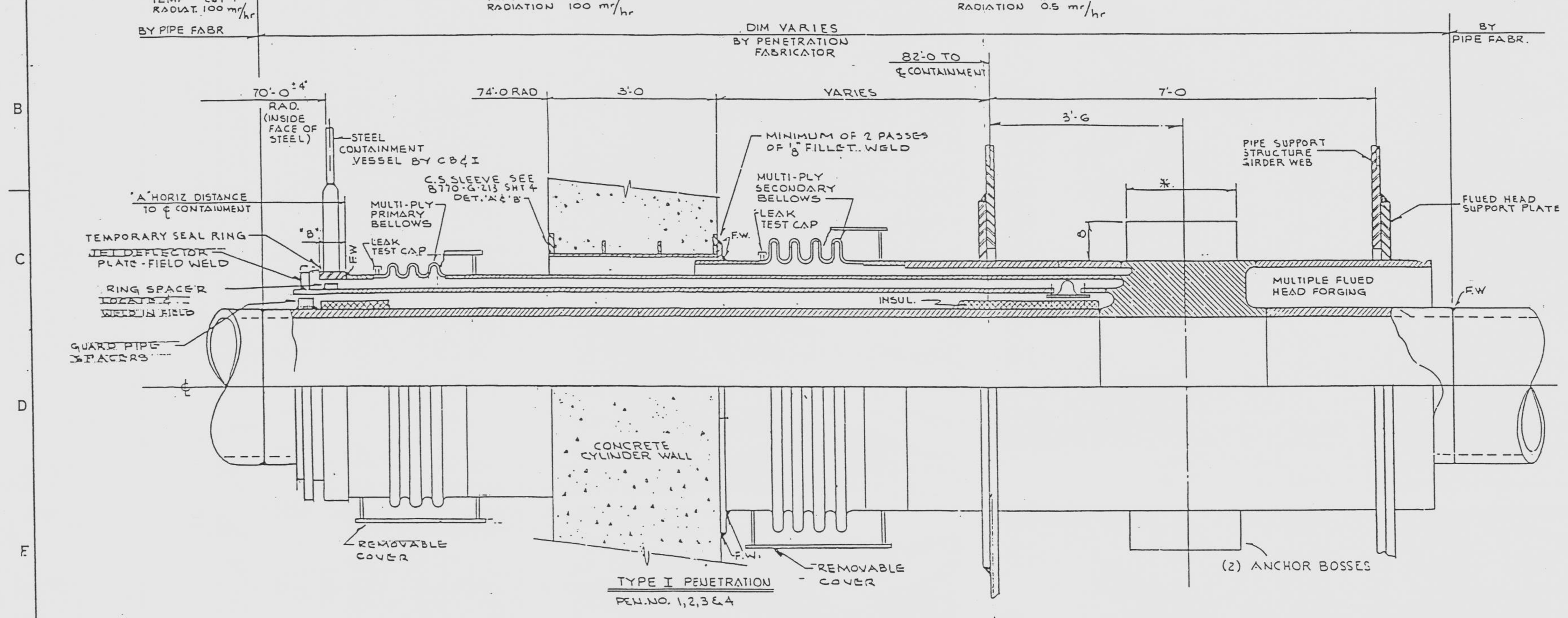
INSIDE CONTAINMENT
NORMAL PRESS 0 PSIG, TEMP 100°F
DESIGN PRESS 44.0 PSIG, TEMP 264°F, RADIAT. 100 mr/hr

ANNULUS
NORMAL PRESS 0 PSIG, TEMP 80-110°F
DESIGN PRESS 1.0 PSIG, TEMP 180°F, RADIATION 100 mr/hr

OUTSIDE
NORMAL PRESS ATMOSPHERIC, TEMP 80-110°F
DESIGN PRESS ATMOSPHERIC, TEMP 110°F, RADIATION 0.5 mr/hr

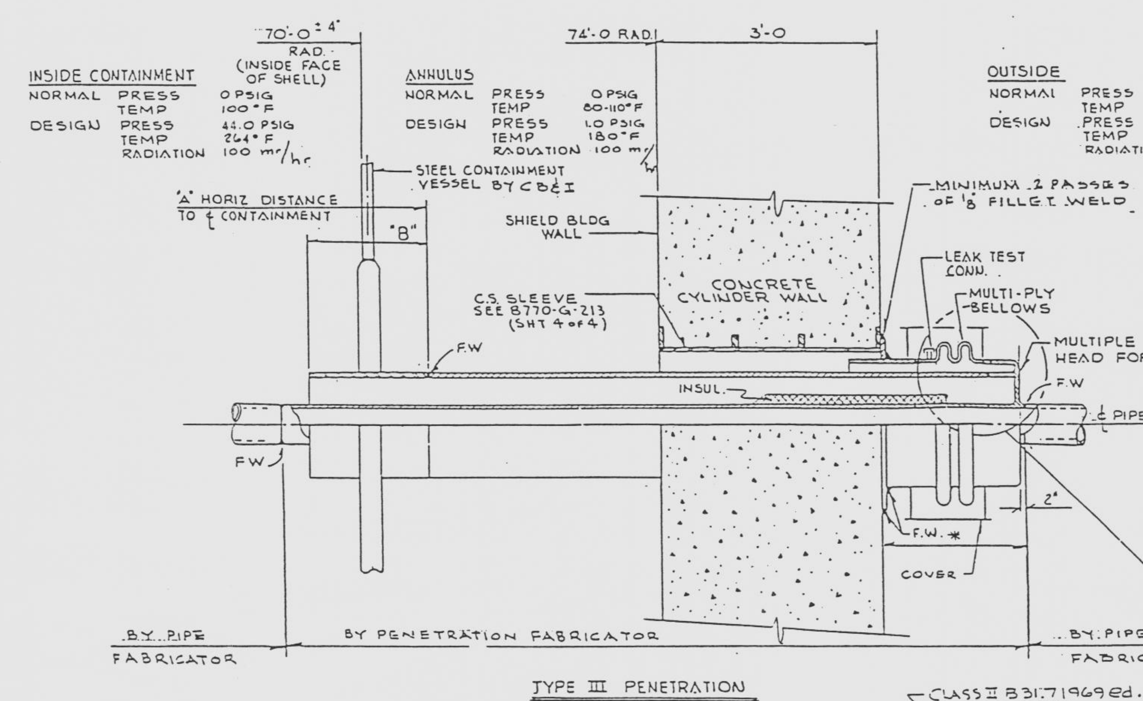


TYPE I PENETRATION
PEN.NO. 1,2,3 & 4

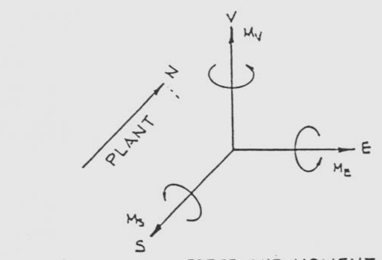
INSIDE CONTAINMENT
NORMAL PRESS 0 PSIG, TEMP 100°F
DESIGN PRESS 44.0 PSIG, TEMP 264°F, RADIATION 100 mr/hr

ANNULUS
NORMAL PRESS 0 PSIG, TEMP 80-110°F
DESIGN PRESS 1.0 PSIG, TEMP 180°F, RADIATION 100 mr/hr

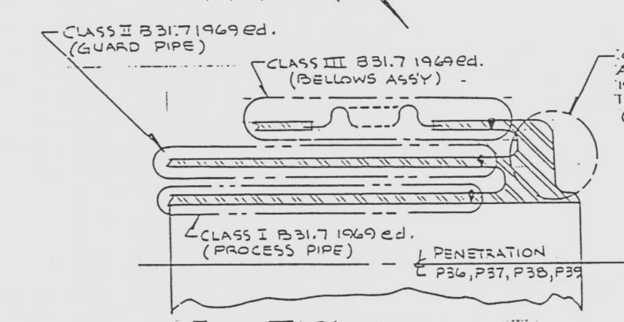
OUTSIDE
NORMAL PRESS ATMOS, TEMP 80-110°F
DESIGN PRESS ATMOS, TEMP 110°F, RADIATION 0.5 mr/hr



TYPE III PENETRATION



FORCE AND MOMENT ORIENTATION
SEE DWG 8770-G-213 SHEET 1 OF 4 FOR ORIENTATION OF NOZZLES



TYPE III PENETRATION
CLASS I PENETRATION ASSEMBLIES
CODE CLASS BOUNDARIES

PENETRATION		LINE DESCRIPTION			PROCESS LINE								PENETRATION		STEEL CONTAINMENT NOZZLE						CONC.
NO.	TYPE	SYSTEM	LINE NO.	FLOW DIAG.	NOM SIZE (IN)	WALL THKN (IN)	MATERIAL	DESIGN PRESS (PSIG)	DESIGN TEMP (F)	MAX. OPER PRESS (PSIG)	MAX. OPER TEMP (F)	INSUL THKN (IN.)	DESIGN PRESS (PSIG)	DESIGN TEMP (F)	NOM SIZE (IN)	WALL THKN (IN.)	MATERIAL	WELD PREP "C" DIM. (IN)	DIMENSION A	DIMENSION B	NOM OPENING (IN.)
1	I	MAIN STEAM (SG-1A)	I-34-MS-28	8770-G-079	34	1.250	C.S.	985	550	885	520	3	985	550	60	1.25	C.S	57.720	SEE PLAN SHT 1		72
2	I	MAIN STEAM (SG-1B)	I-34-MS-29	8770-G-079	34	1.250		985	550	885	520	3	985	550	60	1.25		57.690			72
3	I	FEEDWATER (SG-1A)	I-20-BF-14	8770-G-080	20	5/80		1100	500	1050	440	3	1100	500	45	1.25		42.692			58
4	I	FEEDWATER (SG-1B)	I-20-BF-19	8770-G-080	20			1100	500	1050	440	3	1100	500	45	1.25		42.698			58
5	III	BLOWDOWN (SG-1B)	I-2B-2	3509-G-115 SH1	2			985	550	885	520	2	985	550	10	5/80		9.670	70'-8 5/16	14	20
6	III	BLOWDOWN (SG-1A)	I-2B-1	3509-G-115 SH1	2			985	550	885	520	2	985	550	10	5/80					20
7	II	PRIM WATER SUPPLY	I-2-PMW-7	8770-G-084	2	5/80S	S.S.	150	110	100	35	-	150	265	2	5/160	SB-167	1.732	70'-7 21/32	13 25/32	12
8	II	STATION AIR SUPPLY	I-2-SA-12	8770-G-085	2	5/40	C.S.	150	125	100	115	-					C.S.				
9	II	INSTRUMENT AIR SUPPLY	I-2-IA-14	8770-G-085	2	5/40	C.S.	150	125	100	115	-									
10 TO 13		H & V																			
14	II	NITROGEN SUPPLY	I-1-WM-851	8770-G-078 SH 163	1	5/80S	S.S	250	150	225	100	-	250	265	2	5/160	SB167	1.732	70'-7 21/32	13 27/32	10
15	II	WTR RETURN FAN COOLER 1C	I-8CC-43	8770-G-083	8	S/40	C.S.	150	200	100	180		150	265	8	5/80	C.S	7.709	70'-8 13/16	16	18
16	II	SUPPLY 1C	I-8CC-39								120	-									
17	II	RETURN 1D	I-8CC-44								180										
18	II	SUPPLY 1D	I-8CC-40								120	-									
19	II	RETURN 1A	I-8CC-41								180										
20	II	SUPPLY 1A	I-8CC-37								120	-									
21	II	RETURN 1B	I-8CC-42								180										
22	II	SUPPLY 1B	I-8CC-38								120										
23	II	WATER SUPPLY REACTOR COOLANT PUMPS	I-8CC-138								120										
24	II	WATER RETURN REACTOR COOLANT PUMPS	I-8CC-168		↓	↓	↓	↓	↓	↓	130		↓	↓	↓	5/160	↓	6.999	↓	↓	↓
25	V	FUEL TRANSFER TUBE			36	.500	SS	50	150	20	100	-	50	265	48	1.00	C.S	46.186	SEE SH 2	SEE SH 2	60
26	III	LETDOWN LINE	I-2-CH-103	8770-G-078 SH 120	2	5/160		2385	550	2200	450	1 1/2	2485	650	12	5/160		10.413	70'-8 13/16	14	22
27	III	CHARGING LINE	I-2-CH-109	8770-G-078 SH 120	2	5/160		2735	250	2335	150	-	2735	265	10	5/160		8.740			20
±28	II	MULTIPLE SERVICE											150	265	6	5/80		5.828			16
±29	II	MULTIPLE SERVICE											150	265				5.828 BY FIELD	70'-7 15/16	12 7/8	
30	II	BLOWDOWN (SG-1A)	I-1/2-B-81	3509-G-115 SH1	1/2	5/80	C.S.	985	550	885	520	2	150	265					70'-7 7/16	12 5/8	
31	III	CONTAINMENT VENT HEADER	I-1-WM-448	8770-G-078 SH 163	1	5/40S	S.S.	80	200	0.5	120	-	80	265	2	5/160	SB167	1.732	70'-7 21/32	13 27/32	10
32	IV	CONTAINMENT SUMP SUCT	I-24-CS-4	8770-G-088	24	.250	S.S.	60	300	45	265	—	50	265	34	1.50	C.S.	31.334	78'-0	19'-6	34
33	IV	CONTAINMENT SUMP SUCT	I-24-CS-5	8770-G-088	24	.250	S.S	60	300	45	265	—	50	265	34	1.50					34
34	II	SPARE													8	5/160			70'-10 9/16	18	-
35	II	SPARE													8	5/160			70'-10 13/16	18	-
34A	II	CONTAINMENT SPRAY	I-10-CS-12	8770-G-088	10	5/20	SS	150	300	125	265	—	250	265	10	5/160	SB168	8.740	70'-8 9/16	16	22
35A	II	CONTAINMENT SPRAY	I-10-CS-13	8770-G-088	10	5/20		150	300	125	265	—	250	265	10	5/160	SB168	8.740	70'-8 9/16	16	22
36**	III	SAFETY INJECTION LOOP 1A2	I-6-SI-113	8770-G-078 SH 131	6	5/160		2485	650	2235	330	2	2735	650	16	5/160	C.S	13.170	70'-8 9/16	14	26
37**	III	1A1	I-6-SI-112									2									
38**	III	1B1	I-6-SI-111									2									
39**	III	1B2	I-6-SI-110		↓	↓		↓	↓	↓	↓	2	↓	↓	↓	↓	↓	↓	↓	↓	↓
40	III	SHUTDOWN COOLING	I-10-SI-322		10	5/20		300	350	300	300	2	300	350	24	1.00	C.S.	22.188	71'-2 5/16	22 1/8	32
41	III	SAFETY INJECTION TANK TEST	I-2-SI-479	8770-G-078 SH 130	2	5/40S		300	350	250	"		300	350	8	5/80	C.S.	7.709	70'-8 5/16	14	18
42	II	CONT. SUMP PUMP DISCH	I-3-CS-65	8770-G-088	3			☑80	250	15	120	-	☑150	265	3	5/80	SB167	2.934	70'-8 5/16	16	14
43	IV	REACTOR DRAIN PUMP SUCT	I-3-WM-450	8770-G-078 SH 160	3			25	250	25	120	—	150	265	8	5/80	SB166	7.709	78'-0	18'-11	8
44	III	REACTOR COOLANT PUMPS CONTROLLED BLEED OFF	I-3/4-CH-129	8770-G-078 SH 121	3/4	5/40		2485	250	150	150		2485	265	6	5/160	C.S.	5.326	70'-8 13/16	14	16
±45	II	MULTIPLE SERVICE											44	265	2	5/160		1.732 BY FIELD	70'-6 3/8	12 3/8	12
46	II	REFUEL CAVITY PURIF INLET	I-3-CS-52	8770-G-088	3	5/40S	SS	☑100	300	85	140		☑100	265	6	5/80		5.828	70'-8 5/16	16	14
47	II	REFUEL, CAVITY PURIF OUTLET	I-3-CS-56	8770-G-088	3	5/40S		☑60	265	45	140		☑44	265	5	5/160	SB167	4.866	70'-8 15/16	16	
±48	II	MULTIPLE SERVICE											44	265	6	5/160	C.S	5.326 BY FIELD	70'-10 7/16	15 1/2	16
49	II	BLOWDOWN (SG-1B)	I-1/2-B-82	3509-G-115 SH1	1/2	5/80	C.S.	985	550	885	520	2	44	265	6	5/80		5.828 BY FIELD	70'-10 5/16	15 3/4	16
50	I	SPARE													14				70'-10 15/16	18	26
±51	II	MULTIPLE SERVICE											44	265	6				71'-4 7/16	23 5/8	26
±52	II														12	5/160		10.413 FIELD	70'-10 5/16	17 5/8	22
±53	II														8	5/80		7.709 BY FIELD	70'-8 5/16	15	12
54	III	ILRT	I-8-IL-21	8770-G-093 SH3	8	5/40	CS	60	110	45	95	-			16	5/80			70'-10 5/16	16	26
55 TO 61		H & V																			
64	III	SHUTDOWN COOLING	I-10-SI-370	8770-G-073 SH 131	10	5/20	SS	300	350	300	300	2	300	350	24	1.00	C.S.	22.125	71'-2 5/16	22 1/8	32

PENETRATION	THERMAL LOADS			HYPOTHETICAL SEISMIC LOADS			PIPE RUPTURE LOADS			BELLOWS MOVEMENT		
NO.	AXIAL KIPS	MOMENT IN.-KIPS	TORSION IN.-KIPS	AXIAL KIPS	MOMENT IN.-KIPS	TORSION IN.-KIPS	AXIAL KIPS	MOMENT IN.-KIPS	TORSION IN.-KIPS	AXIAL INCHES	LATERAL INCHES	VERTICAL INCHES
1	40.0	100	450	160.0	2400	700	306	4000	3500	5.1	±1.78	±1.50
2	40.0	100	450	160.0	2400	700	306	4000	3500	5.1	±1.78	±1.50
3	19.0	220	10	38.0	200	200	—	—	—	5.1	±1.76	±1.50
4	19.0	220	10	38.0	200	200	—	—	—	5.1	±1.78	±1.50
5	1.1	11	11	1.1	11	11	3	65		2.3	±0.50	—
6	1.1	11	11	1.1	11	11	3	65		2.3	±0.50	—
7	1.1	11	11	1.1	11	11	0.05	79	64	2.3	±0.75	—
8	0.84	8.4	8.4	0.84	8.4	8.4	0.03	49	40	2.3	±0.75	—
9	0.84	8.4	8.4	0.84	8.4	8.4	0.03	49	40	2.3	±0.75	—
10 TO 13												
14	0.4	2	2	0.4	2	2	0.20	49	12	2.3	±0.75	—
15	6.3	252	252	6.3	252	252	8	406	1200	2.3	±0.75	—
16												—
17												—
18												—
19												—
20												—
21												—
22												—
23												—
24	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	—
25												
26	0.2	1.5	1.5	0.2	1.5	1.5	8.4	106		2.3	±0.50	—
27	0.2	1.5	1.5	0.2	1.5	1.5	5.5	106		2.3	±0.50	—
±28	0.1	0.5	0.5	0.5	0.5	1	—	—	—	2.3	±0.50	—
±29												
30												
31	0.4	2	2	0.4	2	2	0.2	49	12	2.3	±0.75	—
32												
33												
34												
35												
34A	7.6	453	453	7.6	453	453	19	3520	2670	2.3	±0.75	—
35A	7.6	453	453	7.6	453	453	19	3520	2670	2.3	±0.75	—
36**	9.0	200	200	9.0	200	200	5.3	500	1575	2.3	±0.50	—
37**												—
38**												—
39**	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	—
40	6.3	316	316	6.3	316	316	28	2020		2.3	±0.50	—
41										2.3	±0.50	—
42	1.0	16	16	1.0	16	16	0.11	92	92	2.3	±0.75	—
43												
44										2.3	±0.50	—
±45										2.3	±0.75	—
46	1.0	16	16	1.0	16	0.8	0.8	10	92	2.3	±0.75	—
47	1.0	16	16	1.0	16	0.8	0.8	10	92	2.3	±0.75	—
±48										2.3	±0.50	—
49												
50												
±51	0.24	0.5	0.24	0.5								
±52												
±53										2.3	±0.75	—
54												
55 TO 61												
64	6.3	316	316	6.3	316	316	28	2020	2020	2.3	±0.50	—

☑ REANALYZIED AT 175 PSI IC & 225 PSI OC PER PSL-IFSC-97-019

NOTES.
1. INITIAL DESIGN DIFFERENTIAL SETTLEMENT BETWEEN ANY TWO STRUCTURES SHALL BE 1 INCH.
2. DESIGN SEISMIC LOAD VALUES ARE ONE HALF OF HYPOTHETICAL VALUES.
3. * INDICATES DIMENSIONS BY PENETRATION FABRICATOR
4. THIS DRAWING SHOWS CONCEPTUAL ARRANGEMENT AND DESIGN INFORMATION. FOR FINAL DETAILS SEE MANUFACTURER'S DWG, UNDER P.O. NO. N.Y. 422201 & 422264
5. ** INDICATES PENETRATIONS FOR ANSI B31.7 CLASS I PIPING
7. ± MULTIPLE SERVICE PENETRN SEE SHT 4 THIS DWG.

RECEIVED JAN 21 1998 QC RECORDS DOCUMENT CONTROL CENTER

ALLAN WEITZENHOFFER CERTIFICATE No. 15260 STATE OF FLORIDA REGISTERED ENGINEER

THIS DOCUMENT IS THE PROPERTY OF EBASCO SERVICES INCORPORATED. ITS USE IS EXPRESSLY RESTRICTED BY THE TERMS OF THE CONTRACT, DATED AS OF AUGUST 10, 1968, BETWEEN EBASCO SERVICES INCORPORATED AND FLORIDA POWER & LIGHT COMPANY.

NO.	DATE	REVISION	BY	CH.	APPROVED
5	1/6/98	PC/M 97032 ADDED: (L5-6)(N5-7) NOTE	PDB	HS	
4	7-14-82	GEN REV: (L,J,G-3) LINE Nº (N-19) TITLE (N,M,L,K,J,G-3) DWG Nº (N-1) PENE Nº (L,J,I,G-5)(J-4) LINE INFO ADD: (L,M-6) PENE DES (N-3) LINE Nº (K-10) LINE INFO DEL: (J-19)(N-2) NOTE Nº 6 (N-1) PENE INFO	FP	HS MAC	
AS BUILT 3	4-6-78	REVISED: (J,L,M-1,5,6) TABULATION ADD: (J,L,M-1,5) DIM (A-1) SH. NO (A-18,19) NOTES	NGC	SW	
2	12-10-73	REVISED: (G-1)(H-6)(D-16)(K-1)(L-16)(M-2) (M4,8) PENETRAT. ADDED: (F-17) DET. (I-17) GEN NOTE	J.S.	BS	AN
1	8-24-72	REVISED: (E&N-1 TO 13) CHART AS CIRCLED; (B-3&14) DIMS; (C-4&15) SLEEVES; (B&H-18) NOTE	B.F.R	FAH	AN

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT
1976 – 890,000 KW INSTALLATION – UNIT NO. 1

REACTOR CONTAINMENT BUILDING
PIPING PENETRATIONS

EBASCO SERVICES INCORPORATED NEW YORK

SCALE 3/4"=1'-0 | APPROVED Allan Weitzenhoffer | DATE June 18, 1971
DIV. MECH
DR. C. GOURGUG
CH. L. SAS

8770-G-213
SHEET 3 OF 4

E