



VERMONT YANKEE NUCLEAR POWER CORPORATION

SEVENTY SEVEN GROVE STREET

RUTLAND, VERMONT 05701

B.3.2.1

WVY 79-135

REPLY TO:

ENGINEERING OFFICE

TURNPIKE ROAD

WESTBORO, MASSACHUSETTS 01581

TELEPHONE 617-366-9011

November 15, 1979

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Office of Nuclear Reactor Regulation
Mr. W.F. Kane
Bulletins and Orders Task Force

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) USNRC Letter to VYNPC dated July 13, 1979
(c) Memo, T.D. Keenan to Distribution, dated July 26, 1979
(d) Memo, T.D. Keenan to BWR Owners Group, dated September 27, 1979

Dear Sir:

Subject: Long-Term Questions for B&O Task Force

In accordance with the requirements of reference (b), as clarified by references (c) and (d), our responses to these questions are attached.

As noted our work continues per requirements of NUREG-0578.

We trust that this information is satisfactory, however should you have any further questions, please contact Mr. B.C. Slifer of this office.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORP.

R. H. Groce
Senior Engineer
Licensing

HCS/kaf

Attachment

1401 293

7911280

283
13

p

PLANT Vermont Yankee UNIT(S) --

BYPASS CAPACITY

Plant Steam Bypass Capacity, % Rated 105

1401 294

CS
12/18

PLANT Vermont Yankee

SYSTEMS AND COMPONENTS SHARED BETWEEN UNITS

PAGE CONTINUED PAGE

Single-unit plant check here ☒ and do not complete

System or Component

Shared Between
Units Numbers

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POOR ORIGINAL

PLANT Vermont Yankee UNIT(S) ---

PLANT-SPECIFIC SYSTEM INFORMATION

System	General		Water Sources		Instrumentation and Control		Frequency of System and Component Tests	
	Safety Classification	Seismic Category	Safety Classification	Seismic Category	Safety Classif.	Seismic Category	System	Component
1. RCIC	2	1	2	1	Yes	1	Refueling	Monthly
2. Isolation Condenser	Not Applicable							
3. HPCS	Not Applicable							
4. HPCI	2	1	2	1	Yes	1	Refueling	Monthly
5. LPCS	2	1	2	1	Yes	1	Refueling	Monthly
6. LPCI	2	1	2	1	Yes	1	Refueling	Monthly
7. ADS	1(Disch 3)	1	NA	NA	Yes	1	Refueling	
8. SRV	1(Disch 3)	1	NA	NA	NA	NA	Half each refueling	
9. RIHR (including shutdown cooling, steam condensing, suppression pool cooling, containment spray modes)	2	1	2	1	Yes		3 months	Monthly
10. SSW	3	1	3	1	Yes		6 months	
11. RBCCW	Non Safety Class	1	NA	no	non-safety	None	--	
12. CRDS	2	1	Non-Safety	1	Yes		Weekly	
13. CSI (past)	Non Safety Class	1	2	1	Yes	1	Each Refueling	
14. Main Feedwater	Non Safety Class	1	Non-Safety	No	Non-Safety		--	
15. Recirculation Pump/Motor Cooling	Non Safety	1	NA	NA	Non-Safety	None	--	

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PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 1 CONTINUED ON PAGE 2

Prim. Cont. Penetration Number	Line Size, In.	System	Is System an Engineered Safety Function	Figure	Process Fluid	Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Isolation Valves										Comments
											Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, sec.	Power Source	Position Indication in Control Room	Positions					
																Normal	Shutdown	Post Accident	Power Failure		
7a-d	18	Main Steam	No	5	S	2-80A-D	B,C,D,P,AA	I	GB	AO	A	RM	3	A	D	O	O	C	C		
	18	Main Steam	No	5	S	2-86A-D	B,C,D,P,AA	O	GB	AO	A	RM	3	A	D	O	O	C	C		
8	3	Main Steam Drain	No	5	S/W	2-74	"	I	GT	MO	A	RM	15	AC	D	C	C	C	AI		
8	3	Main Steam Drain	No	5	S/W	2-77	"	O	GT	MO	A	RM	15	DC	D	C	C	C	AI		
9A, B	16	Feedwater	No	5	W	2-28A,B	--	I	CK	--	RF	--	--	P	N	O	C	C	C		
9A, B	16	Feedwater	No	5	W	2-27A,B	--	O	CK	--	RF	--	--	P	N	O	C	C	C		
9B	4	RWCU-Return	No	15	W	12-68	A,Other	O	GB	MO	RM	A	45	AC	D	O	O	C	AI		
9B	4	RWCU-Return	No	15	W	12-62	"	O	CK	--	RF	--	--	P	N	O	O	C	C		
41	3/4	Sample	No	4	W	2-39	B,C,D,P	I	SV	SO	A	RM	5	S	I	O	O	C	C		
41	3/4	Sample	No	4	W	2-40	AA	O	SV	SO	A	RM	5	S	I	O	O	C	C		
36	2 1/2	CRD Return-Former	Cut and capped outside containment. Cut from vessel and capped.													O	O	C	C		
38A-D	3/4	CRD with draw	No	8	W	13-121,122	--	O	SV	SO	RM	--	--	S	N	C	C	C	C		
38A-D	3/4	CRD exhaust-SCRAM	No	8	W	13-127	--	O	GB	AO	A	RM	--	S	D	C	C	C	O		
37A-D	3/4	CRD insert	No	8	W	13-125,120	--	O	SV	SO	RM	--	--	S	N	C	C	C	C		
37A-D	3/4	CRD in - SCRAM	No	8	W	13-126	--	O	GB	AO	A	RM	--	S	D	C	C	C	O		
12	20	RHR S/D Cooling Sup	Yes	10	W	10-17	F,A,U	O	GT	MO	A	RM	28	DC	D	C	O	O	AI		
12	20	RHR S/D Cooling Sup	Yes	10	W	10-18	F, A, U	I	GT	MO	A	RM	28	AC	D	C	O	O	AI		
211 A&B	4	Sup. Spray	Yes	10	W	10-8A & B	G, S	O	GB	MO	A	RM	45	AC	D	C	C	O	AI		
39 A&B	12	RHR-Cont. Spray	Yes	10	W	10-31 A&B	G, S	O	GT	MO	A	RM	70	AC	D	C	C	O	AI		
39 A&B	12	RHR-Cont. Spray	Yes	10	W	10-26 A&B	G, S	O	GT	MO	A	RM	70	AC	D	C	C	O	AI		
39 B	4	RHR to Radwaste	NO	10	W	10-57	F, A	O	GT	MO	RM	A	25	DC	D	O	O	C	AI		
39B	4	RHR to Radwaste	No	10	W	10-66	F, A	O	GT	MO	RM	A	25	AC	D	O	O	C	AI		
17	4	RHR Head Spray	No	10	W	10-33	F, A, U	O	GT	MO	A	RM	25	AC	D	C	O	C	AI		
17	4	RHR-Head Spray	No	10	W	10-32	F, A, U	I	GT	MO	A	RM	25	AC	D	C	O	C	AI		
210 A&B	12	RHR Test to Supp Pool	Yes	10	W	10-34 A&B	G, S	O	GB	MO	A	RM	120	AC	D	C	C	C	AI		
210 A&B	12	RHR-Supp Pool	Yes	10	W	10-39 A&B	G, S	O	CT	MO	A	RM	70	DC	D	C	C	C	AI		
210 A&B	8	Core Spray Test	Yes	6	W	14-26 A&B	--	O	GB	MO	RM	--	--	AC	D	C	C	C	AI		
211 A&B	12	RHR-Supp Pool	Yes	10	W	10-39 A&B	G, S	O	GT	MO	A	RM	70	DC	D	C	C	C	AI		
13 A&B	24	LPCI to Reactor	Yes	10	W	V1025 A&B	H	O	GT	MO	RM	A		AC	D	O	O	O	AI		

POOR ORIGINAL

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 2 CONTINUED ON PAGE 3

Prim. Cont. Penetration Number	Line Size, In.	System	Is System an Engineered Safety Function	Figure	Process Fluid	Isolation Valves														Comments
						Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, sec.	Power Source	Position Indication in Control Room	Positions				
																Normal	Shutdown	Post Accident	Power Failure	
13 A&B	24	LPCI to Reactor	Yes	10	W	V1027 A&B	H	O	GB	MO	RM	A		AC	D	C	C	O	AI	Testable Check Valve
13 A&B	24	LPCI to Reactor	Yes	10	W	V1046 A&B	--	I	CK	--	--	--		P	D	C	C	O	C	
13 B	4	RHR To Radwaste	No	10	W	V10-57	F, A	O	GT	MO	RM	A	25	DC	D	O	O	C	AI	
13 B	4	RHR to Radwaste	No	10	W	V10-66	F, A	O	GT	MO	RM	A	25	AC	D	O	O	C	AI	
224	20	RHR from Supp.	Yes	10	W	10-13 AD	--	O	GT	MO	RM	--	--	AC	D	O	O	O	AI	
218	18	Supp Ch Exhaust	Yes	12	A	SB16-19-7B	F, A, Z	O	B		RM	A	10	AO	D	C	C	C	C	
218	3	Sup Ch Exh Bypass	Yes	12	A	SB16-19-6B	F, A, Z	O	B		PM	A	10	AO	D	C	C	C	C	
218	1	CAD air to SGT	Yes	17	A	VG 9B	F, A, Z	O	SV	SO	RM	A		AC	D	C	C	C	C	
218	1	CAD air to SGT	Yes	17	A	VG-22B	F, A, Z	O	GB	MO	RM	A		AC	D	C	C	C	C	
147	1	Air to PC A/C	No	3	A	V7296A	F, A, Z	O	SV	SO	A	RM	20	AC	D	O	O	C	C	
147	1	Air to PC A/C	No	3	A	V7296B	F, A, Z	O	SV	SO	A	RM	20	AC	D	O	O	C	C	
50A	3/4	Cont. Air Sample-Supp	No	4	A	V10975B-1,2	F, A, Z	O	SV	SO	RM	A	5	AC	D	O	O	C	C	
50B	3/4	Cont. Air Sample-Supp	No	4	A	V10975C-1,2	F, A, Z	O	SV	SO	RM	A	5	AC	D	O	O	C	C	
50C	3/4	Cont. Air Sample-Supp	No	4	A	V10975D-1,2	F, A, Z	O	SV	SO	RM	A	5	AC	D	O	O	C	C	
50A-C 220	3/4	CAD & RAD MON	No	4,17	A	VG23, 26	--	O	SV	SO	RM	A	--	AC	D	C	C	O	C	
220	3/4	Cont. Air Sample-Sect	No	4	A	V10975A 1,2	F, A, Z	O	SV	SO	RM	A	5	AC	D	O	O	C	C	
220	3/4	Cont. Air Sample-Sect	No	4	A	V10975A 3,4	F, A, Z	O	SV	SO	RM	A	5	AC	D	O	O	C	C	
209A		PT-16-19-36	Yes	12	A	AC100	--	O	GT	--	--	--	--	H	N	O	O	O	AI	
209D	1	CAD Return	Yes	17	A	VG-24, 25	--	O	SV	SO	RM	A	--	AC	D	O	O	O	C	
209D	1	CAD Return	Yes	8	A	VG-33, 34	--	O	SV	SO	RM	A	--	AC	D	O	O	O	C	
27A,B	1	Core Plate d/p	No	16	W	2-24, 26	--	O	GB	--	--	--	--	H	N	O	O	O	AI	
27C, D	1	Core Spray Flow	Yes	6	W	14-840 A&B		O	GB	--	--	--	--	H	N	O	O	O	AI	
27C, D	1	Core Spray Flow	Yes	6	W	S231 A&B														
27E, F	3/4	HPCI Flow Inst	Yes	7	S	23-35A, B		O	GB	--	--	--	--	H	N	O	O	O	AI	
27E, F	3/4	HPCI Flow Inst	Yes	7	S	SL37A, B														
42	1 1/2	Standby Liquid Cont	Yes	9	W	V11-16	--	O	CK	--	RF	--	--	P	N	C	C	C	C	
42	1 1/2	Standby Liquid Cont.	Yes	9	W	V11-17	--	I	CK	--	RF	--	--	P	N	C	C	C	C	
14	4	Reactor Water Clean	Yes	15	W	V12-15	A,Others	I	GT	MO	RM	A	25	AC	D	O	O	C	AI	Closes on high temp for leak detection

Up-S

Up-S

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PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 3 CONTINUED ON PAGE 4

Prim. Cont. Penetration Number	Line Size, In.	System	Is System an Engineered Safety Function	Figure	Process Fluid	Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Isolation Valves										Comments
											Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, sec.	Power Source	Position Indication in Control Room	Positions					
																Normal	Shutdown	Post Accident	Power Failure		
14	4	Reactor Water Clean Up-S	Yes	15	W	V12-18	A, Others	O	GT	MO	RM	A	25	DC	D	O	O	C	AI		
10	3	RCIC Steam Supp	Yes	11	S	V13-15	K	I	GT	MO	A	RM	20	AC	D	O	O	O	AI		
10	3	RCIC Steam Supp	Yes	11	S	V13-16	K	O	GT	MO	A	RM	20	DC	D	O	O	O	AI		
212	8	RCIC p. disch	Yes	11	S	V13-20	--	O	GT	--	RM	--	--	DC	D	O	O	O	C		
212	8	RCIC P. disch	Yes	11	S	V13-21	--	O	GT	--	RM	--	--	DC	D	C	C	O	C		
223	2	Cond vac disch to sup	Yes	11	S	V13-SSC-10	--	--	SCV	--	RF	--	--	P	N	C	C	O	C		
227	6	RCIC Sect fm Supp	Yes	11	W	V13-41	--	O	GT	MO	RM	--	--	DC	D	C	C	C	AI		
227	6	RCIC Sect fm sup	Yes	11	W	V13-39	--	O	GT	MO	RM	--	--	DC	D	C	C	C	AI		
16 A&B	8	Core Spray to Reactor	Yes	6	W	V14-11 A&B	--	O	GT	MO	A	RM	--	AC	D	O	O	O	AI		
16 A&B	8	Core Spray to Reactor	Yes	6	W	V14-12 A&B	--	O	GT	MO	A	RM	--	AC	D	C	C	O	AI		
16 A&B	8	Core Spray to Reactor	Yes	6	W	V14-14 A&B	--	I	GT	MO	RF	--	--	P	D	O	O	O	C		
226	12	Core Spray Suction	Yes	6	W	V14-7A,B	--	O	GT	MO	RM	--	--	AC	D	O	O	O	AI		
19	3	Drywell Equ Dr.	No	14	W	V20-94	A, F	O	GT	AO	A	RM	20	A	D	C	C	C	C		
19	3	Drywell Equ Dr.	No	14	W	V20-95	A, F	O	GT	AO	A	RM	20	A	D	C	C	C	C		
18	3	Drywell Floor Dr	No	14	W	V20-82	A, F	O	GT	AO	A	RM	20	A	D	C	C	C	C		
18	3	Drywell Floor Dr	No	14	W	V20-83	A, F	O	GT	AO	A	RM	20	A	D	C	C	C	C		
11	10	HPCI Steam Sup	Yes	7	S	V23-15	L1	I	GT	MO	A	RM	17	AC	D	O	O	O	AI		
11	10	HPCI Steam Sup	Yes	7	S	V23-16	L1	O	GT	MO	A	RM	17	DC	D	O	O	O	AI		
221	18	HPCI Exhaust	Yes	7	S	V23-65	--	O	CK	--	RF	--	--	P	N	C	C	O	C		
221	18	HPCI Exhaust	Yes	7	S	V23-12	--	O	SCV	--	RF	--	--	P	N	C	C	O	C		
225	16	HPCI Suction	Yes	7	W	V23-58	--	O	GT	MO	RM	A	--	DC	D	C	C	O	AI		
35	.280	TIP Tube	No	--	TIP	--	--	O	XV	--	RM	--	NA	DC	D	O	O	O	AI		
35	.280	TIP Tube	No	--	TIP	--	F	O	BL	SO	F	RM	NA	AC	D	O	C	C			
30 A-D	1	Instrument Sensing	Yes	5	W	V2-72-A-H	--	O	GB	hand	--	--	--	H	N	O	O	O	AI		
30 E,F	1	Recirc press	No	5	W	V2-304 A&B SL305A,B	O	C-8	--	--	--	--	--	H	N	O	O	O	AI	Excess flow check	
34 A-D	1	Steam Flow Meas.	Yes	5	W	V2-54-73A-H	--	O	CK	flow	--	--	--	P	N	O	O	O	AI	Excess flow check	
34 E,F	1	Recirc d/p A, B	No	5	W	V2-98 A&B SL97A&B	O	C-8	--	--	--	--	--	H	N	O	O	O	AI	Excess flow check	
21	2	Ser Air to DW	No	3	A	V72-33	--	O	GB	hand	--	--	--	H	N	C	C	C	AI	changed?	

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PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

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Prim. Cont. Penetration Number	Line Size, In.	System	Is System an Engineered Safety Function	Figure	Process Fluid	Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Isolation Valves										Comments
											Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, sec.	Power Source	Position Indication in Control Room	Positions					
																Normal	Shutdown	Post Accident	Power Failure		
21	2	Ser Air to DW	No	3	A	V72-37A	--	O	CK	--	RF	--	--	P	N	C	C	C	C	Changed?	
22	2	Inst Air to DW	No	3	A	V72-39C	--	O	CK	--	RF	--	--	P	N	O	O	O	C		
22	2	Inst. Air to DW	No	3	A	V72-90D	--	O	GB	--	--	--	--	H	N	O	O	O	AI		
23	8	RBCCW in	No	14	W	V70-113	--	O	CK	--	RF	--	--	P	N	O	O	C	C		
24	8	RBCCW out	No	14	W	V70-117	--	O	GB	MO	RM	--	--	AC	D	O	O	C	AI		
48	1 1/2	Service water	No	13	W	--	--	O/I	CK/CB/CAP		Capped hose connection with stop valve.										
205	20	Vac Brkr sec cont to sup	Yes	12	A	SB-16-19-11A&B	--	O	B	--	A	RM		D	D	C	C	C	AI		
205	20	VacBrkr sec cont to sup	Yes	12	A	SB-16-19-11A&B	--	O	CK	--	RF	--	--	P	N	C	C	C	AI		
205	18	Supp purge Inlet	Yes	12	A	SB-16-19-10 F,A,Z		O	B		RM	A		A	D	C	O	C	C		
205	6	Supp make-up	Yes	12	A	SB-16-19-23 F,A,Z		O	B		RM	A	10	A	D	C	O	C	C		
205	1	Inst Air to supp ch	No	12	A	V16-70-22A F,A,Z		O	SV	SO	RM	A		AC	D	C	C	C	C		
205	1	Inst Air to supp ch	No	12	A	V16-20-20 F,A,Z		O	SV	SO	RM	A		AC	D	O	O	C	C		
205	1	CAD Air to Supp ch	Yes	17	A	NG12A&B F,A,Z		O	SV	SO	RM	A		AC	D	C	C	O	C		
205	1	CAD Air to Supp Ch	Yes	17	A	NG11A&B F,A,Z		O	SV	SO	RM	A		AC	D	C	C	O	C		
25	18	D.W. Purge & vent out	Yes	12	A	SB-16-19-7A F,A,Z		O	B	AO	RM	A	10	AC	D	C	C	C	C		
25	3	D.W. purge vent out by p	Yes	12	A	SB-16-19-6A F,A,Z		O	B	AO	RM	A	10	AC	D	C	C	C	C		
25	1	CAD Exhaust	Yes	17	A	VG 9A F,A,Z		O	SV	SO	A	RM		AC	D	C	C	C	C		
25	1	CAD Exhaust	Yes	17	A	VG22A F,A,Z		O	GB	MO	A	RM		AC	D	C	C	C	C		
25	8	DWSC ex to SCT	No	12	A	SB16-19-6 F,A,Z		O	B	AO	A	RM	10	AC	D	C	C	C	C		
25	18	DWSC ex to RTF-5	No	12	A	SB16-19-7 F,A,Z		O	B	AO	A	RM	10	AC	D	C	C	C	C		
26	18	DW Purge Inlet	Yes	12	A	SB-16-19-8 F,A,Z		O	B	AO	RM	A	10	AC	D	C	C	C	C		
26	18	DW & Sup purge in	Yes	12	A	SB-16-19-9 F,A,Z		O	B	AO	RM	A	10	AC	D	C	C	C	C		
26	1	DW Inst Air In	Yes	12	A	16-20-22B F,A,Z		O	SV	SO	RM	A	NA	AC	D	C	C	C	C		
26	2	DW Inst Air	No	12	A	V16-19-51 --		O	CK	--	RF	--	--	P	--	C	C	C	C		
26	2	DW Inst Air	No	12	A	V16-19-52 --		O	CK	--	RF	--	--	P	--	C	C	C	C		
28A		R Vessel Level Inst	Yes	16	W	2-18A, 29A SL19A, 29A					Gate and excess flow check.										
28B		R Vessel Level Inst	Yes	16	W	2-16A, SL-17A					Gate and excess flow check.										

POOR ORIGINAL

Prm. Cont. Penetration Number	Line Size, In.	System	Is System an Engineered Safety Function	Figure	Process Fluid	Valve Number	Isolation Signal Code(s)	Location	Type	Isolation Valves						Positions				Comments
										Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, sec.	Power Source	Position Indication in Control Room	Normal	Shutdown	Post Accident	Power Failure	
52F	1	RWB open Ind P.S.	Yes	5	S	2-300 F	SL 301 F	Globe	Globe & excess flow check.											
52H	1	RWA open Ind P.S.	Yes	5	S	2-300 H	SL 301 H	Globe	Globe & excess flow check.											
52		PT 1-156-3	No	12	A	AC-1														
52E	1/2	Mercury Man & d/p	No	12	A	AC 50, AC 49	Globes													
206 A, B		LT 16-19-38A torus level	No	12	W	V300 A, B	Gates													
213 A, B		Torus Drains	Yes	12	W	LC-20-400 A, B														
216	1	Cont Air Sample Return	No	4	A	109-76 ASB	F, A, Z	0	SV	SO	RM	A	5	AC	D	C	0	0	C	
217	1/2	Mercury man	No	12	A	AC-25, AC-39	0	CB	0	CB	--	--	--	H	N	0	0	0	AI	

Exclusive to page 7-level page 7

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ABBREVIATIONS

Engineered Safety Function

N = NO
 Y = YES

Position Indication in Control Room

D = Direct
 I = Indirect
 N = None
 Others stated in Table

Fluid

A = Air
 S = Steam
 W = Water
 Others stated in Table

Isolation Valve Location

I = Inside Containment
 O = Outside Containment
 Others stated in Table

Isolation Valve Actuation Mode

A = Automatic
 OP = Overpressure
 RF = Reverse Flow
 RM = Remote Manual
 Others stated in Table

Isolation Valve Positions

AI = As Is
 C = Closed
 O = Open
 Others stated in Table

Isolation Valve Type

B = Butterfly
 BCK = Ball check
 BL = Ball
 CK = Check
 DCV = Diaphragm
 Control Valve
 GB = Globe
 GT = Gate
 RV = Relief
 SCV = Stop Check
 SV = Solenoid
 VB = Vacuum Breaker
 XV = Explosive
 Others stated in Table

Isolation Valve Power Source

A = Air
 AC = AC
 DC = DC
 H = Hand
 P = Process fluid
 Others stated in Table

Isolation Valve Actuator

AO = Air
 MO = Motor
 SO = Solenoid
 Others stated in Table

Isolation Signal Codes (utility supply)

Code or Group	Parameter(s) Sensed for Isolation	Set Point (units)
A	Reactor Vessel Low Level (1st)	127.0 in. above fuel
B	Reactor Vessel Low Level (2)	-44.5 in. (82.5 in. above fuel)
C	High Radiation-Main Steam Line	Greater than 3 times normal level
D	Line Break-Main Steam Line	>212°F
F	High Drywell Pressure	2 psig
G	Reactor Low Water Level or High Dry- well Pressure initiate CS, HPCI, RHR	as listed
K	Line Break in RCIC Steam to Turbine (high Temp. High Flow Low Pressure	>212°F 180 in. H ₂ O 50 psig
L	Line Break in HPCI Steam to Turbine (High Temp. High Flow, Low Pressure	212°F 180 in. H ₂ O 100 psig
P	Low Main Steam Line Pressure at inlet to Main Turbine	850 psig
Z	High Radiation, Reactor Bldg. Ventilation Exhaust	Greater than 14 m/hr
AA	Low Condenser Vacuum	Less than 12" Hg.
U	High Vessel Pressure- Close RHR S/D Cooling	130 psig
S	Valves, Cooling Valves High Drywell Pressure Close Cont. Spray Valves	2.3 psig

1401 303

<u>FIGURE NO.</u>	<u>DRAWING #</u>	<u>TITLE</u>
1	G191159, SH 3	RCW Cooling Water
2	G191159, SH 5	Recirc. Pump Cooling Water
3	G191160, SH 2	Service & Instrument Air
4	G191165	Sampling System, SH 2
5	G191167	Nuclear Boiler
6	G191168	Core Spray
7	G191169, SH 1	HPCI
8	G191170	CRD
9	G191171	SLC
10	G191172	RHR
11	G191174, SH11	RCIC
12	G191175	Primary Containment, PCAC
13	G191176	C&DWT
14	G191177, SH 1	R.W.
15	G191178, SH 1	RWCU
16	G191267	Nuclear Boiler Instrumentation
17	VY-E-75-002-3	CAD System

1401 304

1966, 1/1/70

DESIGN REQUIREMENTS FOR CONTAINMENT ISOLATION BARRIERS

Question: Discuss the extent to which the quality standards and seismic design classification of the containment isolation provisions follow the recommendations of Regulatory Guides 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Water-Containing Components of Nuclear Power Plants", and 1.29, "Seismic Design Classification".

Response: The containment isolation system was designed to withstand a certain design basis earthquake. This is described in detail in the VY FSAR Volume IV, Appendix A and C. Tests that were done to verify the operability of components under earthquake conditions are also described in Appendix C.

The Quality Assurance Program followed is described in detail in Appendix D to the FSAR.

1401 305

104 up/br

CODES, STANDARDS, AND GUIDES

Question: Identify the codes, standards, and guides applied in the design of the containment isolation system and system components.

Response: The Drywell, Wetwell and attached piping were built to ASME Section III Class B standards, including code cases 1177 and 1330. Details of Penetration Design are given in General Electric Specification 22A1385, Rev. 1.

Electrical components were designed to meet IEEE Standard 279. Design bases are further described in Section 7.3.3 of the FSAR.

1401 306

NORMAL OPERATING MODES AND ISOLATION MODES

Question: Discuss the normal operating modes and containment isolation provision and procedures for lines that transfer potentially radioactive fluids out of the containment.

Response: This question has essentially been answered by the response to I&E Bulletin 79-08, in letters B.4.2.1 of April 27, 1979 and B.4.1.1 of August 9, 1979.

In summary, all systems except Emergency Core Cooling Systems and Main Steam Isolation Valves and Drains, and the sample line, isolate automatically on either low reactor vessel water level, or high drywell pressure. The MSIVs, drains, and sample line isolate on a low-low water level in the reactor vessel. All systems taking water or gasses out of the containment isolate on various other functions, as detailed in the table.

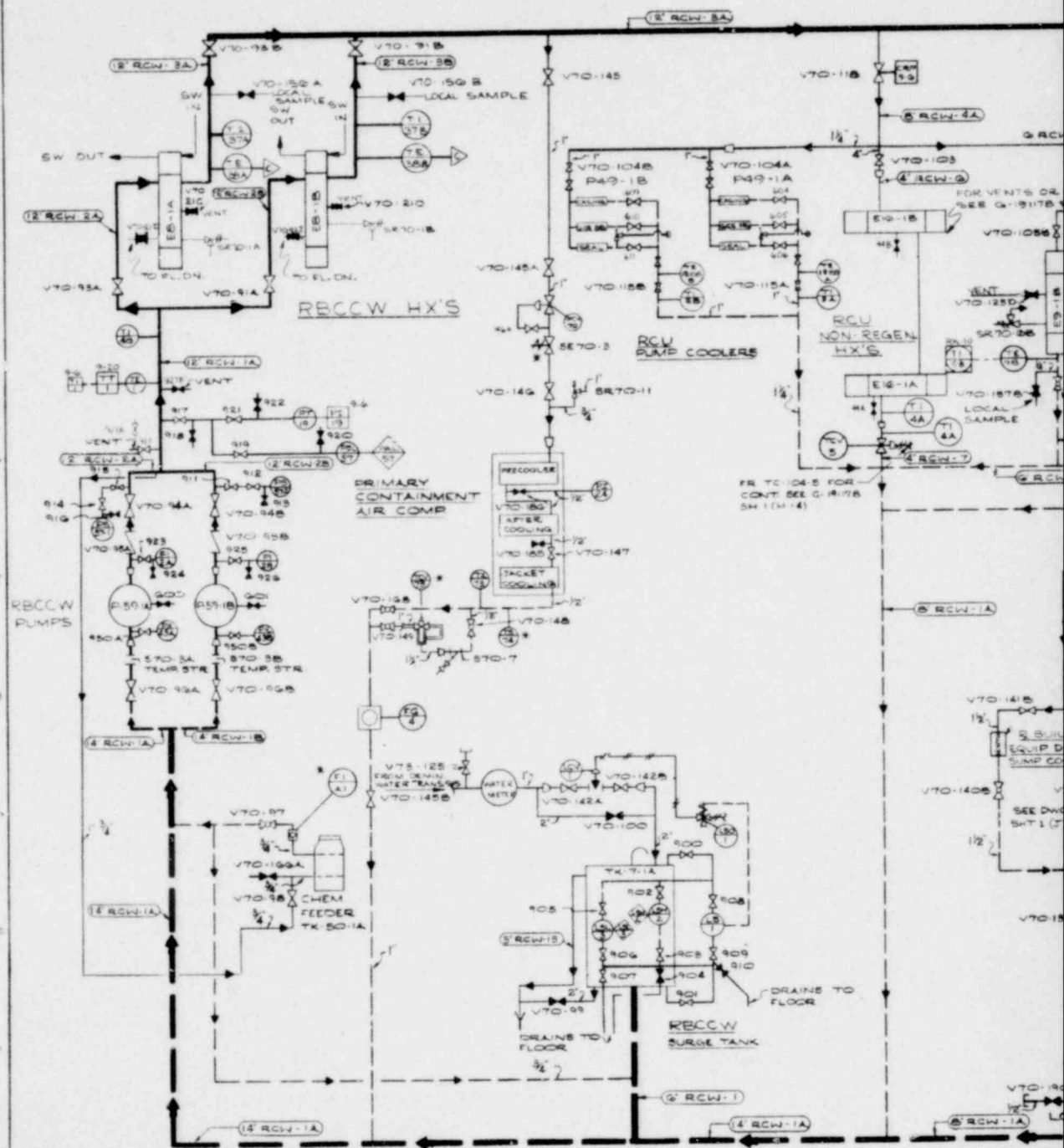
The Emergency Core Cooling Systems may transfer water out of the containment and back in again. Any leakage of water from these systems would be collected by Reactor Building equipment and floor drain sumps and transferred to the Radwaste Building via the Equipment and Floor Drain System. The Radwaste Building ventilation exhaust is monitored. Radwaste areas are monitored for high radiation. Reactor Building air exhaust is monitored. In a post-accident situation Reactor Building Exhaust would be via the standby Gas Treatment System, which processes the air and is monitored.

The remaining systems that transfer radioactivity from the containment are the RHR drain and Containment Atmosphere Dilution System. They discharge via Radwaste and Standby Gas Treatment, respectively.

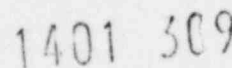
Upon reset of Containment Isolation signal, valves can automatically reopen. This will be modified under steps to implement NUREG-0578. The entire containment isolation design will be reviewed also. Until the design is changed, Operating Procedures have been changed to require monitoring of Radiation Monitoring Systems before and after reset of Containment Isolation Signals.

A lengthy description is given in the VY FSAR Section 7.3.

POOR ORIGINAL



1401 308



FLOW DIAG - SAMPLING SYS - SH 2	Q-191125
FLOW DIAG - CHIC WTR & MISC SYS	Q-191126
FLOW DIAG - FIRE PROTECTION SYS	Q-191128
VALVE RISING PLAN - SH 1	Q-191280
FIRE WATER RISING PLAN	Q-191129
REACTOR BUILDING SERVICE & COOLING WATER RISING PLANS	Q-191134
TURBINE & LONG SERVICE & COOLING WATER RISING PLANS	Q-191135
RISING & INSTRUMENT SYMBOLS	Q-191136
VALVE & SPECIALTY LIST	Q-191137
LIST OF DRAININGS	A-191138

POOR ORIGINAL

TESTA, ABBOTT & DICKSON, INC
MANCHESTER, NH

VERMONT YANKEE NUCLEAR POWER CORP
VERMONT YANKEE NUCLEAR POWER STATION

VERNON, VT

VERNON, VT

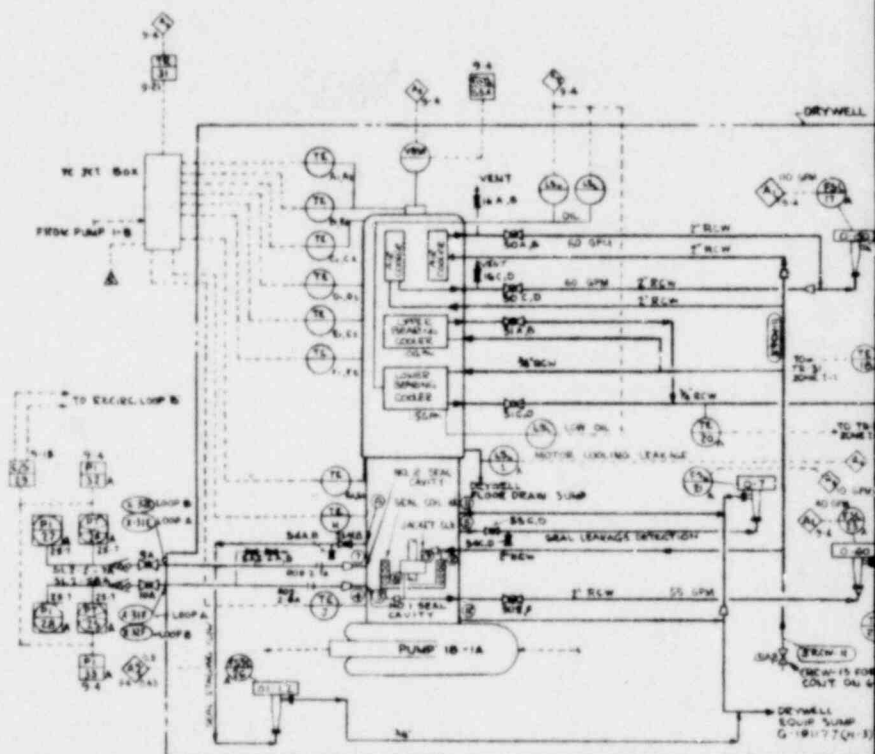
FLOW DIAGRAM
RCW
COOLING WATER SYSTEM
SHE-3

3	GEN UPDATE	DATE	7/28	BY	WJW	CHK	WJW
DATE	DESCRIPTION	BY	DATE	CHK	DATE	CHK	DATE
2	2/4/77 FIELD CHANGES	WJW	2/4	WJW	2/4	WJW	2/4
1	4/4/76 FIELD CHANGES & GENERAL UPDATE	WJW	4/4	WJW	4/4	WJW	4/4
NO	DATE	REVISION	BY	CHK	DATE	CHK	DATE

Dwg No. G-191159 REDRAWN 1974

G-191159
SHEET 5

POOR ORIGINAL



1401 310

POOR ORIGINAL

FLOW DIAGRAM - RECIRCULATION PUMP COOLING WATER

- NOTES:
- SEE REF DWG G-19157 NUCLEAR BOILER FLOW DIAGRAM
 - EQUIPMENT, VALVES AND INSTRUMENTS FOR PUMPS ARE TO BE PREFIXED WITH THE LETTER 'B' SALES AS SHOWN
 - ALL RECIRCULATION PUMPS INSTRUMENTS ARE TO BE PREFIXED WITH SYSTEM NO 2-2. ALL RECIRCULATION VALVES ARE PREFIXED BY PLANT DESIGNATION - RSN
 - PRESSURE INSTRUMENTS IMPULSE PIPING FOR RECIRC PUMP IS WILL EXIT PRIMARY CONTAINMENT THROUGH PENETRATIONS 7-32E & 7-32F
 - THERMOCOUPLES A THRU J, K, TO (22) TO BE WHEED OUT THROUGH DRYWELL TO THE JUNCTION BOX
 - WHERE THERMOCOUPLES ARE DESIGNATED TE(M), AS ETC, TE(M) IS A SPARE ELEMENT
 - FOR INSTRUMENTS WITHOUT RACK NUMBERS SEE INSTRUMENTATION INSTALLATION DETAILS FOR MOUNTING
 - FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT LIST B-191260
 - ALL RECIRCULATION PUMP COOLING VALVES ARE PREFIXED RCV
 - RACK 25-7 LOCATED AT RHR 5W & PUMP ROOM

LIST OF PUMP & MOTOR THERMOCOUPLES

TE/A1 - THRUST BEARING UPPER FACE
 TE/B1 - THRUST BEARING LOWER FACE
 TE/C1 - UPPER GUIDE BEARING
 TE/D1 - MOTOR WINDING W
 TE/E1 - MOTOR WINDING R
 TE/F1 - MOTOR WINDING C
 TE/G1 - LOWER GUIDE BEARING
 TE/H1 - NO 1 SEAL CAVITY
 TE/J1 - NO 1 SEAL CAVITY
 TE/K1 - MOTOR COOLING WATER
 TE/L1 - MOTOR BEARING COOLING WATER
 TE/M1 - SEAL CAVITY COOLING WATER

CONNECTIONS

1" SEAL COOL HEAT EXCHANGER INLET
 1" SEAL COOL HEAT EXCHANGER OUTLET
 1" NO 1 SEAL CAVITY PRESSURE
 1" SEAL LEAKAGE DETECTION - PS-21
 1" SEAL STAGING FLOW - PS-26
 1" NO 2 SEAL CAVITY PRESSURE
 1" JACKET COOLER INLET
 1" JACKET COOLER OUTLET
 1" SEAL LEAKAGE DRAIN
 1/2" SEAL LEAKAGE DRAIN

THERMOCOUPLES REQUIRED

TE/A1 TE/B1
 TE/C1 TE/D1
 TE/E1 TE/F1
 TE/G1 TE/H1
 TE/I1 TE/J1

FLOW INDICATORS

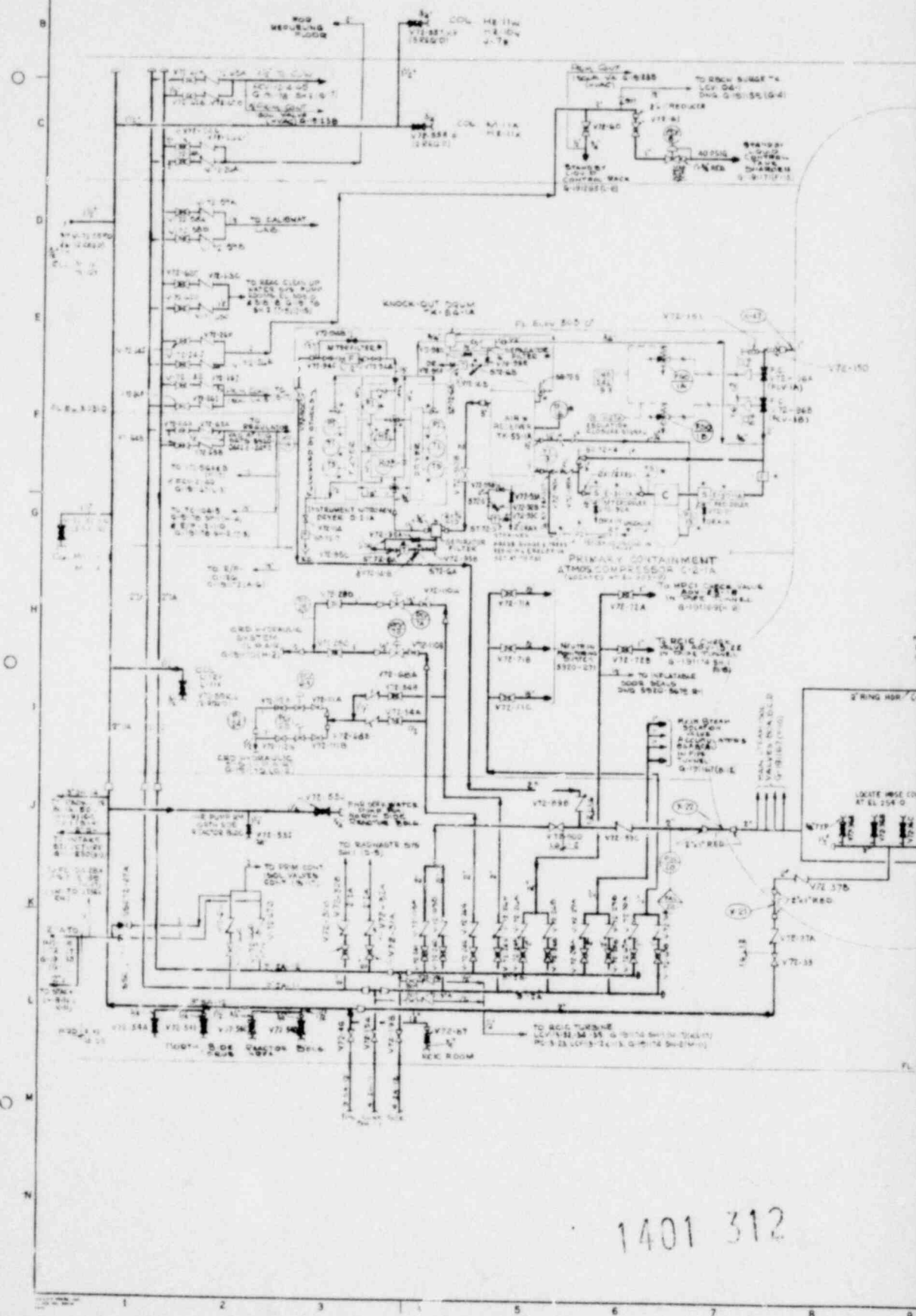
PS-11 - AIR (22) FLOW
 PS-21 - SEAL LEAKAGE DETECTION
 PS-23 - JACKET COOLING & SEAL COOL HEAT EXCHANGER
 PS-26 - SEAL STAGING FLOW

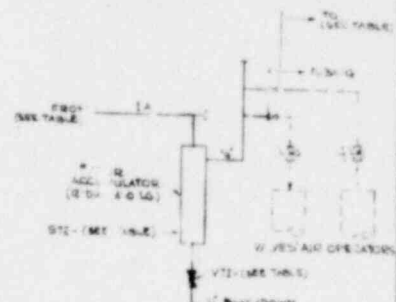
1401 311

1	CORRECTIVE UPDATE	DATE	BY	CHKD	APVD	CDR
REV. NO.	DESCRIPTION	DATE	BY	CHKD	APVD	CDR
YANKEE ATOMIC ELECTRIC COMPANY 20 TURNPIKE ROAD, WESTBORO, MASS 01581 NUCLEAR SERVICES DIVISION VERMONT YANKEE NUCLEAR POWER CORPORATION VERMONT YANKEE NUCLEAR POWER STATION VERMONT, VERMONT FLOW DIAGRAM RECIRCULATING PUMP COOLING WATER						
DESIGNED BY	DATE	CHECKED BY	DATE	INSTR. APPROVED BY	DATE	INSTR.
P.R.	11/11	T.E.L.	11/11	R.P.A.	11/11	11/11
REVISION	DATE	DESCRIPTION	DATE	BY	CHKD	APVD

G-1911e

POOR ORIGINAL





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HOURS 1-24				
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TYPICAL CONNS
OF INST. AIR ACCUMULATORS

POOR ORIGINAL

NOTES:
ON PG 25 OF 27. RESEARCHER'S
RE. DWG. 619. 20. 511 OF 2.

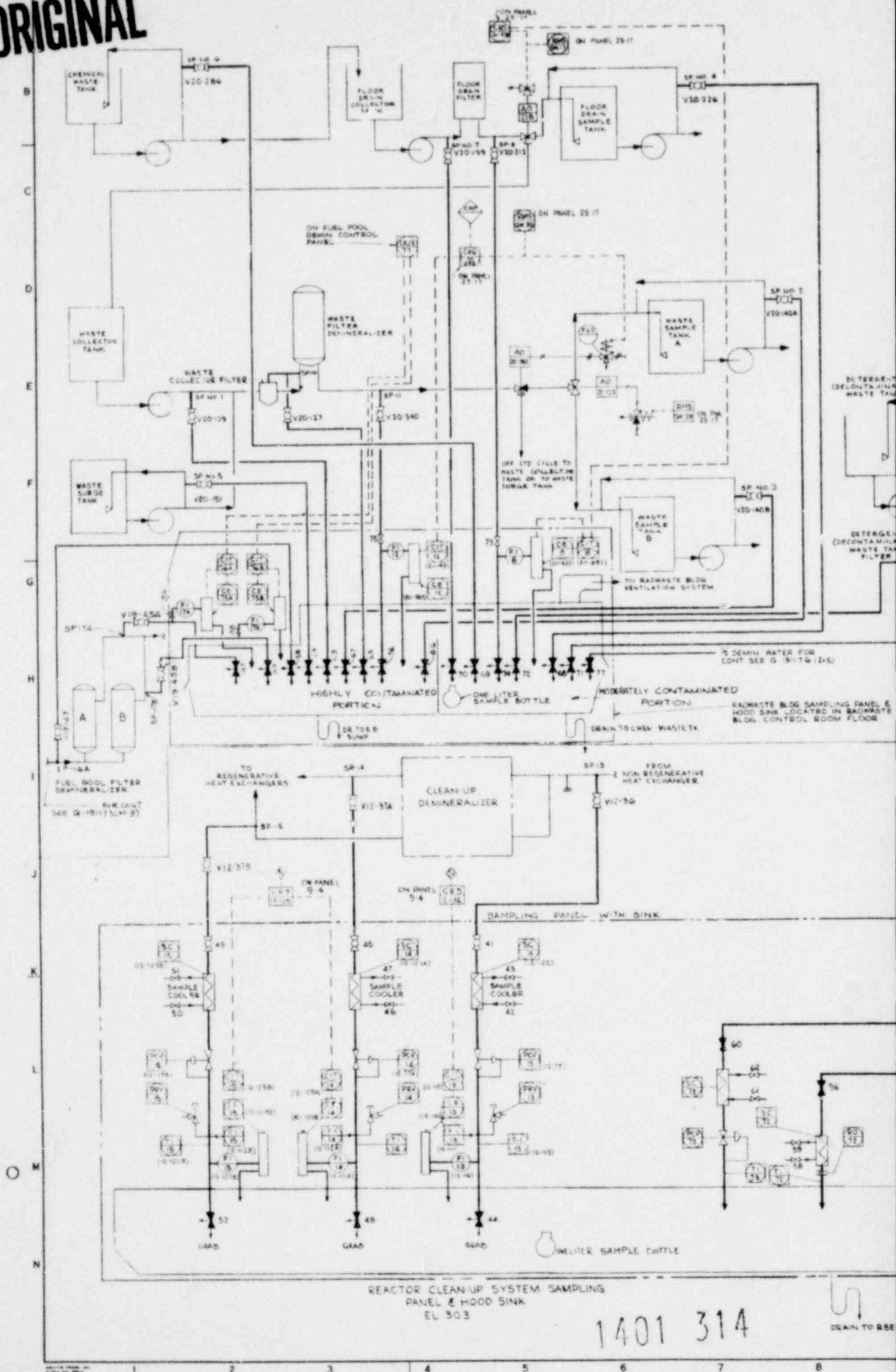
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AS BUILT

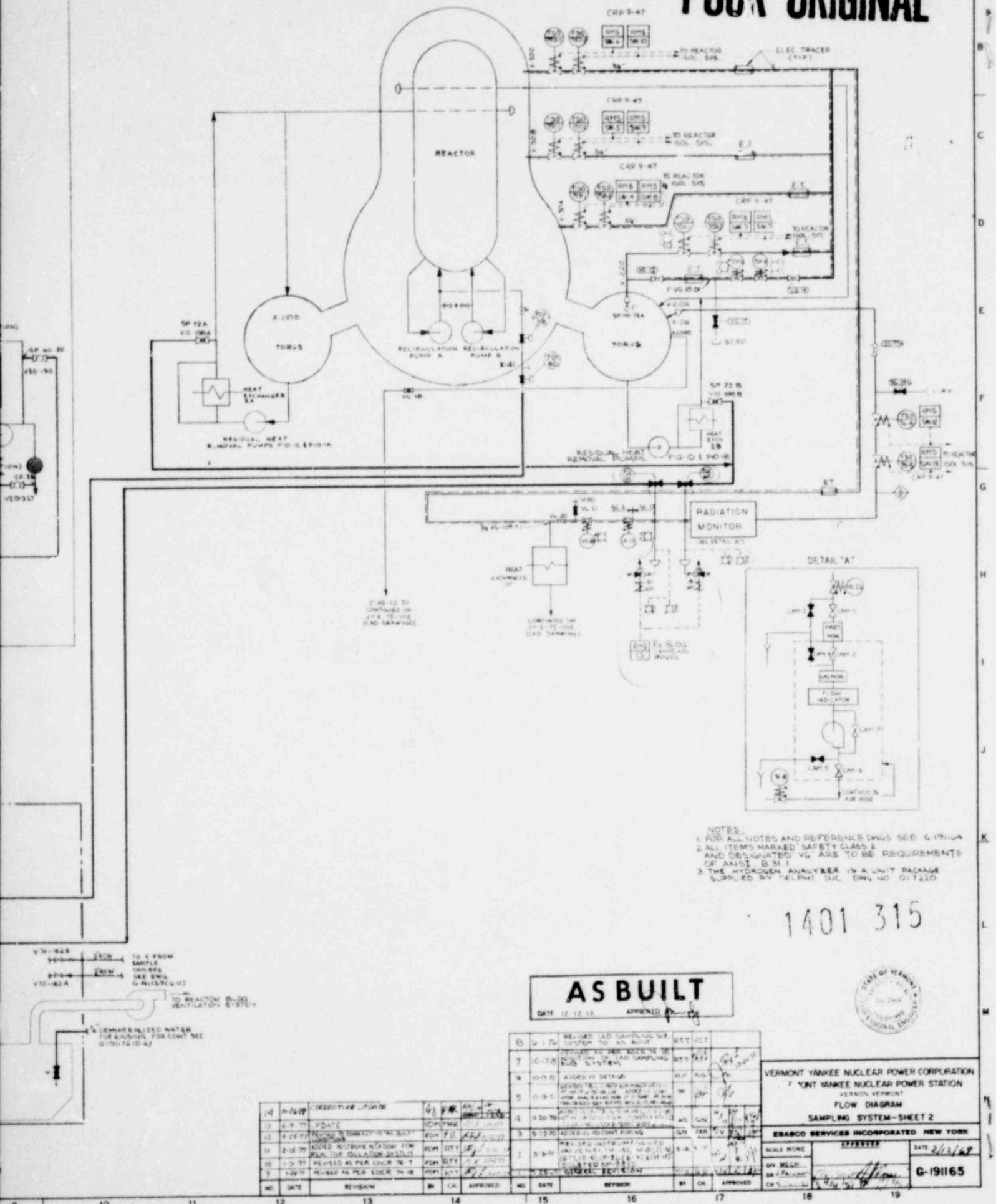
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VERMONT YANKEE NUCLEAR POWER CORPORATION VERMONT YANKEE NUCLEAR POWER STATION VERMONT FLOW DIAGRAM SERVICE & INSTRUMENT AIR SYSTEMS		
EBAECO SERVICES INCORPORATED NEW YORK		
SCALE: NONE	REVISED	DATE: 8-31-64
DRN: JES ENR: JES CA: JES	FILED: 10/1/64	G-191160 SHEET 2 OF 2

POOR ORIGINAL



POOR ORIGINAL



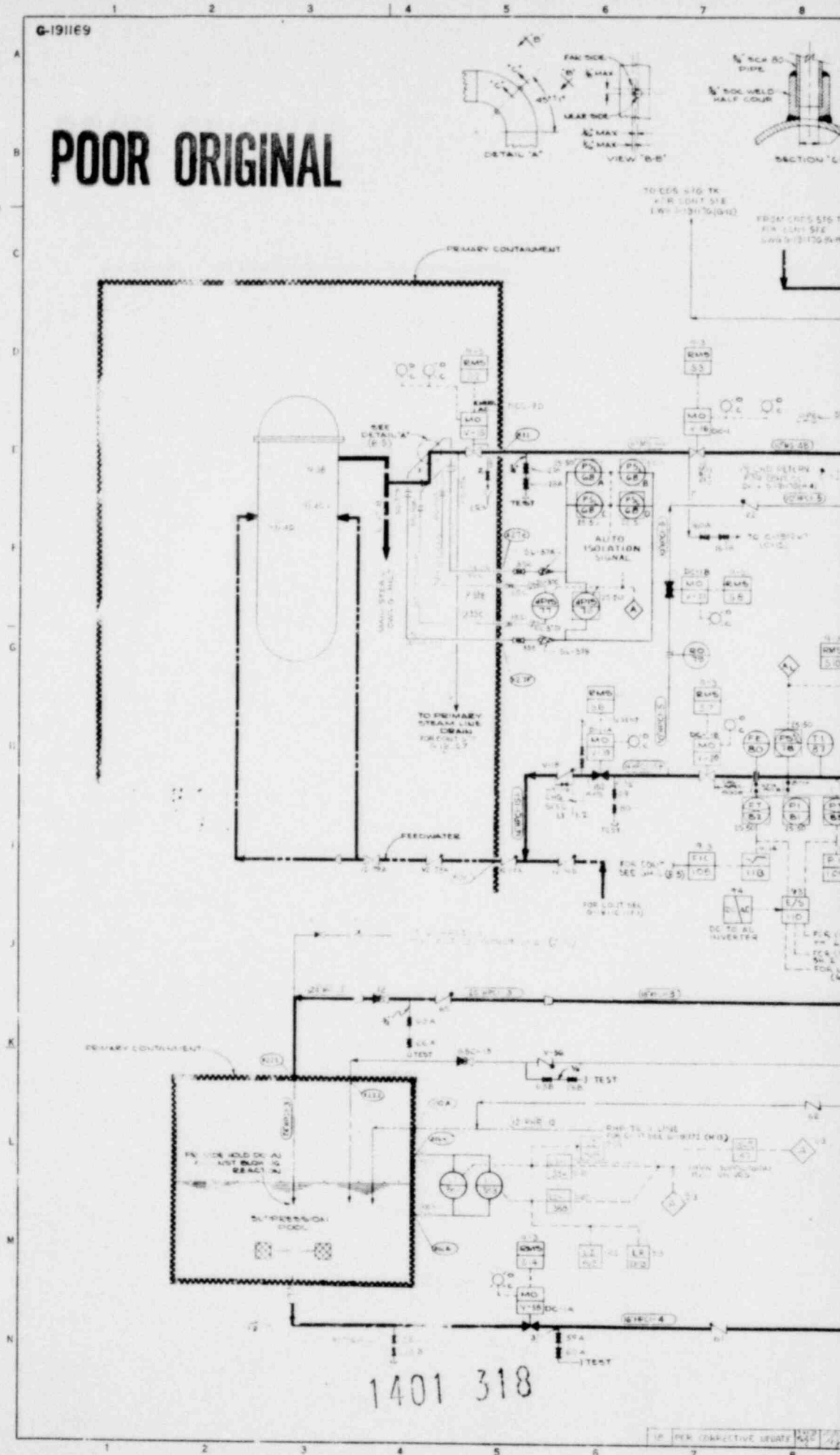
1401 315

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
VERMONT, VERMONT
FLOW DIAGRAM
SAMPLING SYSTEM-SHEET 2

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
VERMONT, VERMONT
FLOW DIAGRAM
SAMPLING SYSTEM-SHEET 2
DATE 2/12/78
G-191165

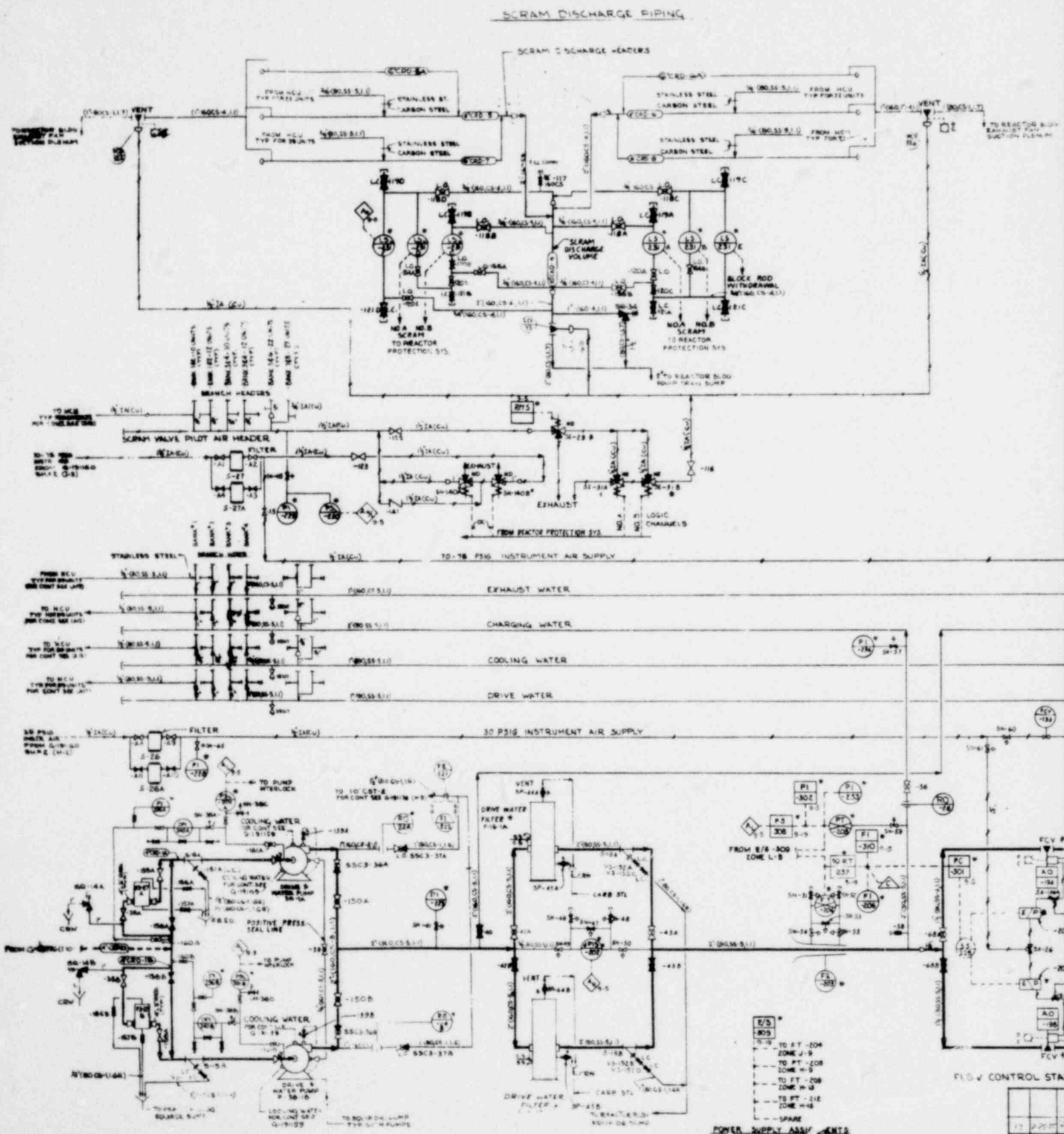
G-191169

POOR ORIGINAL



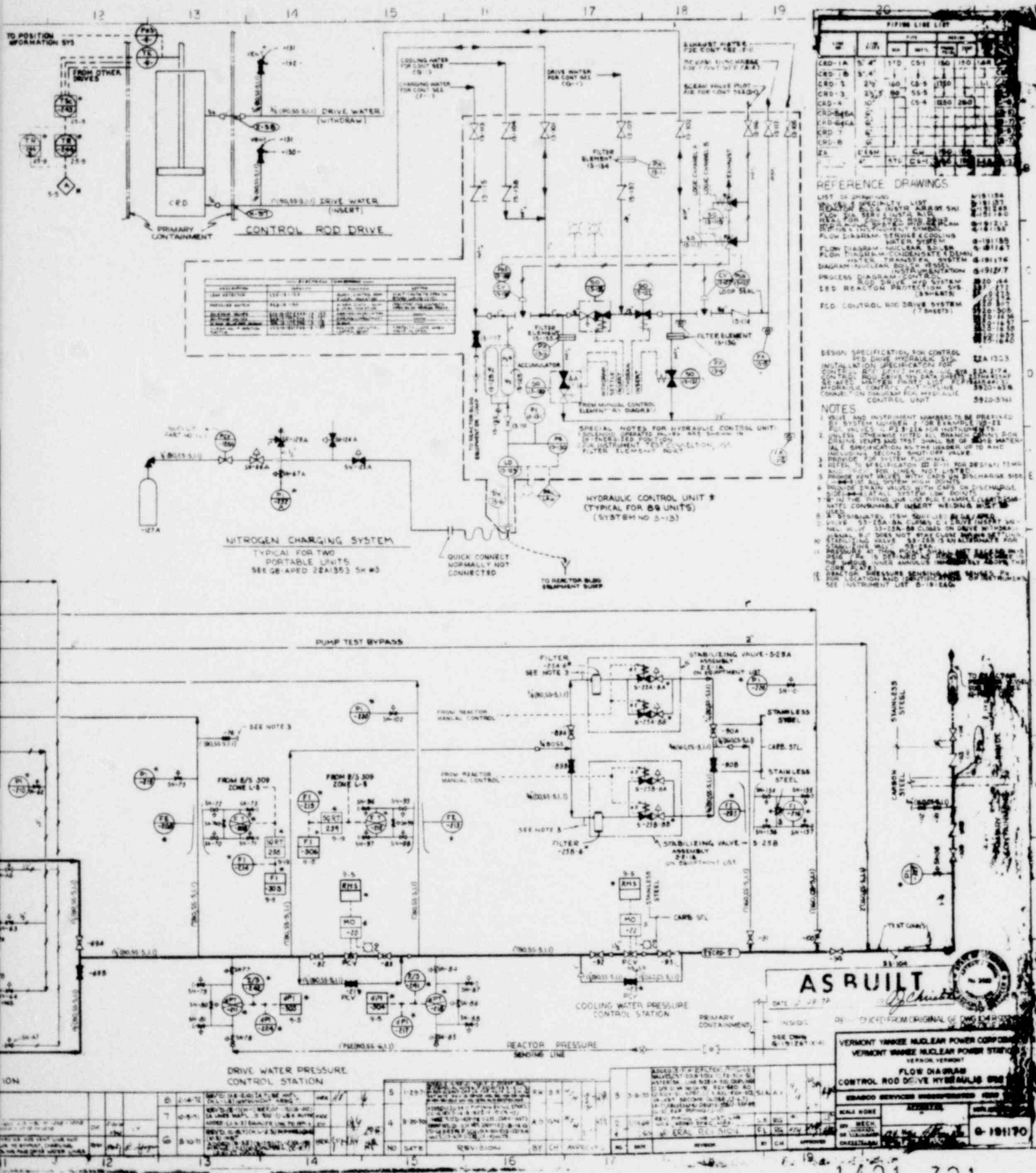
1401 318

POOR ORIGINAL



T401 320

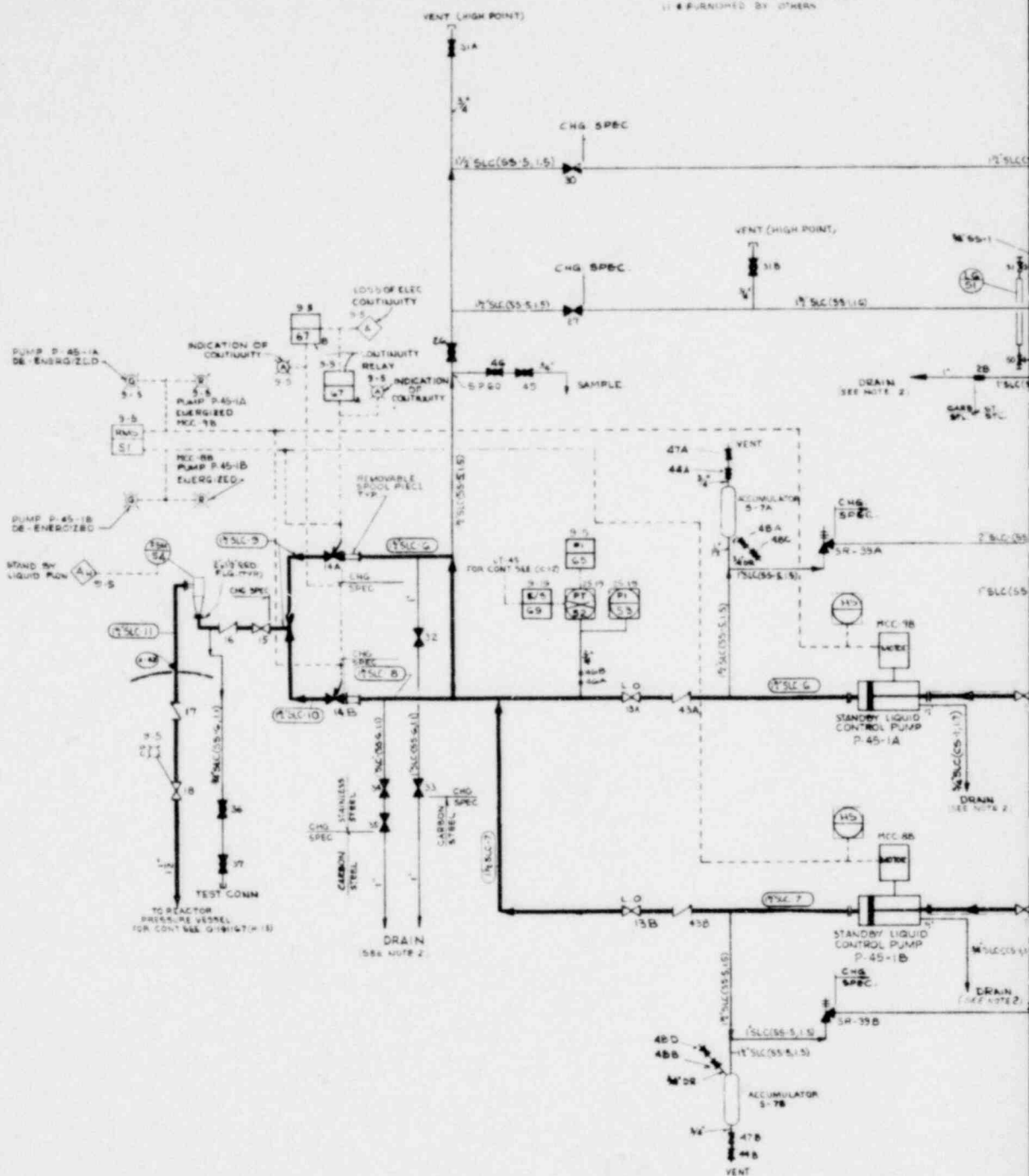
POOR ORIGINAL

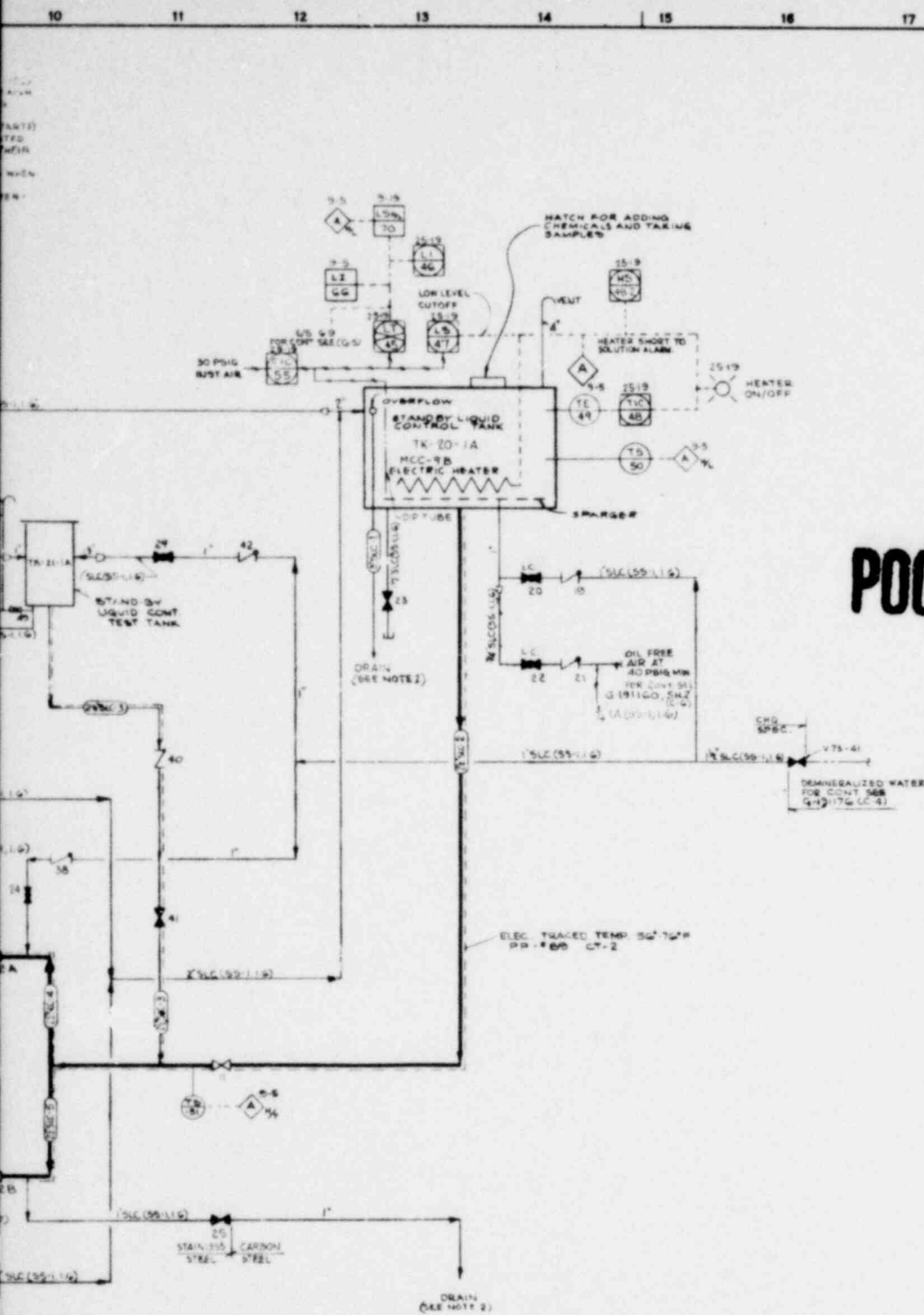


1401 321

POOR ORIGINAL

6. A LOW CURRENT MONITORING SYSTEM (CONTINUITY RELAY) IS VISIBLE PILOT LIGHT INDICATOR OF DIRECT CONTINUITY FOR BOTH PUMPING SYSTEMS IN EACH VALVE AND ASSURES FIRM PERFORMANCE. SEE SPEC 5920-40.
7. SYSTEM IS ENERGIZED (SHEAR PLUGS ARE USED) PUMP BY ACTIVATION OF SWITCH IN THE CONTROL ROOM. LOCAL MANUAL SWITCHES ARE FOR TEST PURPOSES AND ENERGIZE RESPECTIVE PUMPS ONLY.
8. CLEAN-UP SYSTEM IS INTERLOCKED TO PREVENT OPERATION STAND BY LINES - SYSTEM IS ACTIVATED.
9. FOR INSTRUMENTS WITHOUT DATA NUMBERS SEE INSTRUMENTATION INSTALLATION DETAILS FOR MOUNTING.
10. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT LIST B-191171.
11. * FURNISHED BY OTHERS.





POOR ORIGINAL

PIPING LINE LIST									
LINE NO.	SIZE	VALVE	INSTR.	TEMP.	TYPE	VALVE	INSTR.	TEMP.	TYPE
SUC-1	2"	40S	55-1	150	150	1	1	1	1
SUC-2	2"	40S	55-1	150	150	1	1	1	1
SUC-3	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-4	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-5	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-6	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-7	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-8	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-9	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-10	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-11	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-12	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-13	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-14	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-15	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-16	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-17	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-18	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-19	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-20	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-21	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-22	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-23	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-24	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-25	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-26	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-27	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-28	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-29	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-30	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-31	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-32	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-33	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-34	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-35	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-36	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-37	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-38	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-39	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-40	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-41	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-42	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-43	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-44	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-45	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-46	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-47	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-48	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-49	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-50	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-51	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-52	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-53	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-54	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-55	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-56	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-57	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-58	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-59	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-60	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-61	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-62	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-63	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-64	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-65	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-66	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-67	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-68	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-69	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-70	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-71	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-72	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-73	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-74	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-75	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-76	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-77	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-78	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-79	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-80	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-81	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-82	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-83	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-84	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-85	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-86	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-87	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-88	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-89	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-90	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-91	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-92	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-93	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-94	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-95	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-96	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-97	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-98	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-99	1 1/2"	80	55-5	500	150	1	1	1	1
SUC-100	1 1/2"	80	55-5	500	150	1	1	1	1

NOTES:

1. UNLESS OTHERWISE NOTED ALL VALVES INSTRUMENT NUMBERS SPECIFIED TO BE PREFIXED BY SYSTEM NUMBER 11. FOR EXAMPLE: VALVE V-23 PLANT ID - SUC VALVE IDENTIFICATION - 11-23 SYSTEM NO. VALVE IDENTIFICATION - 11-23 ACTUAL TAGGING SHALL BE PREFIXED TYPE OF INSTRUMENT SYSTEM NO. INSTRUMENT DESIGNATION NO. FOR SPECIALTY SR-398 PLANT ID - SUC TYPE OF SPECIALTY SYSTEM NO. SPECIALTY IDENTIFICATION NO.

2. DRAINS TO BE MANFOLDED AND ROUTED TO A COLLECTION AREA FOR REMOVAL BY MEANS OF CONTAINERS (I.E. 55 GAL DRUMS).

3. UNLESS OTHERWISE NOTED ALL OPEN DRAINS EVENTS SHALL BE OF CS-17 PIPING.

4. UNLESS OTHERWISE NOTED ALL BRASS/BRONZE FOR DRAINING VENTS AND TEST SHALL BE OF SAME MATERIAL & SPECIFICATION AS THE HEADERS UP TO AND INCLUDING SECOND SHUT-OFF VALVE.

5. EXPLOSIVE VALVES AND DOUBLE SHUT-OFF VALVES SHALL BE IN ORDER TO SERVICE THESE VALVES AFTER TIGHTENING IT IS NECESSARY TO REMOVE A SIX INCH ROD FROM IMMEDIATELY ADJACENT OF THE RESPECTIVE VALVE EACH SIX INCH VALVE IS RUNNED INTO A WELDED SOCKET WELDING TYPE FLANGE FOR SOCKET WELDING TO THE 6" SPOOL PIECE.

(FOR CONTINUATION OF NOTES SEE (A-2))

- REFERENCE DRAWINGS:**
- LIST OF DRAWINGS: A-19154
 - VALVE AND SPECIALTY LIST: B-19157
 - PIPING AND INSTRUMENT SYMBOLS: C-19155
 - FLOW DIAGRAM - CONDENSATE MAKE UP SYST.: G-19156
 - FLOW DIAGRAM - NUCLEAR BOILER: G-19167
 - REACTOR STANDBY LIQUID CONTROL PIPING: G-19170
 - FLOW DIAGRAM - CONDENSATE DRAIN WATER TRANSFER SYSTEM: G-19116
 - FLOW DIAGRAM - SERVICE INSTRUMENT AIR SYSTEM: G-19150
 - PRIMARY CONTAINMENT NOZZLE CLOSURE ASSEMBLY: G-19179
 - FCD STANDBY LIQUID CONTROL SYSTEM: 5920-40
 - PROCESS DIAGRAM - STANDBY LIQUID CONTROL SYSTEM: 5920-117
 - GE-APED MASTER PARTS LIST: CCF 194284(11)

AS BUILT
DATE 12-14-76



NO.	DATE	REVISION	BY	CHK.	APPROVED
9	5-16-77	REVISED VALVE NOMENCLATURE	ADW/HES		225-0077
8	10-16-76	ADDED V-11 DETAILS	ADW/HES		
7	3-25-76	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
6	10-4-75	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
5	1-29-75	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
4	10-20-74	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
3	7-1-74	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
2	5-6-74	ADDED V-11 & V-12 DETAILS WITH ALARM FSH-52	ADW/HES		
1	7-1-74	GENERAL REVISION	ADW/HES		

REPRODUCED FROM ORIGINAL GE 194284(11)

VERMONT Yankee NUCLEAR POWER CORPORATION
VERMONT Yankee NUCLEAR POWER STATION
VERNON, VERMONT

**FLOW DIAGRAM
STANDBY LIQUID CONTROL SYSTEM**

ESBACO SERVICES INCORPORATED NEW

SCALE NONE

APPETITE

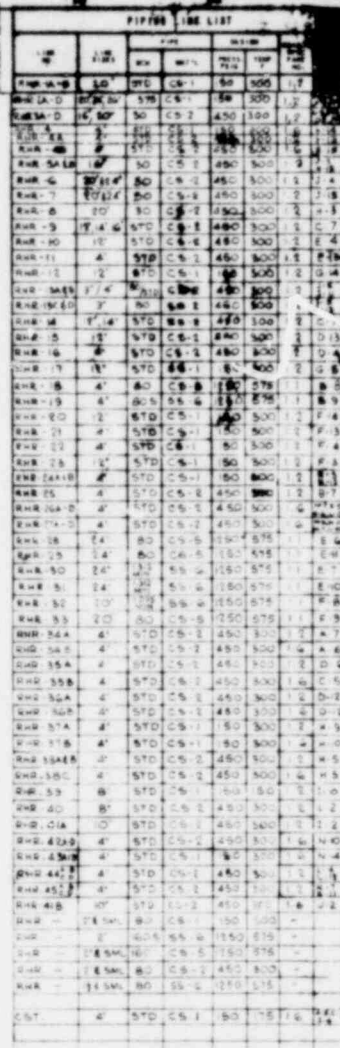
BY: ADW/HES
IN: 12-14-76
CHK: ADW/HES

19154

1401 323

1401 324

2. UNLESS OTHERWISE NOTED, ALL MEASUREMENTS
FOR DIMENSIONS AND TEST SHALL BE
NAME MATERIAL & SPECIFICATIONS ON THE
HIDDEN SURFACES INCLUDING SECOND
SURF OFF WALL
3. UNLESS OTHERWISE NOTED, ALL MEASUREMENTS
AND TEST SHALL BE ALL DIMENSIONS
FROM FINISH LINE TO FINISH TO DIMS TO
DIMENSION VALUES AND TO DIMENSION VALUES
FROM FINISH LINE TO FINISH LINE
DIMENSIONS TO THE MEASUREMENT FROM
ALL FINISH DIMENSIONS AND UNLESS OTHERWISE
SPECIFIED.
4. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS
SEE INSTRUMENT LIST 10-101260
5. * DENOTES ROOT VALUE



LIST OF DRAWINGS

VALVE & SPECIALTY LIST
PIPING & INSTRUMENT SYMBOLS
FLOW DL - AM-CIRCULATING SERVICE
& COOKING WATER SYSTEMS
FLOW DIAGRAM- CONDENSATE &
WASTE U.S.
FLOW DIAGRAM- NUCLEAR BOILER
FLOW DIAGRAM- REACTOR CORE SPRAY
SYSTEM
FLOW DIAGRAM- REACTOR HIGH PRESSURE
COOLANT INJECTION SYSTEM
REACTOR RESIDUAL HEAT REMOVAL
SYSTEM PIPING PLAN
Flow Diagram # 6 - Reactor Core Spray
System
Flow Diagram # 7 - Reactor High Pressure
Coolant Injection System
Reactor Residual Heat Removal
System Piping Plan

FUNCTIONS OTHER THAN "VALVE" SHALL BE PREFIXED BY SYSTEM NUMBER 10 SPECIALTY SHALL BE PREFIXED BY SYSTEM NUMBER 10
FOR EXAMPLE: FOR VALVE V-100
ACTUAL TAGGING SHALL BE V-100
VALVE IDENTIFICATION _____
SYSTEM NO _____
VALVE IDENTIFICATION NO _____
FOR INSTRUMENTAL PS-100
ACTUAL TAGGING SHALL BE PS-100
TYPE OF INSTRUMENT _____
SYSTEM NO _____
INSTRUMENT DESIGNATION NO _____
FOR SPECIALTY SR-40
ACTUAL TAGGING SHALL BE SR-40
TYPE OF SPECIALTY _____
SYSTEM NO _____
SPECIALTY IDENTIFICATION _____

(FOR CONTINUATION OF NOTES SEE (A-5))

AS BUILT

CONTAINMENT DATE 12-1-82
TO SERVICE
WATER DISCHARGE
FOR CONT SEE 6-191306-1

REPRODUCED FROM ORIGINAL GE DWG 726E936 B.1

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT Yankee NUCLEAR POWER STATION

VERNON, VERMONT
E. ONE DIAGRAM

RESIDUAL HEAT REMOVAL SYSTEM

SPACCO, STEPHEN INCORPORATED, NEW YORK

2025 RELEASE UNDER E.O. 14176

SCALE NOW		DATE JAN 24 1964

G-19117

CLASSIFICATION: UNCLASSIFIED

18 19

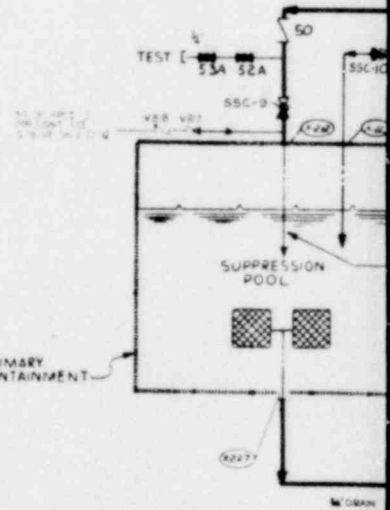
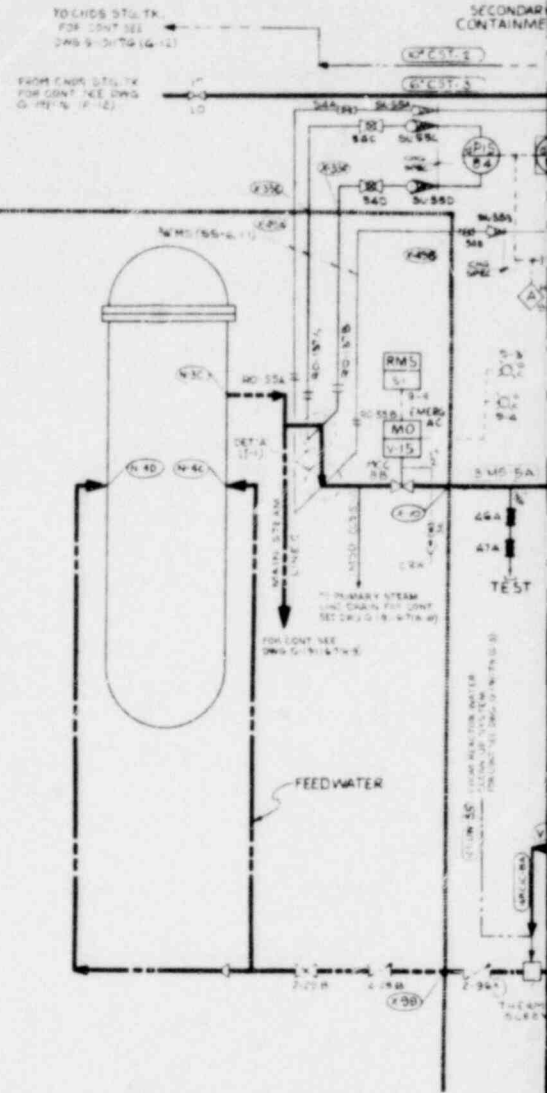
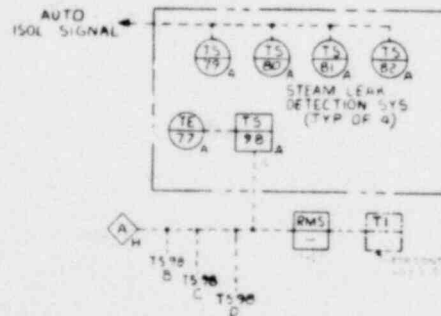
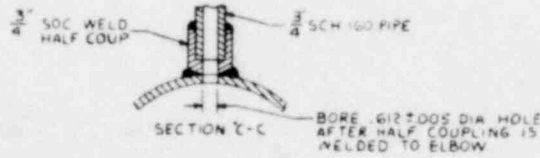
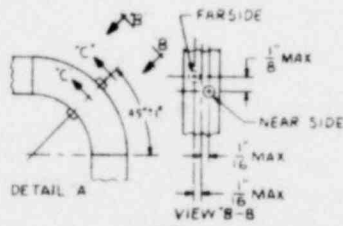
1421 325

1401 575

1101 250

191174

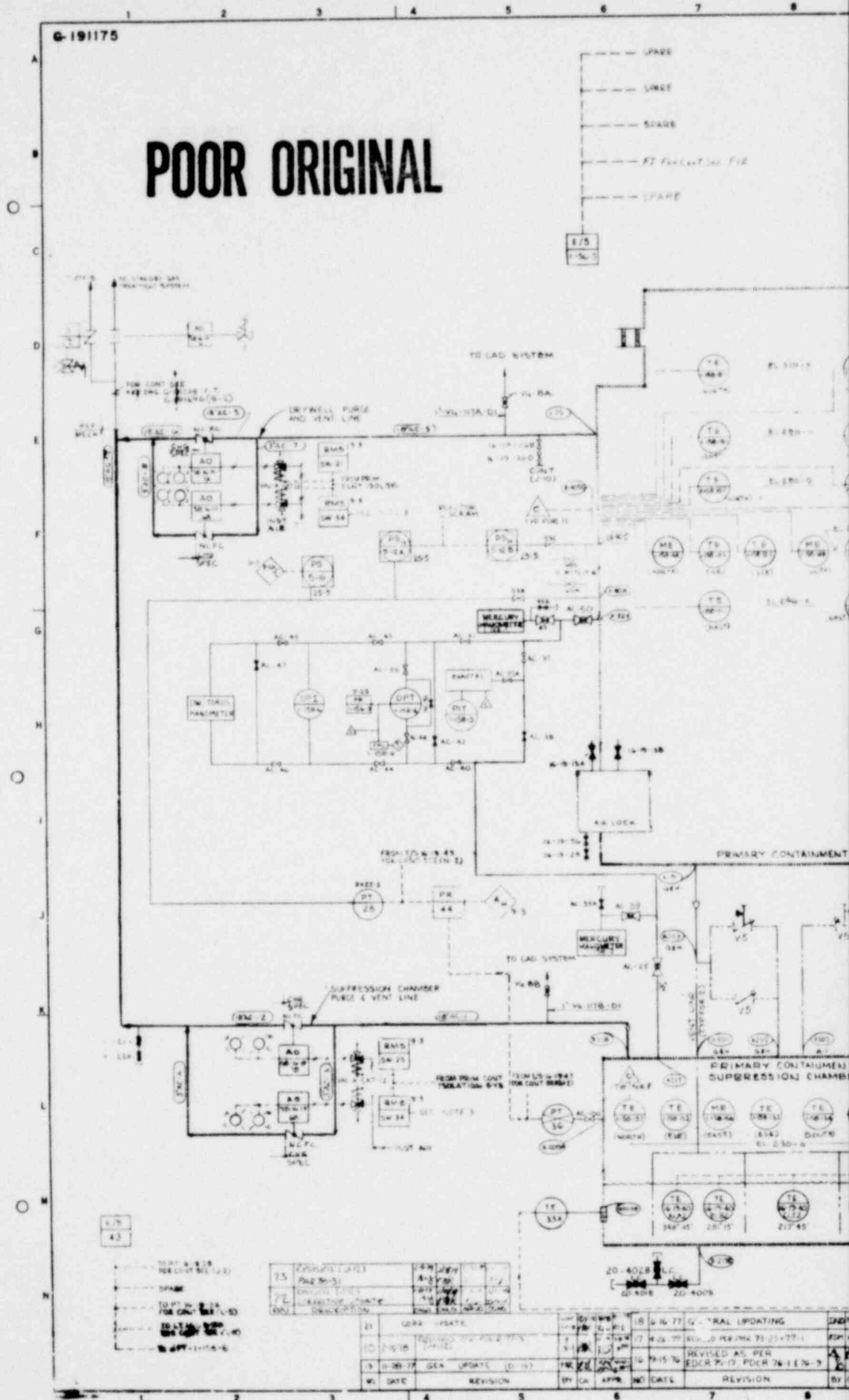
POOR ORIGINAL

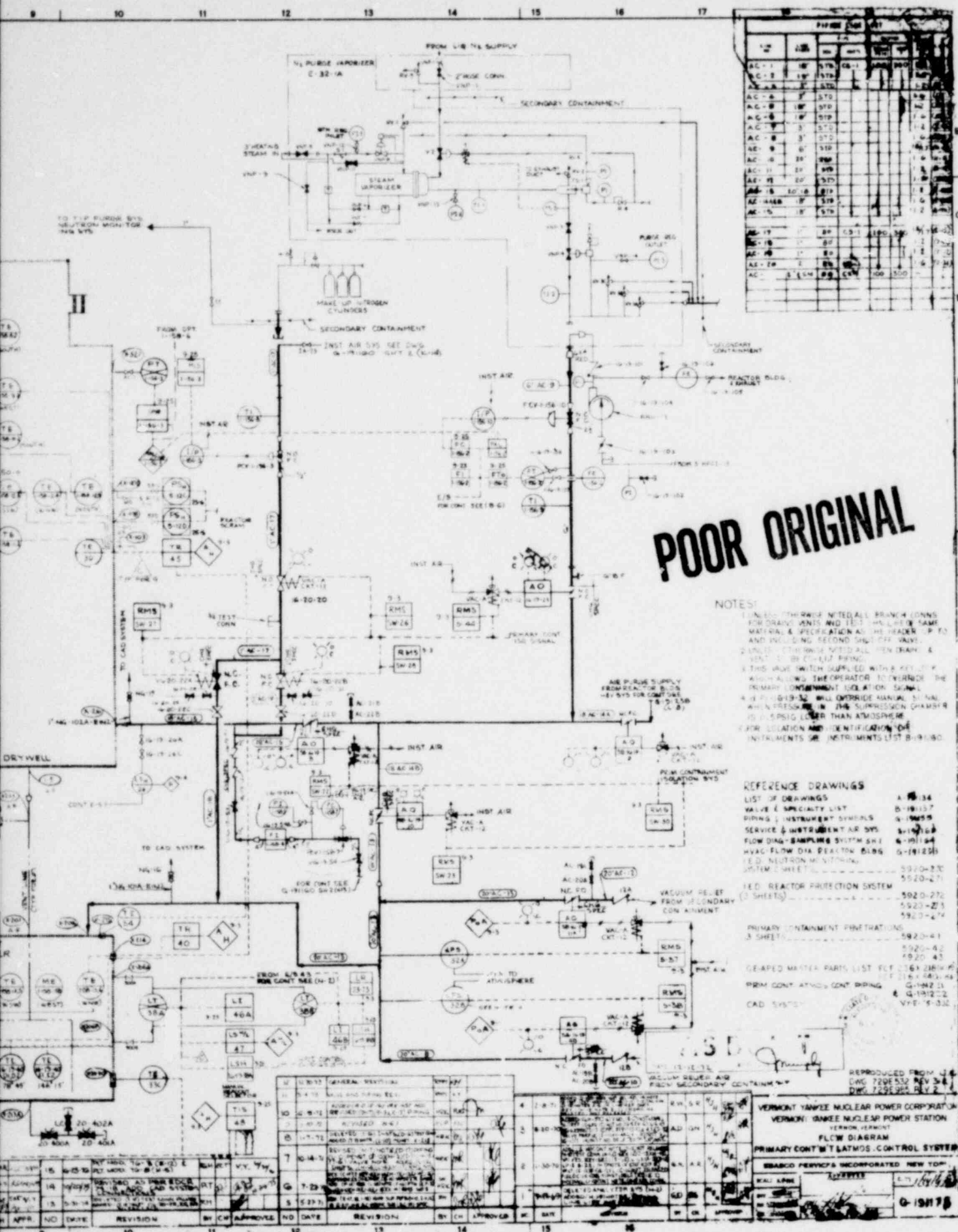


1401 326

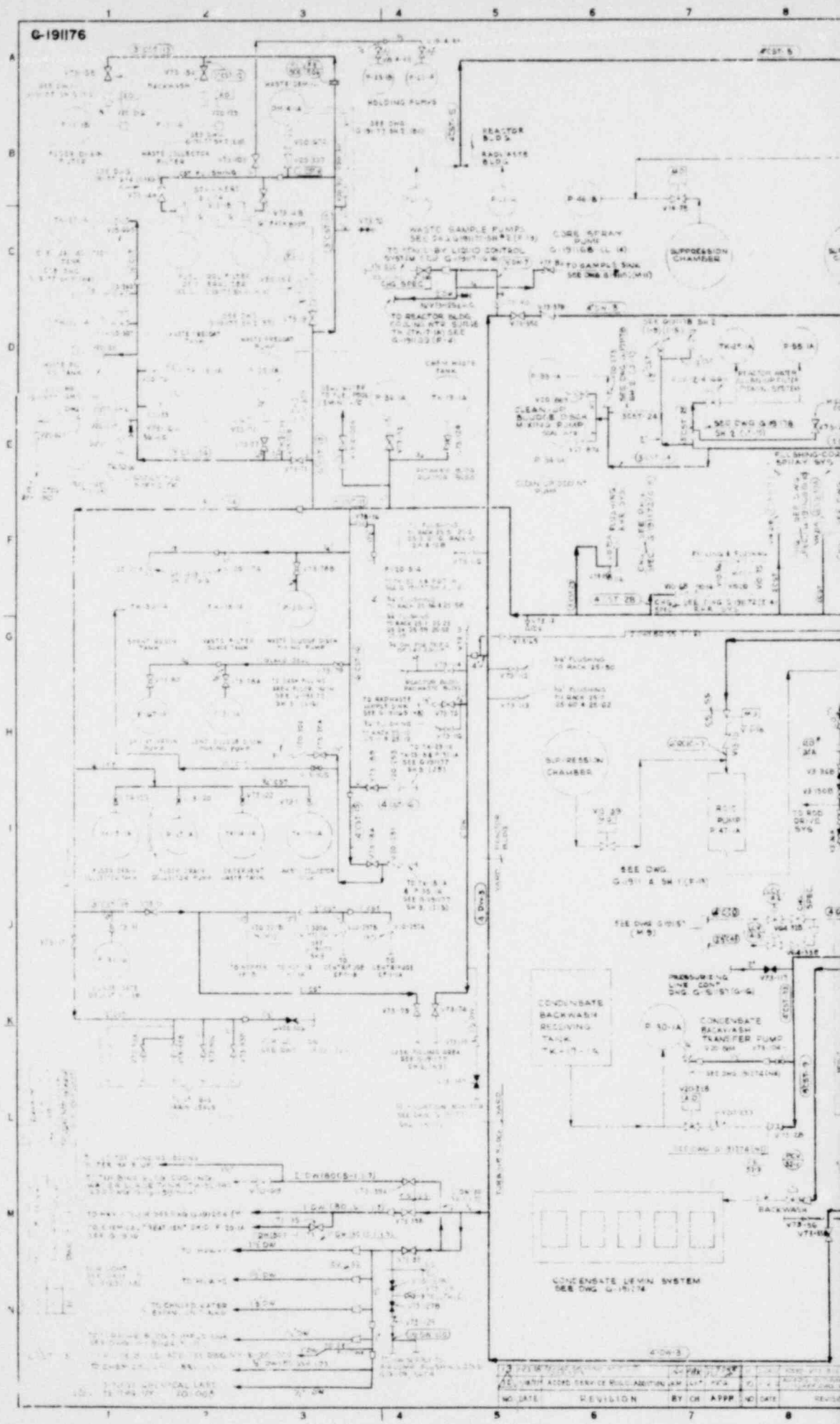
G-191175

POOR ORIGINAL

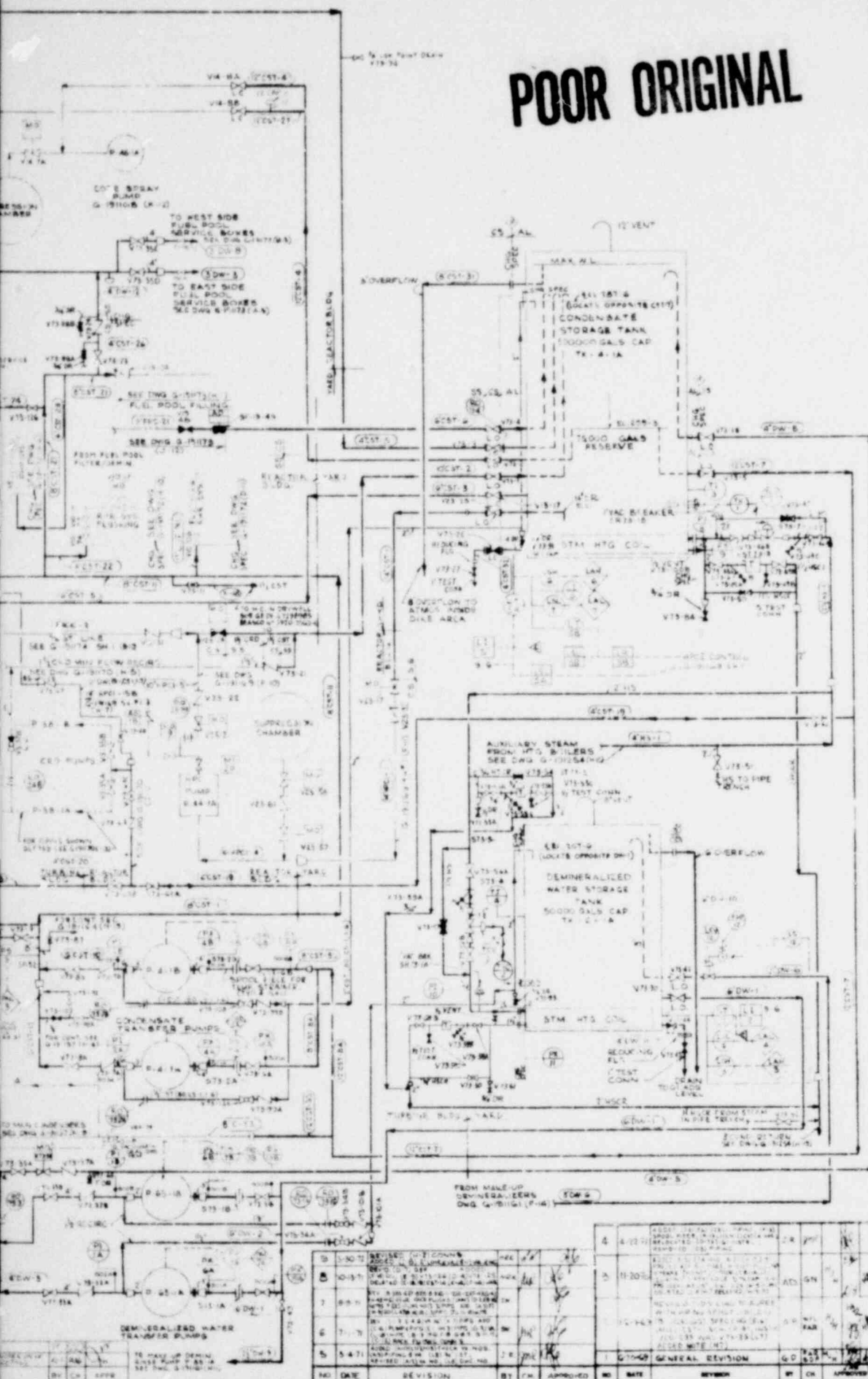




POOR ORIGINAL



CST-1	14	0	55-1	150	75	1	1
CST-2	10	20	55-1				7-1
CST-3	9	40	55-1				7-1
CST-4	12	70	55-1				0-12
CST-5	4	40	55-1				8-5
CST-6	4	40	55-1				4-10
CST-7	2	570	CST-1				1-42
CST-8A-B	5	70	CST-1				1-4
CST-9	8.4	70	CST-1				4-11
CST-10			CST-1				1-42
CST-11-A-B	8.4	70	CST-1				4-11
CST-12	3		CST-1				0-3
CST-13	41.5		CST-1				2-3




CST-1	14	0	55-1	150	75	1	1
CST-2	10	20	55-1				7-1
CST-3	9	40	55-1				7-1
CST-4	12	70	55-1				0-12
CST-5	4	40	55-1				8-5
CST-6	4	40	55-1				4-10
CST-7	2	570	CST-1				1-42
CST-8A-B	5	70	CST-1				1-4
CST-9	8.4	70	CST-1				4-11
CST-10			CST-1				1-42
CST-11-A-B	8.4	70	CST-1				4-11
CST-12	3		CST-1				0-3
CST-13	41.5		CST-1				2-3

CST-15	4'	STD	CST-16	50	1.6	1.3
CST-16	6' 4"		25-1			F2
CST-17			25-2			F3
CST-18	3'		25-3			1.2 191
CST-19	4'		25-4			1.0 209
CST-20	4'		25-5			1.2 238
CST-21	5'		25-6			1.0 F-9
CST-22	4'		25-7			0.0
CST-23	4'		25-8			0.5
CST-24	4' 3"		25-9			0.5
CST-25	3'		25-10			0.7
CST-26	4'	STD	25-11			0.0
CST-27	12'	STD	25-12			0.0
CST-28	4'	STD	25-13			F-10
CST-29	4'		25-14			
CST-30	4'		25-15			1.0 261
CST-31	5'		25-16			1.7 043
CST-32	4'		25-17			1.7 065
CST-33	4'		25-18			1.7 087
CST-34	4'		25-19			1.7 109
DW-1	2' 5.5M	50	25-20			1.7 131
DW-2	9'	40	25-21			1.7 153
DW-3	4' 3	40	25-22			0.0
DW-4	4'	2	25-23			0.7
DW-5	4'	40	25-24			0.0
DW-6	3'	40	25-25			0.0
DW-7	21'	40	25-26			1.7 208
DW-8	4' 3	40	25-27			1.7 230
DW-9	25'	40	25-28			1.7 252
DW-10	4'	40	25-29			1.7 274
DW-11	6'	40	25-30			1.7 296
DW-12	4'	40	25-31			1.7 318
DW	2' 5.5M	30				1.7 340
H-1	4' 12.5	40	25-32			1.7 362
H-2	2' 5.5M	30	25-33			1.7 384
H-3	4'	50	25-34			1.7 406

STEAM TRAP DATA LOG	A-191134
VALVE AND SPECIALTY LIST	A-191132
PIPING AND INSTRUMENT SYMBOLS	A-191130
FLOW DIAGRAM - TREATMENT PLANT	A-191129
SEWAGE TREATMENT PLANT	A-191127
FLOW DIAGRAM - SERVICE & COOLING WATER SYSTEMS	A-191126
FLOW DIAGRAM - LOSS PREVENTION	A-191125
PLANT & PROCESS CONTROL	A-191124
NUCLEONIC SYSTEMS	A-191123
FLOW DIAGRAM - CONTROL LOGIC	A-191122
HYDRAULIC SYSTEMS	A-191121
FLOW DIAGRAM - PNEUMATIC LOGIC	A-191120
CONTROL SYSTEMS	A-191119
PLANT & PROCESS CONTROL	A-191118
FLOW DIAGRAM - REACTOR COOLING SYSTEM	A-191117
FLOW DIAGRAM - TREATMENT WATER CLEANUP SYSTEM	A-191116
WASTE HEATING SYSTEMS	A-191115
WASTE HEATING SYSTEMS	A-191114
FLOW DIAGRAM - TREATMENT WATER CLEANUP SYSTEM	A-191113
WASTE HEATING SYSTEMS	A-191112
WASTE HEATING SYSTEMS	A-191111
WASTE HEATING SYSTEMS	A-191110
WASTE HEATING SYSTEMS	A-191109
WASTE HEATING SYSTEMS	A-191108
WASTE HEATING SYSTEMS	A-191107
WASTE HEATING SYSTEMS	A-191106
WASTE HEATING SYSTEMS	A-191105
WASTE HEATING SYSTEMS	A-191104
WASTE HEATING SYSTEMS	A-191103
WASTE HEATING SYSTEMS	A-191102
WASTE HEATING SYSTEMS	A-191101

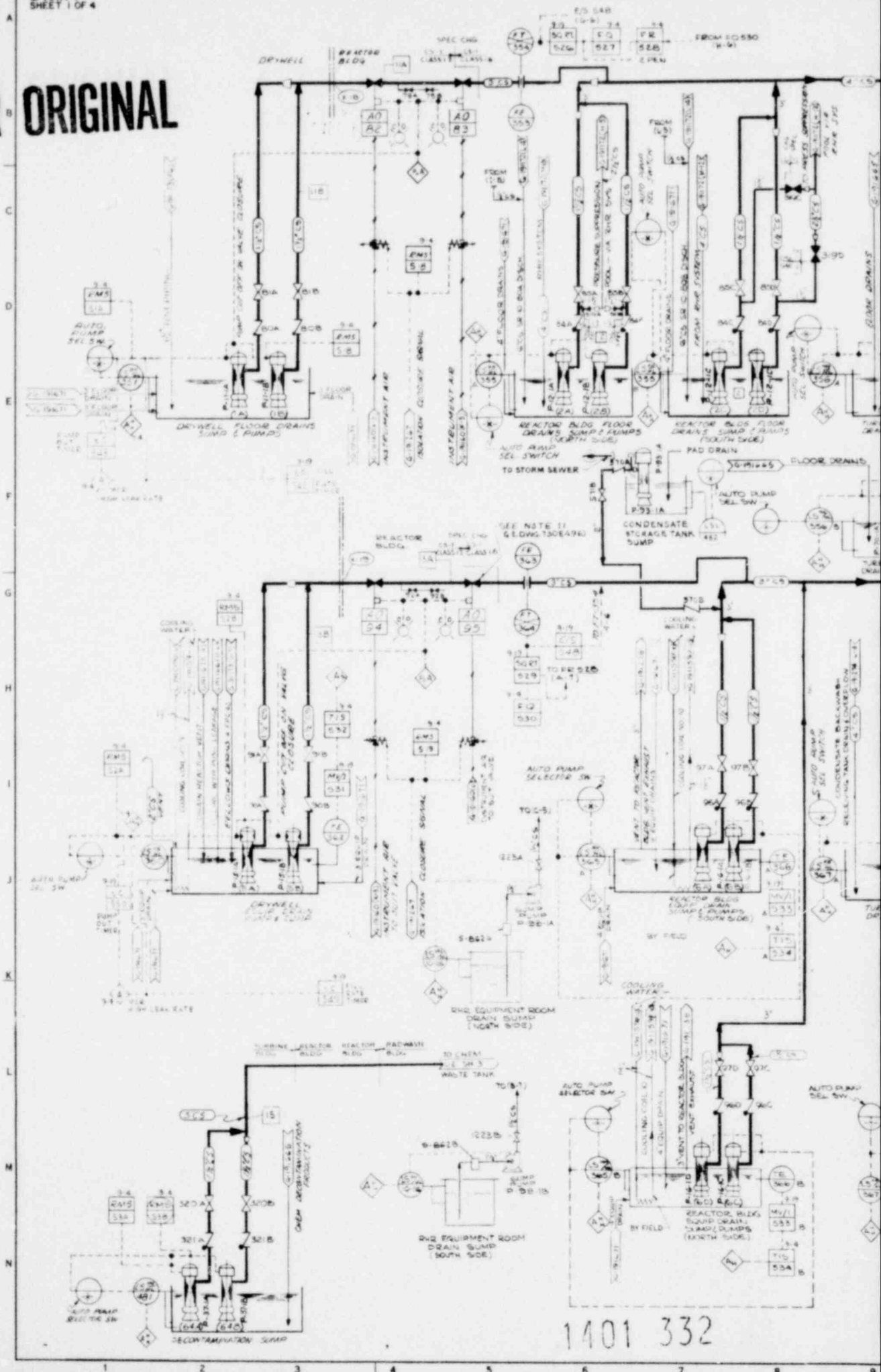
NOTES:
UNLESS OTHERWISE NOTED ALL INSTRUMENTS
AND CONTROL VALVE NUMBERS SHALL BE
PREFIXED BY SYSTEM NO. (FOR EXAMPLE
ACTUAL TAGGING SHALL BE LSH-10748)
TYPE OF INSTRUMENT:
SYSTEM NO.
INST. DESIGNATION AND
PROVIDE INDICATING FLUIDS FOR IN-
PROTECTION BETWEEN PLUGGED COMPONENTS IN
ALUMINUM MATERIAL AND STAINLESS STEEL
AND/OR CARBON STEEL MONA

AS BUILT

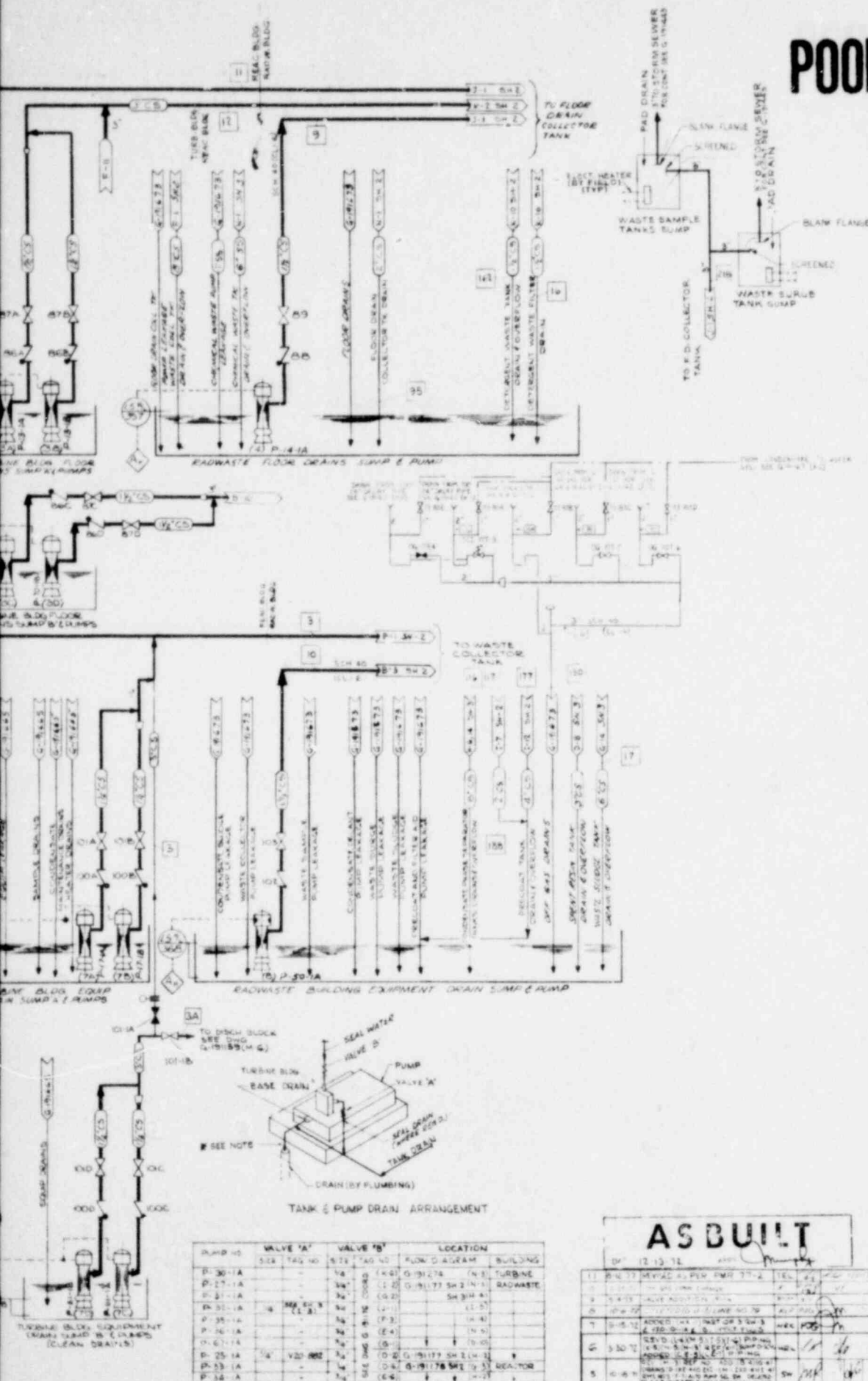
VERMONT YANKEE NUCLEAR POWER CORPORATION		
VERMONT YANKEE NUCLEAR POWER STATION		
VERMONT, VERMONT		
FLOW DIAGRAM-CONDENSATE & DEMINERALIZED WATER TRANSFER SYSTEM		
EBC&CO SERVICES INCORPORATED NEW YORK		
SCALE: NONE	APPROVED	DATE 4-27-64
DW: MESH DR: S. GARDNER CH: S. GARDNER BY: S. GARDNER		G-191176

1401 331

POOR ORIGINAL



1401 332



NOTES

UNLESS OTHERWISE NOTED ALL VALVES AND INSTRUMENT NUMBERS TO BE PREFIXED BY SYSTEM NUMBER 30.

FOR EXAMPLE, FOR VALVE 74
ACTUAL TAGGING SHALL BE V20-74
SYSTEM NO. _____
VALVE DESIGNATION NO. _____
FOR INSTRUMENT PI-95
ACTUAL TAGGING SHALL BE PI-20-95
TYPE OF INSTRUMENT _____
SYSTEM NO. _____
INSTRUMENT DESIGNATION _____

2 ☐ 6 INDICATES LINE NUMBER
UNLESS OTHERWISE NOTED ALL LINE
NUMBERS TO BE PREFIXED BY RW(RA WASTE)

FOR EXAMPLE ----- 16
ACTUAL TAGGING SHALL BE RW-16
FOR PIPING LINE LIST SEE DMC C-#1272

2. FOR ALL OTHER NOTES SEE EPASCO DVG. E.F.
NO. 5980-606 (SEE DVG. 730E496 CH. I)

4. ALL AD VALVES TO FAIL CLOSE (FC)
ON ELECTRICAL OR AIR SUPPLY FAILURE.

5 UNLESS OTHERWISE NOTED ALL CARBON STEEL
PIPING SHALL BE CS-1 CLASS 1B STANDARD

6. ☐ 11A ☐ 11B ☐ 3A ☐ 3B ARE CE-CLASS 2E DRINKING

REFERENCE DRAWINGS

LIST OF DRAWINGS	A-98-57
WAVE AND SPECIALTY LIST	G-99-37
PIPING AND INSTRUMENT SYMBOLS	G-99-52
TURBINE BUILDING - RISER DIAGRAMS	H-99-61
SH-I PLUMBING AND DRAINAGE	H-99-62
REACTOR BUILDING - RISER DIAGRAMS AND DETAILS PLUMBING AND DRAINAGE	H-99-71
RADIOWASTE BUILDING - RISER DIAGRAMS AND DETAILS PLUMBING DRAINAGE	G-99-73
FUEL POOL FILTER DEMON. SYS. SH-4	G-99-77
RESIDUAL HEAT REMOVAL SYSTEM	G-99-72
RADIATION MONITORING	S-99-74
REACTOR WATER CLEANUP SYSTEM	E-99-75
CONTROL ROD DRIVE HYDRAULIC SYS.	E-99-70
REACTOR RADIO CUPSED CW. SYS. FIELD	G-99-55
FUEL POOL COOLING & CLEANUP SYS.	G-99-76
CONDENSATE & DEMINERALIZED WATER TRANSFER SYSTEM	H-99-78
H.P.C.I. SYSTEM	I-99-63
R.G.C. SYSTEM	L-99-64
P.D. NUCLEAR BOILER VESSEL INSTR.	M-99-65
RADIOWASTE FUNCTIONAL CONTROL DIAGRAM (4 SHEETS)	5920-A-98-70

HVAC - RADWASTE BUILDING	G-19251
HVAC - HEATING FLOW DIAGRAM FULLER ROOM LAYOUT	G-19252
HVAC - FLOW DIAGRAM: RADWASTE BLDGS. FLOW DIAGRAM - CONDENSATE DRAIN SYSTEM	G-19253 G-19271
FLOW DIAG - SERVICE & INSTR AIR SYS.	G-19140
FLOW DIAG - CIRCULATING WATER & MISC. SYSTEM	G-19146
RADWASTE BUILDING PIPING SHEET 1	G-19255 G-19256

AS BUILT

1401 333

[illegible]

REPRODUCED FROM ORIGINAL G.E. DRAW. 730E-105.

GENERAL ELECTRIC COMPANY
ATOMIC POWER EQUIPMENT DEPARTMENT

VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
VERNON, VERMONT

FLOW DIAGRAM—RADWASTE SYSTEMS

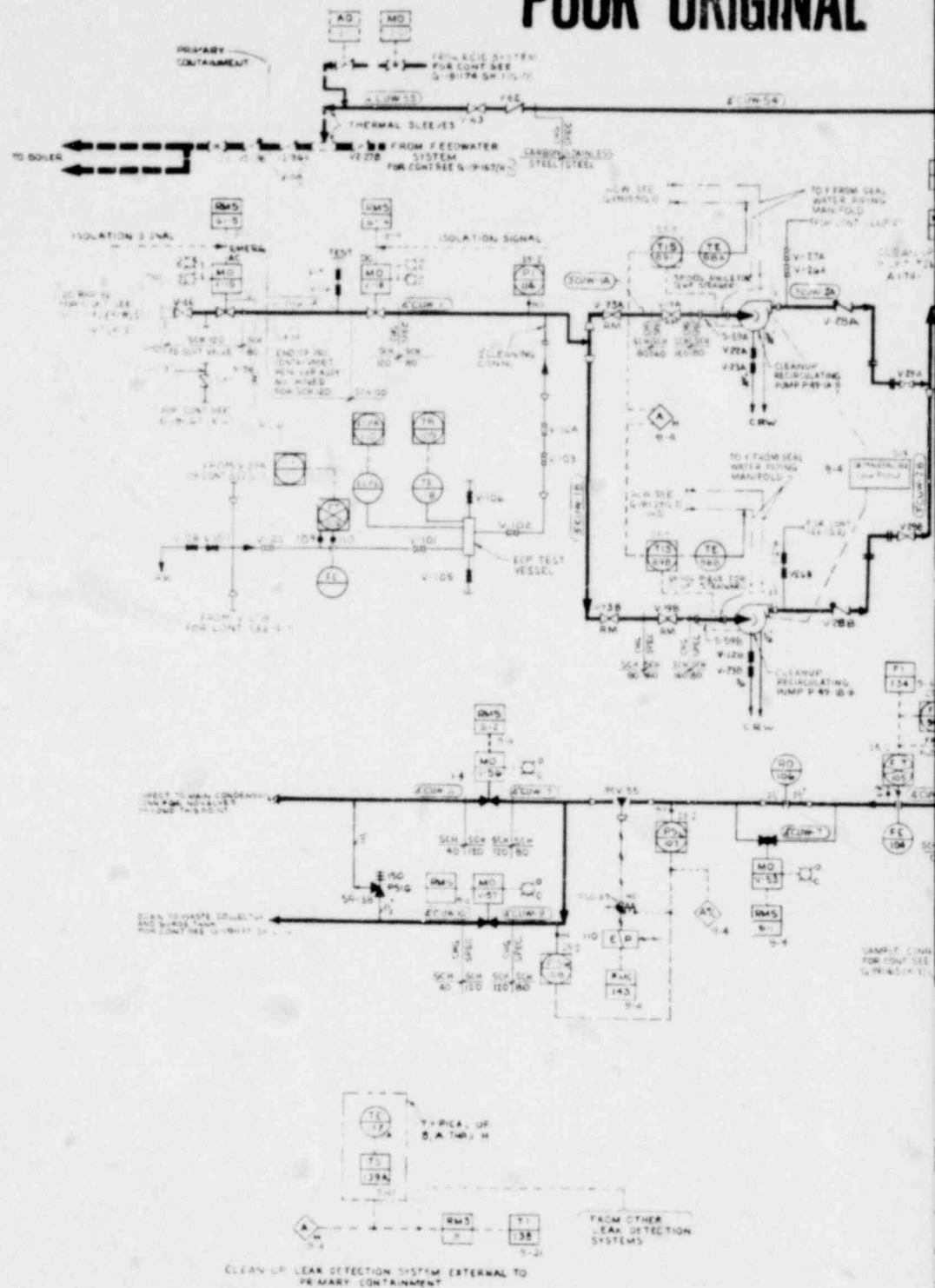
SEABCO SERVICES INCORPORATED NEW YORK

SCALE NONE	<u>APPROVED</u>	DATE <i>Jan</i>
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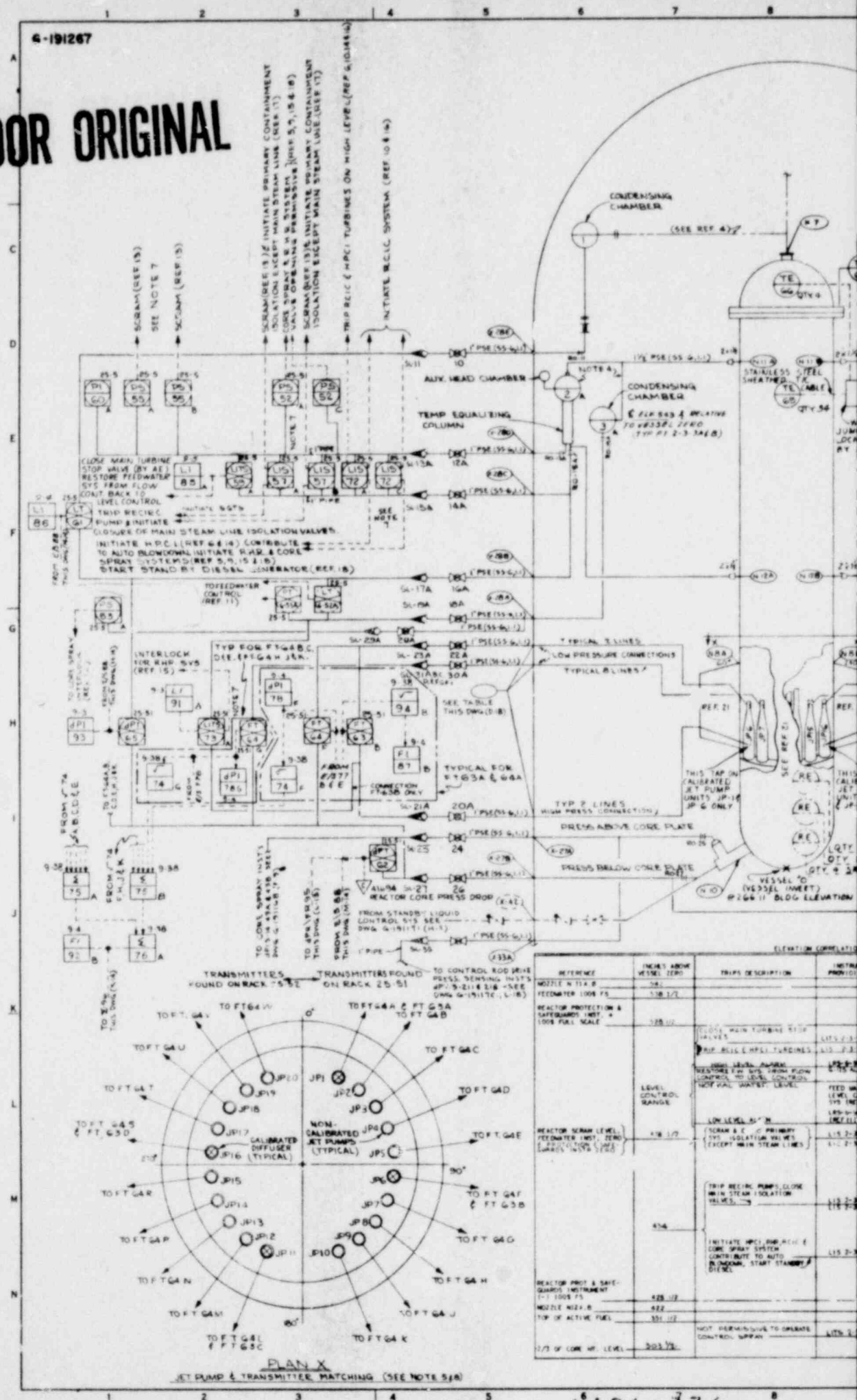
REV. MECH. TO 111

CNSC FORM 12

POOR ORIGINAL



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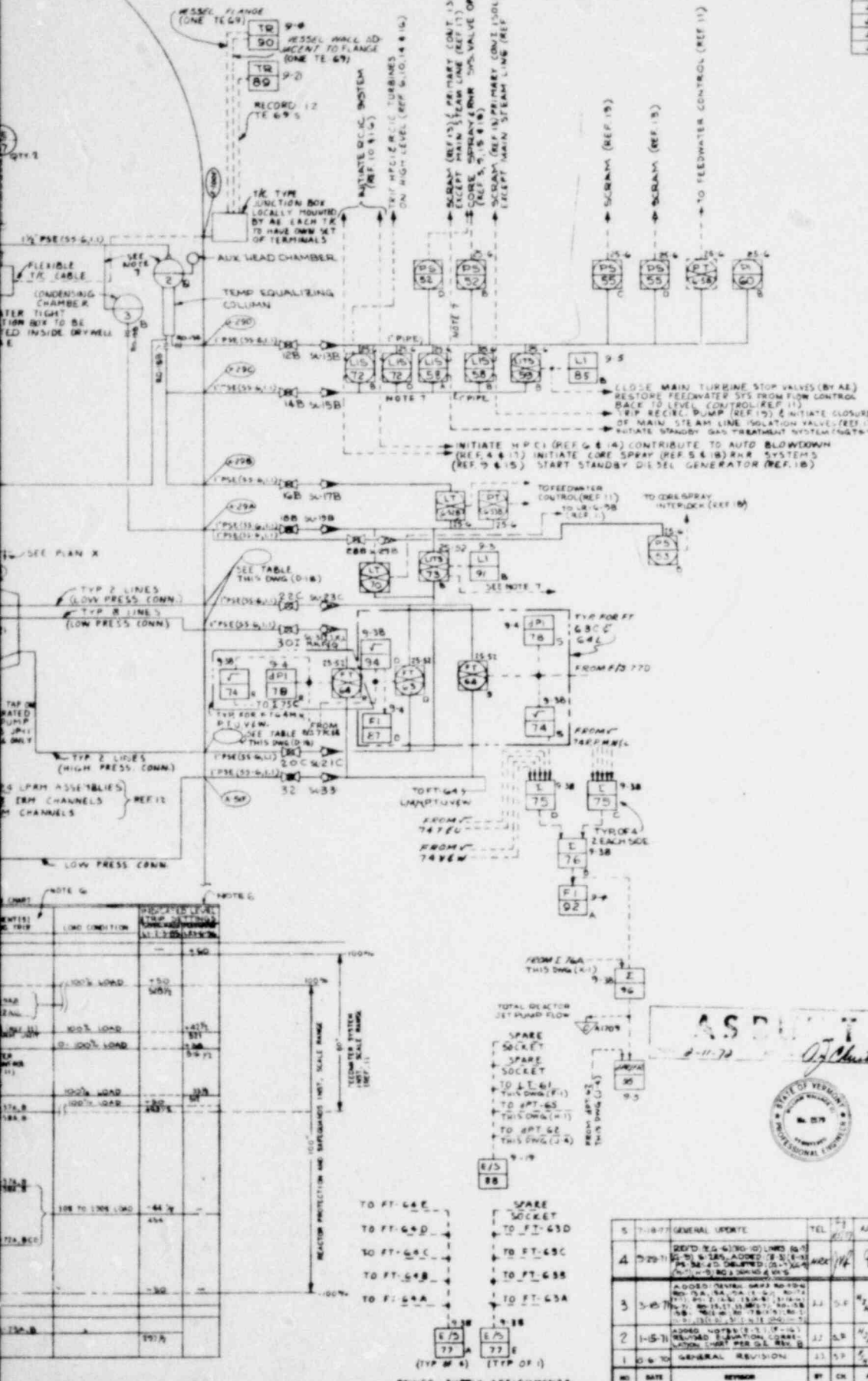
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POOR ORIGINAL

JET PUMP	PENETRATOR	JET PUMP	PENETRATOR
JP1 (UPPER)	X-40B-C	JP11 (UPPER)	X-40D-V
JP1 (LOWER)	X-40B-B	JP11 (LOWER)	X-40D-S
JP2	X-40B-E	JP12	X-40D-F
JP3	X-40B-D	JP13	X-40D-P
JP4	X-40B-F	JP14	X-40D-T
JP5	X-40B-A	JP15	X-40D-A
JP6 (UPPER)	X-40A-C	JP16 (UPPER)	X-40C-C
JP6 (LOWER)	X-40A-D	JP16 (LOWER)	X-40C-B
JP7	X-40A-E	JP17	X-40C-E
JP8	X-40A-C	JP18	X-40C-D
JP9	X-40A-F	JP19	X-40C-F
JP10	X-40A-A	JP20	X-40A-A

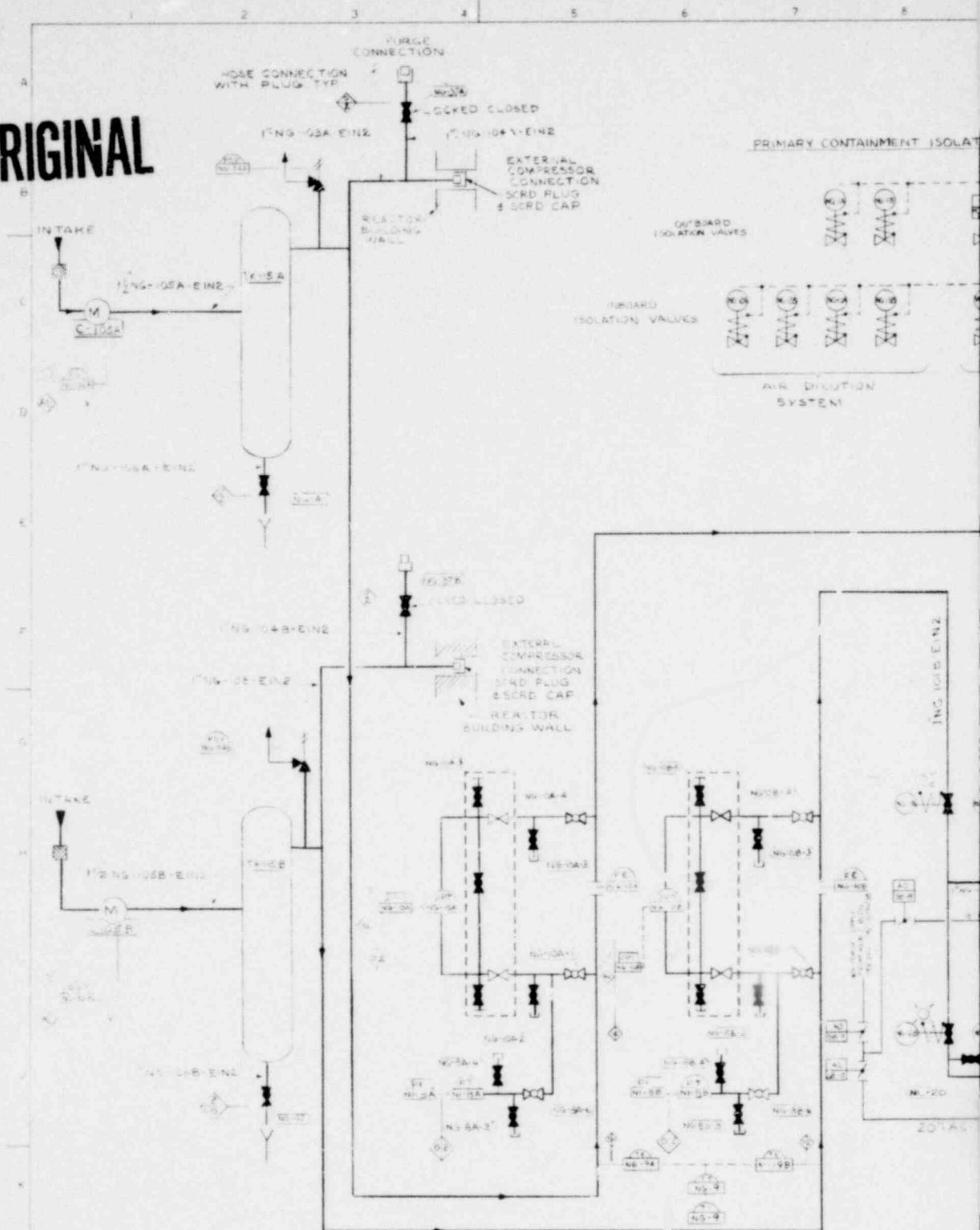
- NOTES:
- UNLESS OTHERWISE NOTED ALL INSTRUMENT AND VALVE NUMBERS TO BE PREFIXED BY SYSTEM NUMBER 2-3.
FOR EXAMPLE: FOR INSTRUMENT LT-61
ACTUAL TAGGING SHALL BE: LT-7-3-61
TYPE OF INSTRUMENT
SYSTEM NO.
INSTRUMENT DESIGNATION NO.
FOR VALVE 12B
ACTUAL TAGGING SHALL BE V2-12B
SYSTEM NO.
VALVE DESIGNATION NO.
 - INSTRUMENT LINES TO SLOPE MINIMUM 1/2 INCH PER FOOT TOWARDS INSTRUMENT. WATER LINES MUST NOT HAVE AIR TRAPS, AND STEAM LINES MUST NOT HAVE WATER TRAPS.
 - LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICABLE.
 - INSTALL TEMP. EQUALIZING COLUMN AND LEVEL INSTRUMENT PIPING AS DIRECTED BY VENDOR'S INSTALLATION DRAWING.
 - ALL INSTRUMENT LINES FROM JET PUMPS 1 TO 10 EXIT THRU PENETRATIONS NDA AND 2-NDA AND 6. LINES 11 TO 20 EXIT THRU PENETRATIONS NDA AND 1-NDA AND 9. SEE TABLE THIS DRAWING (D-17).
 - INSTRUMENTS ARE "CALIBRATED FOR 1000 PSIG REACTOR PRESSURE AND 155°F AMBIENT TEMPERATURE AT THE COOLANT TEMPERATURE. INSTRUMENT ERROR AT 100% LOAD WITH LIQUID LEVEL ABOVE ORDER SETPOINT INCLUDES 17 MC/IN ACROSS ORDER. ALLOWANCE FOR 25 STEAM CARRY OVER AND 4.25 ALLOWABLE INSTRUMENT ERROR WHEN LIQUID LEVEL FALLS BELOW ORDER SETPOINT. INSTRUMENT ERROR AT STATED CONDITIONS BECOMES 17 MC (1.25 OF 100 RANGE). INDICATED LEVELS MARKED WITH * ARE SETPOINT SETTINGS ON THE ASSOCIATED INSTRUMENT LISTED IN "INSTRUMENTS PROVIDING TRIP" COLUMN.
 - ALARMS ASSOCIATED WITH THE SYSTEMS INITIATED BY THE REACTOR PROTECTION OR SAFEGUARD SYSTEM LEVEL AND PRESSURE SWITCHES ARE SHOWN ON THE P AND I D. FOR THE PARTICULAR SYSTEM.
 - ON ALL VENTILATION SYSTEMS, THE INSTRUMENTS ARE RELATED TO REACTOR LOOPS AND JPMs THRU JPMs ARE RELATED TO REACTOR LOOP A.

- REFERENCE DRAWINGS:
- LIST OF DRAWINGS 4-191134
 - VALVE AND SPECIALTY LIST 8-191137
 - PIPING AND INSTRUMENT SYMBOLS 6-191135
 - FLOW DIAGRAM - NUCLEAR AND LEAK 6-191167
 - FLOW DIAGRAM - CORE SPRAY SYSTEM 6-191168
 - FLOW DIAGRAM - HIGH PRESSURE COOLANT INJECTION SYSTEM SHEET 1 & 2 6-191169
 - FLOW DIAGRAM - CONTROL AND HYDRAULIC SYSTEM 6-191170
 - FLOW DIAGRAM - STANDBY LIQUID CONTROL SYSTEM 6-191171
 - FLOW DIAGRAM - RESIDUAL HEAT REMOVAL SYSTEM 6-191172
 - FLOW DIAGRAM - REACTOR CORE ISOLATION COOLING SYSTEMS SHEET 1 & 2 6-191174
 - I.E.C. - FEEDWATER CONTROL SYSTEM (CRASCO F.F.F. 5920-204)
 - I.E.C. - NEUTRON MONITORING SYSTEM (CRASCO F.F.F. 5920-270 & 271)
 - I.E.C. - REACTOR PROTECTION SYSTEM (CRASCO F.F.F. 5920-272, 273 & 274)
 - FUNC. CONTR. DIAG. - HIGH PRESSURE COOLANT INJECTION SYSTEM (CRASCO F.F.F. 5920-26, 35 & 36)
 - FUNC. CONTR. DIAG. - RESIDUAL HEAT REMOVAL SYSTEM (CRASCO F.F.F. 5920-27, 28 & 29)
 - FUNC. CONTR. DIAG. - REACTOR CORE ISOLATION COOLING SYS. (CRASCO F.F.F. 5920-25, 26 & 30)
 - FUNC. CONTR. DIAG. - NUCLEAR BOILER W.T.C. SYSTEMS (CRASCO F.F.F. 5920-311 & 312)
 - FUNC. CONTR. DIAG. - CORE SPRAY SYSTEM (CRASCO F.F.F. 5920-37)
 - FUNC. CONTR. DIAG. - REACTOR COOLANT FLOW CONTROL SYS. (CRASCO F.F.F. 5920-18, 19 & 20)
 - REACTOR VESSEL (THERMOCOUPLE PAD) (CRASCO F.F.F. 5920-22)
 - REACTOR ASSEMBLY DRAWING (CRASCO F.F.F. 5920-5775 & 5776)



5	7-18-77	GENERAL UPDATE	TEL	1-3	1/1
4	5-29-77	REACTOR VESSEL INSTRUMENTATION (REF 11) (REF 12) (REF 13) (REF 14) (REF 15) (REF 16) (REF 17) (REF 18) (REF 19) (REF 20) (REF 21) (REF 22) (REF 23) (REF 24) (REF 25) (REF 26) (REF 27) (REF 28) (REF 29) (REF 30) (REF 31) (REF 32) (REF 33) (REF 34) (REF 35) (REF 36) (REF 37) (REF 38) (REF 39) (REF 40) (REF 41) (REF 42) (REF 43) (REF 44) (REF 45) (REF 46) (REF 47) (REF 48) (REF 49) (REF 50) (REF 51) (REF 52) (REF 53) (REF 54) (REF 55) (REF 56) (REF 57) (REF 58) (REF 59) (REF 60) (REF 61) (REF 62) (REF 63) (REF 64) (REF 65) (REF 66) (REF 67) (REF 68) (REF 69) (REF 70) (REF 71) (REF 72) (REF 73) (REF 74) (REF 75) (REF 76) (REF 77) (REF 78) (REF 79) (REF 80) (REF 81) (REF 82) (REF 83) (REF 84) (REF 85) (REF 86) (REF 87) (REF 88) (REF 89) (REF 90) (REF 91) (REF 92) (REF 93) (REF 94) (REF 95) (REF 96) (REF 97) (REF 98) (REF 99) (REF 100) (REF 101) (REF 102) (REF 103) (REF 104) (REF 105) (REF 106) (REF 107) (REF 108) (REF 109) (REF 110) (REF 111) (REF 112) (REF 113) (REF 114) (REF 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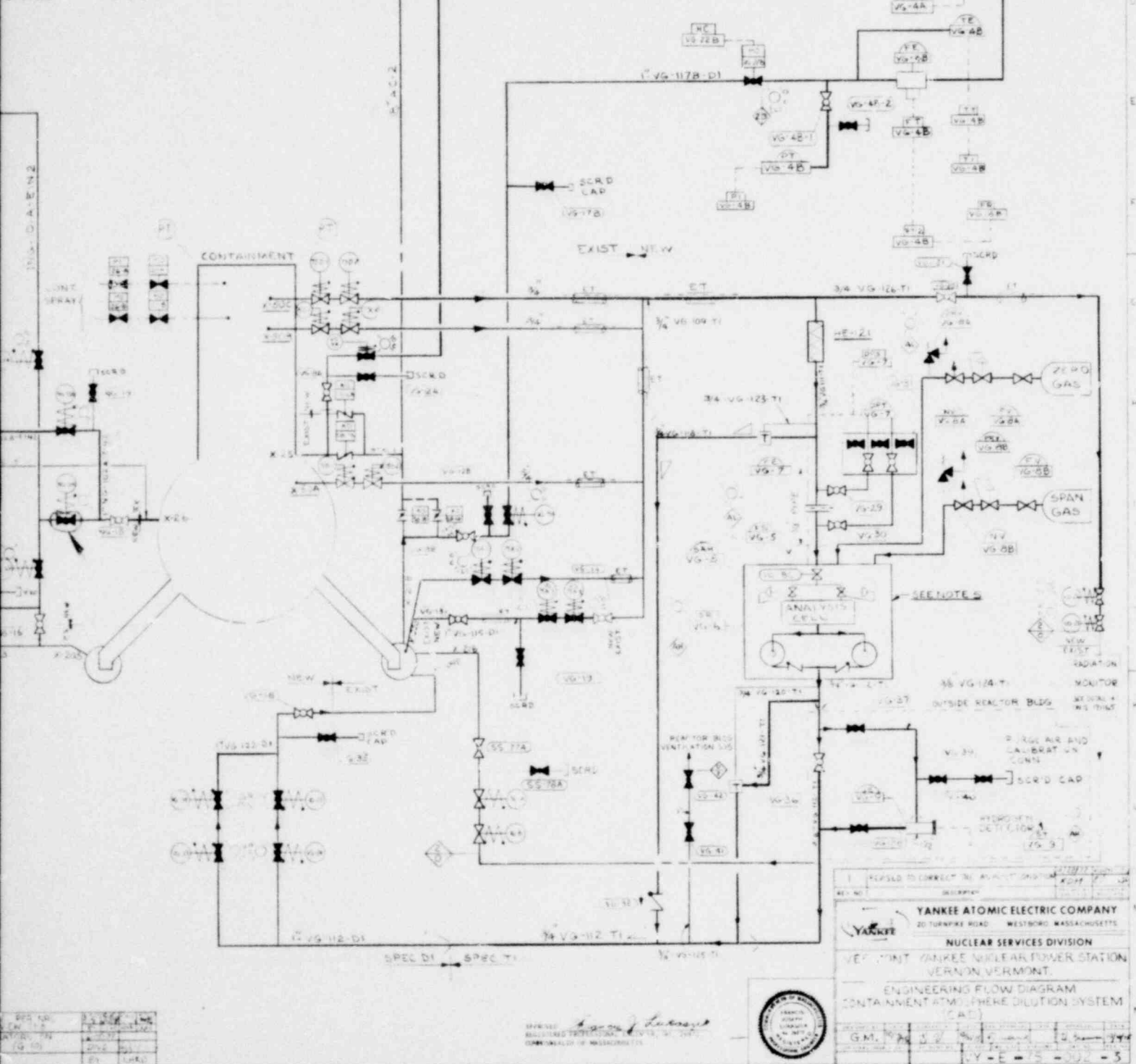
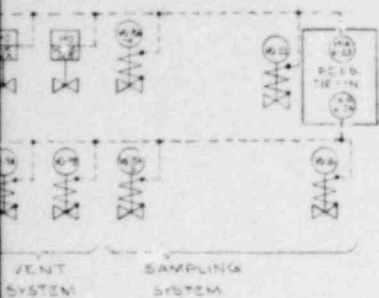


- NOTES:
1. VALVES V-100A-EIN2 AND V-100B-EIN2 ARE SAFETY RELATED.
 2. VALVES V-100A-EIN2 AND V-100B-EIN2 ARE SAFETY CLASS 2 WORKING ISOLATED.
 3. ALL ITEMS MARKED SAFETY CLASS 1 ARE TO THE REQUIREMENTS OF ASME B31.1 CODE SECTION II - SUBSECTION NC EXCEPT LINES A-C AND D-E-H-I-J-K-L-M-N-O-P-Q-R-S-T-U-V-W-X-Y-Z-AA-AB-AC-AD-AE-AF-AG-AH-AI-AJ-AL-AM-AN-AO-AP-AQ-AR-AS-AT-AU-AV-AW-AX-AY-AZ-BA-BB-BC-BD-BE-BF-BG-BH-BI-BJ-BL-BM-BN-BO-BP-BQ-BR-BR-BT-BU-BV-BW-BX-BY-BZ-CA-CB-CC-CD-CE-CF-CG-CH-CI-CJ-CL-CM-CN-CP-CQ-CR-CS-CT-CU-CV-CW-CX-CY-CZ-DA-DB-DC-DD-DE-DF-DG-DH-DI-DJ-DL-DM-DN-DO-DP-DQ-DR-DS-DT-DU-DV-DW-DX-DY-DZ-EA-EB-EC-ED-EE-EF-EG-EH-EI-EJ-EL-EM-EN-EO-EP-EQ-ER-ES-ET-EU-EV-EW-EX-EY-EZ-FA-FB-FC-FD-FE-FF-FG-FH-FI-FJ-FL-FM-FN-FO-FP-FQ-FR-FS-FT-FU-FV-FW-FX-FY-FZ-GA-GB-GC-GD-GE-GF-GG-GH-GI-GJ-GL-GM-GN-GO-GP-GQ-GR-GS-GT-GU-GV-GW-GX-GY-GZ-HA-HB-HC-HD-HE-HF-HG-HH-HI-HJ-HL-HM-HN-HO-HP-HQ-HR-HS-HT-HU-HV-HW-HX-HY-HZ-IA-IB-IC-ID-IE-IF-IG-IH-II-IJ-IL-IM-IN-IO-IP-IQ-IR-IS-IT-IU-IV-IW-IX-IY-IZ-JA-JB-JC-JD-JE-JF-JG-JH-JI-JJ-JL-JM-JN-JO-JP-JQ-JR-JS-JT-JU-JV-JW-JX-JY-JZ-KA-KB-KC-KD-KE-KF-KG-KH-KI-KJ-KL-KM-KN-KO-KP-KQ-KR-KS-KT-KU-KV-KW-KX-KY-KZ-LA-LB-LC-LD-LE-LF-LG-LH-LI-LJ-LL-LM-LN-LO-LP-LQ-LR-LS-LT-LU-LV-LW-LX-LY-LZ-MA-MB-MC-MD-ME-MF-MG-MH-MI-MJ-ML-MM-MN-MO-MP-MQ-MR-MS-MT-MU-MV-MW-MX-MY-MZ-NA-NB-NC-ND-NE-NF-NG-NH-NI-NJ-NL-NM-NN-NO-NP-NQ-NR-NS-NT-NU-NV-NW-NX-NY-NZ-OA-OB-OC-OD-OE-OF-OG-OH-OI-OJ-OL-OM-ON-OO-OP-OQ-OR-OS-OT-OU-OV-OW-OX-OY-OZ-PA-PB-PC-PD-PE-PF-PG-PH-PI-PJ-PL-PM-PN-PO-PP-PQ-PR-PS-PT-PU-PV-PW-PX-PY-PZ-QA-QB-QC-QD-QE-QF-QG-QH-QI-QJ-QL-QM-QN-QO-QP-QQ-QR-QS-QT-QU-QV-QW-QX-QY-QZ-RA-RB-RC-RD-RE-RF-RG-RH-RI-RJ-RL-RM-RN-RO-RP-RQ-RR-RS-RT-RU-RV-RW-RX-RY-RZ-SA-SB-SC-SD-SE-SF-SG-SH-SI-SJ-SL-SM-SN-SO-SP-SQ-SR-SS-ST-SU-SV-SW-SX-SY-SZ-TA-TB-TC-TD-TE-TF-TG-TH-TI-TJ-TL-TM-TN-TO-TP-TQ-TR-TS-TT-TU-TV-TW-TX-TY-TZ-UA-UB-UC-UD-UE-UF-UG-UH-UI-UJ-UL-UM-UN-UO-UP-UQ-UR-US-UT-UU-UV-UW-UX-UY-UZ-VA-VB-VC-VD-VE-VF-VG-VH-VI-VJ-VL-VM-VN-VO-VP-VQ-VR-VS-VT-VU-VV-VW-VX-VY-VZ-WA-WB-WC-WD-WE-WF-WG-WH-WI-WJ-WL-WM-WN-WO-WP-WQ-WR-WS-WT-WU-WV-WW-WX-WY-WZ-XA-XB-XC-XD-XE-XF-XG-XH-XI-XJ-XL-XM-XN-XO-XP-XQ-XR-XS-XT-XU-XV-XW-XX-XY-XZ-YA-YB-YC-YD-YE-YF-YG-YH-YI-YJ-YL-YM-YN-YO-YP-YQ-YR-YS-YT-YU-YV-YW-YX-YY-YZ-ZA-ZB-ZC-ZD-ZE-ZF-ZG-ZH-ZI-ZJ-ZL-ZM-ZN-ZO-ZP-ZQ-ZR-ZS-ZT-ZU-ZV-ZW-ZX-ZY-ZZ-AA-AB-AC-AD-AE-AF-AG-AH-AI-AJ-AL-AM-AN-AO-AP-AQ-AR-AS-AT-AU-AV-AW-AX-AY-AZ-BA-BB-BC-BD-BE-BF-BG-BH-BI-BJ-BL-BM-BN-BO-BP-BQ-BR-BR-BT-BU-BV-BW-BX-BY-BZ-CA-CB-CC-CD-CE-CF-CG-CH-CI-CJ-CL-CM-CN-CP-CQ-CR-CS-CT-CU-CV-CW-CX-CY-CZ-DA-DB-DC-DD-DE-DF-DG-DH-DI-DJ-DL-DM-DN-DO-DP-DQ-DR-DS-DT-DU-DV-DW-DX-DY-DZ-EA-EB-EC-ED-EE-EF-EG-EH-EI-EJ-EL-EM-EN-EO-EP-EQ-ER-ES-ET-EU-EV-EW-EX-EY-EZ-FA-FB-FC-FD-FE-FF-FG-FH-FI-FJ-FL-FM-FN-FO-FP-FQ-FR-FS-FT-FU-FV-FW-FX-FY-FZ-GA-GB-GC-GD-GE-GF-GG-GH-GI-GJ-GL-GM-GN-GO-GP-GQ-GR-GS-GT-GU-GV-GW-GX-GY-GZ-HA-HB-HC-HD-HE-HF-HG-HH-HI-HJ-HL-HM-HN-HO-HP-HQ-HR-HS-HT-HU-HV-HW-HX-HY-HZ-IA-IB-IC-ID-IE-IF-IG-IH-II-IJ-IL-IM-IN-IO-IP-IQ-IR-IS-IT-IU-IV-IW-IX-IY-IZ-JA-JB-JC-JD-JE-JF-JG-JH-JI-JJ-JL-JM-JN-JO-JP-JQ-JR-JS-JT-JU-JV-JW-JX-JY-JZ-KA-KB-KC-KD-KE-KF-KG-KH-KI-KJ-KL-KM-KN-KO-KP-KQ-KR-KS-KT-KU-KV-KW-KX-KY-KZ-LA-LB-LC-LD-LE-LF-LG-LH-LI-LJ-LL-LM-LN-LO-LP-LQ-LR-LS-LT-LU-LV-LW-LX-LY-LZ-MA-MB-MC-MD-ME-MF-MG-MH-MI-MJ-ML-MM-MN-MO-MP-MQ-MR-MS-MT-MU-MV-MW-MX-MY-MZ-NA-NB-NC-ND-NE-NF-NG-NH-NI-NJ-NL-NM-NN-NO-NP-NQ-NR-NS-NT-NU-NV-NW-NX-NY-NZ-OA-OB-OC-OD-OE-OF-OG-OH-OI-OJ-OL-OM-ON-OO-OP-OQ-OR-OS-OT-OU-OV-OW-OX-OY-OZ-PA-PB-PC-PD-PE-PF-PG-PH-PI-PJ-PL-PM-PN-PO-PP-PQ-PR-PS-PT-PU-PV-PW-PX-PY-PZ-QA-QB-QC-QD-QE-QF-QG-QH-QI-QJ-QL-QM-QN-QO-QP-QQ-QR-QS-QT-QU-QV-QW-QX-QY-QZ-RA-RB-RC-RD-RE-RF-RG-RH-RI-RJ-RL-RM-RN-RO-RP-RQ-RR-RS-RT-RU-RV-RW-RX-RY-RZ-SA-SB-SC-SD-SE-SF-SG-SH-SI-SJ-SL-SM-SN-SO-SP-SQ-SR-SS-ST-SU-SV-SW-SX-SY-SZ-TA-TB-TC-TD-TE-TF-TG-TH-TI-TJ-TL-TM-TN-TO-TP-TQ-TR-TS-TT-TU-TV-TW-TX-TY-TZ-UA-UB-UC-UD-UE-UF-UG-UH-UI-UJ-UL-UM-UN-UO-UP-UQ-UR-US-UT-UU-UV-UW-UX-UY-UZ-VA-VB-VC-VD-VE-VF-VG-VH-VI-VJ-VL-VM-VN-VO-VP-VQ-VR-VS-VT-VU-VV-VW-VX-VY-VZ-WA-WB-WC-WD-WE-WF-WG-WH-WI-WJ-WL-WM-WN-WO-WP-WQ-WR-WS-WT-WU-WV-WW-WX-WY-WZ-XA-XB-XC-XD-XE-XF-XG-XH-XI-XJ-XL-XM-XN-XO-XP-XQ-XR-XS-XT-XU-XV-XW-XX-XY-XZ-YA-YB-YC-YD-YE-YF-YG-YH-YI-YJ-YL-YM-YN-YO-YP-YQ-YR-YS-YT-YU-YV-YW-YX-YY-YZ-ZA-ZB-ZC-ZD-ZE-ZF-ZG-ZH-ZI-ZJ-ZL-ZM-ZN-ZO-ZP-ZQ-ZR-ZS-ZT-ZU-ZV-ZW-ZX-ZY-ZZ
 4. THE HYDROGEN ANALYZER SAH-V-5 IS A UNIT PACKAGE SUPPLIED BY DELPHI IND. DRAWING NO. 017220.
 5. AIR PURIFICATION SYSTEM SEE DRAWING.

1401 338

3	ADD VALVE 25-A & 26-A
2	ADD VALVE 25-A & 26-A
REVNO	DESCRIPTION

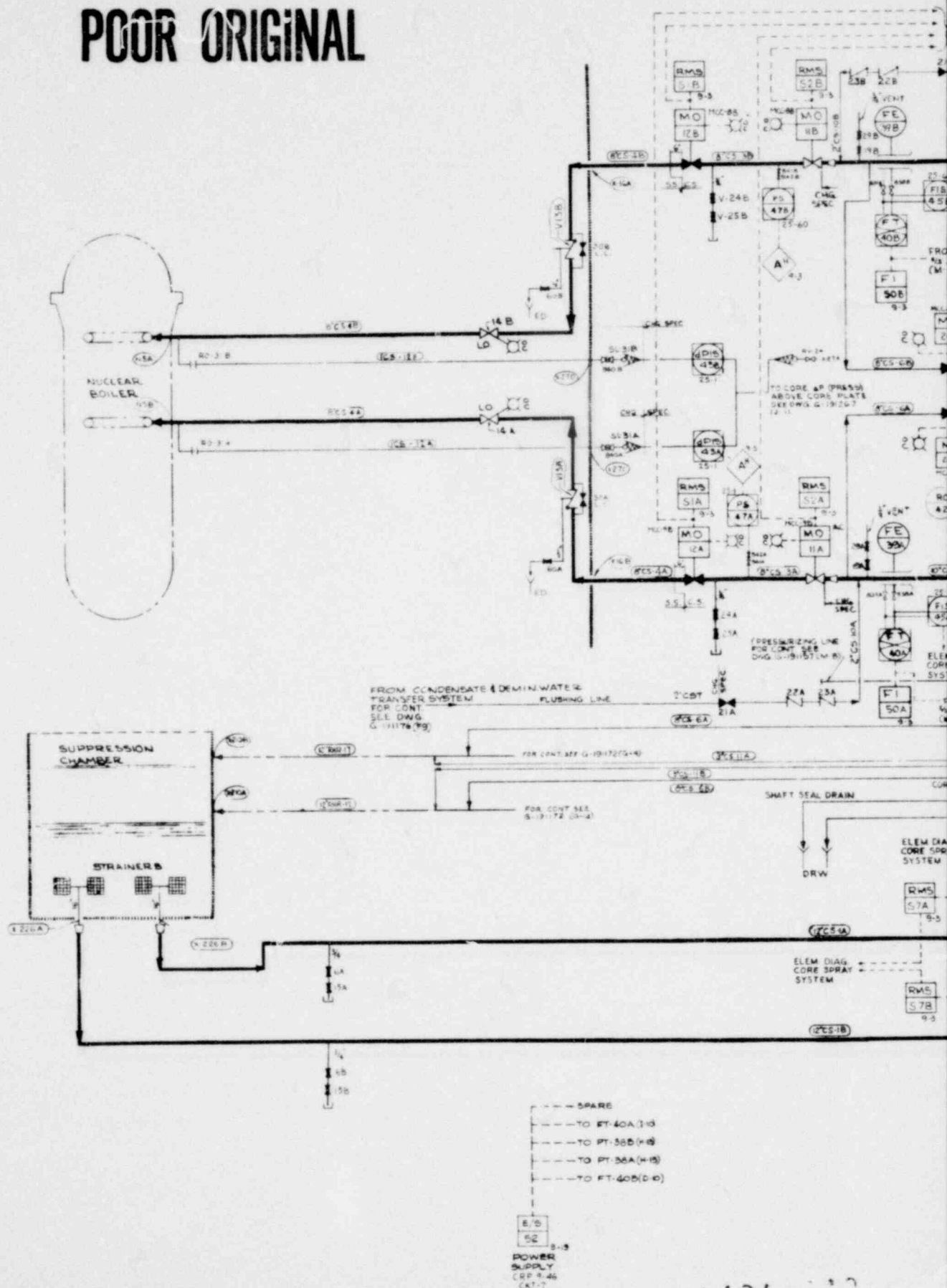
ION SYSTEM (PGIS)



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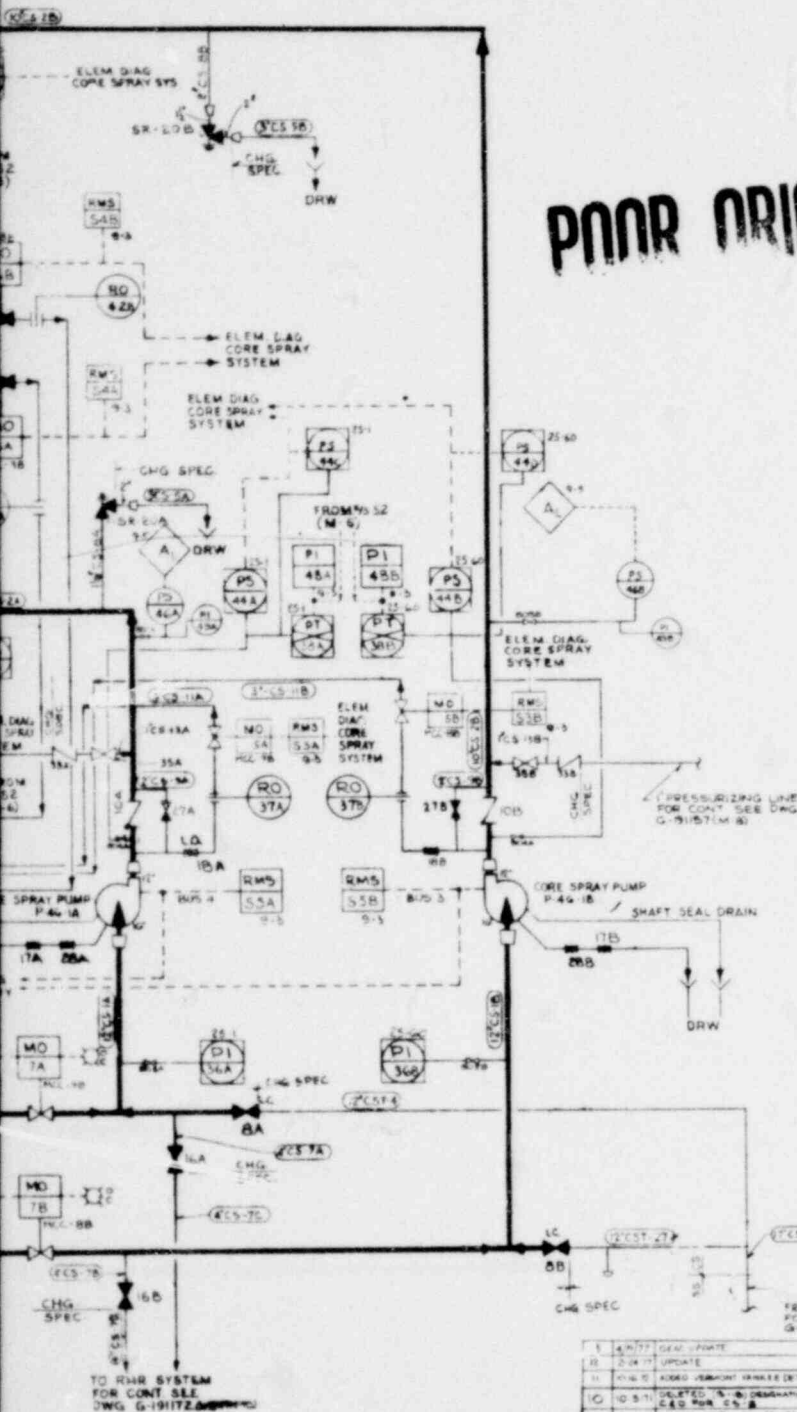
POOR ORIGINAL



ELEM. DIAG.
CORE SPRAY SYS.

2" CST (FLUORINE LINE)

FROM CONDENSATE & DRAINING WATER
TRANSFER SYSTEM
FOR CONTINUATION
SEE DWG. G-191176 (P.9)



POOR ORIGINAL

PIPING LINE LIST									
LINE NO.	SIZE	TYPE	START	END	VALVE	FLANGE	WELD	TEST	NOTE
CS-1A	1/2"	STD	CS-1	150	15	12	15	12	15
CS-2A	1/2"	STD	CS-2	150	15	12	15	12	15
CS-3A	1/2"	STD	CS-3	150	15	12	15	12	15
CS-4A	1/2"	STD	CS-4	150	15	12	15	12	15
CS-5A	1/2"	STD	CS-5	150	15	12	15	12	15
CS-6A	1/2"	STD	CS-6	150	15	12	15	12	15
CS-7A	1/2"	STD	CS-7	150	15	12	15	12	15
CS-8A	1/2"	STD	CS-8	150	15	12	15	12	15
CS-9A	1/2"	STD	CS-9	150	15	12	15	12	15
CS-10A	1/2"	STD	CS-10	150	15	12	15	12	15
CS-11A	1/2"	STD	CS-11	150	15	12	15	12	15
CS-12A	1/2"	STD	CS-12	150	15	12	15	12	15
CS-13A	1/2"	STD	CS-13	150	15	12	15	12	15
CS-14A	1/2"	STD	CS-14	150	15	12	15	12	15
CS-15A	1/2"	STD	CS-15	150	15	12	15	12	15
CS-16A	1/2"	STD	CS-16	150	15	12	15	12	15
CS-17A	1/2"	STD	CS-17	150	15	12	15	12	15
CS-18A	1/2"	STD	CS-18	150	15	12	15	12	15
CS-19A	1/2"	STD	CS-19	150	15	12	15	12	15
CS-20A	1/2"	STD	CS-20	150	15	12	15	12	15
CS-21A	1/2"	STD	CS-21	150	15	12	15	12	15
CS-22A	1/2"	STD	CS-22	150	15	12	15	12	15
CS-23A	1/2"	STD	CS-23	150	15	12	15	12	15
CS-24A	1/2"	STD	CS-24	150	15	12	15	12	15
CS-25A	1/2"	STD	CS-25	150	15	12	15	12	15
CS-26A	1/2"	STD	CS-26	150	15	12	15	12	15
CS-27A	1/2"	STD	CS-27	150	15	12	15	12	15
CS-28A	1/2"	STD	CS-28	150	15	12	15	12	15
CS-29A	1/2"	STD	CS-29	150	15	12	15	12	15
CS-30A	1/2"	STD	CS-30	150	15	12	15	12	15
CS-31A	1/2"	STD	CS-31	150	15	12	15	12	15
CS-32A	1/2"	STD	CS-32	150	15	12	15	12	15
CS-33A	1/2"	STD	CS-33	150	15	12	15	12	15
CS-34A	1/2"	STD	CS-34	150	15	12	15	12	15
CS-35A	1/2"	STD	CS-35	150	15	12	15	12	15
CS-36A	1/2"	STD	CS-36	150	15	12	15	12	15
CS-37A	1/2"	STD	CS-37	150	15	12	15	12	15
CS-38A	1/2"	STD	CS-38	150	15	12	15	12	15
CS-39A	1/2"	STD	CS-39	150	15	12	15	12	15
CS-40A	1/2"	STD	CS-40	150	15	12	15	12	15
CS-41A	1/2"	STD	CS-41	150	15	12	15	12	15
CS-42A	1/2"	STD	CS-42	150	15	12	15	12	15
CS-43A	1/2"	STD	CS-43	150	15	12	15	12	15
CS-44A	1/2"	STD	CS-44	150	15	12	15	12	15
CS-45A	1/2"	STD	CS-45	150	15	12	15	12	15
CS-46A	1/2"	STD	CS-46	150	15	12	15	12	15
CS-47A	1/2"	STD	CS-47	150	15	12	15	12	15
CS-48A	1/2"	STD	CS-48	150	15	12	15	12	15
CS-49A	1/2"	STD	CS-49	150	15	12	15	12	15
CS-50A	1/2"	STD	CS-50	150	15	12	15	12	15
CS-51A	1/2"	STD	CS-51	150	15	12	15	12	15
CS-52A	1/2"	STD	CS-52	150	15	12	15	12	15
CS-53A	1/2"	STD	CS-53	150	15	12	15	12	15
CS-54A	1/2"	STD	CS-54	150	15	12	15	12	15
CS-55A	1/2"	STD	CS-55	150	15	12	15	12	15
CS-56A	1/2"	STD	CS-56	150	15	12	15	12	15
CS-57A	1/2"	STD	CS-57	150	15	12	15	12	15
CS-58A	1/2"	STD	CS-58	150	15	12	15	12	15
CS-59A	1/2"	STD	CS-59	150	15	12	15	12	15
CS-60A	1/2"	STD	CS-60	150	15	12	15	12	15
CS-61A	1/2"	STD	CS-61	150	15	12	15	12	15
CS-62A	1/2"	STD	CS-62	150	15	12	15	12	15
CS-63A	1/2"	STD	CS-63	150	15	12	15	12	15
CS-64A	1/2"	STD	CS-64	150	15	12	15	12	15
CS-65A	1/2"	STD	CS-65	150	15	12	15	12	15
CS-66A	1/2"	STD	CS-66	150	15	12	15	12	15
CS-67A	1/2"	STD	CS-67	150	15	12	15	12	15
CS-68A	1/2"	STD	CS-68	150	15	12	15	12	15
CS-69A	1/2"	STD	CS-69	150	15	12	15	12	15
CS-70A	1/2"	STD	CS-70	150	15	12	15	12	15
CS-71A	1/2"	STD	CS-71	150	15	12	15	12	15
CS-72A	1/2"	STD	CS-72	150	15	12	15	12	15
CS-73A	1/2"	STD	CS-73	150	15	12	15	12	15
CS-74A	1/2"	STD	CS-74	150	15	12	15	12	15
CS-75A	1/2"	STD	CS-75	150	15	12	15	12	15
CS-76A	1/2"	STD	CS-76	150	15	12	15	12	15
CS-77A	1/2"	STD	CS-77	150	15	12	15	12	15
CS-78A	1/2"	STD	CS-78	150	15	12	15	12	15
CS-79A	1/2"	STD	CS-79	150	15	12	15	12	15
CS-80A	1/2"	STD	CS-80	150	15	12	15	12	15
CS-81A	1/2"	STD	CS-81	150	15	12	15	12	15
CS-82A	1/2"	STD	CS-82	150	15	12	15	12	15
CS-83A	1/2"	STD	CS-83	150	15	12	15	12	15
CS-84A	1/2"	STD	CS-84	150	15	12	15	12	15
CS-85A	1/2"	STD	CS-85	150	15	12	15	12	15
CS-86A	1/2"	STD	CS-86	150	15	12	15	12	15
CS-87A	1/2"	STD	CS-87	150	15	12	15	12	15
CS-88A	1/2"	STD	CS-88	150	15	12	15	12	15
CS-89A	1/2"	STD	CS-89	150	15	12	15	12	15
CS-90A	1/2"	STD	CS-90	150	15	12	15	12	15
CS-91A	1/2"	STD	CS-91	150	15	12	15	12	15
CS-92A	1/2"	STD	CS-92	150	15	12	15	12	15
CS-93A	1/2"	STD	CS-93	150	15	12	15	12	15
CS-94A	1/2"	STD	CS-94	150	15	12	15	12	15
CS-95A	1/2"	STD	CS-95	150	15	12	15	12	15
CS-96A	1/2"	STD	CS-96	150	15	12	15	12	15
CS-97A	1/2"	STD	CS-97	150	15	12	15	12	15
CS-98A	1/2"	STD	CS-98	150	15	12	15	12	15
CS-99A	1/2"	STD	CS-99	150	15	12	15	12	15
CS-100A	1/2"	STD	CS-100	150	15	12	15	12	15

NOTES:

- UNLESS OTHERWISE NOTED ALL VALVES, INSTRUMENT NUMBERS AND SPECIALTIES TO BE PREFIXED BY SYSTEM NUMBER.
- FOR EXAMPLE, FOR VALVE V-23, ACTUAL TAGGING SHALL BE CS-23.
- SYSTEM VALVE DESIGNATION NO. FOR INSTRUMENT - CS-23.
- ACTUAL TAGGING SHALL BE CS-23-23.
- TYPE OF INSTRUMENT - VALVE.
- INSTRUMENT DESIGNATION NO. FOR SPECIALTY - CS-23.
- ACTUAL TAGGING SHALL BE CS-23-23.
- TYPE OF SPECIALTY - VALVE.
- SPECIALTY IDENTIFICATION NO. - CS-23.
- UNLESS OTHERWISE NOTED ALL BRANCH COND. FOR DRAINING VENTS AND TEST SHALL BE OF SAME MATERIAL & SPECIFICATION AS THE HEADER UP TO AND INCLUDING SECOND SWITCH VALVE.
- UNLESS OTHERWISE NOTED ALL OPEN DRAINS AND VENTS SHALL BE CS-117 PIPING.
- FOR INSTRUMENTS WITHOUT RACK NUMBERS SEE INSTRUMENTATION INSTALLATION DETAILS FOR MOUNTING.
- FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT LIST G-191220.
- PIPE MATERIAL FROM VESSEL TO VESSEL - A-117, IS, SA, SS, TYPE 304, REMAINING CS-5A & 46 PIPE IS CS-5A.

REFERENCE DRAWINGS:

- LIST OF DRAWINGS - A-191134
- VALVE & SPECIALTY LIST - B-191157
- PIPING & INSTRUMENT SYMBOLS - G-191155
- FLOW DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM - G-191172
- REACTOR CORE SPRAY PIPING PLAN - G-191206
- FLOW DIAGRAM FEEDWATER, CONDENSATE & AIR EVACUATION SYSTEMS - G-191157
- FLOW DIAGRAM CONDENSATE & DRAINING WATER TRANSFER SYSTEM - G-191176
- DIAGRAM NUCLEAR POWER VESSEL INST. G-191241
- FLOW DIAGRAM NUCLEAR BOILER - G-191167
- FLOW DIAGRAM RADWASTE SYSTEM - G-191177
- RCD CORE SPRAY SYSTEM - G-191177
- GE-APED MASTER PARTS LIST - G-191214 (A)

AS BUILT
DATE 12-12-92



REPRODUCED FROM ORIGINAL GE DWG. 465477 P-0
VERMONT NUCLEAR POWER CORPORATION
VERMONT NUCLEAR POWER STATION
VERMONT, VERMONT
FLOW DIAGRAM
CORE SPRAY SYSTEM

BRANCH SERVICES INCORPORATED NEW YORK
SCALE NONE
EFFECTIVE
DATE DEC 92
BY NEEC
IN CHARGE
DATE 12-12-92

1	4-27-77	GEN. UPDATE	EDMUND	SLR	WPT	1	4-27-77	GEN. UPDATE	EDMUND	SLR	WPT
2	5-24-77	UPDATE	EDMUND	SLR	WPT	2	5-24-77	UPDATE	EDMUND	SLR	WPT
3	10-16-77	ADDED VESSEL SYMBOL DETAILS	EDMUND	SLR	WPT	3	10-16-77	ADDED VESSEL SYMBOL DETAILS	EDMUND	SLR	WPT
4	10-16-77	DELETED VALVE DESIGNATION	EDMUND	SLR	WPT	4	10-16-77	DELETED VALVE DESIGNATION	EDMUND	SLR	WPT
5	4-27-77	ADDED INSTRUMENT LIST	EDMUND	SLR	WPT	5	4-27-77	ADDED INSTRUMENT LIST	EDMUND	SLR	WPT
6	1-25-77	ADDED 2" STD. VALVE SYMBOL	EDMUND	SLR	WPT	6	1-25-77	ADDED 2" STD. VALVE SYMBOL	EDMUND	SLR	WPT
7	10-20-77	ADDED CONDENSATE & DRAINING WATER TRANSFER SYSTEM	EDMUND	SLR	WPT	7	10-20-77	ADDED CONDENSATE & DRAINING WATER TRANSFER SYSTEM	EDMUND	SLR	WPT
8	5-24-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT	8	5-24-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT
9	10-20-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT	9	10-20-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT
10	5-24-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT	10	5-24-77	ADDED 1/2" STD. VALVE SYMBOL	EDMUND	SLR	WPT

18	REVISED PER CORRECTIVE UPDATE	EDMUND	SLR	WPT	18	REVISED PER CORRECTIVE UPDATE	EDMUND	SLR	WPT		
17	CORRECTIVE UPDATE PER NRI EXIT INTERVIEW 7-8	EDMUND	SLR	WPT	17	CORRECTIVE UPDATE PER NRI EXIT INTERVIEW 7-8	EDMUND	SLR	WPT		
16	CORRECTIVE UPDATE (CHANGED NOTE 6)	EDMUND	SLR	WPT	16	CORRECTIVE UPDATE (CHANGED NOTE 6)	EDMUND	SLR	WPT		
15	ADDED NOTE 6 (LDK 77-8)	EDMUND	SLR	WPT	15	ADDED NOTE 6 (LDK 77-8)	EDMUND	SLR	WPT		
14	6-9-77 GEN. UPDATE	EDMUND	SLR	WPT	14	6-9-77 GEN. UPDATE	EDMUND	SLR	WPT		
NO.	DATE	REVISION	BY	CHK.	APPROVED	NO.	DATE	REVISION	BY	CHK.	APPROVED
NO.	DATE	REVISION	BY	CHK.	APPROVED	NO.	DATE	REVISION	BY	CHK.	APPROVED