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 AUTH. NAME: SORENSEN, G.C. AUTHOR AFFILIATION: Washington Public Power Supply System
 RECIP. NAME: SCHWENCER, A. RECIPIENT AFFILIATION: Licensing Branch 2

SUBJECT: Forwards revised FSAR figures documenting analyses of SER
 Confirmatory Issue 1 re final pipe break locations & design
 of pipe whip restraints. Final break locations based on
 completion of as-built programs & final stress analysis.

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Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

August 8, 1983
G02-83-705

Docket No. 50-397

Director of Nuclear Reactor Regulation
Attention: A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

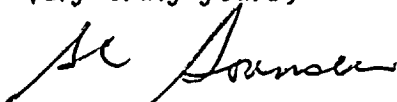
Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
SAFETY EVALUATION REPORT, CONFIRMATORY
ISSUE (1) BREAK LOCATIONS

The subject confirmatory issue requires submittal of the results of analyses to determine final pipe break locations and final design of pipe whip restraints. Attached are the revised FSAR figures documenting these analyses. It should be noted that these revisions indicate break locations based on the "status as built" stress analysis with thermal and fatigue loads. The "status as built" is not a final "as built" configuration; however, the Supply System does not anticipate any significant differences. Hence, the stress analysis and resulting pipe break locations in the attached figures, although not based on a final "as built", will not differ significantly from the final break locations. The final break locations will be based on completion of the "as built" program and the final stress analysis. Although no changes are anticipated, the Supply System will evaluate any changes, revise the attached drawings and incorporate them into the WNP-2 Final Safety Analysis Report.

Should you have any further questions, please contact Mr. P. L. Powell, Acting Manager, WNP-2 Licensing.

Very truly yours,



G. C. Sorensen, Acting Manager
Nuclear Safety and Regulatory Programs

PLP/tmh
Enclosures

cc: R Auluck - NRC
WS Chin - BPA
A Toth - NRC Site

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TABLE 3.6-6

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

Break No.	Line Designation	Isometric No. (M200)	Diameter (Inches)	Max. Force (kips) or Thrust vs. Time Figure	Plan Location Figure
1	RCIC(13)-4	120-1	4	Later	3.6-49
2	RCIC(13)-4	120-2	4	3.6-69, 70	3.6-49
3	RCIC(13)-4	120-3	4	3.6-65, 66	3.6-49
4	RCIC(13)-4	120-4	4	Later*	3.6-48
5	RCIC(13)-4	120-5	4	Later*	3.6-48
6	RCIC(13)-4	120-6	4	Later*	3.6-48
7	RCIC(13)-4	120-7	4	Later*	3.6-48
8	RCIC(13)-4	120-8	4	Later*	3.6-47
9	RCIC(13)-4	120-9	4	Later*	3.6-47
10	RCIC(13)-4	120-10	4	3.6-63, 64	3.6-47
11	RWCU(1)-4	126-1	5	3.6-79, 80	3.6-51
12	RWCU(1)-4	126-2	6	3.6-75, 76	3.6-50
13	RWCU(1)-4	126-3	④2	Later*	3.6-50
14	RWCU(1)-4	126-4	4	Later*	3.6-50
15	RWCU(1)-4	126-5	2	Later*	3.6-50
16	RWCU(1)-4	126-6	②4	3.6-81, 82	3.6-51
17	RWCU(2)-4	128-7	5	3.6-67, 68	3.6-51
18	RWCU(2)-4	128-8	5	Later*	3.6-51
19	RWCU(2)-4	128-9	6	Later*	3.6-51
20	RWCU(2)-4	128-10	6	Later*	3.6-50
21	RWCU(2)-4	128-11	5	Later*	3.6-49
22	RWCU(2)-4	128-12	6	Later*	3.6-49
23	RWCU(3)-4	128-39	5	Later*	3.6-50
24	RWCU(3)-4	128-40	5	Later*	3.6-50
25	RWCU(3)-4	128-41	6	Later*	3.6-50

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

<u>Break No.</u>	<u>Line Designation</u>	<u>Isometric No. (M200)</u>	<u>Diameter (Inches)</u>	<u>Max. Force (kips) or Thrust vs. Time Figure</u>	<u>Plan Location Figure</u>
51	AS(10)-2	141-11	6	Later* 7.28	3.6-43
52	AS(10)-2	141-12	6	Later* 7.28	3.6-43
53	RWC(1)-4	142-20	4	Later* <i>Fig 3.6-85</i>	3.6-51
54	RWC(1)-4	142-21	4	Later* "	3.6-51
55	RWC(1)-4	142-22	4	Later* "	3.6-51
56	RWC(1)-4	142-23	4	Later* "	3.6-51
57	RWC(1)-3	144-24	4	Later*	3.6-53
58	RWC(1)-3	144-25	4	Later*	3.6-51
59	RWC(1)-3	144-26	4	Later*	3.6-51
60	RWC(1)-3	144-27	4	Later*	3.6-51
61	RWC(1)-3	144-28	4	Later*	3.6-51
62	RWC(1)-3	144-29	6	Later*	3.6-51
63	RWC(2)-3	144-30	6	Later*	3.6-51
64	RWC(2)-3	144-31	4	Later*	3.6-51
65	RWC(2)-3	144-32	6	Later*	3.6-51
66	RWC(2)-3	144-33	6	Later*	3.6-51
67	RWC(2)-3	144-34	6	Later*	3.6-51
68	RWC(2)-3	144-35	6	Later*	3.6-51
69	RWC(2)-3	144-36	6	Later*	3.6-53
70	HS(9)-2	148-1	3	3.6-112, 113	3.6-43
71	HS(1)-2	148-2	4	Later*	3.6-43
72	HS(5)-2	148-4	4	3.6-105, 106	3.6-43
73	HS(5)-2	148-5	2	Later*	3.6-43
74	HS(5)-2	148-6	2	Later*	3.6-43
75	HS(5)-2	148-7	2	Later*	3.6-43

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

<u>Break No.</u>	<u>Line Designation</u>	<u>Isometric No. (M200)</u>	<u>Diameter (Inches)</u>	<u>Max. Force (kips) or Thrust vs. Time Figure</u>	<u>Plan Location Figure</u>
101	AS(1)-2	342-15	8	Later*	3.6-43
102	AS(3)-2	341-16	2	Later*	3.6-43
103	MS(1)-4	400-8	25	Later*	3.6-44
104	MS(1)-4	400-9	26	Later*	3.6-44
105	MS(1)-4	400-10	30	Later*	3.6-44
106	MS(1)-4	400-11	26	Later*	3.6-44
107	MS(1)-4	400-12	26	Later*	3.6-44
108	MS(1)-4	400-13	30	Later*	3.6-44
109	MS(1)-4	400-14	26	Later*	3.6-44
110	MS(1)-4	400-15	26	Later*	3.6-44
111	MS(1)-4	400-16	30	Later*	3.6-44
112	MS(1)-4	400-17	30	Later*	3.6-44
113	MS(1)-4	400-18	26	Later*	3.6-44
114	MS(1)-4	400-19	26	Later*	3.6-44
115	MS(1)-4	400-20	30	Later*	3.6-44
116	MS(1)-4	400-21	30	Later*	3.6-44
117	CO(3)-2	440-1	2.5	Later*	N/A
118	CO(3)-2	440-2	2.5	Later*	N/A
119	CO(3)-2	440-3	2.5	Later*	N/A
120	HS(5)-1	447-19	6	Later*	N/A
121	HS(5)-1	447-25	6	Later*	N/A
122	HS(5)-1	447-26	6	Later*	N/A
123	HS(5)-1	447-27	6	Later*	N/A
124	HS(1)-1	448-15	6	Later*	N/A
125	HS(1)-1	448-16	6	Later*	N/A

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

<u>Break No.</u>	<u>Line Designation</u>	<u>Isometric No. (M200)</u>	<u>Diameter (Inches)</u>	<u>Max. Force (kips) or Thrust vs. Time Figure</u>	<u>Plan Location Figure</u>
151	MS(9)-4	451-7	3	Later*	N/A
152	CRD(12)-3	N/A	8	N/A	See Section

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*Information is scheduled to be ready for Staff review in late 1982.

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

1200 ISO - BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIPS) OR THRUST VS TIME GRAPH	PLAN LOCAT. FIGURE
120-1	RLIC (13)-4	4"	FIG 3.6-65	FIG 3.6-49
120-2	RLIC (13)-4	4"	FIG 3.6-65	FIG 3.6-49
120-3	RLIC (13)-4	4"	FIG 3.6-65	FIG 3.6-49
120-4	RLIC (13)-4	4"	FIG 3.6-65	FIG 3.6-48
120-5	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-48
120-6	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-48
120-7	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-48
120-8	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-47
120-11	RLIC (13)-4	4"	FIG 3.6-65	FIG 3.6-49
120-12	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-47
120-13	RLIC (13)-4	4"	FIG 3.6-63	FIG 3.6-47
126-1	RWCU (1)-4	6"	FIG 3.6-80	FIG 3.6-51
126-2	RWCU (1)-4	6"	FIG 3.6-75	FIG 3.6-50
126-3	RWCU (1)-4	2"	FIG 3.6-72	FIG 3.6-50
126-5	RWCU (1)-4	2"	FIG 3.6-72	FIG 3.6-50
126-6	RWCU (1)-4	4"	FIG 3.6-81	FIG 3.6-51
126-51	RWCU (1)-4	4"	FIG 3.6-71	FIG 3.6-50
126-52	RWCU (1)-4	6"	FIG 3.6-80	FIG 3.6-51
126-53	RWCU (1)-4	6"	FIG 3.6-80	FIG 3.6-51
128-7	RWCU (2)-4	4"	FIG 3.6-84	FIG 3.6-51
128-8	RWCU (2)-4	6"	FIG 3.6-68	FIG 3.6-51
128-9	RWCU (2)-4	6"	FIG 3.6-68	FIG 3.6-51
128-10	RWCU (2)-4	6"	FIG 3.6-68	FIG 3.6-50
128-11	RWCU (2)-4	6"	FIG 3.6-68	FIG 3.6-49
128-61	RWCU (2)-4	6"	FIG 3.6-68	FIG 3.6-49

TABLE 3.6-6

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY

CONTAINMENT

M200-150 -BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIP)	PLAN LOCATION FIGURE
			OR THRUST VS TIME GRAPH	
129-39	RWCU (3)-4	6"	FIG 3.6-77	FIG 3.6-50
129-41	RWCU (3)-4	6"	FIG 3.6-77	FIG 3.6-50
129-42	RWCU (3)-4	6"	FIG 3.6-77, 73	FIG 3.6-50
129-43	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
129-44	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
129-45	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
129-47	RWCU (3)-4	3"	FIG 3.6-73	FIG 3.6-50
129-48	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
129-50	RWCU (3)-4	3"	FIG 3.6-73	FIG 3.6-50
129-54	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
129-55	RWCU (3)-4	4"	FIG 3.6-73	FIG 3.6-50
134-1	MS(20)-4	2"	2.85	FIG 3.6-44
134-2	MS(20)-4	2"	2.85	FIG 3.6-44
134-3	MS(20)-4	2"	2.85	FIG 3.6-44
134-4	MS(20)-4	2"	2.85	FIG 3.6-44
134-35	MS(20)-4	3"	2.85, 6.88	FIG 3.6-44
134-36	MS(20)-4	3"	6.88	FIG 3.6-44
139-1	AS(11)-2	3"	FIG 3.6-87	FIG 3.6-43
139-3	AS(11)-2	3"	FIG 3.6-87	FIG 3.6-43
139-4	AS(11)-2	4"	FIG 3.6-87	FIG 3.6-43
139-7	AS(11)-2	4"	FIG 3.6-87	FIG 3.6-43
139-18	AS(11)-2	4"	12.6, 3.2	FIG 3.6-43
139-19	AS(11)-2	4"	FIG 3.6-87	FIG 3.6-43
139-20	AS(11)-2	4"	FIG 3.6-87	FIG 3.6-43
139-21	AS(11)-2	4"	FIG 3.6-87	FIG 3.6-43

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DESIGN BASIS. BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

M200-150 BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIPS) OR FORCE VS TIME GRAPH	PLAN LOCATION FIGURE
141-10	AS (10)-2	6"	7.28	FIG 3.6-43
141-11	AS (10)-2	6"	7.28	FIG 3.6-43
141-12	AS (10)-2	6"	7.28	FIG 3.6-43
141-20	AS (10)-2	8"	12.61	FIG 3.6-43
141-21	AS (7)-2	8"	12.61	FIG 3.6-43
142-20	RWCU (1)-4	4"	FIG 3.6-85	FIG 3.6-51
142-21	RWCU (1)-4	4"	FIG 3.6-85	FIG 3.6-51
142-22	RWCU (1)-4	4"	FIG 3.6-85	FIG 3.6-51
142-23	RWCU (1)-4	4"	FIG 3.6-85	FIG 3.6-51
144-24	RWCU (1)-3	4"	13.34	FIG 3.6-53
144-26	RWCU (1)-3	4"	13.34	FIG 3.6-51
144-27	RWCU (1)-3	4"	13.34	FIG 3.6-51
144-28	RWCU (1)-3	4"	13.34	FIG 3.6-51
144-29	RWCU (1)-3	6"	30.25	FIG 3.6-51
144-31	RWCU (2)-3	4"	13.34	FIG 3.6-51
144-32	RWCU (2)-3	6"	30.25	FIG 3.6-51
144-36	RWCU (2)-3	4"	13.34	FIG 3.6-53
144-56	RWCU (1)-3	4"	13.34	FIG 3.6-51
144-57	RWCU (2)-3	6"	30.12	FIG 3.6-51
144-58	RWCU (1)-3	4"	13.28	FIG 3.6-51
144-59	RWCU (2)-3	6"	30.12	FIG 3.6-49
144-60	RWCU (5)-3	6"	30.12	FIG 3.6-49

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TABLE 3.6-6.

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

M200-150 BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIPS) OR THRUST VS TIME FIGURE	LOCATION PLAN FIGURE
148-1	HS (9)-2	3"	FIG 3.6-97	FIG 3.6-60
148-2	HS (1)-2	4"	FIG 3.6-97	FIG 3.6-60
148-3	AS (11)-2	3"	FIG 3.6-97	FIG 3.6-60
148-5	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-6	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-7	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-8	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-9	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-10	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-11	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-12	HS (5)-2	2"	FIG 3.6-97	FIG 3.6-60
148-30	HS (5)-2	3"	FIG 3.6-97	FIG 3.6-60.
149-2	HCO (11)-1	4"	.182	FIG 3.6-58
149-5	HCO (11)-2	3"	.182	FIG 3.6-58
149-30	HCO (11)-2	3"	.182	FIG 3.6-58
149-31	HCO (11)-2	3"	.182	FIG 3.6-58
149-32	HCO (11)-2	3"	.182	FIG 3.6-58
149-33	HCO (11)-2	3"	.182	FIG 3.6-58
149-34	HCO (11)-2	3"	.182	FIG 3.6-60
335-1	RFW (1)-4	24"	433.12	
335-3	RFW (1)-4	24"	433.12	
335-5	RFW (1)-4	24"	433.12	
335-6	RFW (1)-4	24"	433.12.	

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TABLE 3.6-6

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DESIGN BASIS BREAK LOCATIONS OUTSIDE PRIMARY CONTAINMENT

M200 150 BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIPS) ON THRUST vs TIME FIGURE	PLAN LOCATION FIGURE
342-13	HS (1) -1	6"	7.28	FIG 3.6-43
342-14	AS (9) -2	4"	3.21	FIG 3.6-43
342-25	AS (1) -2	8"	12.6	N/A
342-26	SS (1) -2	8"	12.6	N/A
342-27	AS (9) -2	4"	3.21	FIG 3.6-43
315-8	MS (1) -4	26"	444.5	FIG 3.6-44
315-32	MS (1) -4	26"	432.2	FIG 3.6-44
400-11	MS (1) -4	26"	444.5	FIG 3.6-44
400-33	MS (1) -4	26"	432.2	FIG 3.6-44
401-14	MS (1) -4	26"	444.5	FIG 3.6-44
401-30	MS (1) -4	26"	432.2	FIG 3.6-44
402-18	MS (1) -4	26"	444.5	FIG 3.6-44
402-31	MS (1) -4	26"	432.2	FIG 3.6-44
440-1	CO (3) -2	2 1/2"	1.63	N/A
440-2	CO (3) -2	2 1/2"	1.63	N/A
440-3	CO (3) -2	2 1/2"	1.63	N/A
447-10	HS (5) -1	6"	1.82	N/A
447-25	HS (5) -1	6"	1.82	N/A
447-26	HS (5) -1	6"	1.82	N/A
447-27	HS (5) -1	6"	1.82	N/A

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TABLE 3.6-6

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DESIGN BASIS BREAK LOCATION OUTSIDE PRIMARY CONTAINMENT

M200 130 BREAK	LINE DESIGNATION	PIPE DIA.	MAX FORCE (KIPS) OR THRUST VS. TIME FIGURE	PLAN LOCATION FIGURE
448-15	HS (1)-1	6"	1.82	N/A
448-16	HS (1)-1	6"	1.82	N/A
448-17	HS (1)-1	6"	1.82	N/A
448-18	HS (1)-1	6"	1.82	N/A
448-19	HS (1)-1	6"	1.82	N/A
448-20	HS (1)-1	6"	1.82	N/A
448-21	HS (1)-1	6"	1.82	N/A
448-22	HS (1)-1	4"	.802	N/A
448-23	HS (1)-1	4"	.802	N/A
448-24	HS (1)-1	2"	.186	N/A
449-13	HCO (5)-1	3"	.093	N/A
449-14	HCO (5)-1	3"	.093	N/A
449-15	HCO (5)-1	3"	.093	N/A
449-16	HCO (5)-1	3"	.093	N/A
449-17	HCO (5)-1	3"	.093	N/A
449-18	HCO (5)-1	3"	.093	N/A
449-19	HCO (5)-1	3"	.093	N/A
449-20	HCO (5)-1	3"	.093	N/A
449-21	HCO (5)-1	3"	.093	N/A
449-22	HCO (5)-1	3"	.093	N/A

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TABLE 3.6-6.

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DESIGN BASIS BREAK LOCATION OUTSIDE PRIMARY CONTAINMENT

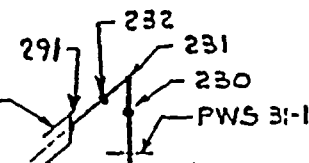
M200 ISO BREAK	LINE DESIGNATION	PIPE DIA	MAX FORCE (KIPS) OR	PLAN LOCATION FIGURE
			THRUST VS TIME FIGURE	
450-23	HCO(S)-1	3"	.093	N/A
450-24	HCO(S)-1	3"	.093	N/A
450-25	HCO(S)-1	2 1/2"	.060	N/A
450-26	HCO(S)-1	2 1/2"	.060	N/A
450-27	HCO(S)-1	2 1/2"	.060	N/A
450-28	HCO(S)-1	2 1/2"	.060	N/A
451-6	MS(9)-4	3"	6.88	FIG 3.6-44
451-30	MS(9)-4	3"	6.88	FIG 3.6-44

PAGE 3.6-856

No Change

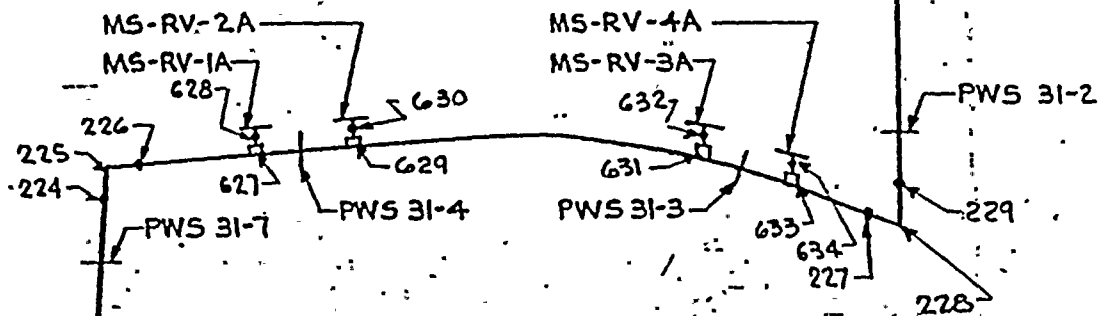


REACTOR VESSEL
MS NOZZLE N3A



2" MS(12)-4

26" MS(1)-4



FE
N005

FLOW
RESTRICTOR

X-18A

MS-V-22A

PWS 31-6

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

MAIN STEAM LOOP A ISOMETRIC

FIGURE

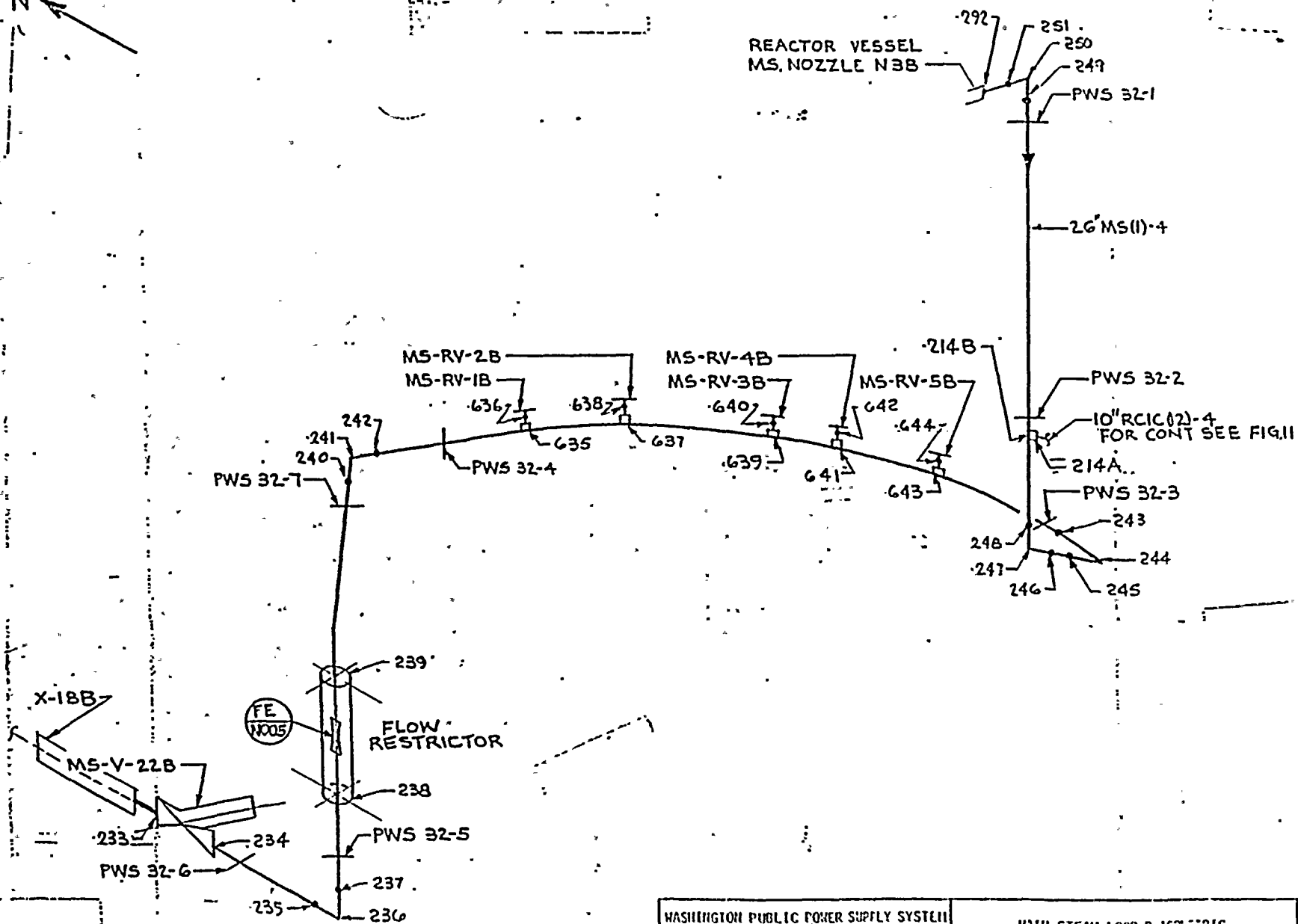
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

~~Node 215~~
Node 216.
~~Node 217~~
Node 219.
Node 221.
~~Node 222~~
~~Node 223~~
Node 224.
Node 226.
Node 227.
Node 229.
Node 230.
Node 232.
Node 291.
~~Node 628~~
~~Node 630~~
~~Node 632~~
~~Node 634~~
~~Node 633~~
~~Node 631~~
~~Node 629~~
~~Node 627~~

LONGITUDINAL BREAKS

~~Node 218~~
Node 220.
Node 225.
Node 228.
Node 231.
Node 633
Node 631
Node 629
Node 627

No Change



WNP-2

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

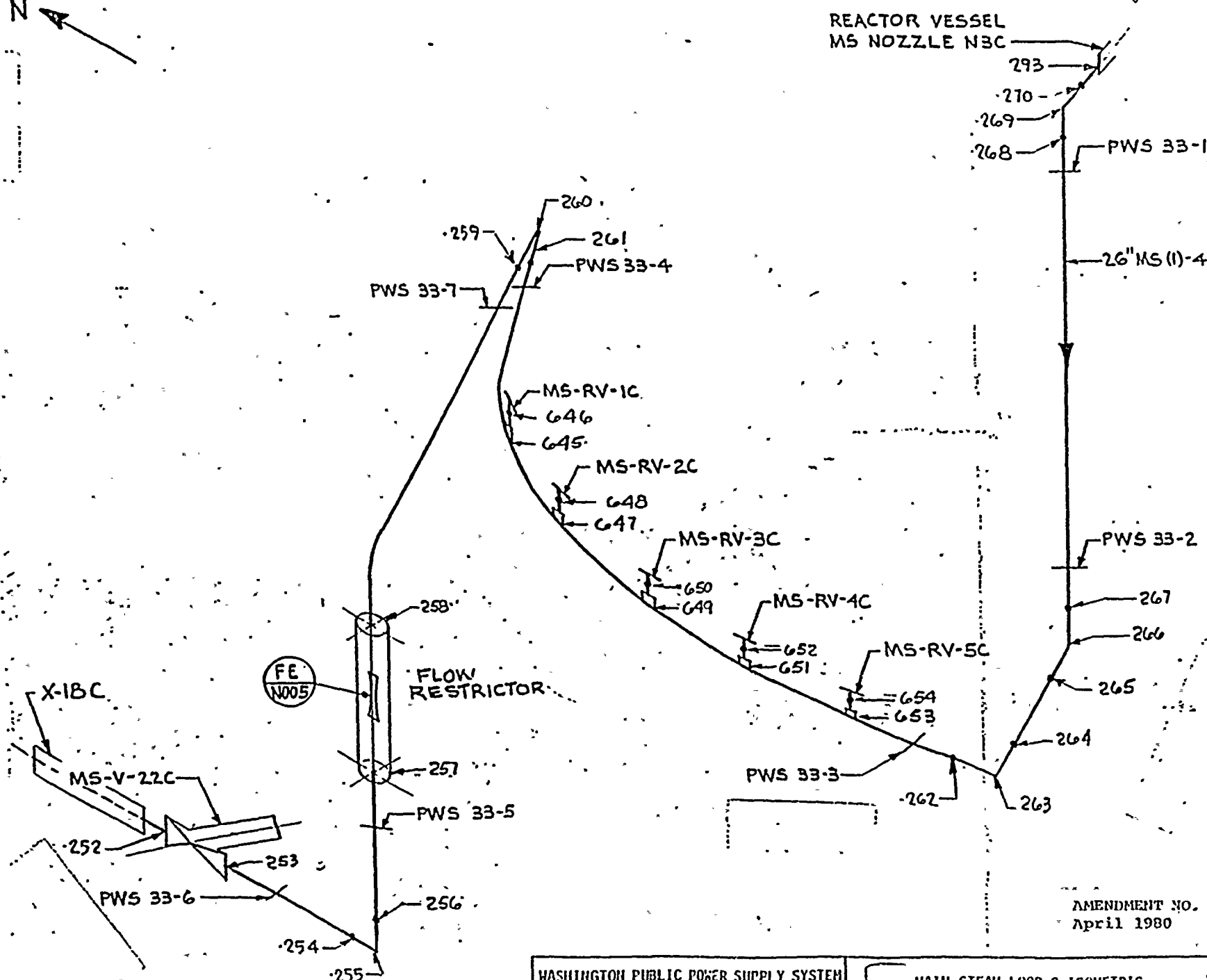
CIRCUMFERENTIAL BREAKS

~~Node 233~~
~~Node 234~~
Node 235
Node 237
~~Node 238~~
~~Node 239~~
Node 240
Node 242
~~Node 243~~
~~Node 245~~
Node 246
Node 248
Node 249
Node 251
Node 292
Node 636
~~Node 638~~
Node 640
~~Node 642~~
Node 644
NODE 214A
~~NODE 643~~
~~NODE 644~~
~~NODE 639~~
~~NODE 637~~
~~NODE 635~~

LONGITUDINAL BREAKS

Node 236
Node 241
~~Node 244~~
Node 247
Node 250
NODE 643
NODE 641
NODE 639
NODE 637
NODE 635

No Change



AMENDMENT NO. 9
April 1980

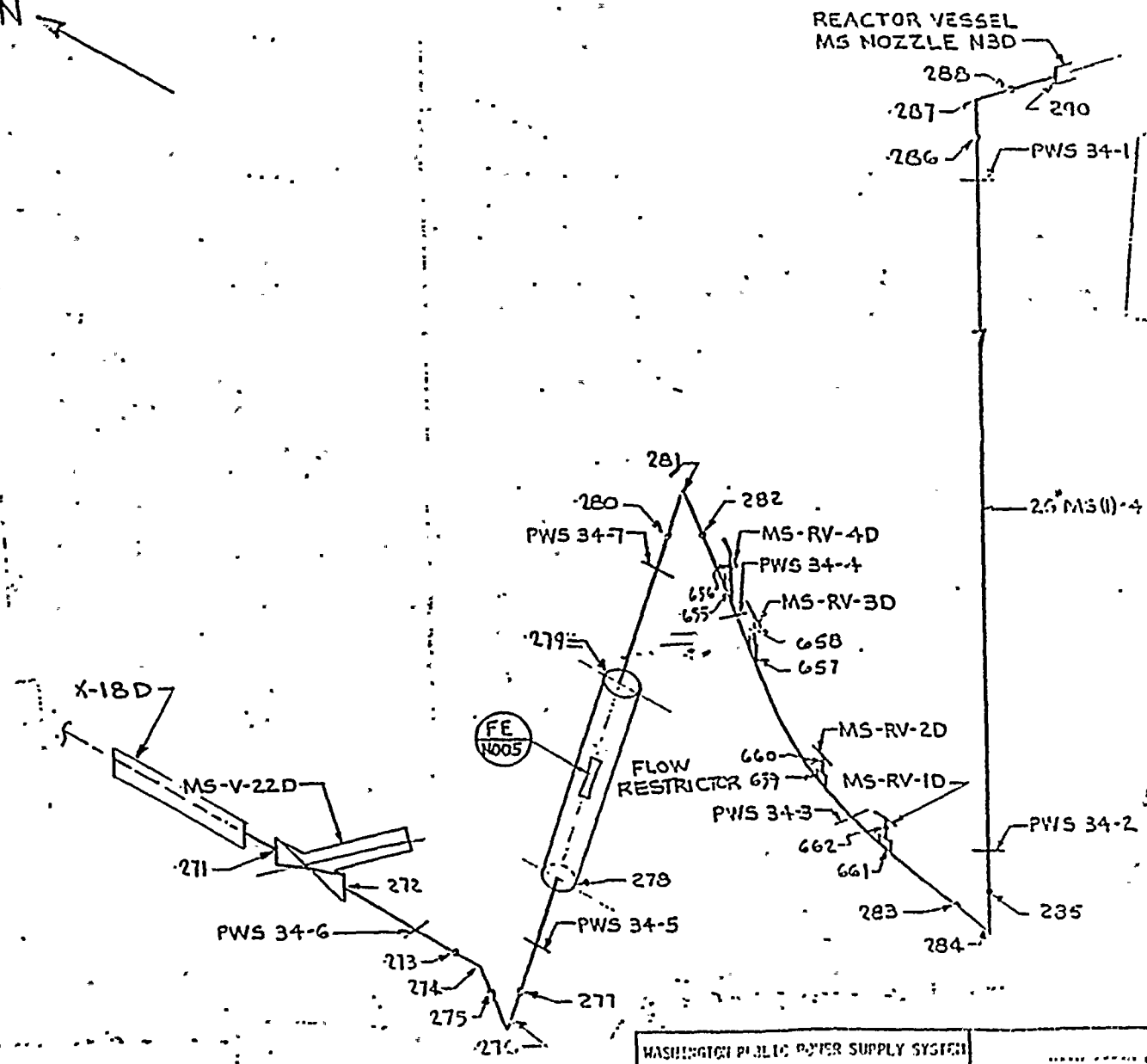
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

~~Node 252~~
~~Node 253~~
Node 254'
Node 256'
~~Node 257~~
~~Node 258~~
Node 259.
Node 261.
~~Node 262~~
~~Node 264~~
Node 265.
Node 267.
Node 268.
Node 270.
Node 293.
Node 646' *NODE 646'*
~~Node 648~~
Node 650' *NODE 650'*
~~Node 652~~
Node 654'

LONGITUDINAL BREAKS

Node 255-
Node 260-
~~Node 263~~
Node 266 -
Node 269 -
NODE 653 -
NODE 651 -
NODE 649 -
NODE 647 -
NODE 645 -

No Change



WASHINGTON PUBLIC POWER SUPPLY SYSTEM

SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

~~Node 271~~
Node 272.
~~Node 273~~
Node 275.
Node 277.
~~Node 278~~
~~Node 279~~
Node 280.
Node 282.
Node 283.
Node 285.
Node 286.
Node 288.
Node 290.
~~Node 656~~
~~Node 658~~
~~Node 660~~
~~Node 662~~

LONGITUDINAL BREAKS

~~Node 274~~
Node 276.
Node 281.
Node 284.
Node 287.
NODE 661.
NODE 659.
NODE 657
NODE 655

new

W.O. P.
Drawn
By
Title

WNP-2

AMENDMENT NO. 32
1983

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

CIRCUMFERENTIAL BREAKS

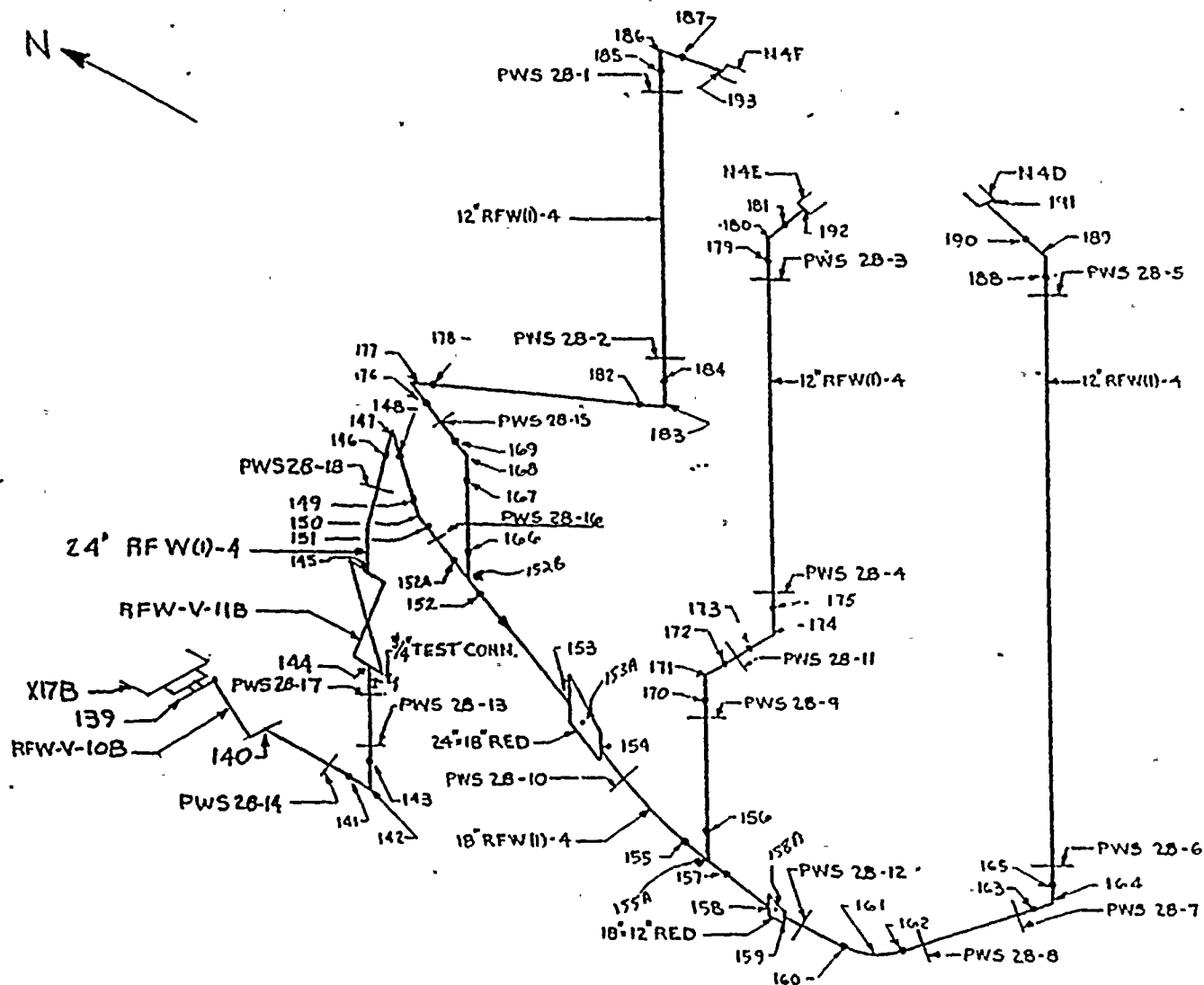
NODE		
85	124	115
86	126	117
88	127	118
89	129	120
90	136	130
91	100	132
93	101	137
97A	102	103
97	104	
111	105	
98	107	
99	108	
112	110	
114	133	
121	135	
123	138	

LONGITUDINAL BREAKS

NODE	
87	97B
92	98A
113	100A
122	103A
125	
128	
106	
109	
134	
116	
119	
131	

Note: Break locations based on change in piping flexibility because stress analysis not complete.

WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2	REACTOR FEEDWATER (LINE A)	Figure 3.6-16 b
---	----------------------------	--------------------



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NYLCAR PROJECT NO. 7

REACTOR FEEDWATER (LINE F)
ISOMETRIC

11/1/68
24-17

W.
Dr.
By
Tft

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-Ort
-E
=

WNP2

AMENDMENT NO. 32
1983

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

CIRCUMFERENTIAL BREAK

LONGITUDINAL BREAK

NODE	
140	154
141	155
143	156
144	157
145	170
146	172
148	173
152 A	175
152	179
166	181
167	192
169	159
176	160
178	162
182	163
184	165
185	188
187	190
193	191
153	158

NODE	
142	152 B
147	153 A
168	155 A
177	158 A
183	
186	
171	
174	
180	
161	
164	
189	

Note: Break locations based on change in piping flexibility because stress analysis not complete.

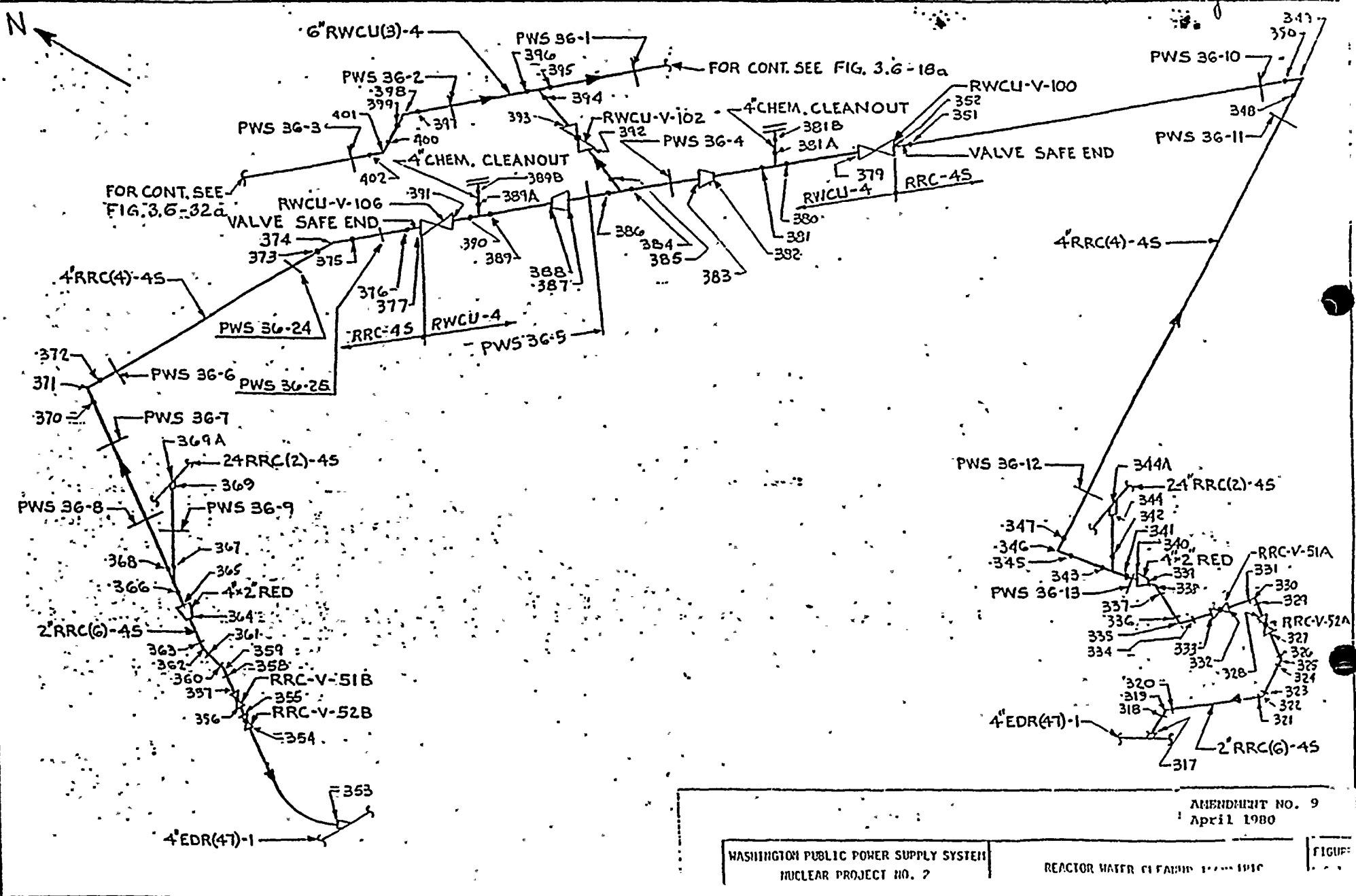
WASHINGTON PUBLIC POWER

REACTOR FEEDWATER (LINE B)

SUPPLY SYSTEM NUCLEAR

FIGURE
3.6-17b

No Change



AMENDMENT NO. 9
April 1980

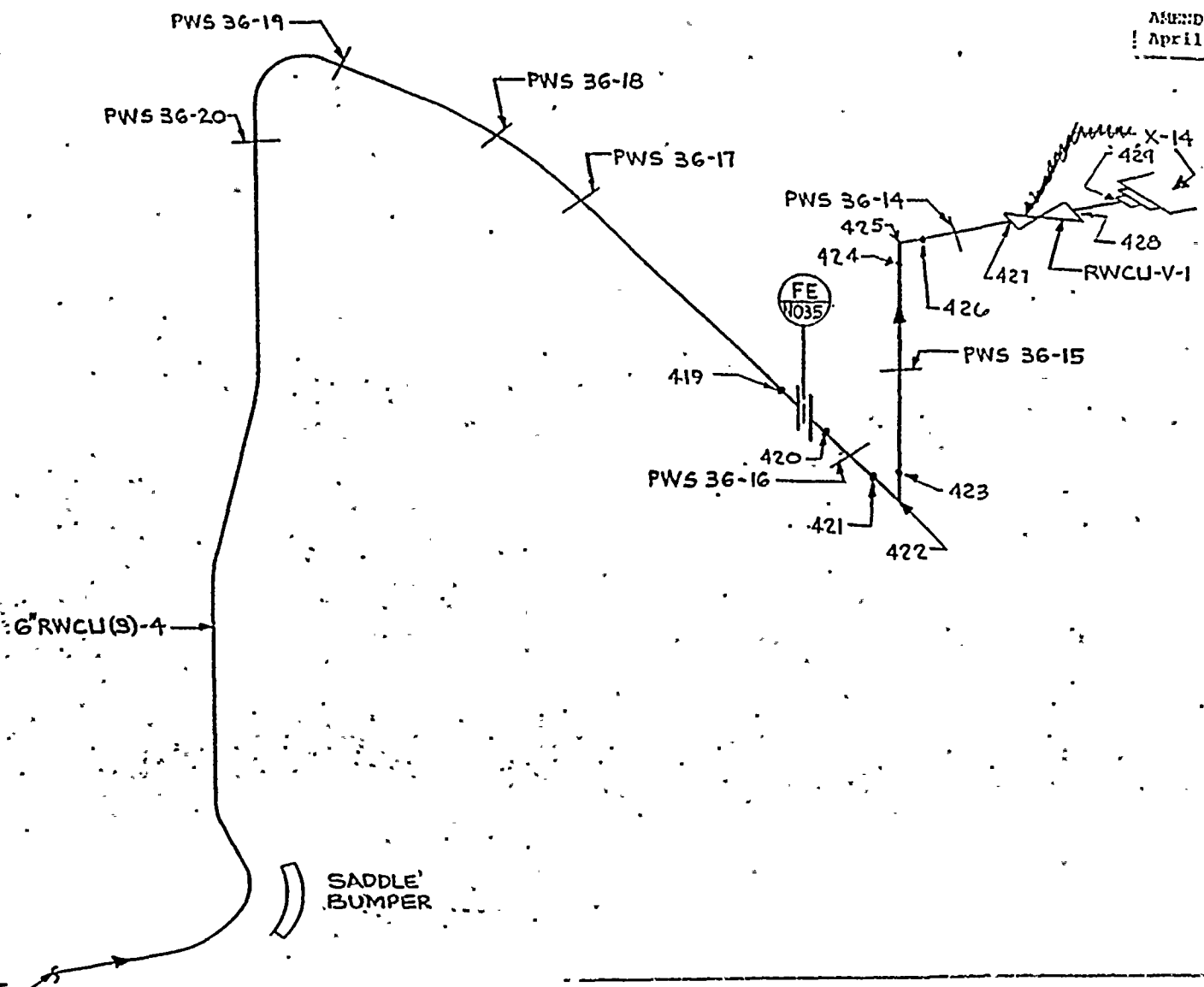
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

REACTOR WATER CIRCUITRY

FIGURE

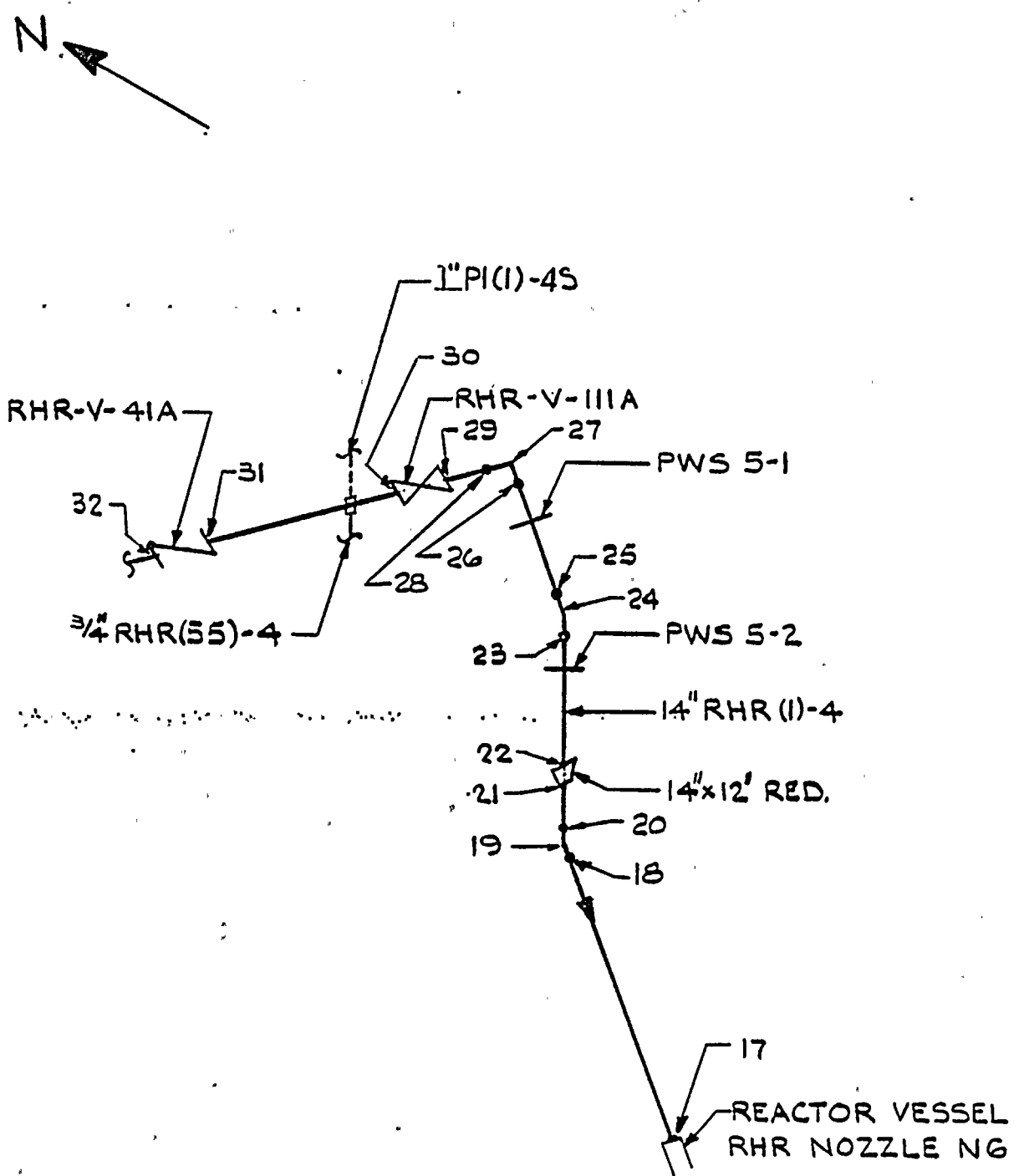


AMENDMENT NO. 832
April 1980



FOR CONT. SEE
FIG. 3.6-18b

No Change



SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

~~Node 419~~
~~Node 420~~
~~Node 421~~
~~Node 423~~
~~Node 424~~
~~Node 426~~
Node 427.
~~Node 428~~
~~Node 429~~

LONGITUDINAL BREAKS

~~Node 422~~
~~Node 425~~

SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKSNODE 333

~~Node 340~~
~~Node 341~~
~~Node 342~~
~~Node 343~~
Node 344
~~Node 345~~
~~Node 347~~
~~Node 348~~
~~Node 350~~
~~Node 352~~
~~Node 365~~
Node 366
Node 367
Node 368
~~Node 369~~
~~Node 370~~

NODE 357

~~Node 372~~
Node 373
~~Node 375~~
~~Node 377~~
Node 379
~~Node 380~~
Node 381
~~Node 381A~~
~~Node 381B~~
~~Node 382~~
~~Node 383~~
~~Node 384~~
Node 385
~~Node 386~~
~~Node 387~~

~~Node 388~~
~~Node 389~~
~~Node 389A~~
~~Node 389B~~
~~Node 390~~
Node 391
~~Node 392~~
~~Node 393~~
Node 394
Node 395
Node 396
~~Node 397~~
~~Node 399~~
~~Node 400~~
~~Node 402~~

LONGITUDINAL BREAKS

~~Node center of [341, 342, 343] (TEE)~~

~~346~~
~~349~~

~~Node center of [384, 385, 386] (TEE)~~

~~374~~
~~371~~

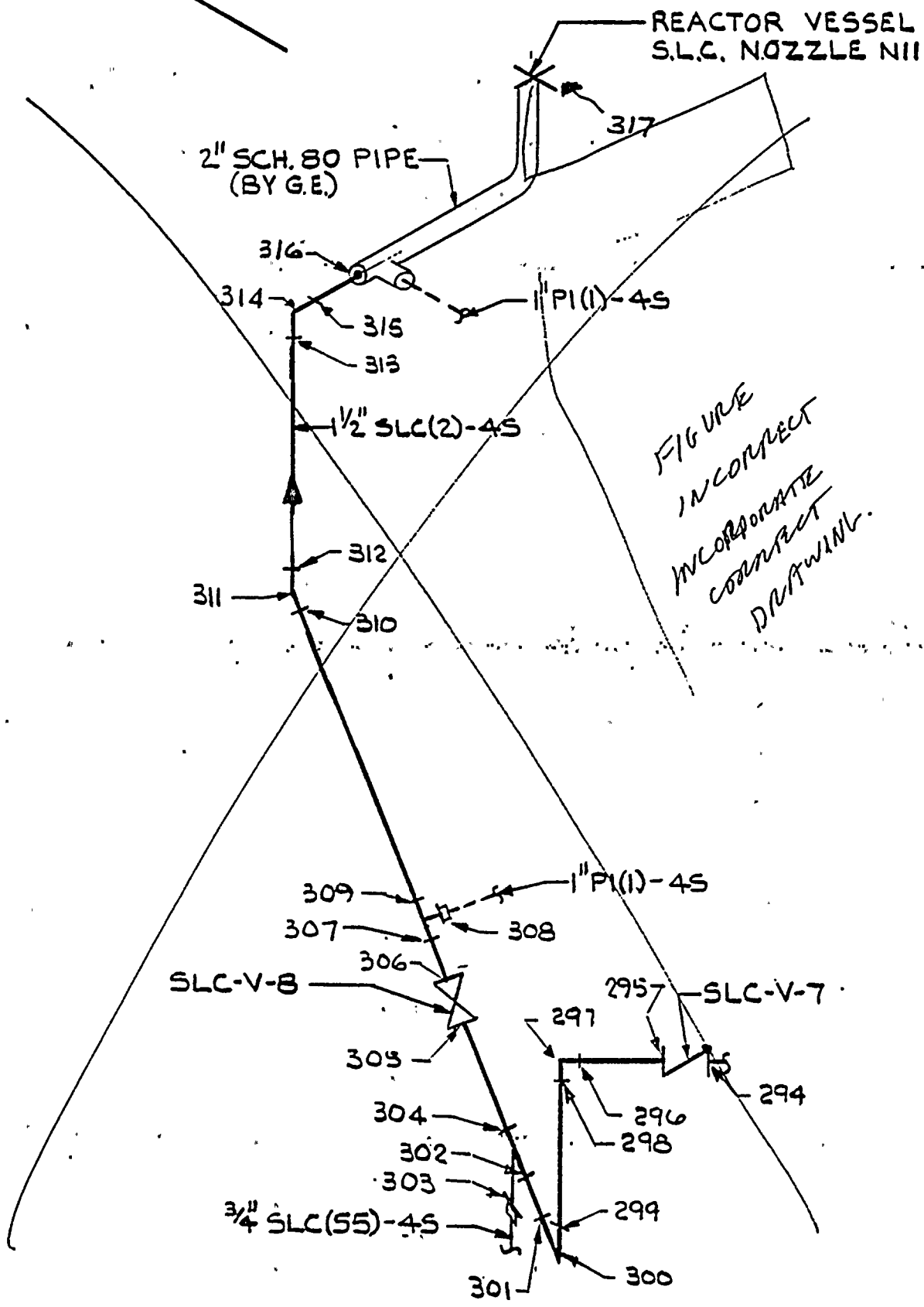
~~Node center of [366, 367, 368] (TEE)~~

~~Node center of [394, 395, 396] (TEE)~~

~~390~~
~~401~~

~~Node center of [389, 389A, 390] (TEE)~~

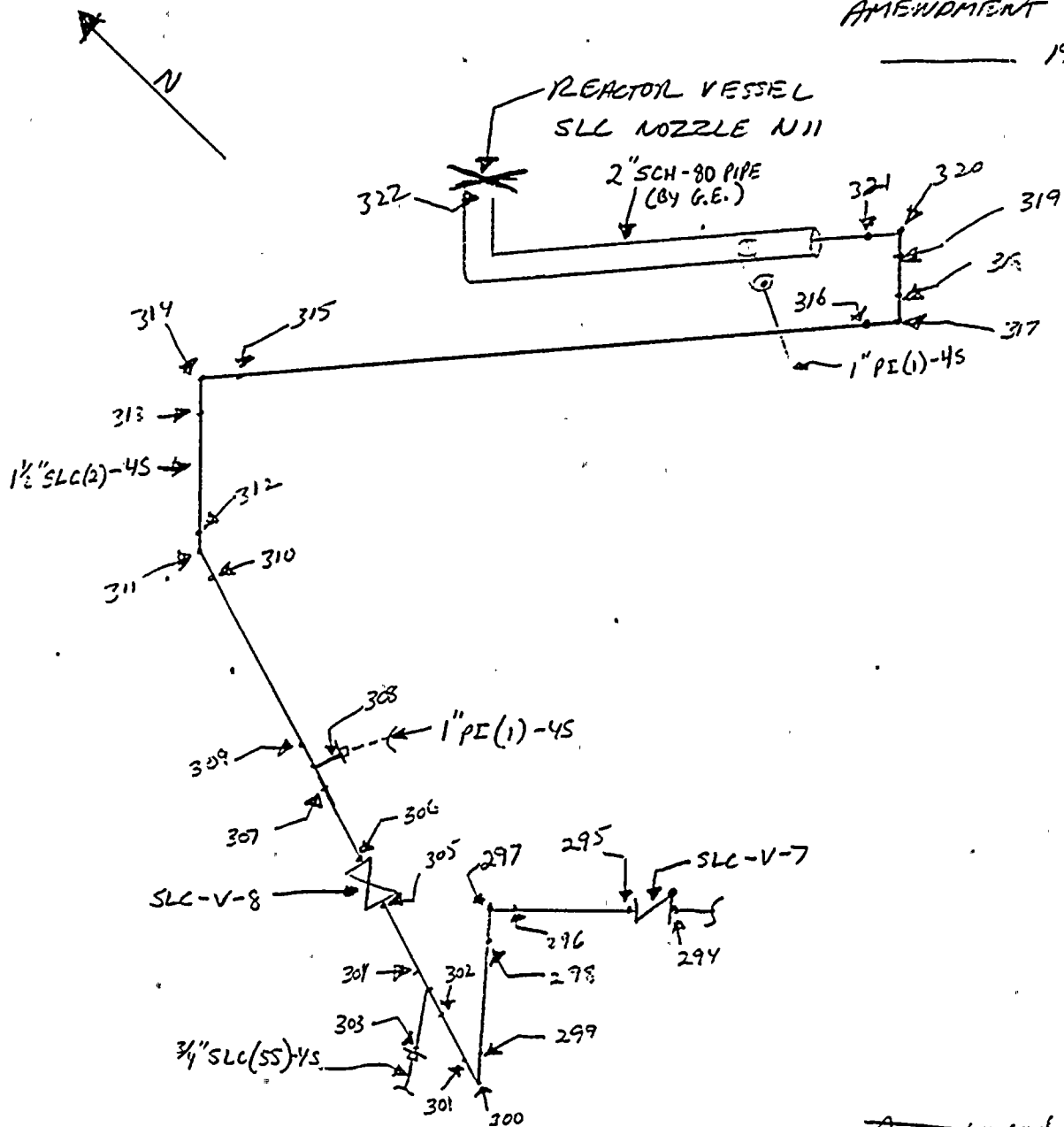
~~Node center of [380, 381, 381A] (TEE)~~



W.O.
Draw
By—
Title

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Boc
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AMENDMENT NO. _____
1983



~~Amendment No. 9~~
Amendment NO. 33

WASHINGTON PUBLIC POWER	STANDARD, LIQUID CONTROL	FILED
SUPPLY SYSTEM, NUCLEAR	KINETIC	3.6-19a
PROJECT NO. 2		

W.
Dr
By
FH

BURNS AND ROY INC

or
K1111

WNP-2

AMENDMENT NO. 32
1983

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

CIRCUMFERENTIAL BREAK

NODE 295

NODE 308

NODE 310

NODE 312

NODE 316

NODE 318

NODE 319

NODE 321

NODE 322

WASHINGTON PUBLIC POWER

SUPPLY SYSTEM NUCLEAR

PROJECT NO. 2

STANDBY LIQUID CONTROL

FIGURE

3.6-10b

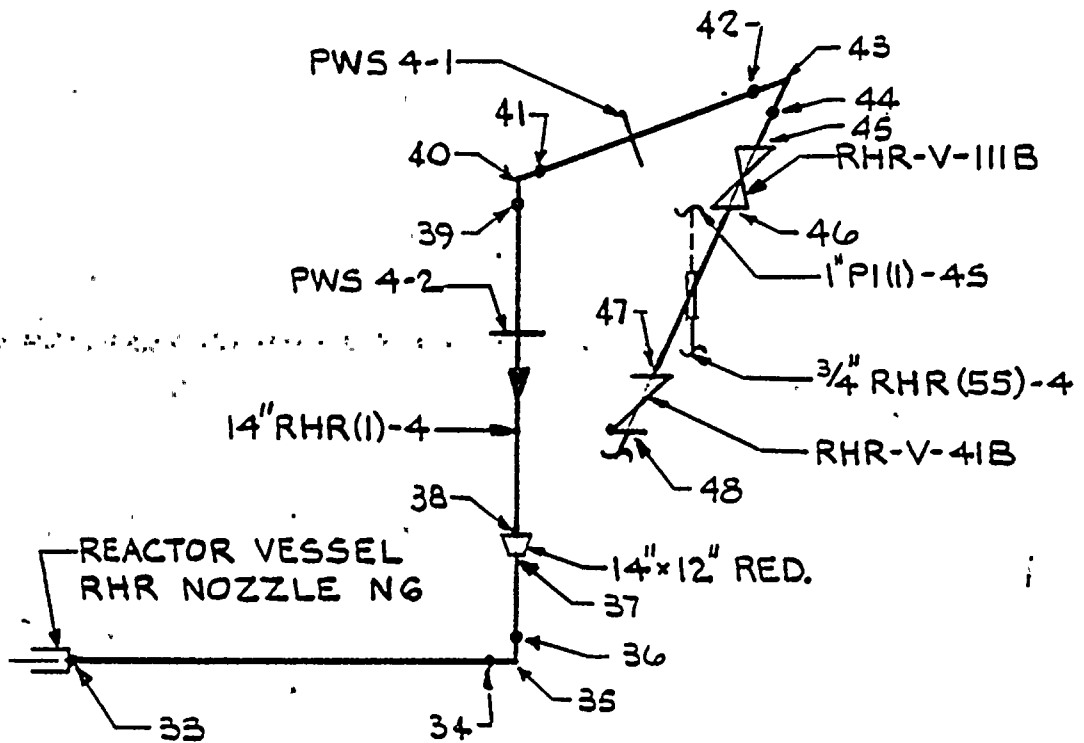
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 17.
Node 18.
Node 20.
~~Node 21~~
~~Node 22~~
~~Node 23~~
~~Node 25~~
Node 26.
Node 28.
~~Node 29~~
~~Node 30~~
Node 31.

LONGITUDINAL BREAKS

Node 19.
~~Node 24~~
Node 27.

No Change



SUMMARY OF POSTULATED PIPE BREAK LOCATIONSPERIPHERAL BREAKS

Node 33•

Node 34•

Node 36•

~~Node 37•~~~~Node 38•~~~~Node 39•~~~~Node 41•~~

Node 42•

Node 44•

~~Node 45•~~~~Node 46•~~

Node 47•

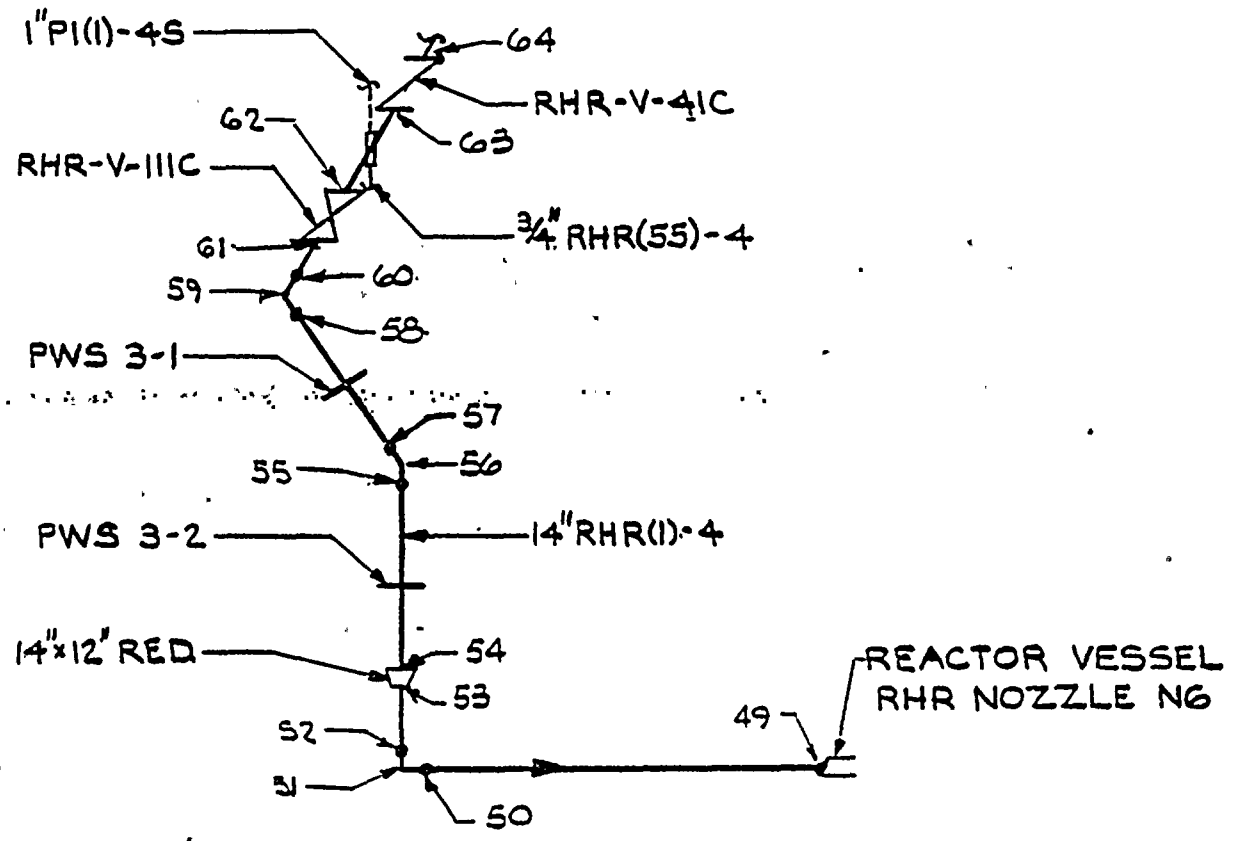
LONGITUDINAL BREAKS

Node 35•

~~Node 40•~~

Node 43•

No Change



WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2	RESIDUAL HEAT REMOVAL LPCI MODE (LOOP C) ISOMETRIC	FIGURE 3.6-22a
--	--	-------------------



SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

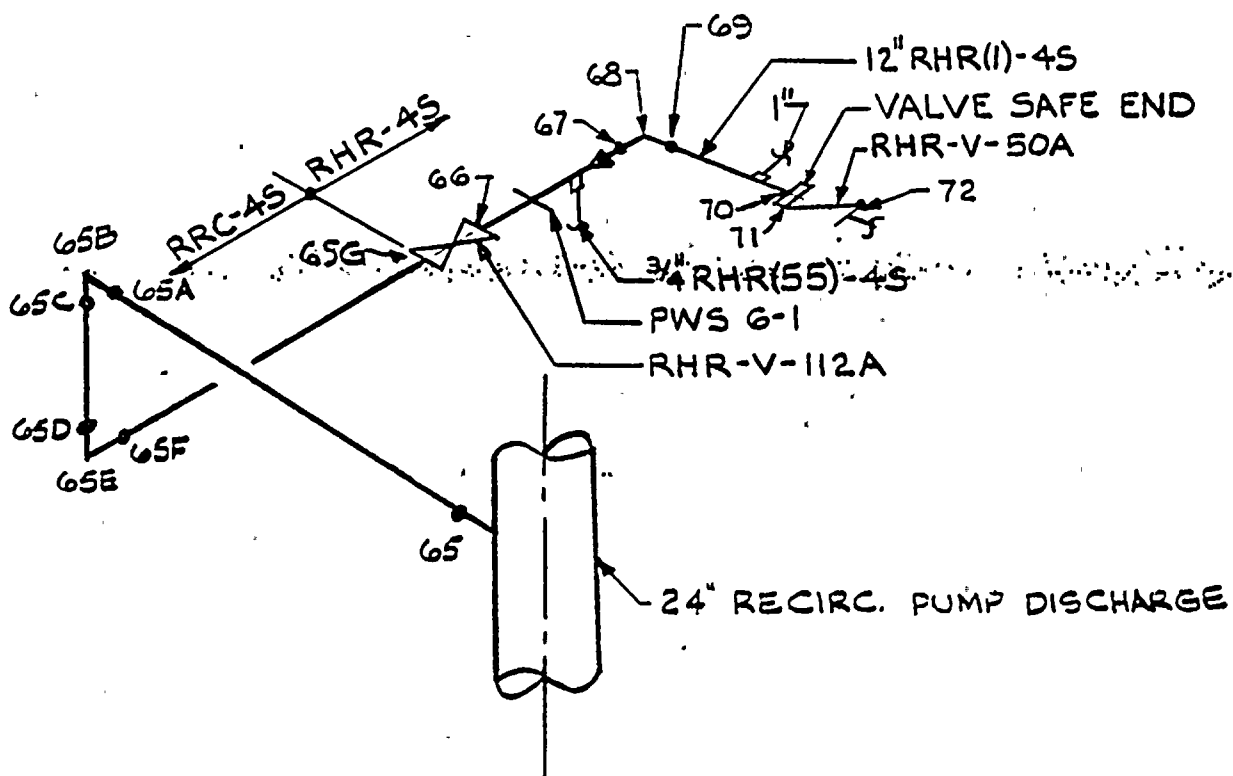
Node 49•
Node 50•
Node 52•
~~Node 53~~
~~Node 54~~
~~Node 55~~
~~Node 57~~
Node 58•
Node 60•
~~Node 61~~
~~Node 62~~
Node 63•

LONGITUDINAL BREAKS

Node 51•
~~Node 56~~
Node 59•

No Change

Amendment No. 9
April 1980



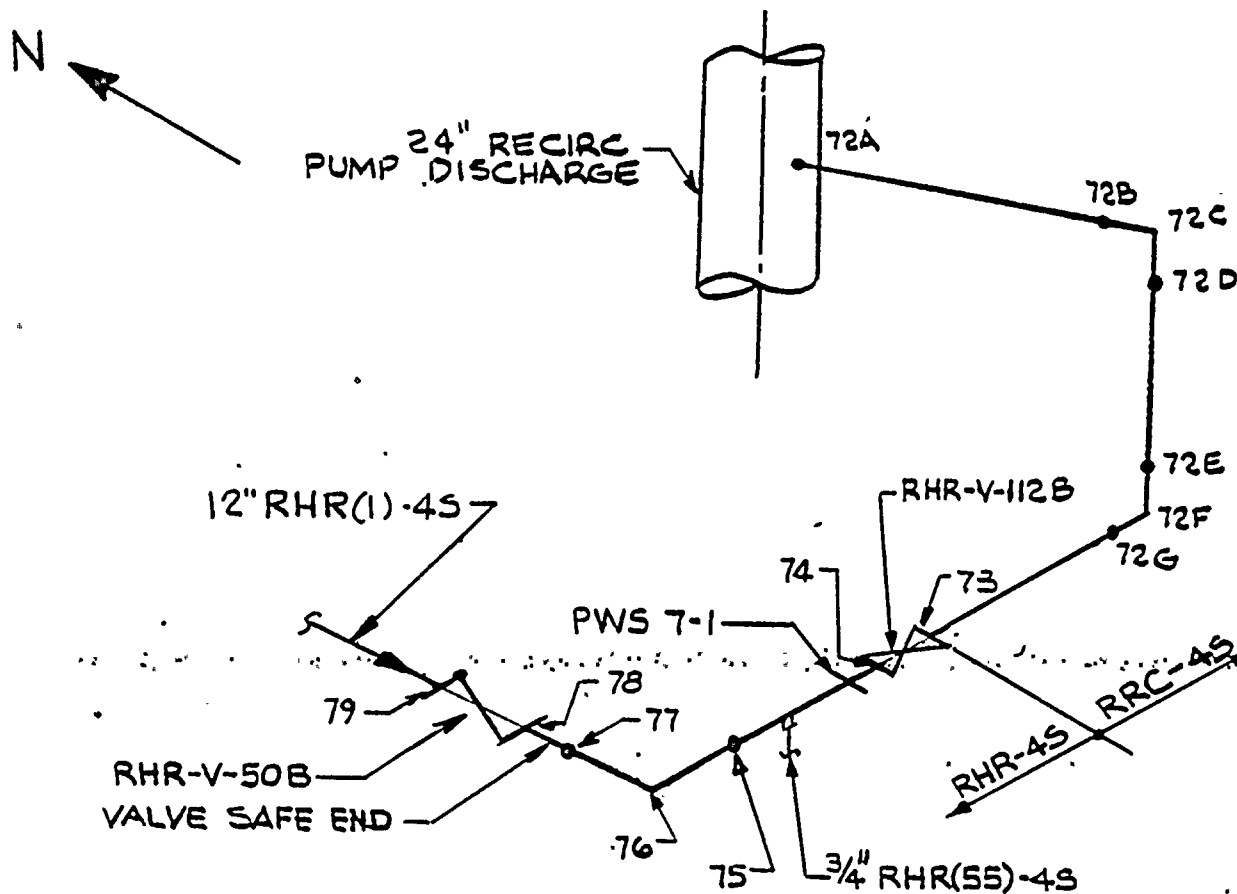
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 65•
Node 65A•
Node 65C•
~~Node 65D•~~
~~Node 65F•~~
Node 65G•
Node 66•
Node 67•
Node 69•
~~Node 71•~~
NODE 70

LONGITUDINAL BREAKS

Node 65B•
~~Node 65E~~
Node 68•

No Change



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

RESIDUAL HEAT REMOVAL
SHUTDOWN COOLING (LOOP B) ISOMETRIC

FIGURE
3.6-24a

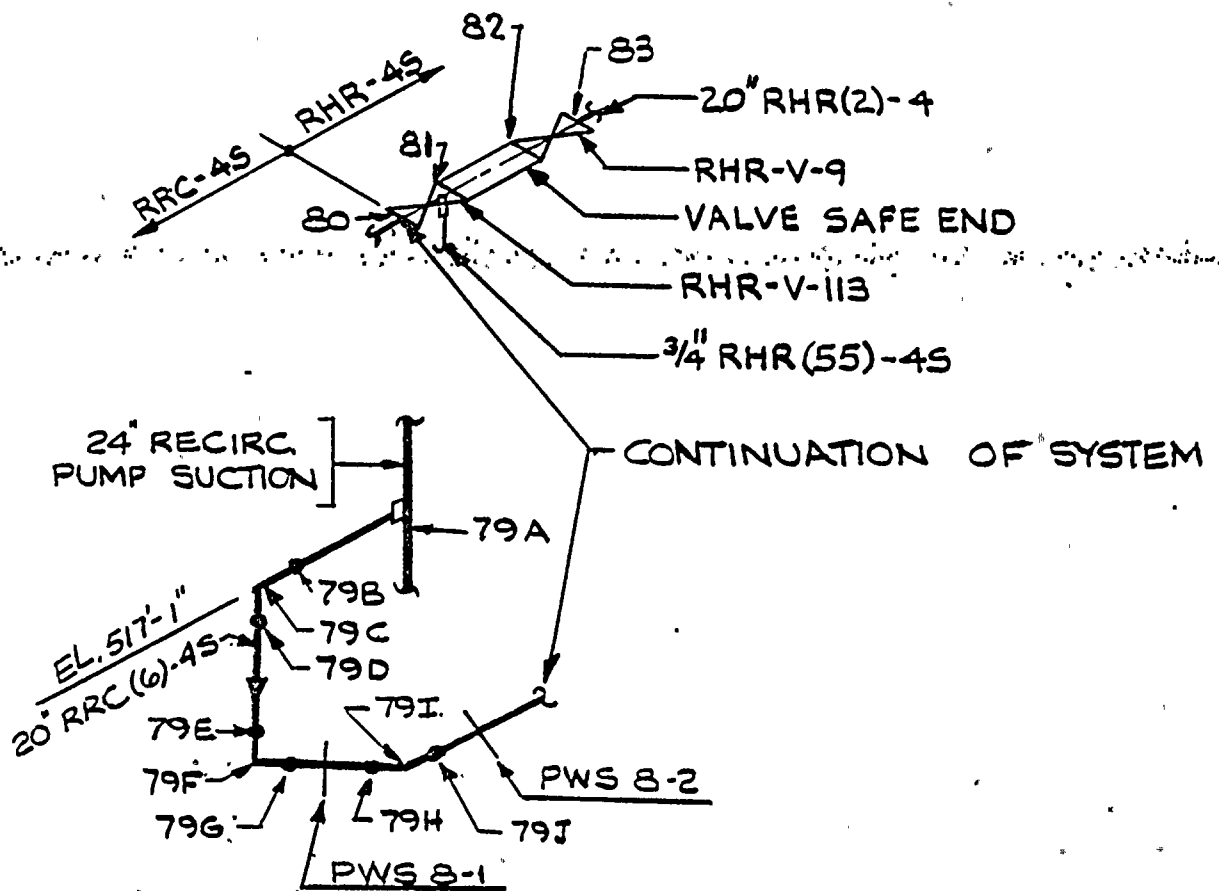
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 72A •
Node 72B •
Node 72D •
Node 72E •
Node 72G •
~~Node 73~~
~~Node 74~~
Node 75 •
~~Node 78~~
NODE 77

LONGITUDINAL BREAKS

Node 72C •
Node 72F •
Node 76 •

No Change.



WNP-2

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

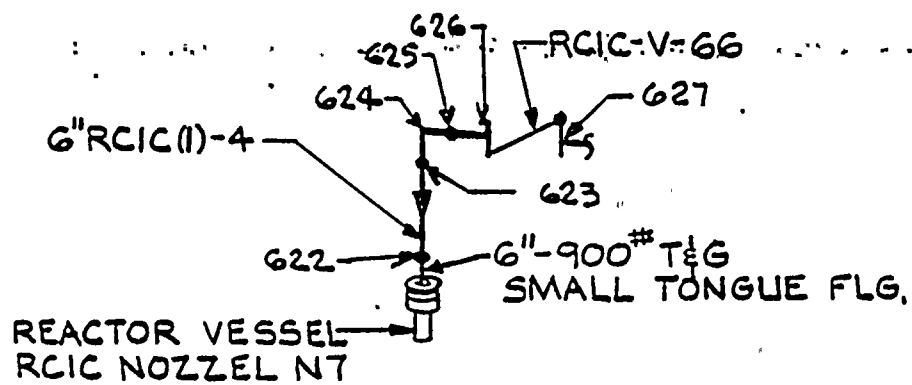
CIRCUMFERENTIAL BREAKS

Node 79A •
~~Node 79B •~~
~~Node 79D •~~
Node 79E •
Node 79G •
Node 79H •
Node 79J •
~~Node 80~~
~~Node 81~~
Node 82 •

LONGITUDINAL BREAKS

~~Node 79C •~~
Node 79F •
Node 79I •

No Change



WNP-2

SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

CIRCUMFERENTIAL BREAKS

Node 622*
Node 623*
Node 625*
Node 626*

LONGITUDINAL BREAKS

Node 624*

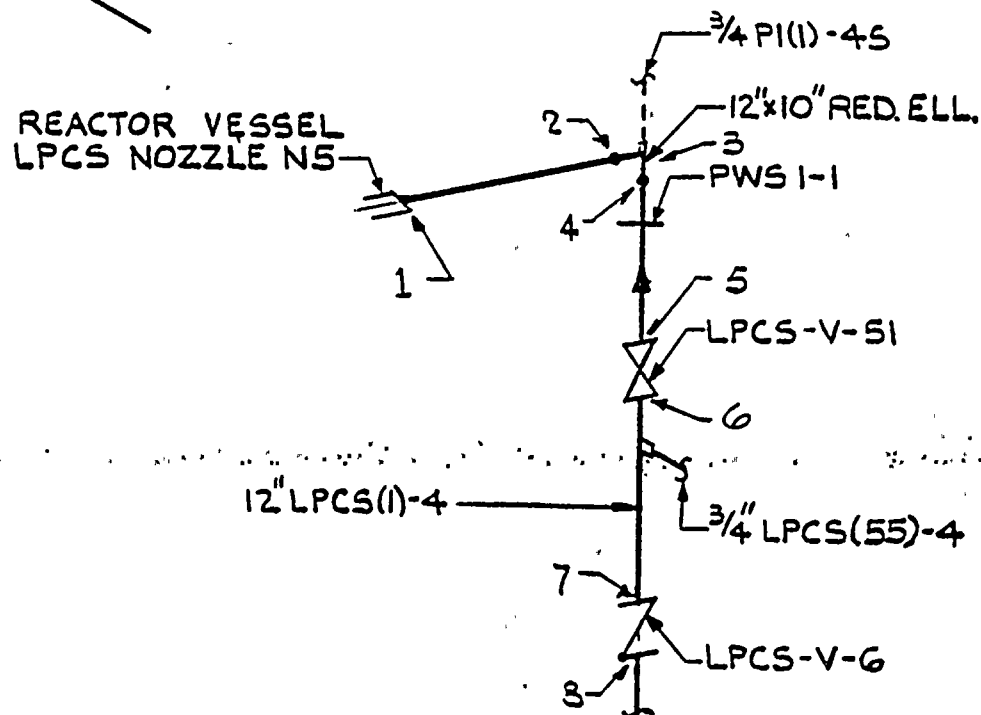
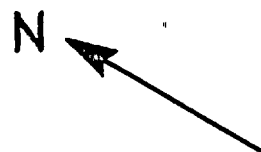
RCIC RPV HEAD SPRAY ~~SHUTDOWN~~

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

~~RESIDUAL HEAT REMOVAL SHUTDOWN~~
~~COOLING SUPPLY~~

FIGURE
3.6-
26b

No Change.



No Change

WNP-2

Amendment No. 9
April 1980

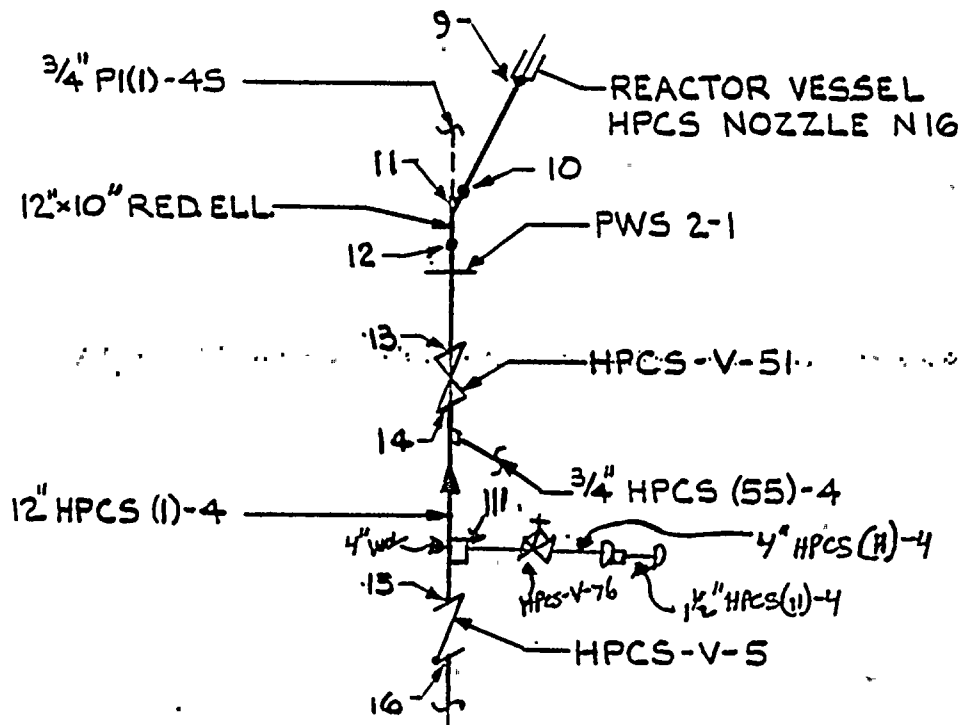
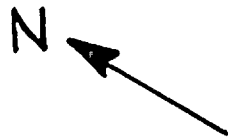
SUMMARY OF POSTULATED PIPE BREAK LOCATIONS

CIRCUMFERENTIAL BREAKS

Node 1 •
Node 2 •
Node 4 •
Node 5 •
Node 6 •
Node 7 •

LONGITUDINAL BREAKS

• Node 3 •



SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

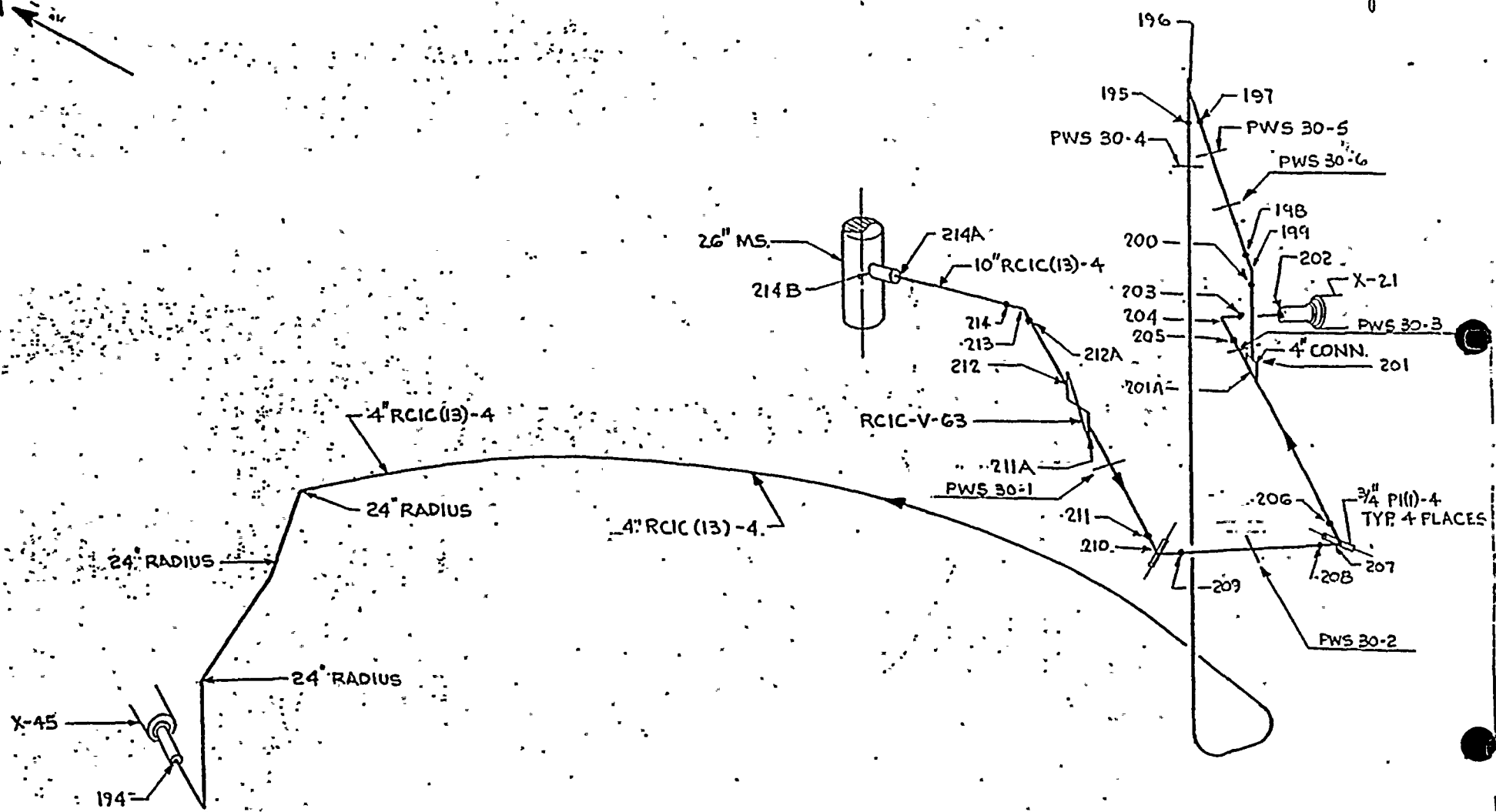
Node 9•
Node 10•
Node 12•
Node 13•
Node 14•
Node 15•
NODE III

LONGITUDINAL BREAKS

Node 11•



No Change -



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

RCIC CONDENSING MODE
RCIC TURBINE STEAM ISOMETRIC

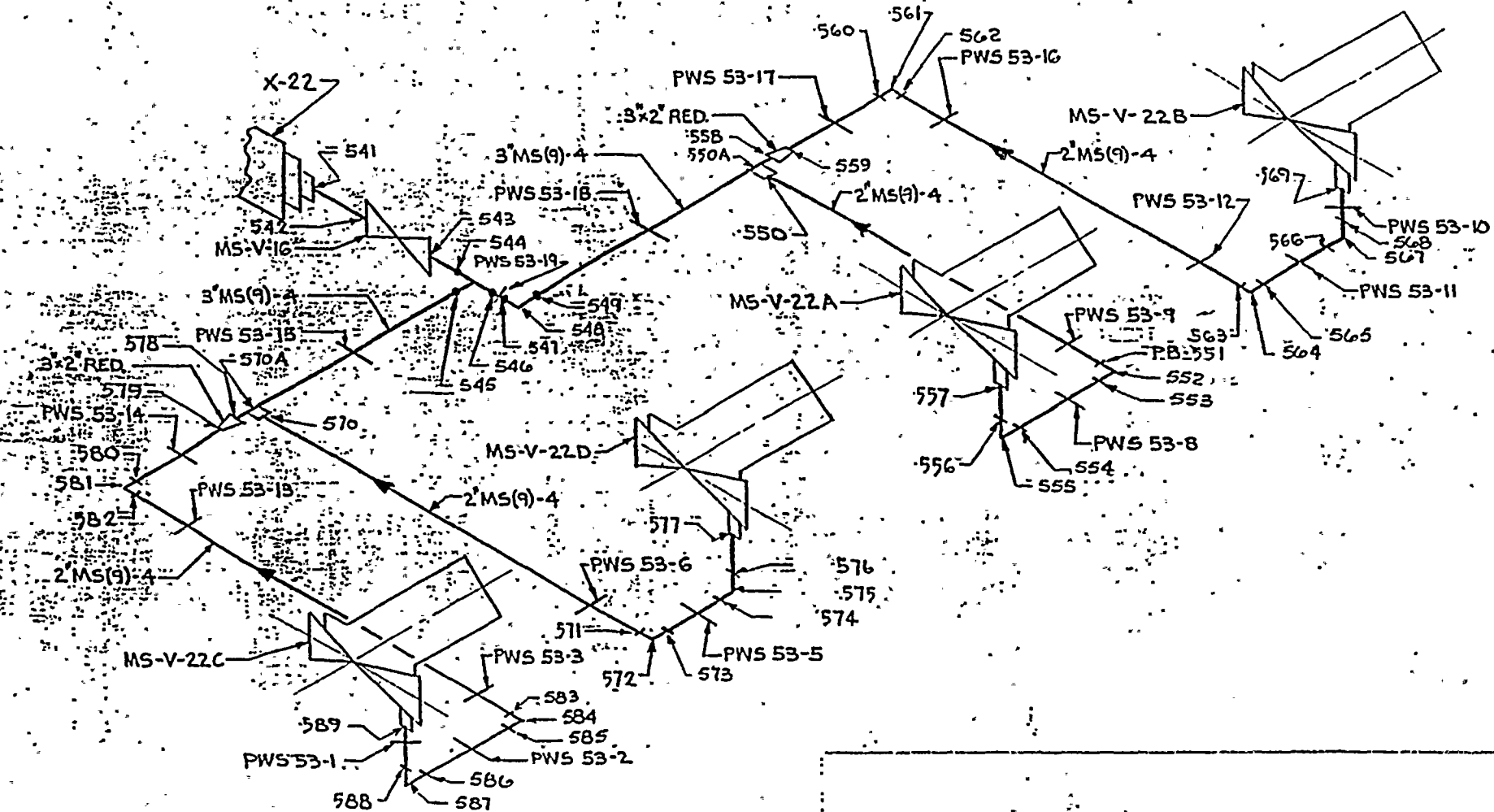
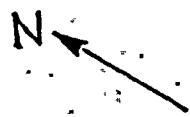
FIGURE
2.0-2

LONGITUDINAL BREAKS

~~Node 194~~
~~Node 195~~
~~Node 197~~
~~Node 198~~
~~Node 200~~
~~Node 201~~
~~Node 202~~
~~Node 203~~
~~Node 205~~
~~Node 206~~
~~Node 208~~
~~Node 209~~
~~Node 211~~
~~Node 211A~~
~~Node 212~~
Node 212A
~~Node 214~~
~~Node 214A~~
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~~Node 214H~~
~~Node 214I~~
~~Node 214J~~
~~Node 214K~~
~~Node 214L~~
~~Node 214M~~
~~Node 214N~~
~~Node 214O~~
~~Node 214P~~
~~Node 214Q~~
~~Node 214R~~
~~Node 214S~~
~~Node 214T~~
~~Node 214U~~
~~Node 214V~~
~~Node 214W~~
~~Node 214X~~
~~Node 214Y~~
~~Node 214Z~~
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~~Node 510~~
~~Node~~

~~Node 196~~
~~Node 199~~
~~Node 201A~~
~~Node 204~~
~~Node 207~~
~~Node 210~~
Node 213.

No Change



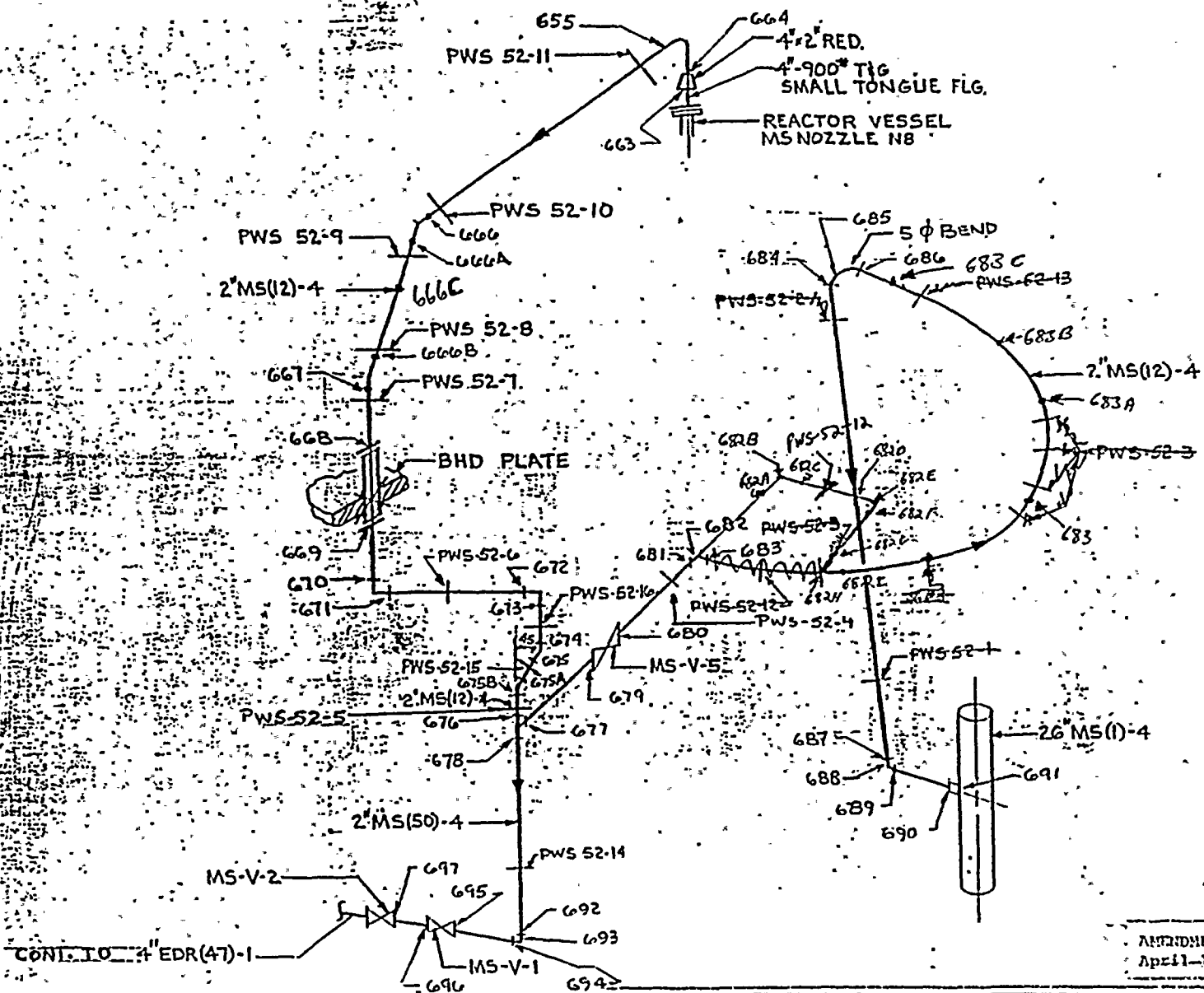
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

K-11 STEAM VALVES DRAINAGE
PIPING ISOMETRIC

FIGURE
C-302

SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 541	Node 557•	Node 574•
Node 542	Node 558	Node 576•
Node 543•	Node 559	Node 577•
Node 544	Node 560•	Node 578
Node 545	Node 562•	Node 579
Node 546	Node 563 NODE 563•	Node 580•
Node 547	Node 565•	Node 582•
Node 549	Node 566•	Node 583•
Node 550•	Node 568•	Node 585•
Node 551	Node 569•	Node 586•
Node 553	Node 570•	Node 588•
Node 554•	Node 571	Node 589•
Node 556•	Node 573	



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April-1980

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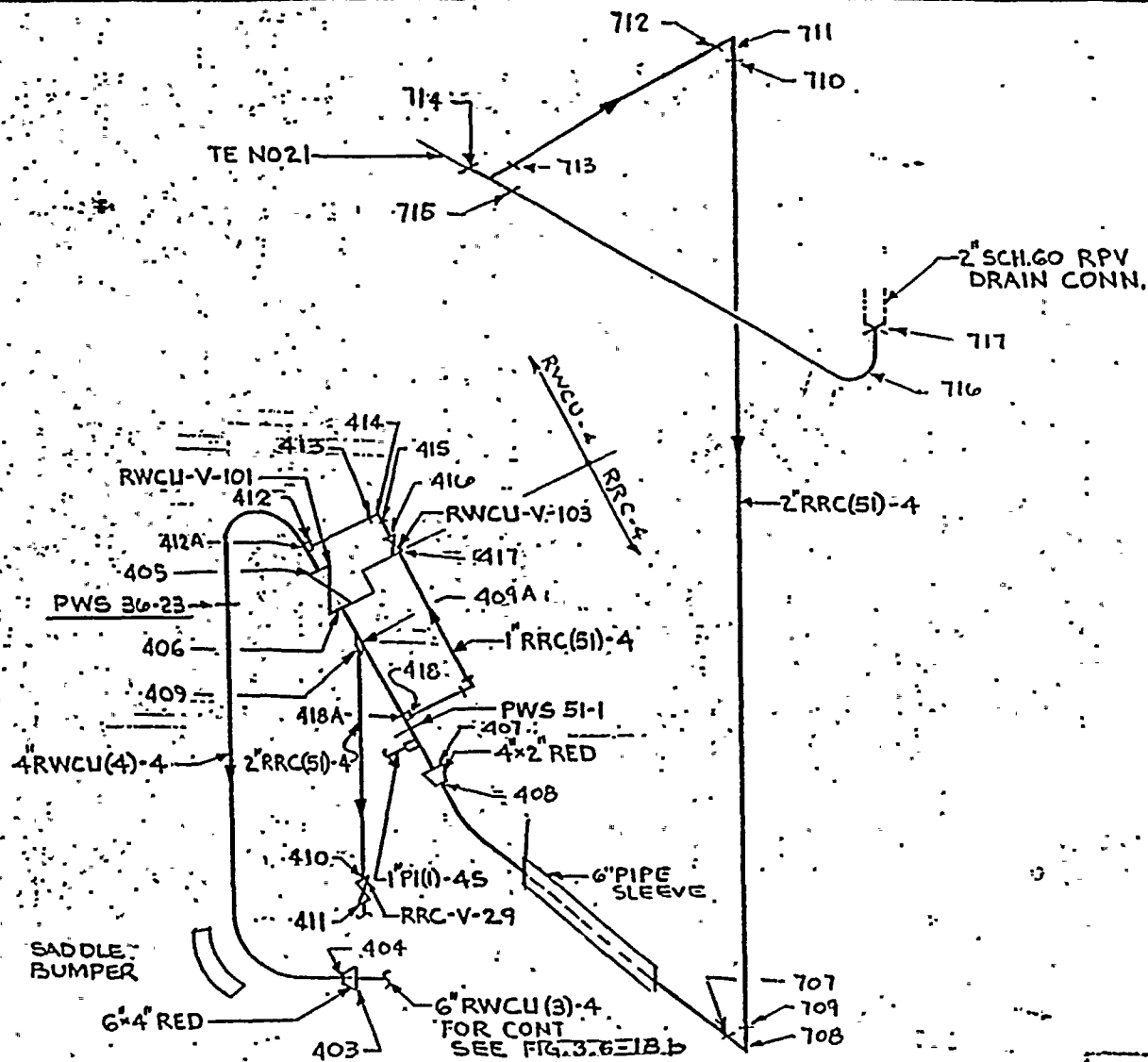
MAIN STEAM RPV HEAD VENT ISOMETRIC

FIGURE
N.C-31a

SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 663 •
~~Node 664~~
~~Node 666~~
~~Node 666A~~
~~Node 666B~~
~~Node 667~~
Node 668 •
~~Node 669~~
~~Node 670~~
~~Node 671~~
~~Node 672~~
~~Node 673~~
~~Node 674~~
~~Node 675~~
Node 675A •
Node 675B •
NODE 666C

Node 676 •
Node 677 •
Node 678 •
Node 679 •
~~Node 680~~
~~Node 681~~
Node 683 •
~~Node 687~~
~~Node 689~~
Node 690 •
~~Node 692~~
~~Node 694~~
Node 695 •
~~Node 696~~
~~Node 697~~
~~Node 698~~
NODE 682A
NODE 682C
NODE 682D
NODE 682F
NODE 682G
NODE 682I
~~NODE 683~~
NODE 683A
NODE 683B
NODE 683C



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

RRC REACTOR PRESSURE VESSEL
DRAIN ISOMETRIC

FIGURE
3.6-32a

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By
Title.

E, INC.

adell, N.J.

Book No.

Page No.

Sheet

Cont. on Sheet

Approved

ANALYSIS

WNP-2

AMENDMENT NO. 32
September 1983.

SUMMARY OF PIPE BREAK LOCATIONS.

CIRCUMFERENTIAL BREAK.

NODE 717
NODE 715
NODE 713
NODE 410
NODE 409
NODE 418
NODE 416

WASHINGTON PUBLIC

RRC REACTOR PRESSURE

FIGURE.

POWER SUPPLY SYSTEM

VESSEL DRAIN

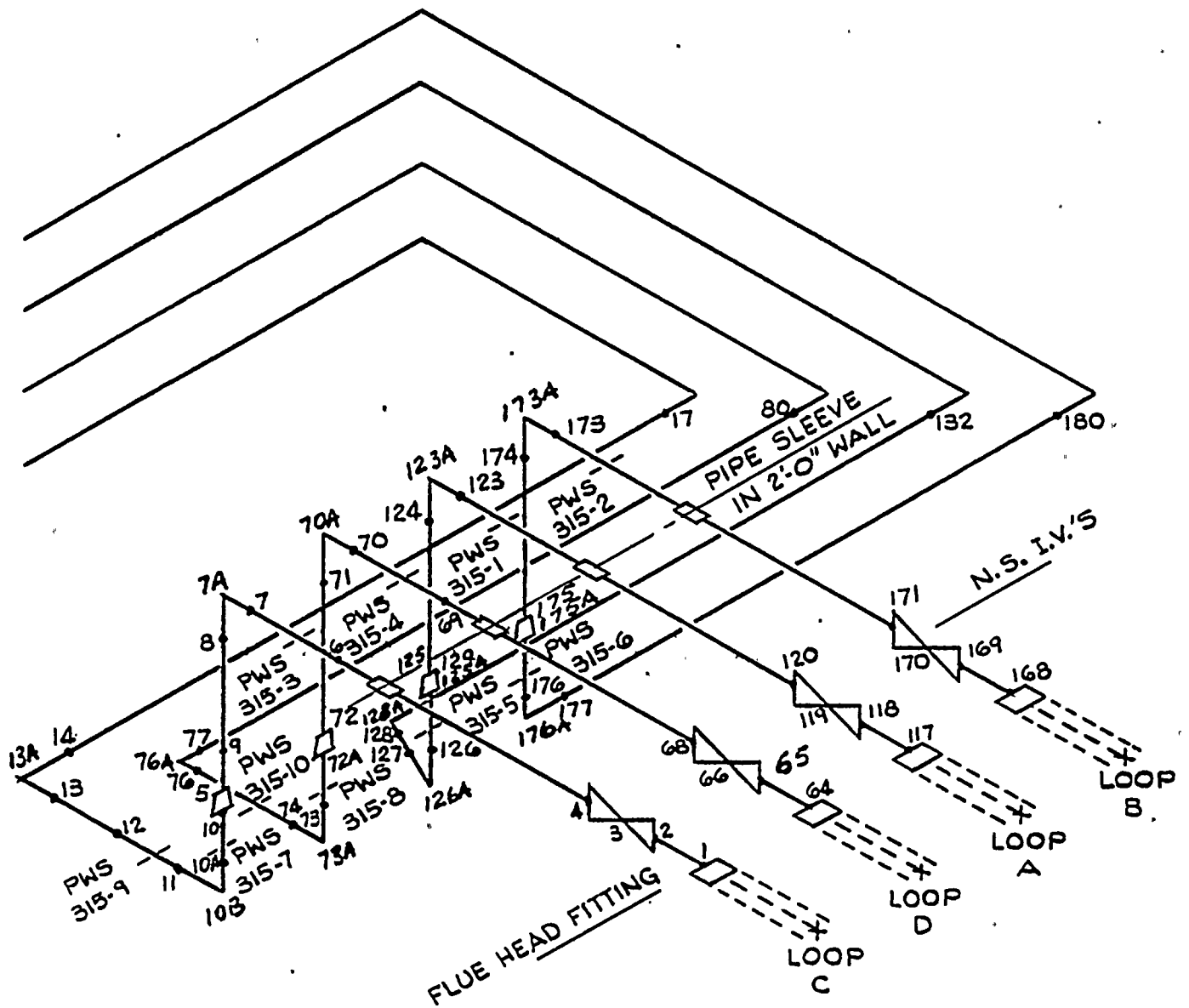
3.6-326.

NUCLEAR PROJECT NO. 2

Form BR8002A (9/82) 200M

No Change

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April 1980



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

MAIN STEAM PIPING (LOOP A,B,C & D)
INSIDE MAIN STEAM TUNNEL

FIGURE
3.6-33a

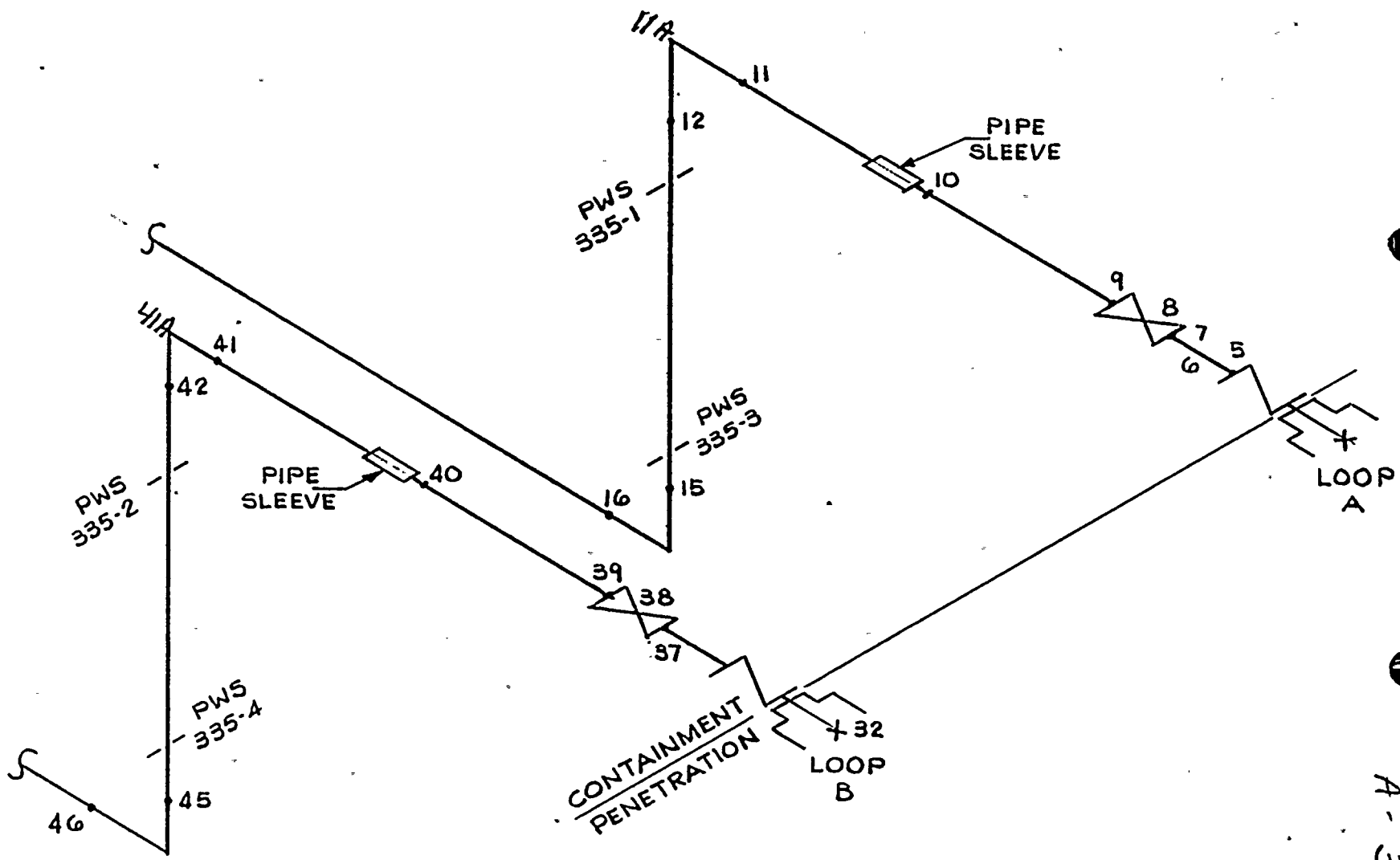
SUMMARY OF POSTULATED PIPE BREAK LOCATIONSCIRCUMFERENTIAL BREAKS

Node 1	Node 60
Node 2	Node 117
Node 4	Node 118
Node 5	Node 120
Node 7	Node 123
Node 8	Node 124
Node 10	Node 125
Node 10A	Node 125A
Node 11	Node 126
Node 13	Node 127
Node 14	Node 128
Node 17	Node 129
Node 64	Node 132
Node 65	Node 168
Node 68	Node 169
Node 70	Node 171
Node 71	Node 173
Node 72	Node 174
Node 72A	Node 175
Node 73	Node 175A
Node 74	Node 176
Node 76	Node 177
Node 77	Node 180

LONGITUDINAL BREAKS

Node 7A
Node 10B
Node 13A
Node 70A
Node 73A
Node 76A
Node 123A
Node 126A
Node 128A
Node 173A
Node 176A

A-32



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2

RFM INSIDE MAIN STEAM TUNNEL

FIGURE
3.6-34a

New

WNP-2

AMENDMENT NO. 38
1983

SUMMARY OF POSTULATED PIPE BREAK
LOCATIONS.

CIRCUMFERENTIAL BREAKS

NODE 11
NODE 12
NODE 41
NODE 42
NODE 9
NODE 37

LONGITUDINAL BREAKS

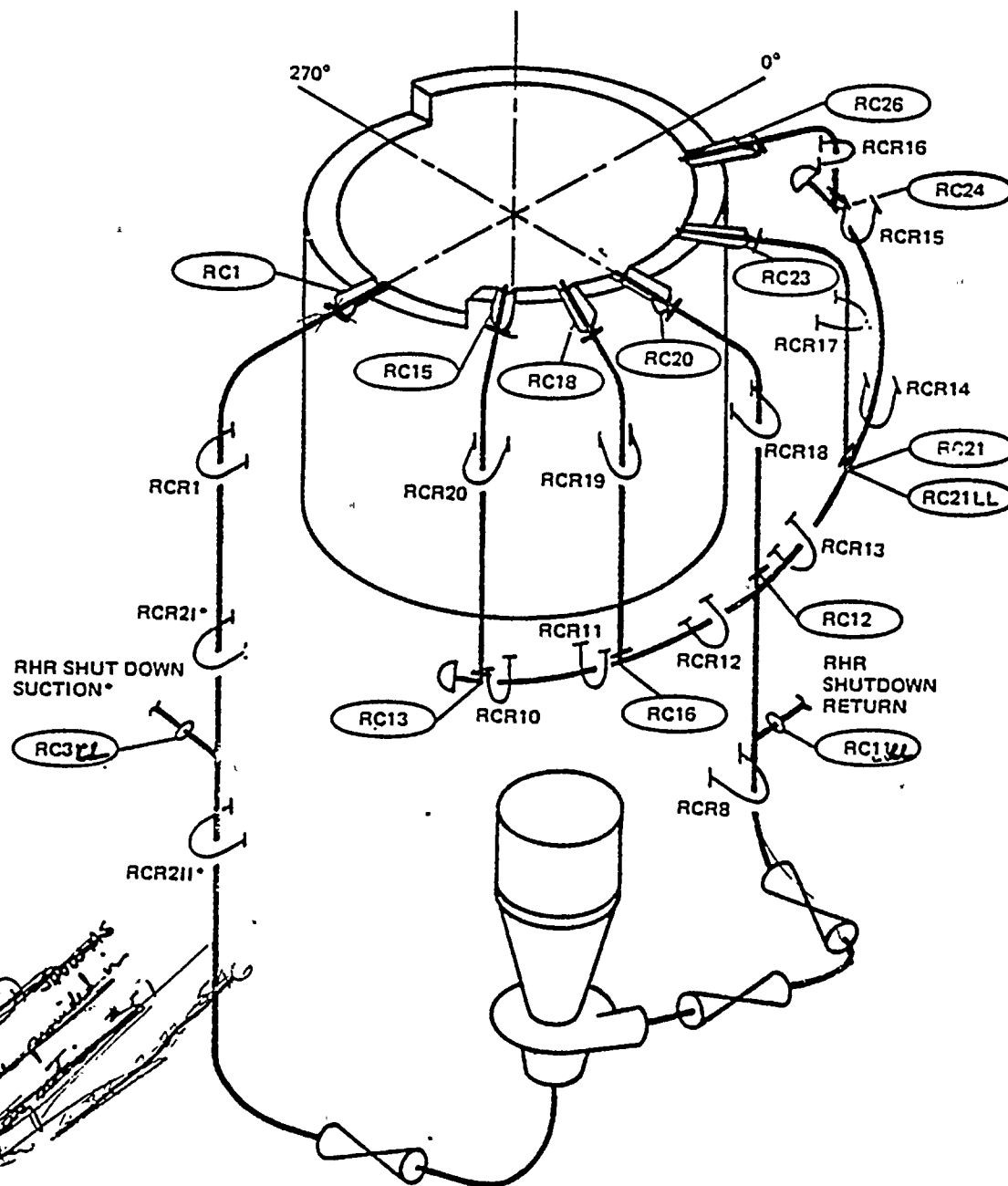
NODE 11A
NODE 41A

WASHINGTON PUBLIC
POWER SUPPLY SYSTEM
NUCLEAR PROJECT
NO. 2

RFW INSIDE MAIN STEAM
TUNNEL

FIG 3.6-34b

Updated in Amendment 31



KEY:

RC1 = TYPICAL BREAK LOCATION
RCR1 = TYPICAL RESTRAINT DESIGNATION
SUFFIX "LL" INDICATES LONGITUDINAL BREAK
* INDICATES LOOP A ONLY

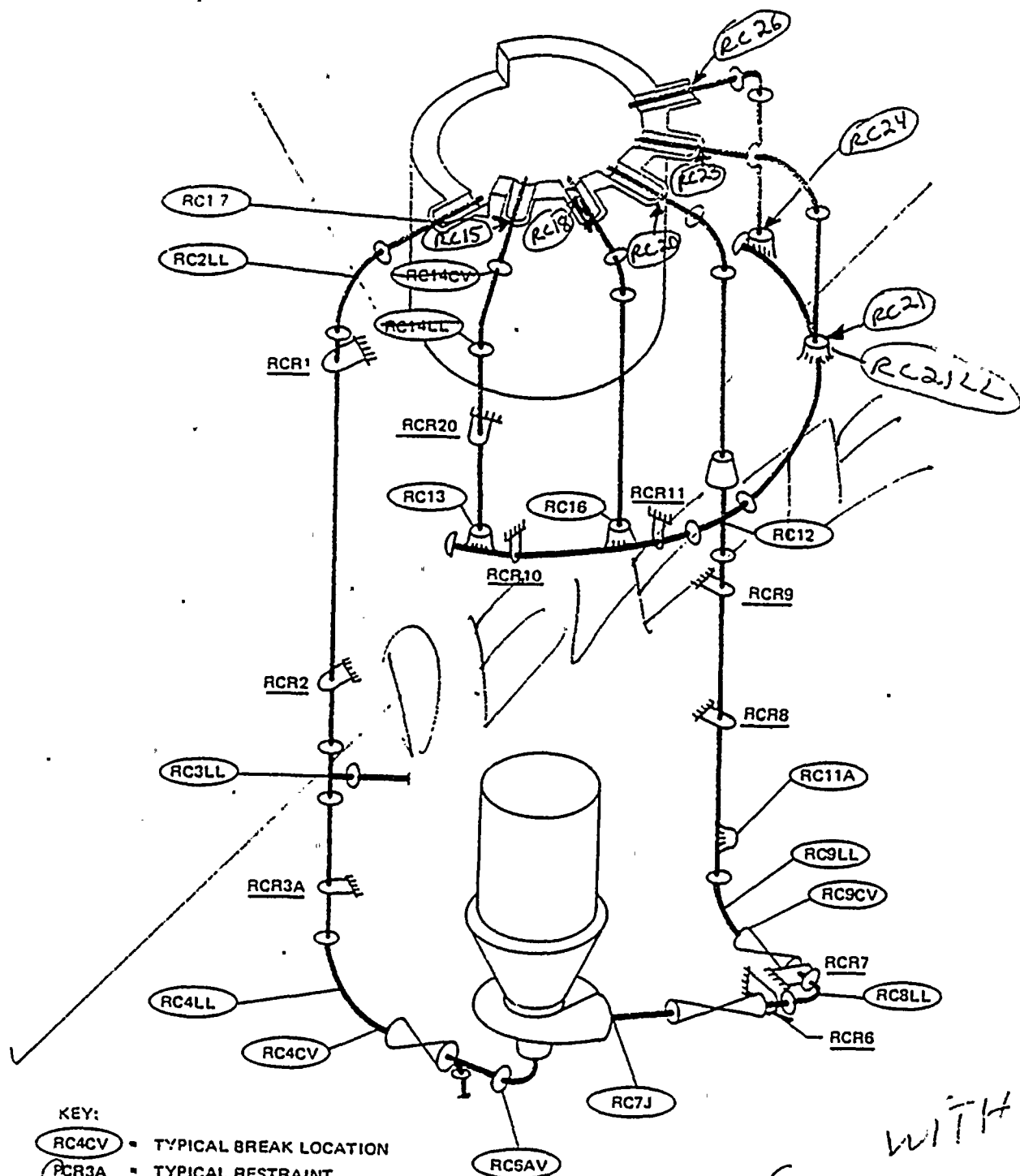
NOTES:

1. THIS FIGURE REPRESENTS LOOP A. LOOP B IS SIMILAR EXCEPT AS NOTED.
2. SEE FIGURE 3.6-35b FOR RESTRAINT-BREAK LOCATION CORRELATION AND BREAK TYPES.
3. ONLY THOSE RESTRAINTS THAT MAY ACT DURING THE POSTULATED BREAKS ARE SHOWN.

**WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2**

BREAK LOCATIONS AND RESTRAINTS ANALYZED, PDA VERIFICATION PROGRAM

FIGURE
3.6-35a



KEY:
 RC4CV • TYPICAL BREAK LOCATION
 RCR3A • TYPICAL RESTRAINT DESIGNATION
RCR3A

REPLACE
~~FOLLOWING~~ WITH
 PAGE.



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