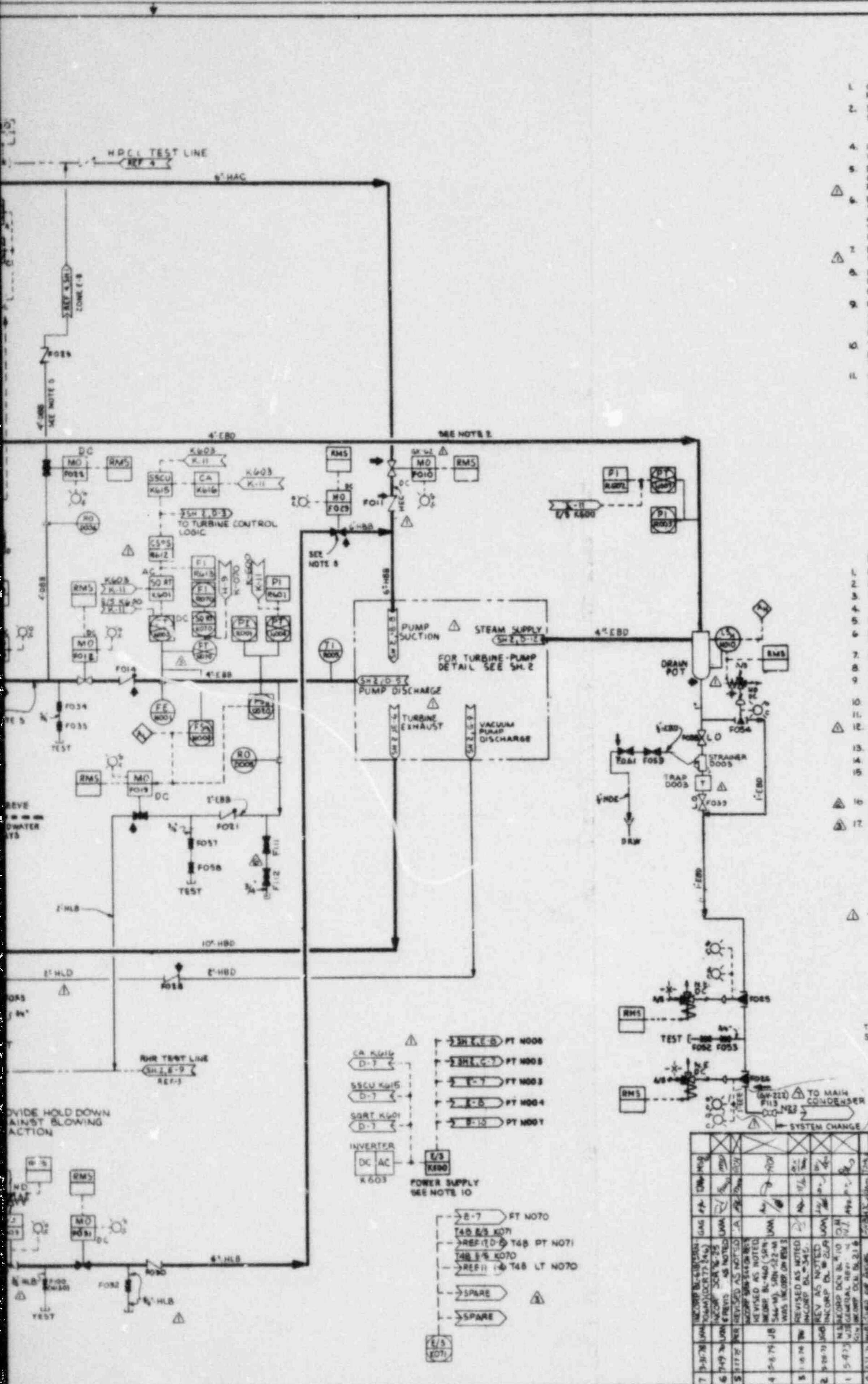
APPROVALS

LITHO NEG


MIN. WATER LEVEL EL. 101'-7½"
OFFSET TOWARD TORUS ℄
STRAIGHT PIPE
90° WELD ELBOW ASA B16.9
DETAIL "A" ZONE D-3 & E-3
DETAIL "B" ZONE L-3
PRIMARY CONTAINMENT
SEE DETAIL "A" ZONE B-3
MAIN STEAM LINE REF 1
TO PRIMARY STEAM LINE DRAIN
FEEDWATER SYS
SEE NOTE 23
SEE NOTE 22
SEE NOTE 10
SEE NOTE 11
PRIMARY CONTAINMENT
PROVIDE HOLD DOWN AGAINST BLOWING REACTION
SEE DETAIL "B" ZONE B-5
SUPPRESSION POOL
SEE NOTE


BECHTEL JOB NO.
REFERENCE DOCUMENTS:
NOTES:
CONDENSATE STORAGE TANK
OPEN SUPPRESSION POOL VALVES REF 4
SECONDARY CONTAINMENT
C.R.D. SYSTEM
AUTO ISOLATION SIGNAL REF 4
RCIC TEST LINE
RHR TEST LINE
PUMP SUCTION
PUMP DISCHARGE
STEAM SUPPLY
DRAIN POT SEE NOTE 2
STRAINER
TRAP
TEST
FOR TURBINE-PUMP DETAILS SEE SHEET 2
TURBINE EXHAUST
TURBINE EXHAUST DRAIN
SSCU K615
SQ RT K601
CA K616
DC TO AC INVERTER
POWER SUPPLY
TO MAIN CONDENSER
THIS DRAWING DEVELOPED FROM G.E. DWG. NO. 729E600BA SHT. 1, REV 4. SSI DWG. NO. 5-16150.
BECHTEL ASSOCIATES
JOB 6511
SOUTHERN SERVICES INC.
FOR
GEORGIA POWER CO., ATLANTA, GA.
GENERAL ENGINEERING DEPARTMENT
EDWIN I. HATCH NUCLEAR PLANT UNIT NO.1
HPCI SYSTEM P&ID
SHEET NO.1
SCALE NONE
DRAWING NUMBER
LOCATION 10-502
SHEET NO. H-16332


CONDENSATE STORAGE TANK (REF. 15)
SEE NOTE 9
SECONDARY CONTAINMENT
PRIMARY CONTAINMENT
MIN. WATER LEVEL EL 101'-7½"
STRAIGHT PIPE
DETAIL "B" ZONE (K-6)
90° WELD ELBOW ASA B16.9
45°±1°
FAR SIDE
NEAR SIDE
DETAIL "A" ZONE C-5
VIEW "B-B"
SOC. WELD HALF COUP.
SCH 80 PIPE
SECTION "C-C"
BORE .742±.005 DIA HOLE AFTER HALF COUPLING IS WELDED TO ELBOW
TO PRIMARY STEAM LINE DRAIN
MAIN STEAM LINE REF 1
SUPPRESSION POOL
PRIMARY CONTAINMENT
VENT AIR INLET
VENT AIR OUTLET
ISOLATION SIGNAL REF 5
EMERGENCY AREA COOLER
RCIC EQUIP AREA LEAK DETECTION SYS.
(SEE REF 6)



NOTES

1. CHEMICAL CLEANING CONNECTIONS VALVES, ETC IF REQUIRED, ARE TO PROVIDED AS NECESSARY.
2. SLOPE STEAM LINE DOWN ALL THE WAY FROM MAIN STEAM LINE TO DRAIN POT JUST AHEAD OF TURBINE.
4. INSTRUMENT LINE VALVING MUST COMPLY WITH INSTRUMENT PIPING STANDARDS.
5. DESIGN PRESSURE & TEMP. TO BE ESTABLISHED BASED ON MAIN FEED PUMP SHUT OFF PRESSURE AND/OR RCIC PUMP SHUT-OFF PRESSURE & FEEDWATER TEMP.
6. EQUIPMENT VENT & DRAIN QUANTITIES SHOWN ARE TO BE MODIFIED TO AGREE WITH VPF DATA FOR ACTUAL EQUIPMENT PURCHASED. PIPING HIGH POINT VENTS & LOW POINT DRAINS TO BE ADDED AS NECESSARY.
7. EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY MPL. NO. E51, UNLESS OTHERWISE NOTED.
8. LOCATE VALVE F029 (ZONE D-8) AS CLOSE AS POSSIBLE TO PUMP SUCTION LINE FROM CONDENSATE STORAGE.
9. REQUIRED TOTAL RESERVE STORAGE FOR RCIC SYS. AND HPCI SYS. 100,000 GAL. THIS AMOUNT OF STORAGE SHALL BE CAPABLE OF BEING ISOLATED FROM SERVING OTHER SYSTEMS.
10. "A-C" POWER FOR RCIC INSTRUMENTS SHALL BE DERIVED FROM A "D-C" SOURCE SEPARATE FROM THAT WHICH SUPPLIES THE HPCI SYSTEM.
11. FOR INTERLOCKING REQUIREMENTS AND AUTO VALVE ACTUATION SEE FUNCTIONAL CONTROL DIAGRAM, REF. 2.

NOTES CONT'D ON SH. 2.

REFERENCES

	REF DOCUMENTS	MPL ITEM NO.	BECHTEL OR S.S.I. NO.
1.	NUCLEAR BOILER SYS P&ID SHTS 1&2	B21-1010	H-16062 & 63
2.	NUCLEAR BOILER SYS FCD	B21-1030	S-15267
3.	RHR SYS. P&ID	E11-1010	H-16325
4.	HPCI SYS. P&ID	E41-1010	H-16332
5.	RCIC SYS. FCD	E51-1030	S-15581
6.	NUCLEAR BOILER LEAK DETECTION SYS. DESIGN SPEC.	A61-4040	S-15530
7.	RWCU SYS. P&ID SHTS 1&2	G31-1010	H-16188-89
8.	PIPING & INSTRUMENT SYMBOLS	A41-1010	S-15051
9.	PROCESS INSTRUMENT PIPING AND TUBING INSTALLATION SPEC.	A61-4070	S-15426
10.	PLANT REQUIREMENTS	A61-4020	S-17109
11.	TURBINE CONTROL DWG.	VFP 2757-014	
12.	FURN., FAB & DEL. OF PIPING & SETTING OF MECH EQUIP		SS-6909-1
13.	TURBINE OUTLINE	E51-C002	S-15496
14.	HPCI SYS. FCD	E41-1030	S-16153
15.	REACTOR & RADWASTE BUILDINGS CONDENSATE STORAGE & TRANSFER SYS DIAGRAM	P11-1010	H-16016
16.	DRYWELL VALVE & EQUIP DRAINAGE SYS. P&ID		H-16199
17.	PRIMARY CONTAINMENT PURGE & INERTING SYS P&ID	T48-1020	H-16024

LEGEND

CA - CONTROL AMPLIFIER
SSCU - SELF SYNCRONIZING CONTROL UNIT
CSPS - CONTROL SET POINT STATION

THIS DWG. DEVELOPED FROM GE DWG. NO. 729E604BA SHT 1, REV 4, SSI DWG. NO. S16157.

MPL NO. E51-1010

LVN-F113

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EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1
RCIC SYSTEM P&ID
SHEET NO. 1

SCALE: NONE
DRAWING NUMBER
LOCATION: 10-502
SHEET NO.: H-16334