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格納容器圧力抑制系信頼性実証試験
データレポート・12 (TEST 1205)

1981年3月

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格納容器圧力抑制系信頼性実証試験
データレポート・12 (TEST 1205)

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(1981年2月9日受理)

格納容器圧力抑制系信頼性実証試験は、LOCA 時にBWR用Mark II 格納容器の圧力抑制系に発生する熱水力現象に関する試験を行い、格納容器の信頼性実証に資するデータを得ることを目的としている。試験装置の圧力抑制系は、実炉の圧力抑制系の実物大 20°セクタ模型であり、ペント管 7 本を有する。

本報告書は、昭和54年11月9日に実施したTEST 1205 のデータレポートである。本試験は、放出ノズル口径220mmの蒸気放出試験であり、プールスウェルを主要な試験対象としている。本試験ではバキュームブレーカを閉状態で固定し、その他の試験条件は同一破断口径による基本ケースであるTEST 1203とほぼ同一に設定した。本試験におけるプールスウェル時のウェットスウェル気相部最高圧力、ならびにダイアフラムフロア上向き差圧の値は、TEST 1203 の結果をやや上回り、プールスウェルに対するバキュームブレーカの効果が有意であることが示された。

この報告書は、電波開発促進対策特別会計施行令に基づき、科学技術庁から日本原子力研究所への委託研究「昭和54年度「格納容器圧力抑制系信頼性実証試験」」のうち、TEST 1205 の試験データをまとめたものである。

本報告は、先に作成した原研所内資料 J A E R I - memo 8875 (1980年5月) の内容に検討、修正を加え、公開に付するものである。

Full-Scale Mark II CRT Program
Data Report No. 12 (TEST 1205)

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Recorded data for TEST 1205 conducted on the Full-Scale Mark II CRT (Containment Response Test) Facility are presented. The TEST 1205 is the fifth test run of a series of steam discharge pool swell tests. The test conditions are similar to those of the TEST 1203 except that the vacuum breaker was locked close. The test was successful and the comparison of the TEST 1205 and the TEST 1203 results shows that the vacuum breaker may have some effects to reduce the wetwell airspace pressurization, and thus to reduce the upward force to diaphragm floor during a pool swell.

Key words : BWR, LOCA, Pressure Suppression, Mark II Containment, Hydraulic Loads, Full-Scale Test, Pool Swell, Data

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1. まえがき

格納容器圧力抑制系信頼性実証試験は、我が国の最新型沸騰水型炉に使用されている Mark II 格納容器における冷却材喪失事故時の熱水力現象を模擬した試験を行い、格納容器の信頼性実証に資するデータを得ることを目的としている。

本試験計画は、電源開発促進対策特別事業の一環として科学技術庁より原研に委託されたものであり、昭和52年度を初年度として5年間にわたり実施される予定である。原研内では安全工学部安全工学第1研究室が試験計画の立案および試験結果の解析を担当し、同安全試験技術室が試験装置の運転、管理を担当している。試験装置は昭和54年3月原研東海研究所敷地内に完成し、以後1カ月に約1回の割合で試験を実施している。

本報告書は、昭和54年11月9日に実施した TEST 1205 のデータレポートである。

本試験は、放出ノズル口径 220 mm の大口径蒸気放出試験であり、プールスウェルを主要な試験対象としている。本試験ではバキュームブレーカを閉鎖状態で固定し、その他の試験条件は同一破断口径による基本ケースである TEST 1203 とほぼ同一に設定した。本試験におけるプールスウェル時のウェットウェル気相部最高圧力、ならびにダイアフラムフロア上向き差圧の値は、TEST 1203 の結果をやや上回り、プールスウェルに対するバキュームブレーカの効果が有意であることが示された。

2. 試験装置

試験装置の概略を Fig. 2.1 に示す。試験装置主要部は試験格納容器、圧力容器、放出配管等により構成される。試験格納容器ウェットウエル部は、1100 MWe 級 Mark II 格納容器のウェットウエルの中心角 20° の 1 セクタを模擬したものであり、各部の高さ、内部のベント管等の寸法は実炉とほぼ同一である。ドライウエル、1 次系の容積は、実炉の相当部分の約 1 / 18 である。これらの諸元を Table 2.1 に示す。

本試験装置における計測の項目を Table 2.2 に、計測チャンネルリストを Tables 2.5 ~ 2.7 に、計測点位置を Figs. 2.2 ~ 2.9 に示す。データは 2 系統の収録系により収録する。比較的変化の遅い信号（温度、水位計出力等）は小型計算機によってオンライン収録する。一方比較的変化の速い信号（圧力の大半、歪、加速度等）は PCM (pulse code modulation) 方式により収録し、試験後小型計算機を介してデータを再編集する。収録されたデータの処理はすべて原研計算センターの大型計算機により行う。データ収録装置の主要諸元を Table 2.3 に示す。

本試験における計測器の動作状態を Tables 2.8 ~ 2.10 に、圧力、差圧変換器に関する較正試験結果を Table 2.11 に、計測レンジの設定値を Table 2.12 に示す。

本試験で生じた計測系の故障箇所は以下の通りである。

圧力容器内の水位計 PVLS-002 が絶縁不良となった。また、ウェットウエル気相部の露出型熱電対 WWTS-108, 408 が断線した。

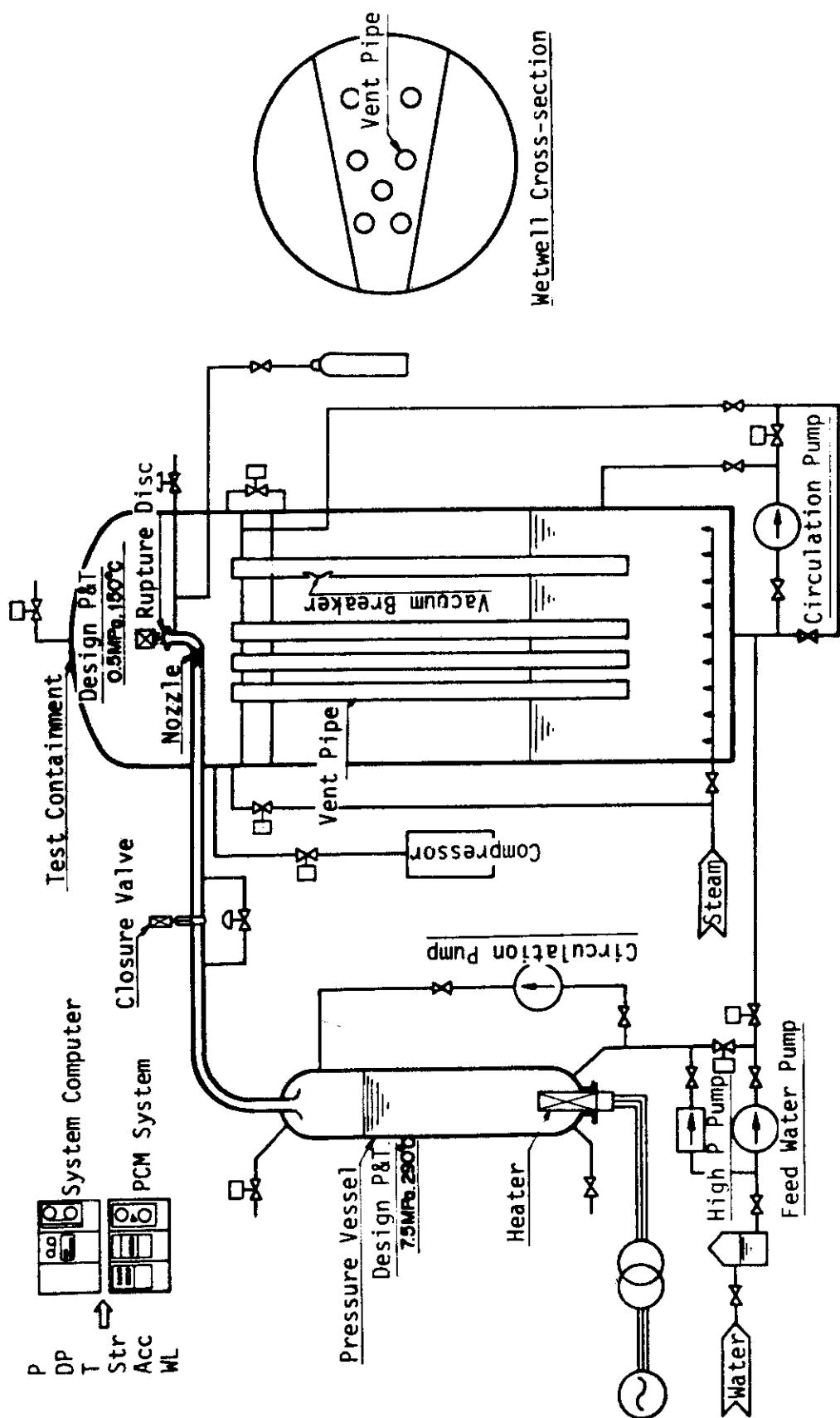


Fig. 2.1 Schematic Flow Diagram of Test Facility

Table 2.1 Comparison of Major Design Parameters

Parameter		Reference Mark II	CRT Facility
<hr/>			
<u>Drywell</u>			
Free Volume, Including Air Volumes in Vent Pipes	(m ³)	5700	329
<hr/>			
<u>Vent Pipe</u>			
Number	(-)	108	7
Length	(m)	14.2	13.6
Clearance, to Pool Bottom	(m)	3.66	3.66
Number of Vacuum Breakers	(-)	11	1
<hr/>			
<u>Wetwell</u>			
Free Volume	(m ³)	4100	255
Water Volume	(m ³)	3200	188
Height, to Diaphragm Floor	(m)	17.3	17.0
<hr/>			
<u>Pressure Vessel</u>			
Inside Diameter	(m)	6.4	2.2
Height	(m)	22.0	10.4

Table 2.2 Summary of Data Channels

Location	Item	Data Acquisition			Channel Code = A B C D - E F G
		Computer	PCM Track-1	PCM Track-2	
Pressure Vessel	Pressure	2			A B Location
	Diff. press.	6			= P V Pressure Vessel
	Temperature	6			= B P Blowdown Pipe
	Water Level	6			= D W Drywell
Blowdown Pipe	Pressure	2			= V P Vent Pipe
	Diff. Press.	1			= W W Wetwell
	Temperature	3			C Measurement Item
	Timing Sig.	2	2	2	= P Pressure
Drywell	Pressure	1	1		= D Differential Pressure
	Temperature	8			= T Temperature
	Water Level	4			= L Water Level Signal
	Timing Sig.				= S Strain
Vent Pipe	Pressure	9			= A Acceleration
	Temperature	6			= M Actuation Signal
	Water Level	19	4		D Data Acquisition System
	Strain		4		= S Computer Recorded , 50 data/s
Wetwell	Acceleration		4		= F PCM Recorded , 455.6 data/s
	Timing Sig.	1	20		E Group Number
	Pressure	1			PCM System
	Diff. Press.	2			Computer 39 x 2 tracks
Sampling Rate	Temperature	32			Input Range +10.00
	Water Level	80			Resolution 4.883
	Acceleration				Sampling Rate (data/ch./s) 50.00
					Skew (ms/ch.) 0.028

Table 2.4 Identification of Data Channels

Table 2.3 Summary of Data Acquisition Systems

Max. Number of Channels	(V)	PCM System
Input Range	(mV/digit)	39 x 2 tracks
Resolution	(data/ch./s)	+10.00
Sampling Rate	(ms/ch.)	-19.53
Skew		455.56
		0.0488

Table 2.5 List of Data Channels (Computer Recorded Channels)

Channel No.	Channel Code	Measurement Location
1	BPMS-001	RUPTURE DISC BREAK SIGNAL
2	BPMS-002	MAIN DISCHARGE VALVE CLOSE SIGNAL
3	VPMS-001	OPENING OF VACUUM BREAKER (5-STEPS)
4		
5	PVPS-001	VESSEL STEAM DOME
6	PVPS-002	VESSEL STEAM DOME
7	BPPS-001	BLOWDOWN PIPE (8.4M FROM OUTL.)
8	BPPS-002	BLOWDOWN PIPE (0.9M FROM OUTL.)
9	DWPS-001	DRYWELL
10	WWPS-001	WETWELL AIRSPACE (15.0M ABOVE BOTT.)
11		
12	PVDS-001	DP OVER VESSEL (EL = 0.0M - +9.2M)
13	PVDS-002	DP OVER VESSEL (EL = 0.0M - +2.6M)
14	PVDS-003	DP OVER VESSEL (EL = +2.2M - +4.2M)
15	PVDS-004	DP OVER VESSEL (EL = +3.8M - +5.8M)
16	PVDS-005	DP OVER VESSEL (EL = +5.4M - +7.4M)
17	PVDS-006	DP OVER VESSEL (EL = +7.0M - +9.2M)
18	BPDS-001	DYNAMIC PRESS. IN BLOWDOWN PIPE
19	WWDS-001	DP OVER POOL (EL = 4.5M - 15.5M)
20	WWLS-002	DP ACROSS DIAPHRAGM FLOOR
21	WWLS-221	WETWELL (L2, 9.125M ABOVE BOTT.)
22	PVTS-001	VESSEL (EL = 0.6M)
23	PVTS-002	VESSEL (EL = 2.2M)
24	PVTS-003	VESSEL (EL = 3.8M)
25	PVTS-004	VESSEL (EL = 5.4M)
26	PVTS-005	VESSEL (EL = 7.0M)
27	PVTS-006	VESSEL (EL = 8.6M)
28	BPTS-001	BLOWDOWN PIPE (6.5M FROM OUTL.)
29	BPTS-002	BLOWDOWN PIPE (4.1M FROM OUTL.)
30	BPTS-003	BLOWDOWN PIPE (0.9M FROM OUTL.)
31	DWTS-101	DRYWELL (0.5M ABOVE DF)
32	DWTS-102	DRYWELL (2.5M ABOVE DF)
33	DWTS-103	DRYWELL (4.5M ABOVE DF)
34	DWTS-201	DRYWELL (0.5M ABOVE DF)
35	DWTS-202	DRYWELL (2.5M ABOVE DF)
36	DWTS-203	DRYWELL (4.5M ABOVE DF)
37	DWTS-301	DRYWELL (0.5M ABOVE DF)
38	DWTS-302	DRYWELL (3.5M ABOVE DF)
39	VPTS-101	VP1 (0.5M ABOVE OUTL.)
40	VPTS-102	VP1 (11.5M ABOVE OUTL.)
41	VPTS-201	VP2 (0.5M ABOVE OUTL.)
42	VPTS-202	VP2 (11.5M ABOVE OUTL.)
43	VPTS-301	VP3 (0.5M ABOVE OUTL.)
44	VPTS-302	VP3 (11.5M ABOVE OUTL.)
45	WWTS-101	WETWELL (T1, 1.0M ABOVE BOTT.)
46	WWTS-102	WETWELL (T1, 3.0M ABOVE BOTT.)
47	WWTS-103	WETWELL (T1, 5.0M ABOVE BOTT.)
48	WWTS-104	WETWELL (T1, 7.0M ABOVE BOTT.)
49	WWTS-105	WETWELL (T1, 9.0M ABOVE BOTT.)
50	WWTS-106	WETWELL (T1, 11.0M ABOVE BOTT.)
51	WWTS-107	WETWELL (T1, 13.0M ABOVE BOTT.)
52	WWTS-108	WETWELL (T1, 15.0M ABOVE BOTT.)

Table 2.5 (continued)

Channel No.	Channel Code	Measurement Location
53	WWTS-201	WETWELL (T2, 1.0M ABOVE BOTT.)
54	WWTS-202	WETWELL (T2, 3.0M ABOVE BOTT.)
55	WWTS-203	WETWELL (T2, 5.0M ABOVE BOTT.)
56	WWTS-204	WETWELL (T2, 7.0M ABOVE BOTT.)
57	WWTS-205	WETWELL (T2, 9.0M ABOVE BOTT.)
58	WWTS-206	WETWELL (T2, 11.0M ABOVE BOTT.)
59	WWTS-207	WETWELL (T2, 13.0M ABOVE BOTT.)
60	WWTS-208	WETWELL (T2, 15.0M ABOVE BOTT.)
61	WWTS-301	WETWELL (T3, 1.0M ABOVE BOTT.)
62	WWTS-302	WETWELL (T3, 3.0M ABOVE BOTT.)
63	WWTS-303	WETWELL (T3, 5.0M ABOVE BOTT.)
64	WWTS-304	WETWELL (T3, 7.0M ABOVE BOTT.)
65	WWTS-305	WETWELL (T3, 9.0M ABOVE BOTT.)
66	WWTS-306	WETWELL (T3, 11.0M ABOVE BOTT.)
67	WWTS-307	WETWELL (T3, 13.0M ABOVE BOTT.)
68	WWTS-308	WETWELL (T3, 15.0M ABOVE BOTT.)
69	WWTS-401	WETWELL (T4, 1.0M ABOVE BOTT.)
70	WWTS-402	WETWELL (T4, 3.0M ABOVE BOTT.)
71	WWTS-403	WETWELL (T4, 5.0M ABOVE BOTT.)
72	WWTS-404	WETWELL (T4, 7.0M ABOVE BOTT.)
73	WWTS-405	WETWELL (T4, 9.0M ABOVE BOTT.)
74	WWTS-406	WETWELL (T4, 11.0M ABOVE BOTT.)
75	WWTS-407	WETWELL (T4, 13.0M ABOVE BOTT.)
76	WWTS-408	WETWELL (T4, 15.0M ABOVE BOTT.)
77	WWLS-222	(L2, 9.875M ABOVE BOTT.)
78	PVLS-001	VESSEL (EL = 0.6M)
79	PVLS-002	VESSEL (EL = 2.2M)
80	PVLS-003	VESSEL (EL = 3.8M)
81	PVLS-004	VESSEL (EL = 5.4M)
82	PVLS-005	VESSEL (EL = 7.0M)
83	PVLS-006	VESSEL (EL = 8.6M)
84	DWLS-001	DRYWELL (0.048M ABOVE DF)
85	DWLS-002	DRYWELL (0.096M ABOVE DF)
86	DWLS-003	DRYWELL (0.144M ABOVE DF)
87	DWLS-004	DRYWELL (0.192M ABOVE DF)
88	VPLS-101	VP1 (0.042M ABOVE OUTL.)
89	VPLS-103	VP1 (2.042M ABOVE OUTL.)
90	VPLS-105	VP1 (4.042M ABOVE OUTL.)
91	VPLS-201	VP2 (0.042M ABOVE OUTL.)
92	VPLS-203	VP2 (2.042M ABOVE OUTL.)
93	VPLS-205	VP2 (4.042M ABOVE OUTL.)
94	VPLS-301	VP3 (0.042M ABOVE OUTL.)
95	VPLS-302	VP3 (1.042M ABOVE OUTL.)
96	VPLS-303	VP3 (2.042M ABOVE OUTL.)
97	VPLS-304	VP3 (3.042M ABOVE OUTL.)
98	VPLS-305	VP3 (4.042M ABOVE OUTL.)
99	VPLS-401	VP4 (0.042M ABOVE OUTL.)
100	VPLS-403	VP4 (2.042M ABOVE OUTL.)
101	VPLS-405	VP4 (4.042M ABOVE OUTL.)
102	VPLS-501	VP5 (0.042M ABOVE OUTL.)
103	VPLS-502	VP5 (1.042M ABOVE OUTL.)
104	VPLS-503	VP5 (2.042M ABOVE OUTL.)
105	VPLS-504	VP5 (3.042M ABOVE OUTL.)
106	VPLS-505	VP5 (4.042M ABOVE OUTL.)

Table 2.5 (continued)

Channel No.	Channel Code	Measurement Location
107	WWLS-104	WETWELL (L1, 5.75M ABOVE BOTT.)
108	WWLS-105	WETWELL (L1, 6.50M ABOVE BOTT.)
109	WWLS-106	WETWELL (L1, 7.25M ABOVE BOTT.)
110	WWLS-107	WETWELL (L1, 8.00M ABOVE BOTT.)
111	WWLS-108	WETWELL (L1, 8.75M ABOVE BOTT.)
112	WWLS-109	WETWELL (L1, 9.50M ABOVE BOTT.)
113	WWLS-110	WETWELL (L1, 10.25M ABOVE BOTT.)
114	WWLS-111	WETWELL (L1, 11.00M ABOVE BOTT.)
115	WWLS-112	WETWELL (L1, 11.75M ABOVE BOTT.)
116	WWLS-113	WETWELL (L1, 12.50M ABOVE BOTT.)
117	WWLS-114	WETWELL (L1, 13.25M ABOVE BOTT.)
118	WWLS-115	WETWELL (L1, 14.00M ABOVE BOTT.)
119	WWLS-116	WETWELL (L1, 14.75M ABOVE BOTT.)
120	WWLS-201	WETWELL (L2, 3.50M ABOVE BOTT.)
121	WWLS-202	WETWELL (L2, 4.25M ABOVE BOTT.)
122	WWLS-203	WETWELL (L2, 5.00M ABOVE BOTT.)
123	WWLS-204	WETWELL (L2, 5.75M ABOVE BOTT.)
124	WWLS-205	WETWELL (L2, 6.50M ABOVE BOTT.)
125	WWLS-206	WETWELL (L2, 7.25M ABOVE BOTT.)
126	WWLS-207	WETWELL (L2, 8.00M ABOVE BOTT.)
127	WWLS-208	WETWELL (L2, 8.75M ABOVE BOTT.)
128	WWLS-209	WETWELL (L2, 9.50M ABOVE BOTT.)
129	WWLS-210	WETWELL (L2, 10.25M ABOVE BOTT.)
130	WWLS-211	WETWELL (L2, 11.00M ABOVE BOTT.)
131	WWLS-212	WETWELL (L2, 11.75M ABOVE BOTT.)
132	WWLS-213	WETWELL (L2, 12.50M ABOVE BOTT.)
133	WWLS-214	WETWELL (L2, 13.25M ABOVE BOTT.)
134	WWLS-215	WETWELL (L2, 14.00M ABOVE BOTT.)
135	WWLS-216	WETWELL (L2, 14.75M ABOVE BOTT.)
136	WWLS-303	WETWELL (L3, 5.00M ABOVE BOTT.)
137	WWLS-305	WETWELL (L3, 6.50M ABOVE BOTT.)
138	WWLS-307	WETWELL (L3, 8.00M ABOVE BOTT.)
139	WWLS-309	WETWELL (L3, 9.50M ABOVE BOTT.)
140	WWLS-311	WETWELL (L3, 11.00M ABOVE BOTT.)
141	WWLS-313	WETWELL (L3, 12.50M ABOVE BOTT.)
142	WWLS-315	WETWELL (L3, 14.00M ABOVE BOTT.)
143	WWLS-401	WETWELL (L4, 3.50M ABOVE BOTT.)
144	WWLS-402	WETWELL (L4, 4.25M ABOVE BOTT.)
145	WWLS-403	WETWELL (L4, 5.00M ABOVE BOTT.)
146	WWLS-404	WETWELL (L4, 5.75M ABOVE BOTT.)
147	WWLS-405	WETWELL (L4, 6.50M ABOVE BOTT.)
148	WWLS-406	WETWELL (L4, 7.25M ABOVE BOTT.)
149	WWLS-407	WETWELL (L4, 8.00M ABOVE BOTT.)
150	WWLS-408	WETWELL (L4, 8.75M ABOVE BOTT.)
151	WWLS-409	WETWELL (L4, 9.50M ABOVE BOTT.)
152	WWLS-410	WETWELL (L4, 10.25M ABOVE BOTT.)
153	WWLS-411	WETWELL (L4, 11.00M ABOVE BOTT.)
154	WWLS-412	WETWELL (L4, 11.75M ABOVE BOTT.)
155	WWLS-413	WETWELL (L4, 12.50M ABOVE BOTT.)
156	WWLS-414	WETWELL (L4, 13.25M ABOVE BOTT.)
157	WWLS-415	WETWELL (L4, 14.00M ABOVE BOTT.)
158	WWLS-416	WETWELL (L4, 14.75M ABOVE BOTT.)
159	WWLS-503	WETWELL (L5, 5.00M ABOVE BOTT.)
160	WWLS-505	WETWELL (L5, 6.50M ABOVE BOTT.)

Table 2.5 (continued)

Channel No.	Channel Code	Measurement Location
161	WWLS-507	WETWELL (L5, 8.00M ABOVE BOTT.)
162	WWLS-509	WETWELL (L5, 9.50M ABOVE BOTT.)
163	WWLS-511	WETWELL (L5, 11.00M ABOVE BOTT.)
164	WWLS-513	WETWELL (L5, 12.50M ABOVE BOTT.)
165	WWLS-515	WETWELL (L5, 14.00M ABOVE BOTT.)
166	WWLS-604	WETWELL (L6, 5.75M ABOVE BOTT.)
167	WWLS-606	WETWELL (L6, 7.25M ABOVE BOTT.)
168	WWLS-608	WETWELL (L6, 8.75M ABOVE BOTT.)
169	WWLS-610	WETWELL (L6, 10.25M ABOVE BOTT.)
170	WWLS-612	WETWELL (L6, 11.75M ABOVE BOTT.)
171	WWLS-614	WETWELL (L6, 13.25M ABOVE BOTT.)
172	WWLS-616	WETWELL (L6, 14.75M ABOVE BOTT.)
173	WWLS-704	WETWELL (L7, 5.75M ABOVE BOTT.)
174	WWLS-706	WETWELL (L7, 7.25M ABOVE BOTT.)
175	WWLS-708	WETWELL (L7, 8.75M ABOVE BOTT.)
176	WWLS-710	WETWELL (L7, 10.25M ABOVE BOTT.)
177	WWLS-712	WETWELL (L7, 11.75M ABOVE BOTT.)
178	WWLS-714	WETWELL (L7, 13.25M ABOVE BOTT.)
179	WWLS-716	WETWELL (L7, 14.75M ABOVE BOTT.)
180	WWLS-804	WETWELL (L8, 5.75M ABOVE BOTT.)
181	WWLS-806	WETWELL (L8, 7.25M ABOVE BOTT.)
182	WWLS-808	WETWELL (L8, 8.75M ABOVE BOTT.)
183	WWLS-810	WETWELL (L8, 10.25M ABOVE BOTT.)
184	WWLS-812	WETWELL (L8, 11.75M ABOVE BOTT.)
185	WWLS-814	WETWELL (L8, 13.25M ABOVE BOTT.)
186	WWLS-816	WETWELL (L8, 14.75M ABOVE BOTT.)
187	WWLS-223	WETWELL (L2, 10.625M ABOVE BOTT.)
188	WWLS-224	WETWELL (L2, 11.375M ABOVE BOTT.)
189	WWLS-225	WETWELL (L2, 12.125M ABOVE BOTT.)
190	WWLS-226	WETWELL (L2, 12.875M ABOVE BOTT.)
191	WWLS-227	WETWELL (L2, 13.625M ABOVE BOTT.)
192	WWLS-228	WETWELL (L2, 14.375M ABOVE BOTT.)

Table 2.6 List of Data Channels (PCM Track-1 Channels)

Channel No.	Channel Code	Measurement Location
1	BPMF-001	RUPTURE DISC BREAK SIGNAL
2	BPMF-002	MATN DISCHARGE VALVE CLOSE SIGNAL
3	VPLS-502	VP5 (1.042M ABOVE OUTL.)
4	DWPF-001	DRYWELL
5	VPPF-101	VP1 (0.5M ABOVE OUTL.)
6	VPPF-201	VP2 (0.5M ABOVE OUTL.)
7	VPPF-301	VP3 (0.5M ABOVE OUTL.)
8	VPPF-302	VP3 (6.0M ABOVE OUTL.)
9	VPPF-303	VP3 (11.5M ABOVE OUTL.)
10	VPPF-401	VP4 (0.5M ABOVE OUTL.)
11	VPPF-501	VP5 (0.5M ABOVE OUTL.)
12	VPPF-502	VP5 (6.0M ABOVE OUTL.)
13	VPPF-503	VP5 (11.5M ABOVE OUTL.)
14	WWPF-101	POOL BOTT., UNDER VP1
15	WWPF-102	POOL BOTT., UNDER VP2
16	WWPF-103	POOL BOTT., UNDER VP3
17	WWPF-104	POOL BOTT., UNDER VP4
18	WWPF-105	POOL BOTT., UNDER VP5
19	WWPF-106	POOL BOTT., BETW. VP1, VP6 & PEDESTAL
20	WWPF-107	POOL BOTT., BETW. VP2 & VP3
21	WWPF-201	WALL BESIDE VP2 (P1, 1.8M ABOVE BOTT.)
22	WWPF-202	WALL BESIDE VP2 (P1, 3.6M ABOVE BOTT.)
23	WWPF-203	WALL BESIDE VP2 (P1, 6.0M ABOVE BOTT.)
24	WWPF-301	WALL BESIDE VP3 (P2, 1.8M ABOVE BOTT.)
25	WWPF-302	WALL BESIDE VP3 (P2, 3.6M ABOVE BOTT.)
26	WWPF-303	WALL BESIDE VP3 (P2, 6.0M ABOVE BOTT.)
27	WWPF-401	SHELL BESIDE VP3 (P3, 1.8M ABOVE BOTT.)
28	WWPF-402	SHELL BESIDE VP3 (P3, 3.6M ABOVE BOTT.)
29	WWPF-501	SHELL BESIDE VP4 (P4, 1.8M ABOVE BOTT.)
30	WWPF-502	SHELL BESIDE VP4 (P4, 3.6M ABOVE BOTT.)
31	WWPF-602	WALL BESIDE VP4 (P5, 3.6M ABOVE BOTT.)
32	WWPF-702	WALL BESIDE VP7 (P6, 3.6M ABOVE BOTT.)
33	WWPF-001	WETWELL AIRSPACE (15.0M ABOVE BOTT.)
34	VPMS-001	OPENING OF VACUUM BREAKER (5-STEPS)
35	VPSF-101	LOWER BRACE BETW. VP1 & WALL
36	VPSF-102	LOWER BRACE BETW. VP1 & VP2
37	VPSF-103	LOWER BRACE BETW. VP1 & VP6
38	VPSF-201	UPPER BRACE BETW. VP1 & PEDESTAL
39		

Table 2.7 List of Data Channels (PCM Track-2 Channels)

Channel No.	Channel Code	Measurement Location
1	BPMF-001	RUPTURE DISC BREAK SIGNAL
2	BPMF-002	MAIN DISCHARGE VALVE CLOSE SIGNAL
3	VPLS-502	VP5 (1.042M ABOVE OUTL.)
4	VPAF-101	VP2 OUTL. (0DEG)
5	VPAF-102	VP2 OUTL. (90DEG)
6	VPAF-201	VP5 OUTL. (0DEG)
7	VPAF-202	VP5 OUTL. (90DEG)
8	WWAF-001	POOL BOTT., UNDER VP5
9	WWAF-002	POOL BOTT., BETW. VP2, VP3, VP4 & VP7
10	WWAF-003	WALL BESIDE VP2 (3.0M ABOVE BOTT.)
11	WWAF-004	WALL BESIDE VP7 (3.0M ABOVE BOTT.)
12	WWAF-005	SHELL BESIDE VP3 (3.0M ABOVE BOTT.)
13	WWAF-006	SHELL BESIDE VP3 (6.0M ABOVE BOTT.)
14	WWAF-007	SHELL BESIDE VP4 (3.0M ABOVE BOTT.)
15	WWAF-008	SHELL BESIDE VP4 (6.0M ABOVE BOTT.)
16	WWAF-009	PEDESTAL (3.0M ABOVE BOTT.)
17	WWAF-010	PEDESTAL (6.0M ABOVE BOTT.)
18	WWAF-011	SHELL AT DF LEVEL (0DEG)
19	WWAF-012	SHELL AT DF LEVEL (90DEG)
20		
21	WWLF-101	PHASE BDRY. (0.9M BELOW OUTL., CENTER)
22	WWLF-102	PHASE BDRY. (0.9M BELOW OUTL., 0DEG)
23	WWLF-104	PHASE BDRY. (0.9M BELOW OUTL., 90DEG)
24	WWLF-106	PHASE BDRY. (0.9M BELOW OUTL., 180DEG)
25	WWLF-108	PHASE BDRY. (0.9M BELOW OUTL., 270DEG)
26	WWLF-201	PHASE BDRY. (0.6M BELOW OUTL., CENTER)
27	WWLF-203	PHASE BDRY. (0.6M BELOW OUTL., 45DEG)
28	WWLF-205	PHASE BDRY. (0.6M BELOW OUTL., 135DEG)
29	WWLF-207	PHASE BDRY. (0.6M BELOW OUTL., 225DEG)
30	WWLF-209	PHASE BDRY. (0.6M BELOW OUTL., 315DEG)
31	WWLF-301	PHASE BDRY. (0.3M BELOW OUTL., CENTER)
32	WWLF-302	PHASE BDRY. (0.3M BELOW OUTL., 0DEG)
33	WWLF-304	PHASE BDRY. (0.3M BELOW OUTL., 90DEG)
34	WWLF-306	PHASE BDRY. (0.3M BELOW OUTL., 180DEG)
35	WWLF-308	PHASE BDRY. (0.3M BELOW OUTL., 270DEG)
36	VPMF-101	
37	VPMF-102	
38	VPMF-103	
39	VPMF-104	

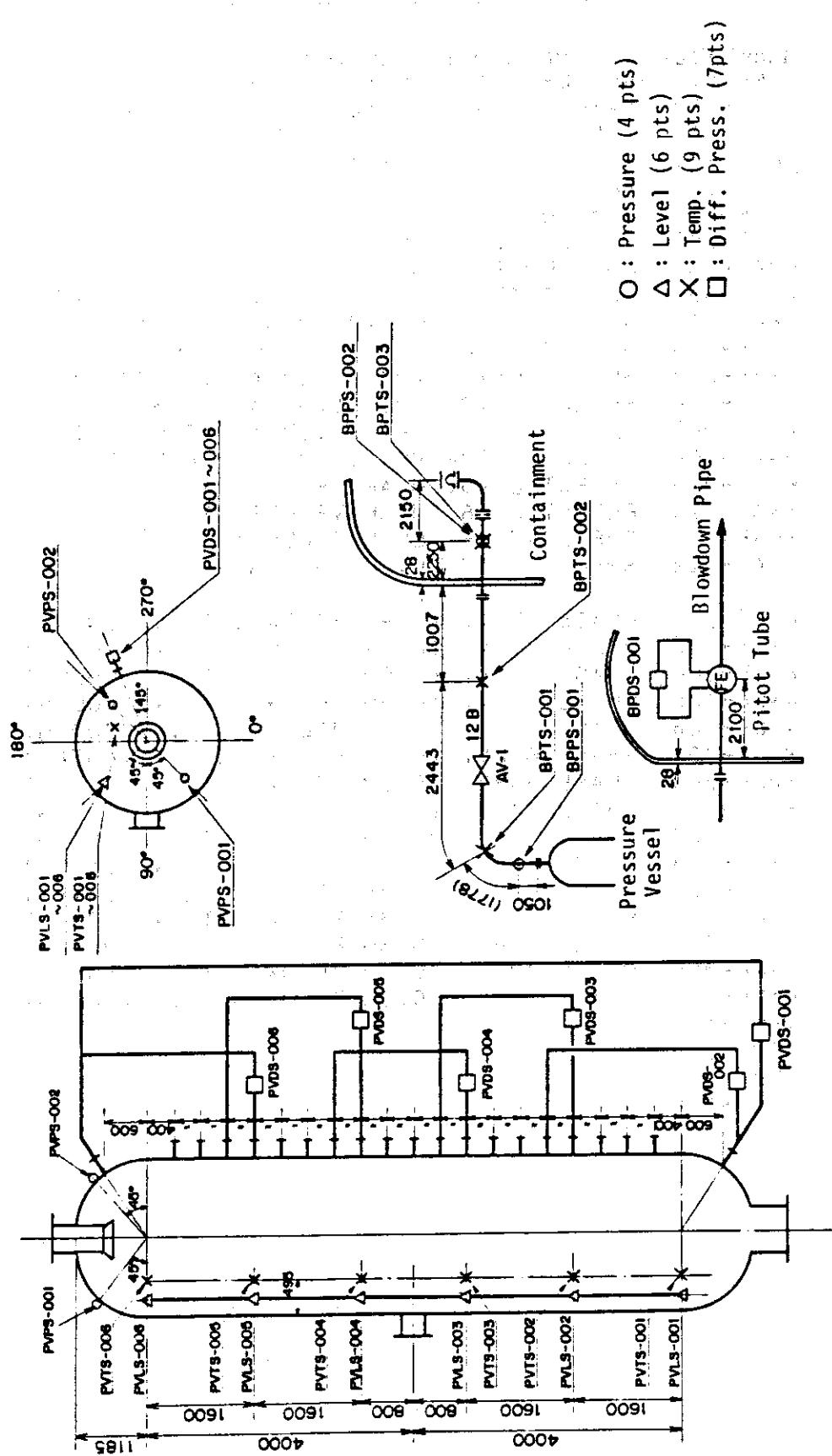


Fig. 2.2 Transducer Locations for Primary System

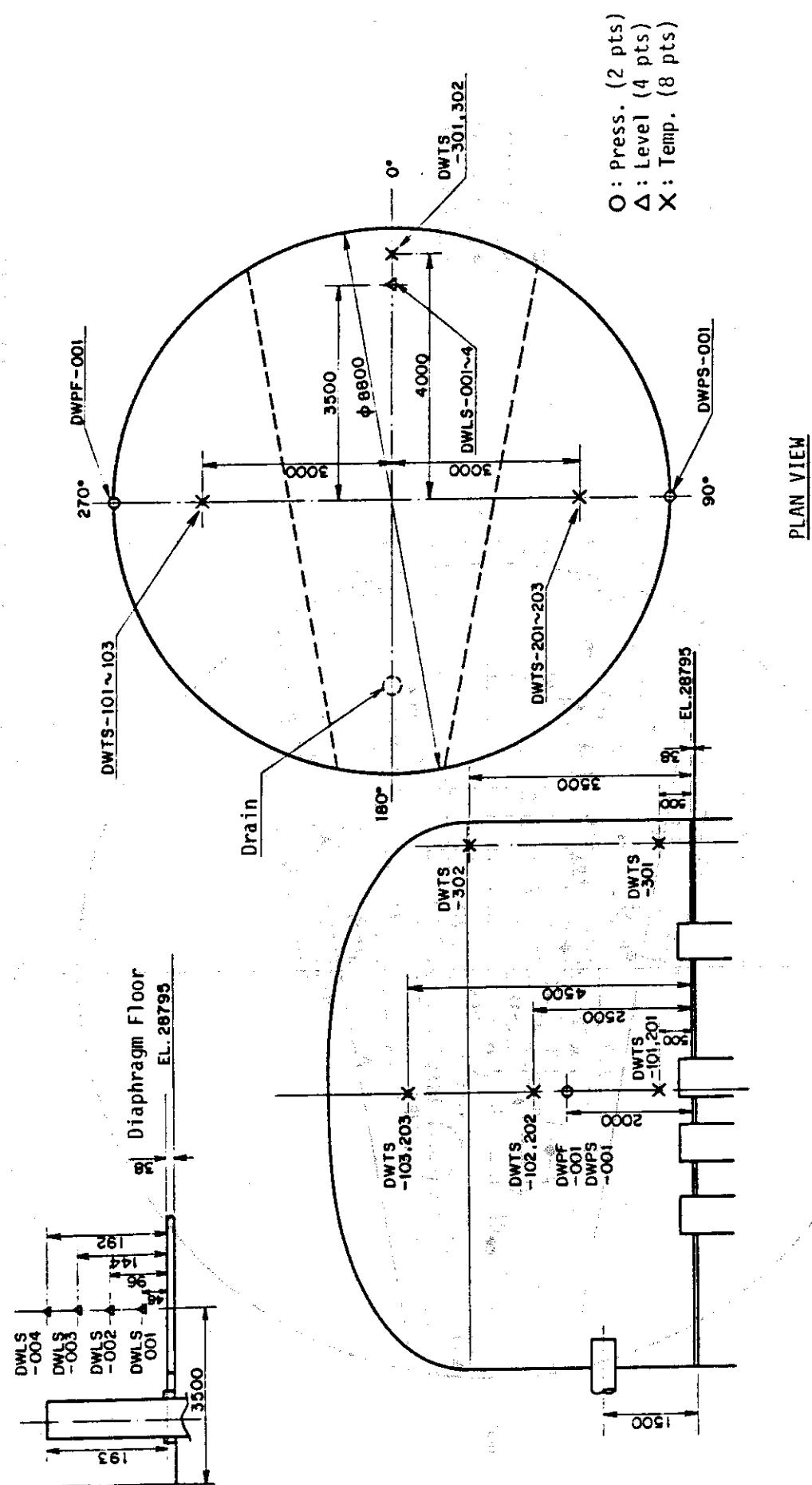


Fig. 2.3 Transducer Locations for Drywell

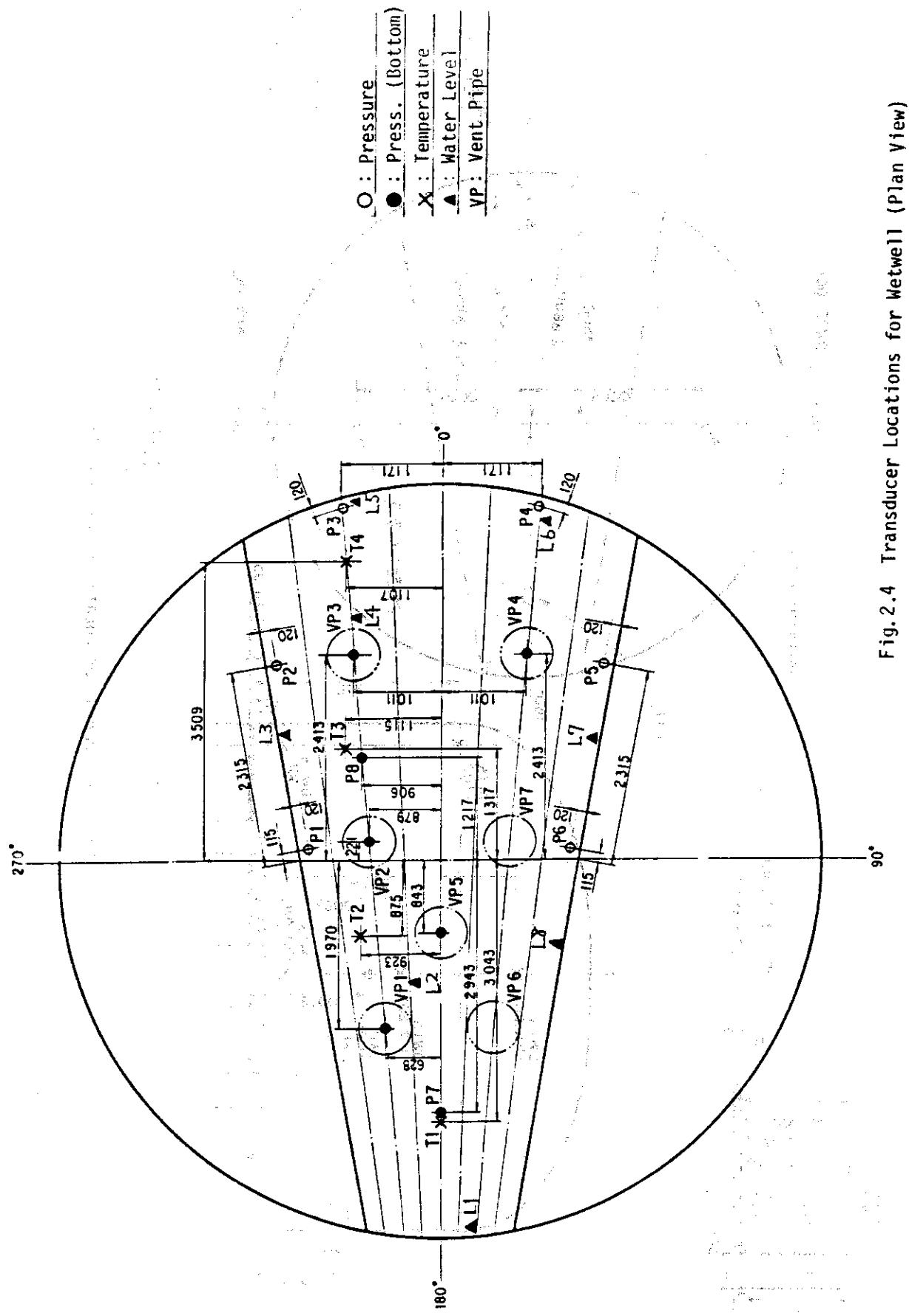


Fig. 2.4 Transducer Locations for Wetwell (Plan View)

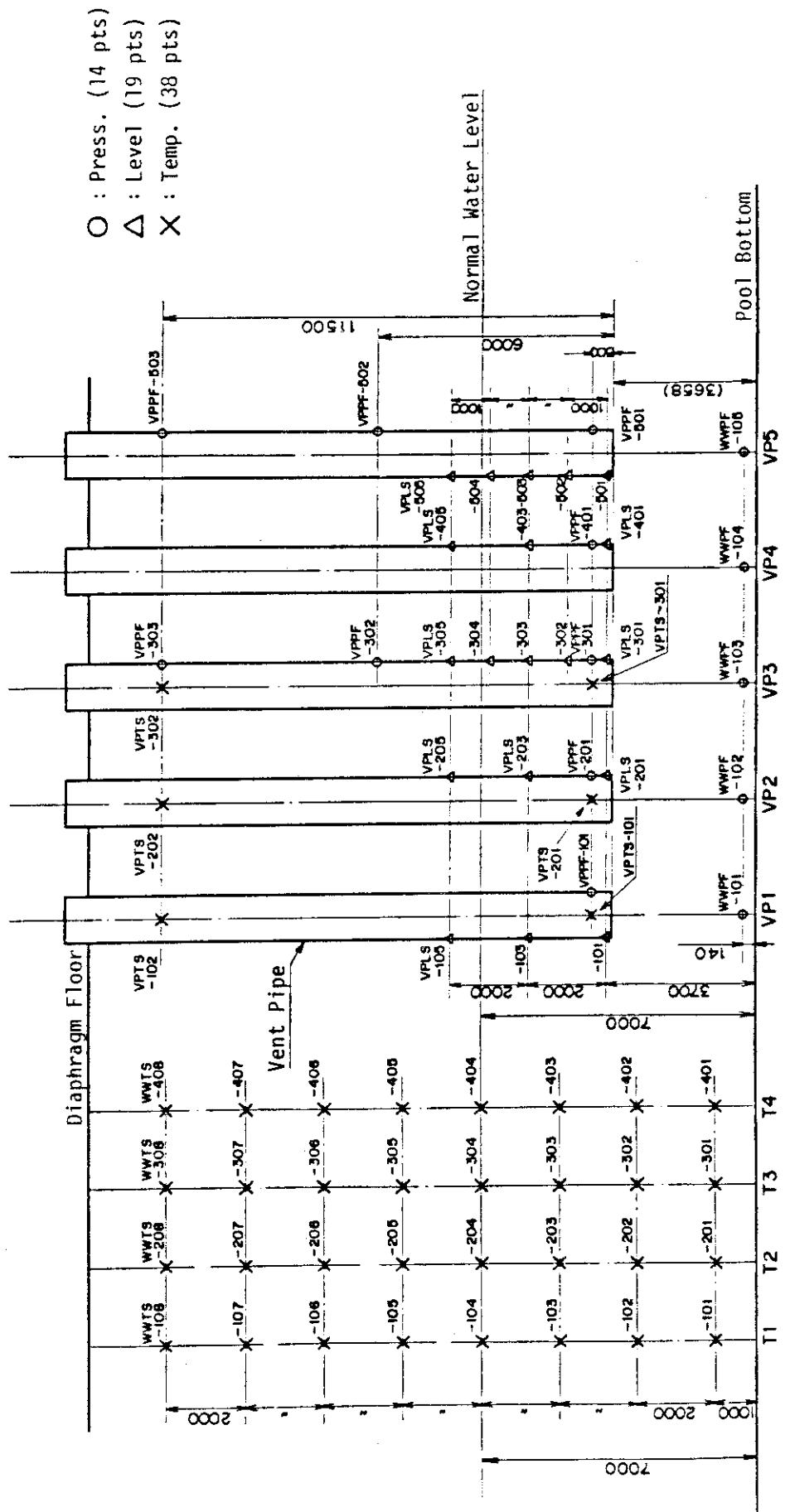


Fig. 2.5 Transducer Locations for Vent Pipes and Thermocouple Locations for Wetwell

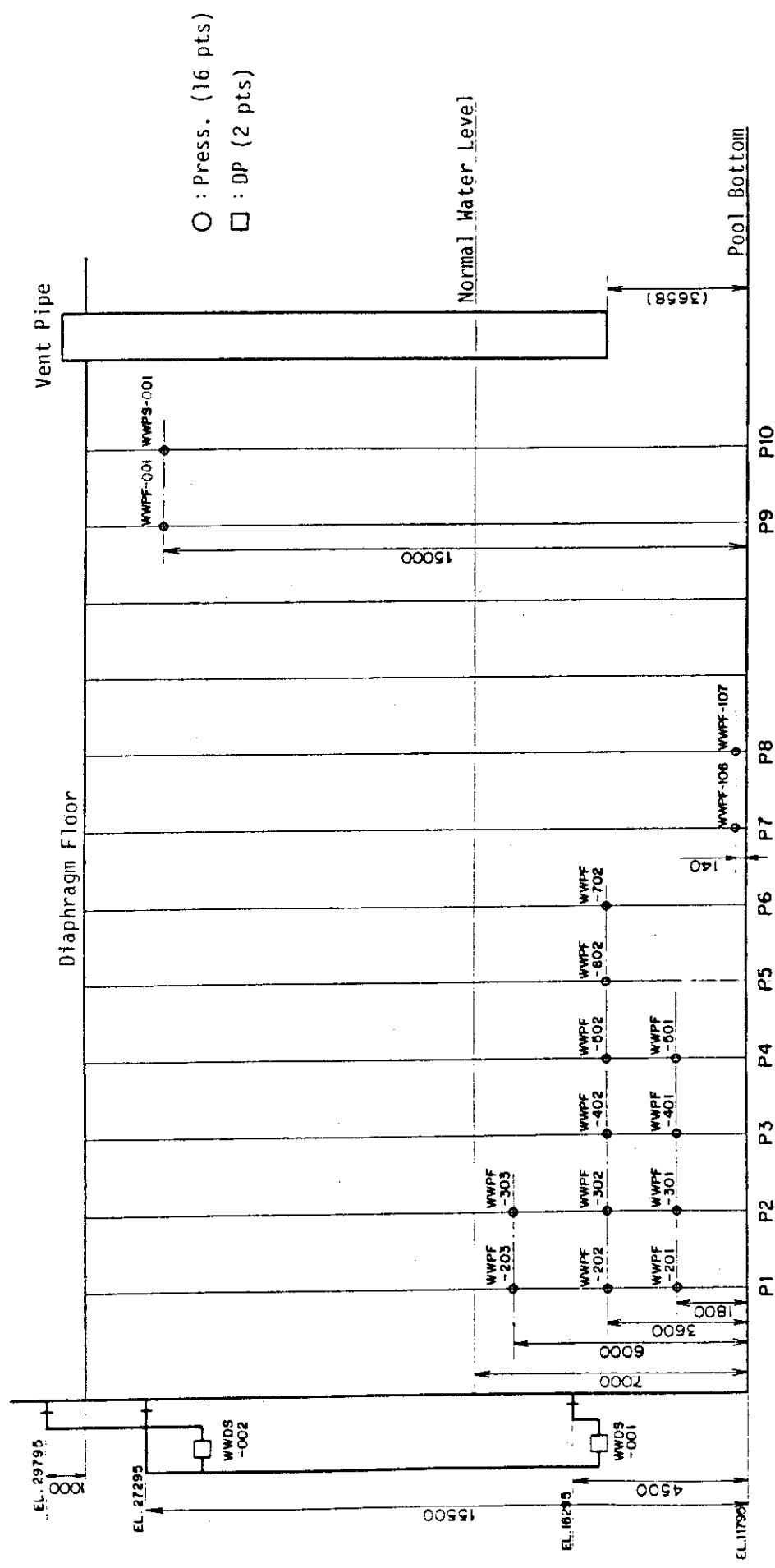


Fig. 2.6 Pressure and Differential Pressure Transducer Locations for Wetwell

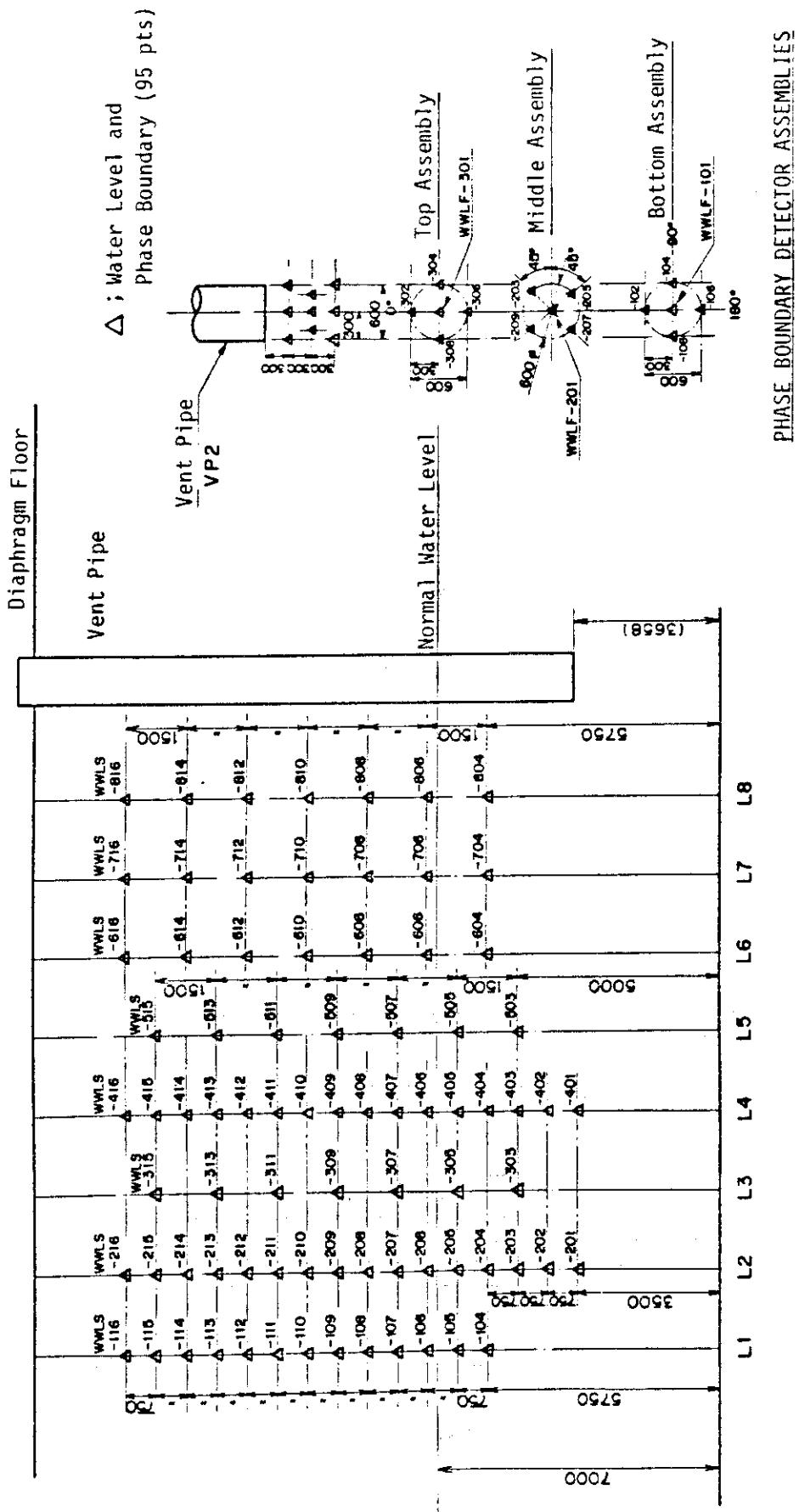


Fig. 2.7 Water Level Detector and Phase Boundary Detector Locations for Wetwell

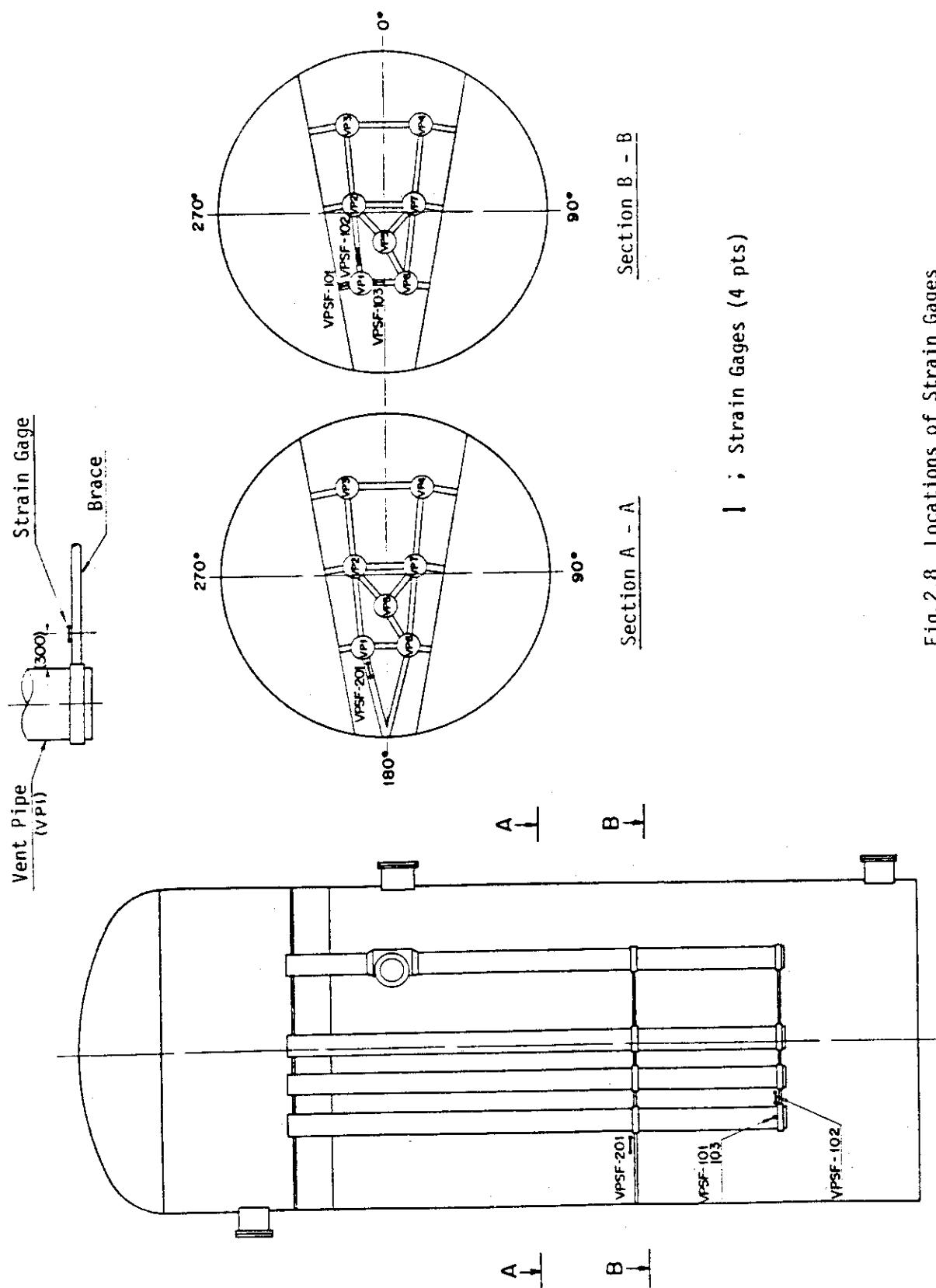


Fig. 2.8 Locations of Strain Gages

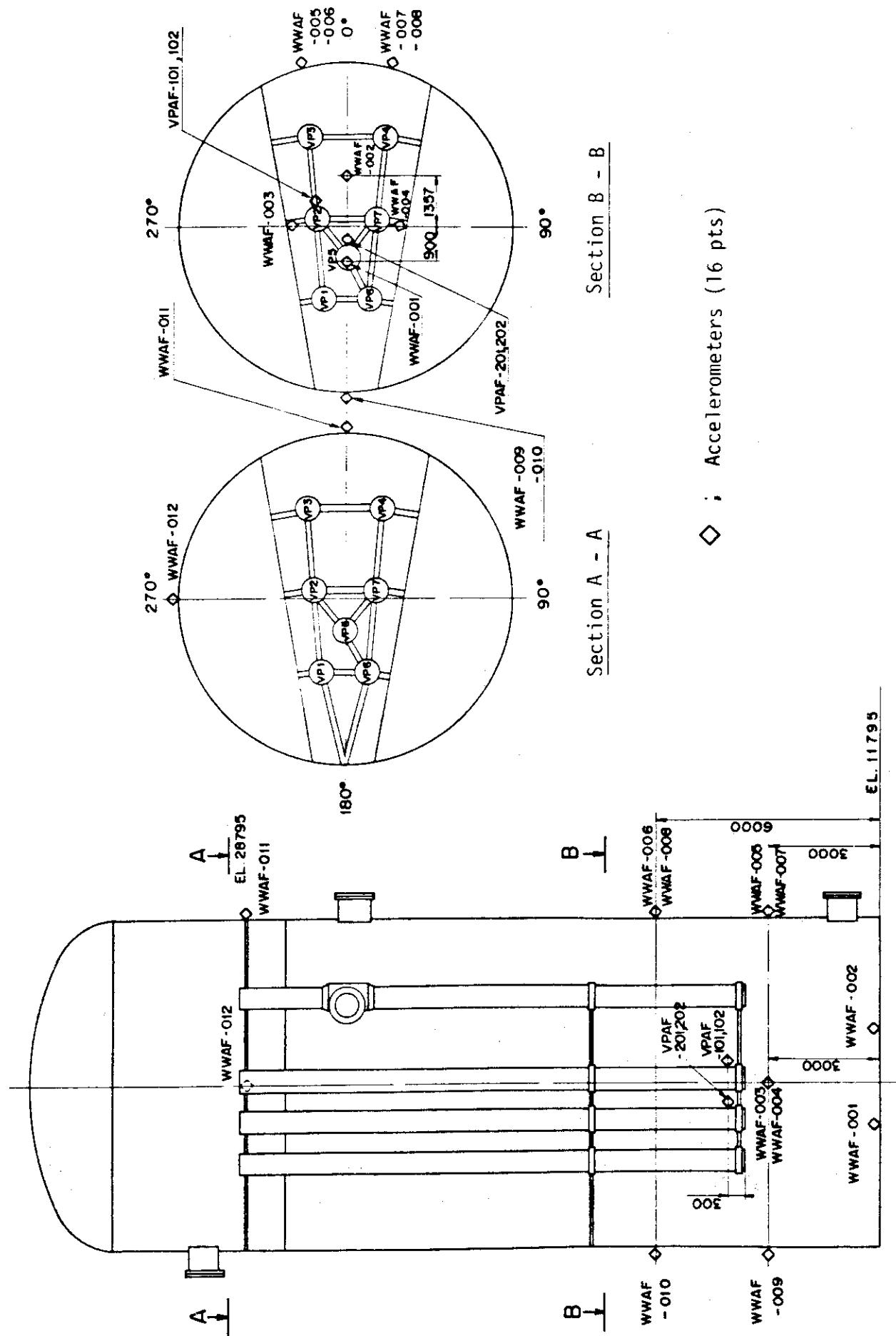


Fig. 2.9 Locations of Accelerometers

Table 2.8 State of Measurement Equipments (Computer Recorded Channels)

Channel No.	Channel Code	Acceptability o Yes \emptyset No	Remarks
1	BPMS-001	o	
2	BPMS-002	o	
3	VPMS-001	o	Vacuum breaker was locked close.
4			
5	PVPS-001	\emptyset	Unreliable.
6	PVPS-002	o	
7	BPPS-001	o	
8	BPPS-002	o	
9	DWPS-001	o	
10	WWPS-001	o	
11			
12	PVDS-001	o	
13	PVDS-002	o	
14	PVDS-003	o	
15	PVDS-004	o	
16	PVDS-005	o	
17	PVDS-006	o	
18	BPDS-001	\emptyset	Damaged in TEST 1203.
19	WWDS-001	o	
20	WWDS-002	o	
21	WWLS-221	o	
22	PVTS-001	o	
23	PVTS-002	o	
24	PVTS-003	o	
25	PVTS-004	o	
26	PVTS-005	o	
27	PVTS-006	o	
28	BPTS-001	o	
29	BPTS-002	o	
30	BPTS-003	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
31	DWTS-101	o	
32	DWTS-102	o	
33	DWTS-103	o	
34	DWTS-201	o	
35	DWTS-202	o	
36	DWTS-203	o	
37	DWTS-301	o	
38	DWTS-302	o	
39	VPTS-101	o	
40	VPTS-102	o	
41	VPTS-201	o	
42	VPTS-202	o	
43	VPTS-301	o	
44	VPTS-302	o	
45	WWTS-101	o	
46	WWTS-102	o	
47	WWTS-103	o	
48	WWTS-104	o	
49	WWTS-105	o	
50	WWTS-106	o	} Wetted during pool swell.
51	WWTS-107	o	
52	WWTS-108	ø	Broken.
53	WWTS-201	o	
54	WWTS-202	o	
55	WWTS-203	o	
56	WWTS-204	o	
57	WWTS-205	o	} Wetted during pool swell.
58	WWTS-206	o	
59	WWTS-207	o	
60	WWTS-208	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
61	WWTS-301	o	
62	WWTS-302	o	
63	WWTS-303	o	
64	WWTS-304	o	
65	WWTS-305	o	
66	WWTS-306	o	} Wetted during pool swell.
67	WWTS-307	o	
68	WWTS-308	o	
69	WWTS-401	o	
70	WWTS-402	o	
71	WWTS-403	o	
72	WWTS-404	o	
73	WWTS-405	o	} Wetted during pool swell.
74	WWTS-406	o	
75	WWTS-407	o	
76	WWTS-408	o	
77	WWLS-222	o	
78	PVLS-001	ø	Sensor insulation failure.
79	PVLS-002	ø	Sensor insulation failure.
80	PVLS-003	o	
81	PVLS-004	o	
82	PVLS-005	o	
83	PVLS-006	o	
84	DWLS-001	o	
85	DWLS-002	o	
86	DWLS-003	o	
87	DWLS-004	o	
88	VPLS-101	o	
89	VPLS-103	o	
90	VPLS-105	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
91	VPLS-201	o	
92	VPLS-203	o	
93	VPLS-205	o	
94	VPLS-301	o	
95	VPLS-302	o	
96	VPLS-303	o	
97	VPLS-304	o	
98	VPLS-305	o	
99	VPLS-401	o	
100	VPLS-403	o	
101	VPLS-405	o	
102	VPLS-501	o	
103	VPLS-502	o	
104	VPLS-503	o	
105	VPLS-504	o	
106	VPLS-505	o	
107	WWLS-104	o	
108	WWLS-105	o	
109	WWLS-106	o	
110	WWLS-107	o	
111	WWLS-108	o	
112	WWLS-109	o	
113	WWLS-110	o	
114	WWLS-111	o	
115	WWLS-112	o	
116	WWLS-113	o	
117	WWLS-114	o	
118	WWLS-115	o	
119	WWLS-116	o	
120	WWLS-201	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
121	WWLS-202	o	
122	WWLS-203	o	
123	WWLS-204	o	
124	WWLS-205	o	
125	WWLS-206	o	
126	WWLS-207	o	
127	WWLS-208	o	
128	WWLS-209	o	
129	WWLS-210	o	
130	WWLS-211	o	
131	WWLS-212	o	
132	WWLS-213	o	
133	WWLS-214	o	
134	WWLS-215	o	
135	WWLS-216	o	
136	WWLS-303	o	
137	WWLS-305	o	
138	WWLS-307	o	
139	WWLS-309	o	
140	WWLS-311	o	
141	WWLS-313	o	
142	WWLS-315	o	
143	WWLS-401	o	
144	WWLS-402	o	
145	WWLS-403	o	
146	WWLS-404	o	
147	WWLS-405	o	
148	WWLS-406	o	
149	WWLS-407	o	
150	WWLS-408	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
151	WWLS-409	o	
152	WWLS-410	o	
153	WWLS-411	o	
154	WWLS-412	o	
155	WWLS-413	o	
156	WWLS-414	o	
157	WWLS-415	o	
158	WWLS-416	o	
159	WWLS-503	o	
160	WWLS-505	o	
161	WWLS-507	o	
162	WWLS-509	o	
163	WWLS-511	o	
164	WWLS-513	o	
165	WWLS-515	o	
166	WWLS-604	o	
167	WWLS-606	o	
168	WWLS-608	o	
169	WWLS-610	o	
170	WWLS-612	o	
171	WWLS-614	o	
172	WWLS-616	o	
173	WWLS-704	o	
174	WWLS-706	o	
175	WWLS-708	o	
176	WWLS-710	o	
177	WWLS-712	o	
178	WWLS-714	o	
179	WWLS-716	o	
180	WWLS-804	o	

Table 2.8 (continued)

Channel No.	Channel Code	Acceptability o Yes <input checked="" type="checkbox"/> No	Remarks
181	WWLS-806	o	
182	WWLS-808	o	
183	WWLS-810	o	
184	WWLS-812	o	
185	WWLS-814	o	
186	WWLS-816	o	
187	WWLS-223	o	
188	WWLS-224	o	
189	WWLS-225	o	
190	WWLS-226	o	
191	WWLS-227	o	
192	WWLS-228	o	

Table 2.9 State of Measurement Equipments (PCM Track-1 Channels)

Channel No.	Channel No.	Acceptability o Yes ø No	Remarks
1	BPMF-001	o	
2	BPMF-002	o	
3	VPLS-502	o	
4	DWPF-001	o	
5	VPPF-101	o	
6	VPPF-201	o	
7	VPPF-301	o	
8	VPPF-302	o	
9	VPPF-303	o	
10	VPPF-401	o	
11	VPPF-501	o	
12	VPPF-502	o	
13	VPPF-503	o	
14	WWPF-101	o	
15	WWPF-102	o	
16	WWPF-103	o	
17	WWPF-104	o	
18	WWPF-105	o	
19	WWPF-106	o	
20	WWPF-107	o	
21	WWPF-201	o	
22	WWPF-202	o	
23	WWPF-203	o	
24	WWPF-301	o	
25	WWPF-302	o	
26	WWPF-303	o	
27	WWPF-401	o	
28	WWPF-402	o	
29	WWPF-501	o	
30	WWPF-502	o	

Table 2.9 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
31	WWPF-602	o	
32	WWPF-702	o	
33	WWPF-001	o	
34	VPMS-001	o	
35	VPSF-101	o	
36	VPSF-102	o	
37	VPSF-103	ø	Sensor broken.
38	VPSF-201	o	
39			

Table 2.10 State of Measurement Equipments (PCM Track-2 Channels)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
1	BPMF-001	o	
2	BPMF-002	o	
3	VPLS-502	o	
4	VPAF-101	ø	High noise level.
5	VPAF-102	o	
6	VPAF-201	o	
7	VPAF-202	o	
8	WWAF-001	ø	
9	WWAF-002	ø	Unreasonable signal probably caused by cable vibration.
10	WWAF-003	ø	
11	WWAF-004	ø	
12	WWAF-005	o	
13	WWAF-006	o	
14	WWAF-007	o	
15	WWAF-008	o	
16	WWAF-009	o	
17	WWAF-010	o	
18	WWAF-011	o	
19	WWAF-012	o	
20			
21	WWLF-101	o	
22	WWLF-102	o	
23	WWLF-104	o	
24	WWLF-106	o	
25	WWLF-108	o	
26	WWLF-201	o	
27	WWLF-203	o	
28	WWLF-205	o	
29	WWLF-207	o	
30	WWLF-209	o	

Table 2.10 (continued)

Channel No.	Channel Code	Acceptability o Yes ø No	Remarks
31	WWLF-301	o	
32	WWLF-302	o	
33	WWLF-304	o	
34	WWLF-306	o	
35	WWLF-308	o	
36	VPMF-101	o	
37	VPMF-102	o	
38	VPMF-103	o	
39	VPMF-104	o	

Table 2.11 Calibration Data

DIFFERENTIAL PRESSURE CHANNELS (COMPUTER RECORDED)

PRESSURE CHANNELS (COMPUTER RECORDED)

<u>Pressure Vessel</u>	<u>Date of Calibration</u>	<u>Nov. 7, 1979</u>	<u>Pressure Vessel</u>	<u>Date of Calibration</u>	<u>Nov. 7, 1979</u>
<u>Test Containment</u>	<u>Date of Calibration</u>	<u>Nov. 7, 1979</u>	<u>Calibration Conducted by Filling Water into Vessel.</u>	<u>Calibration Conducted by Filling Water into Vessel.</u>	<u>Nov. 7, 1979</u>
	<u>Range of Calibration Pressure (kPa)</u>	<u>101 - 6961</u>	<u>Date of Calibration</u>	<u>Jun. 15, 1979</u>	
	<u>Water Level in Pressure Vessel (m)</u>	<u>Full</u>	<u>Calibration Conducted by:</u>		
			<input type="checkbox"/> <u>Filling Water into Containment</u>		
			<input checked="" type="checkbox"/> <u>Applying Known Pressure on Transducer</u>		
<u>Test Containment</u>	<u>Date of Calibration</u>	<u>Nov. 8, 1979</u>	<u>Channel No.</u>	<u>Channel Code</u>	<u>kPa/Digit</u>
	<u>Range of Calibration Pressure (kPa)</u>	<u>101 - 443.6</u>	<u>System Computer</u>		<u>Max. Deviation kPa</u>
	<u>Water Level in Wetwell (m)</u>	<u>3.3</u>	<u>12</u>	<u>PVDS-001</u>	<u>0.04812</u>
			<u>13</u>	<u>PVDS-002</u>	<u>0.02412</u>
			<u>14</u>	<u>PVDS-003</u>	<u>0.02444</u>
			<u>15</u>	<u>PVDS-004</u>	<u>0.02387</u>
			<u>16</u>	<u>PVDS-005</u>	<u>0.02363</u>
			<u>17</u>	<u>PVDS-006</u>	<u>0.02350</u>
			<u>18</u>	<u>BPDS-001</u>	<u>2.393</u>
			<u>19</u>	<u>WWDS-001</u>	<u>3.05015</u>
			<u>20</u>	<u>WWDS-002</u>	<u>0.04816</u>

<u>Channel No.</u>	<u>Channel Code</u>	<u>kPa/Digit</u>	<u>Max. Deviation kPa</u>
<u>5</u>	<u>PVPS-001</u>	<u>4.930</u>	<u>1.69</u>
<u>6</u>	<u>PVPS-002</u>	<u>4.794</u>	<u>1.76</u>
<u>7</u>	<u>BPPS-001</u>	<u>4.307</u>	<u>1.37</u>
<u>8</u>	<u>BPPS-002</u>	<u>4.350</u>	<u>1.69</u>
<u>9</u>	<u>DWPS-001</u>	<u>0.2371</u>	<u>1.12</u>
<u>10</u>	<u>WWPS-001</u>	<u>0.2454</u>	<u>7.00</u>

Table 2.11 (Continued)

PRESSURE CHANNELS (PCM RECORDED)

Test Containment		Date of Calibration		Nov. 8, 1979	
		Range of Calibration Pressure (kPa)		101 - 443.6	
		Water Level in Wetwell		(m) 3.3	

Channel No.	Channel Code	Max. Deviation kPa	Max. Deviation kPa/Digit	Max. Deviation kPa	Max. Deviation kPa
4	DWPF-001	0.9596	0.71	0.9615	0.54
5	VPPF-101	0.9549	0.29	0.9643	0.51
6	VPPF-201	0.9672	0.79	0.9596	0.62
7	VPPF-301	0.9700	0.50	0.9653	0.62
8	VPPF-302	0.9634	0.42	0.9624	0.63
9	VPPF-303	0.9615	0.56	0.9643	0.72
10	VPPF-401	0.9609	0.33	0.9590	0.45
11	VPPF-501	0.9534	0.54	0.9609	0.36
12	VPPF-502	0.9568	0.59	0.9596	0.46
13	VPPF-503	0.9662	0.51	0.9628	0.47
14	WWPF-101	0.9590	0.48	0.9615	0.43
15	WWPF-102	0.9577	0.38	0.9653	0.52
16	WWPF-103	0.9634	0.65	0.9643	0.47

Channel No.	Channel Code	Max. Deviation kPa	Max. Deviation kPa/Digit	Max. Deviation kPa
17	WWPF-104	0.9637	0.65	0.9637
18	WWPF-105	0.9615	0.54	0.9615
19	WWPF-106	0.9643	0.51	0.9643
20	WWPF-107	0.9596	0.62	0.9596
21	WWPF-201	0.9653	0.62	0.9653
22	WWPF-202	0.9624	0.63	0.9624
23	WWPF-203	0.9643	0.72	0.9643
24	WWPF-301	0.9590	0.45	0.9590
25	WWPF-302	0.9609	0.36	0.9609
26	WWPF-303	0.9596	0.46	0.9596
27	WWPF-401	0.9628	0.47	0.9628
28	WWPF-402	0.9615	0.43	0.9615
29	WWPF-501	0.9653	0.52	0.9653
30	WWPF-502	0.9643	0.47	0.9643
31	WWPF-602	0.9537	0.46	0.9537
32	WWPF-702	0.9691	0.27	0.9691
33	WWPF-001	0.9563	0.53	0.9563

Table 2.12 Measurement Ranges

Ch. No.	1) Item	Location 1)	Measurement Range			LPF Cut-Off Freq. (Hz)
			Manufacturer's Specification for Transducer	Expected Overall Range	Unit	
Computer Recorded Channels						
5 - 8	P	PV/BP	101 - 9908	101 - 10000	kPa	100
9	P	DW	0 - 591	0 - 900 ²⁾	kPa	100
10	P	WW	0 - 591	0 - 900 ²⁾	kPa	100
12	D	PV	0 - 98.1	0 - 100	kPa	100
13 - 17	D	PV	0 - 49	0 - 50	kPa	100
18	D	BP	0 - 4904	0 - 4950	kPa	100
19	D	WW	0 - 98.1	0 - 150	kPa	100
20	D	DW-WW	0 - 98.1	0 - 150	kPa	100
22 - 30	T	PV/BP		0 - 300	°C	250
31 - 38	T	DW		0 - 200	°C	250
39 - 44	T	VP		0 - 150	°C	250
45 - 76	T	WW		0 - 150	°C	250
PCM Track-1 Channels						
4	P	DW	0 - 591	0 - 900 ²⁾	kPa	250
5 - 33	P	WW	0 - 591	0 - 900 ²⁾	kPa	250
34 - 38	S	VP		-2300 - +2300	μm/m	250
PCM Track-2 Channels						
4 - 7	A	VP	-980 - +980 ³⁾	-1960 - +1960	m/s ²	300
8 - 19	A	WW	-980 - +980 ³⁾	-196 - +196	m/s ²	300

Notes:

- 1) For meanings of the abbreviations see Table 2.5.
- 2) Linear response of transducers beyond manufacturer-specified range was expected.
- 3) Range for transducer and charge preamplifier.

3. 試験条件と試験結果

Table 3.1 に示すように、昭和54年8月から11月にかけて、プールスウェルを主要な試験対象とする大口径蒸気放出試験を計6回実施した。これらのうち、TEST 1203からTEST 1206までの4回はいずれも破断口径 220 mm の条件の下で行った。

本試験は、これら4回の試験の基本ケースであるTEST 1203の試験条件のうち、バキュームブレーカに関する条件のみを変化させ、プールスウェルに対する影響を調べることを目的として実施したものである。

すでにデータ報告において報告したように、大口径放出試験の場合、放出初期のプールスウェルに際してバキュームブレーカが動作することが観察されている。ここで、バキュームブレーカの動作は、プールスウェルに対して以下の2つの影響をおよぼす可能性がある。

- i) プールスウェルに際してウェットウェル気相部は上昇するプール水面によって圧縮されて圧力が上昇し、この圧力上昇によってプール水面の上昇が抑制される。バキュームブレーカが動作すると圧力上昇が少くなり、プールスウェルに対する抑制効果が減少する。
- ii) プールスウェルに際して発生する格納容器荷重の一つにダイアフラムフロア上向き差圧がある。これは i)で述べた気相部圧力上昇に起因するものであり、バキュームブレーカの動作によって荷重が緩和される。

これらの影響を定量的に把握することは重要であるが、現在までのところバキュームブレーカの効果を実規模で試験した例はない。本試験装置は実炉相当のバキュームブレーカを備えており、実炉の想定条件に近い条件でプールスウェルの試験を行うことができる。ただし、本試験では格納容器の体積縮小率が1/18で、ベント管7本に対して1基のバキュームブレーカを有するのにに対して、典型的な実炉(1100 MWe 級 Mark II)では、ベント管108本に対してバキュームブレーカ11基を有する。したがって、本試験装置による試験結果に対するバキュームブレーカの効果は実炉の場合よりも過大であり、本試験結果を実炉条件に外挿するためにも、バキュームブレーカの効果を定量的に把握することが必要である。

このような観点から、本試験ではバキュームブレーカを全閉状態で固定し、試験結果を基本ケース TEST 1203 の結果と比較することによりプールスウェルに対するバキュームブレーカの効果を調べることを意図した。

本試験の初期条件を Table 3.2 に、データ収録の状況を Table 3.3 に、試験中の物質・エネルギー移動を Table 3.4 に示す。また、試験開始前後の運転記録の抜きを Fig. 3.1 に、1次系内の初期温度分布を Fig. 3.2 に、ドライウェルおよびウェットウェル内の初期および試験終了後の温度分布を Figs. 3.3, 3.4 に示す。

これらの図表に示されるように、圧力容器内初期圧力、圧力抑制プール初期水位等は、基本ケース TEST 1203 とはほぼ同一の条件が得られた。しかし、圧力容器の初期水位は TEST 1203 より約 0.7 m 高く、また TEST 1203 では放出配管内に最大 11 °C の初期未飽和があったのに対して、本試験では1次系全体でほぼ飽和条件が達成された。

試験結果の定量的評価および解析は後報にゆずり、ここでは概要のみを述べる。

放出開始直後、圧力容器保有水の沸騰遅れのため、圧力容器蒸気ドーム圧力は約 0.9 MPa 低下し、約 0.25 秒以後回復した。放出配管内には放出開始直後最大 2.3 MPa の 1 時的減圧が発生したが、約 0.2 秒以後放出配管内の差圧はほぼ一定となり、流動が静定したことを示した。

減圧に伴うフラッシングのため圧力容器内の水位が上昇し、放出開始 1.25 秒後には 8.6 m（初期水位から約 2.8 m 上方）のレベルにある水位計に達した。また、放出配管内の圧力、温度は約 1.35 秒から 1.55 秒にかけて一時的に低下し、以後変動量が増大した。圧力容器内 8.6 m のレベルにある水位計は、放出開始後約 45 秒間、間欠的にぬれた状態を示した。これらの結果から、放出開始約 1.35 秒後に圧力容器内の水面が放出管入口に達し、以後しばらくの間、放出管入口は 2 相流状態であったと考えられる。また、TEST 1203 の結果と比較すると、本試験の方が放出管入口に水位が到達する時刻が約 0.3 秒早く、これは本試験における圧力容器初期水位が TEST 1203 より高めであったためである。なお、ウェットウェル気相部圧力ピークによって示されるように、TEST 1203 および本試験における、いわゆるバルクスウェル（ブレークスルー発生前の段階のプールスウェル）時の最高水位は放出開始約 1.5 秒で生じている。従って、上述のような放出クオリティの時間変化の相違（TEST 1203 では放出クオリティの低下が放出開始後 1.65 秒で生じ、TEST 1205 では 1.35 秒で生じた）は、プールスウェルに関する試験結果の比較に関してほとんど問題とならないと考えられる。

本試験における放出初期（破断からベントクリアリングまで）の圧力上昇率は約 183 kPa であり、TEST 1203 の結果と良く一致した。

ドライウェル内の温度は放出開始約 4 秒後から均一となり、圧力に対応する飽和温度にはほぼ一致する値となった。ドライウェル内の蓄積水量は、試験後大気圧下での計量において約 710 kg であった。これは全放出量の約 7 % に相当する。

ベントクリアリングには放出開始後約 0.65 秒を要し、クリアリング後プール内に形成された気泡の下端はベント管出口の少くとも 0.9 m 下方に達した。ベントクリアリング直後のプール内圧力上昇は、プール底面において最大約 116 kPa であった。

プールスウェル時の水位の時間変化は TEST 1203 の結果とほぼ同様である。両者を比較すると、本試験結果の方が、スウェル末期の水面上昇速度がやや低いが、このような差異が有意であるかどうかの判断は後報に留保する。プールスウェル時のウェットウェル気相部の最高圧力は約 237 kPa であり、TEST 1203 の結果である約 233 kPa をやや上回った。また、ダイアフラムフロア上向き差圧は最大約 17 kPa であり、TEST 1203 における約 11 kPa を上回った。本試験結果と TEST 1203 の結果との間の差異はわずかであり、今後計測精度の影響を検討する必要があるが、差異の傾向は予想に一致し、プールスウェルに対するバキュームブレーカの効果が有意であることを示すものと考えられる。

蒸気凝縮に伴う圧力振動の振幅は全般的に小さな値を示した。放出開始後約 33 秒からベント管内にプール水が間欠的に流入はじめ、約 38 秒から 67 秒にかけてベント管内の最高水位は出口の 1 m 以上上方に達した。

放出開始約 94.5 秒後に主放出弁を全閉とし、試験を終了した。

謝 辞

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Table 3.1 Test Matrix

(As of December 1980)

Test Number	DISCHARGE CONDITIONS				INITIAL CONDITIONS				Number of Open Vents	Vacuum Breaker Functionality	Date of Performance	Ref. Report Number JAERI-M	REMARKS		
	Disch. Fluid	Nozzle Diam.	Pipe Inlet Level (m)	Drywell Prepurge (%)	Time of Blowdown (s)	Pressure Vessel Temp. (°C)	Water Level (m)	Water Temp. (°C)							
0001	water	100	2.105	none	ca. 600	286	6.28	24.6	22.5	3.342	7	yes	2/18/79	Shakedown test performed by Hitachi Ltd. Excluded from reporting.	
0002	water	100	2.105	none	7015	286	7.15	27.8	3.867	7	yes	2/21	8598	Shakedown test performed by Hitachi Ltd.	
0003	water	100	2.105	none	6976	286	6.89	9.9	3.862	7	yes	2/23	8761	Shakedown test performed by Hitachi Ltd.	
0004	water	200	2.105	none	7005	286	7.17	29.9	3.852	7	yes	2/28	8762	Shakedown test performed by Hitachi Ltd.	
1101	water	200	2.105	none	72	7020	286	7.17	29.9	3.632	7	yes	3/30	8763	
2101	water	74	2.105	none	343	6966	287	7.99	14.2	3.345	7	yes	4/27	8764	
3101	water	74	2.105	23	298	6887	286	7.79	18.9	3.347	7	yes	5/25	8865	
3102	water	200	2.105	98	68.5	6966	287	7.73	33.2	3.622	7	yes	6/29	8765	
1201	steam	200	9.105	none	85	6894	286	5.71	52.3	3.327	7	yes	8/24	8887	
1202	steam	240	9.105	none	89	6976	286	5.44	53.5	3.342	7	yes	9/14	8961	
1203	steam	220	9.105	none	91.9	6974	286	5.06	53.9	3.340	7	yes	10/05		
1204	steam	220	9.105	none	89.9	6971	286	5.32	18.7	3.338	7	yes	10/22		
1205	steam	220	9.105	none	94.5	6966	287	5.77	53.5	3.350	7	yes	11/09		
1206	steam	220	9.105	none	85.1	6966	285	5.30	10.0	1.962	7	no	11/29		
3201	steam	74	9.105	100	302.4	6868	286	5.18	28.0	3.286	7	yes	3/04/80		
3103	water	74	2.105	31	299	7188	286	7.11	23.9	3.472	7	yes	9/19		
3104	water	74	2.105	90	284	6964	287	7.16	26.6	3.632	7	yes	10/14		
3105	water	100	2.105	94	184	6953	287	7.29	20.6	3.667	7	yes	10/30		

TEST NO. = A B C D

- A = 1 Pool Swell Test
A = 2 Condensation Oscillation Test without Prepurge
A = 3 Condensation Oscillation Test with Prepurge
B = 1 Water Blowdown
B = 2 Steam Blowdown
B = 3 Air Blowdown
CD = Sequential Number

Table 3.2 Test Specifications

FULL-SCALE MARK II CRT DATA SHEET (TEST SPECIFICATIONS)

TEST NUMBER 1205 DATE OF PERFORMANCE Nov. 9, 1979

(A) SPECIFICATIONS FOR TEST FACILITY CONFIGURATION AND TEST PROCEDURE

- (1) Diameter of Discharge Nozzle (mm) 220
 (2) Inlet Level of Blowdown Pipe (m) 9.105
 (3) Percentage of Prepurge, Specified/Performed (%) None
 (4) Number of Open Vent Pipes 7
 (5) Vacuum Breaker Functionability No
-

(B) SPECIFICATIONS FOR INITIAL CONDITIONS

(1) Pressure Vessel

Item	Specified	Performed
Pressure (kPa)	6966	6969
Temperature (°C)	285	286.6
Water Level (m)	5.0	5.77

(2) Test Containment

Item		Specified	Performed	
			Before Prepurge	Before Break
Pressure (kPa)	Drywell	101		102.7
	Wetwell	101		102.7
Pool Temp. (°C)		50		53.5
Pool Level (m)		7.0		7.008

(C) AMBIENT CONDITIONS

Pressure (kPa) 102.7 Temperature (°C) 20.0

Table 3.3 Summary of Data Recording

(A) Structure of Computer Processed Tapes

Tape No.		12050		12051		12052	
File No.	Index	Contents	Period (s)	Contents	Period (s)	Contents	Period (s)
1		Tape No. Heading		Tape No. Heading		Tape No. Heading	
2	1	R0		R0		R0	
3	2	R1		R1		R1	
4	3	R2		R2		R2	
5	4	Data	-13 to 172	Data	-12 to 165	Data	-13 to 165
6	5						

(B) Structure of PCM Tape

Record No.	Tape Counter Indication	Time Code	Contents
1	4815 - 4886	18°15'08" -18°15'20"	R0
2	4886 - 4957	18°17'02" -18°17'15"	R1
3	4957 - 5018	19°39'20" -19°39'31"	R2
4	5018 - 5915	19°41'24" -19°44'22"	Data
5			
6			

Notes:

- Last digit of tape number indicates contents of the tape;
 - 0 Online data recorded by the system computer.
 - 1 Data transferred from PCM recorder track 1.
 - 2 Data transferred from PCM recorder track 2.
- R0, R1, R2 are records for calibration of data channels;
 - R0 Zero scale calibration outputs.
 - R1 Full scale calibration outputs.
 - R2 Initial values.

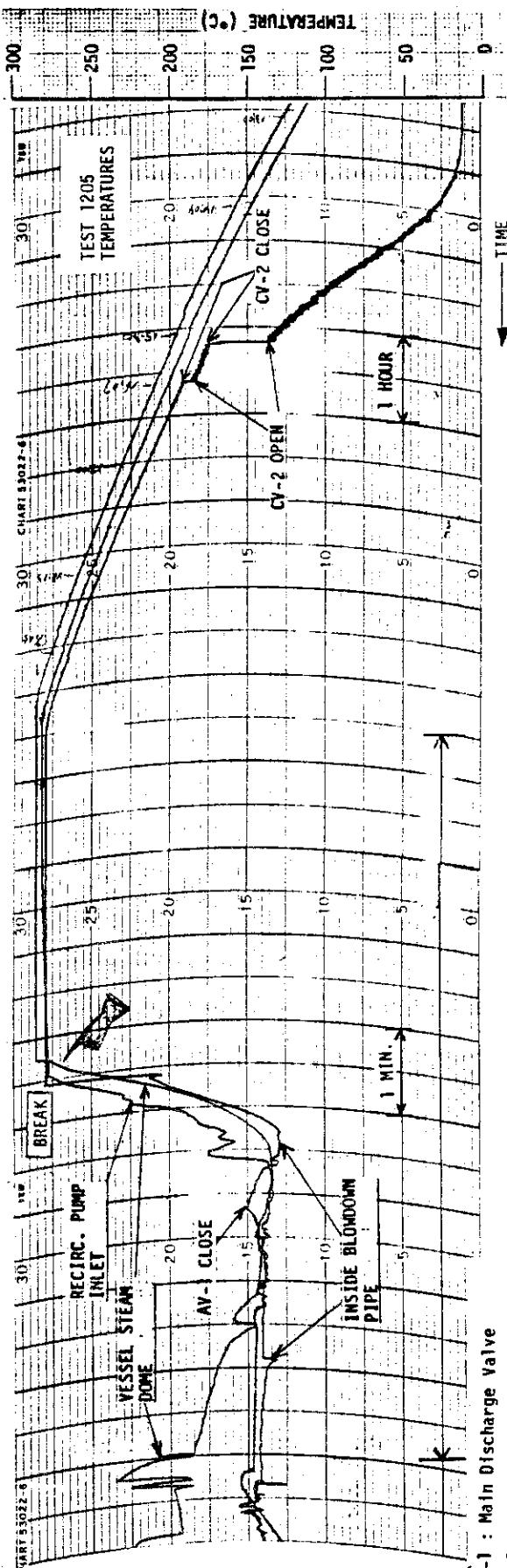
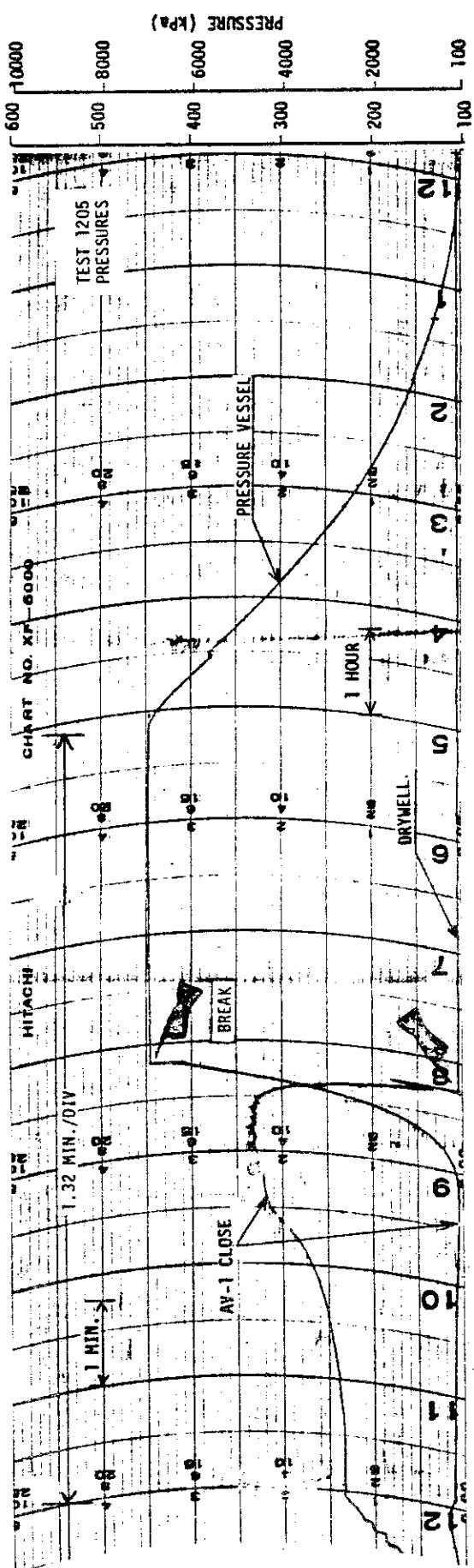
Table 3.4 Initial and Final Conditions

TEST NUMBER 1205 DATE OF PERFORMANCE Nov. 9, 1979

<u>PRESSURE VESSEL</u>	Unit	Before Test	After Test *	Change
Pressure	kPa	6969		
Averaged Liquid Temperature	°C	286.6	134.9	
Max./Min. Liquid Temperature	°C	237.8/236.1		
Averaged Steam Temperature	°C	286.7	138.7	
Sat. Press. Based on Liquid Temp.	kPa	7085	312.2	
Liquid Level Based on PVDS-001	m	5.77	1.43	
Liquid Level Based on PVDS-002 - 006	m	5.77	1.54	
Mass of Water	kg	1.71×10^4	6.07×10^3	-1.10×10^4
Energy of Water	kJ	2.25×10^7	3.55×10^6	-1.89×10^7
<u>BLOWDOWN PIPE</u>				
Max./Min. Temperature	°C	286.5/286.1		
<u>DRYWELL</u>				
Pressure	kPa	102.7	(103.0)	
Sat. Temp. Based on Pressure	°C			
Averaged Gas Phase Temperature	°C	46.7	132.3	
Max./Min. Gas Phase Temperature	°C	55.6/34.6	132.8/131.7	
Liquid Level	m		0 - 0.042	
<u>VENT PIPES</u>				
Max./Min. Inlet Temperature	°C	27.6/26.0	132.8/132.4	
Max./Min. Outlet Temperature	°C	53.6/53.4	69.8/67.7	
<u>WETWELL</u>				
Pressure	kPa	102.7	(103.0)	
Averaged Pool Temperature	°C	53.5	69.1	
Max./Min. Pool Temperature	°C	54.1/53.0	77.5/62.1	
Averaged Airspace Temperature	°C	27.6	55.9	
Max./Min. Airspace Temperature	°C	28.8/26.7	59.6/51.0	
Liquid Level	m	7.008	(7.365)	
Mass of Water	kg	1.88×10^5	1.97×10^5	9.55×10^3
Energy of Water	kJ	4.20×10^7	5.70×10^7	1.50×10^7
Mass of Air	kg	306	683	

REMARKS

* Numbers in parentheses are data measured after opening the equalizer valve between drywell and wetwell.



AV-1 : Main Discharge Valve
C-2 : Cold Water Discharge Valve

Fig. 3.1 Operation Records

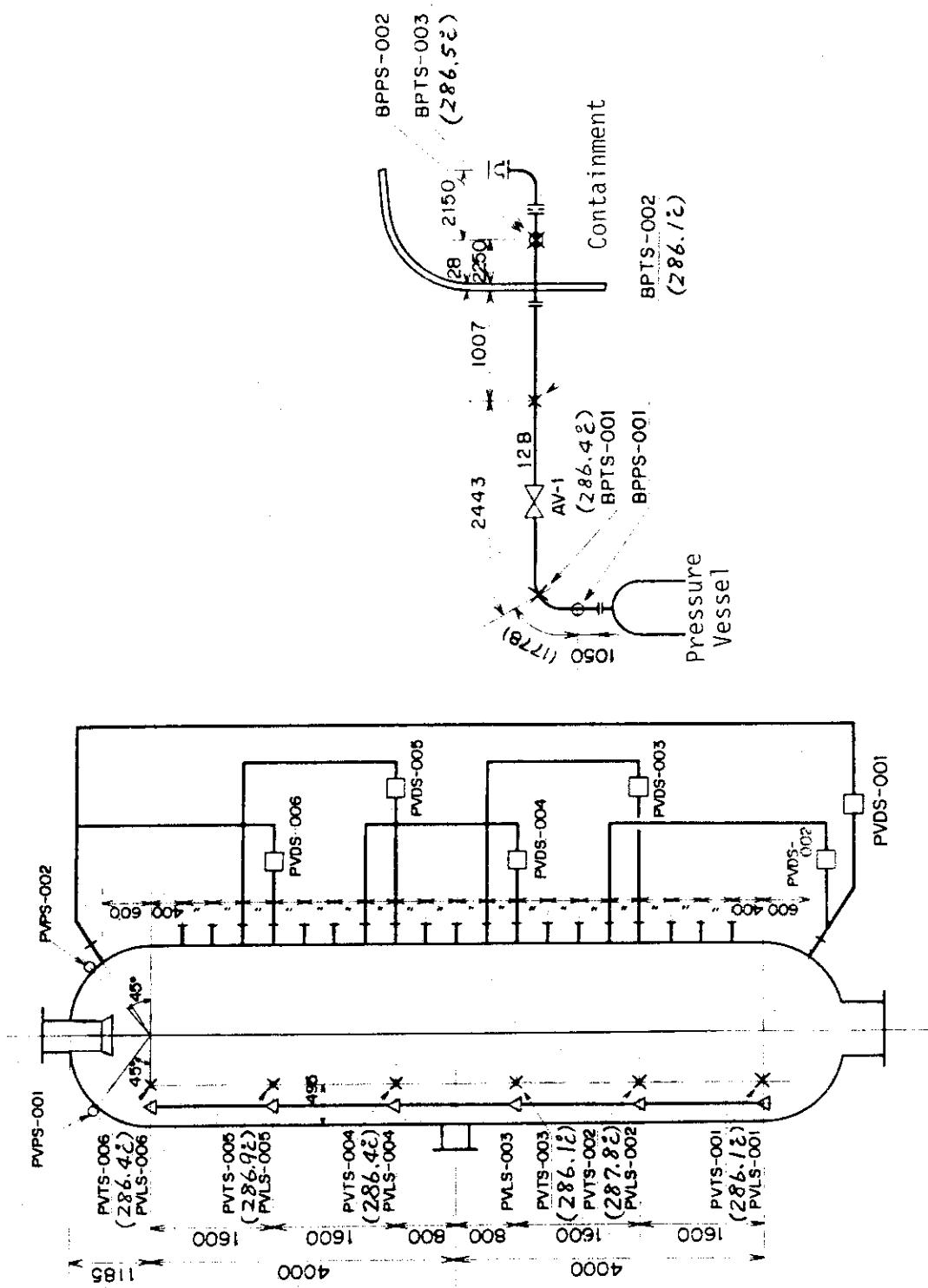


Fig. 3.2 Initial Temperature Distribution in Primary System

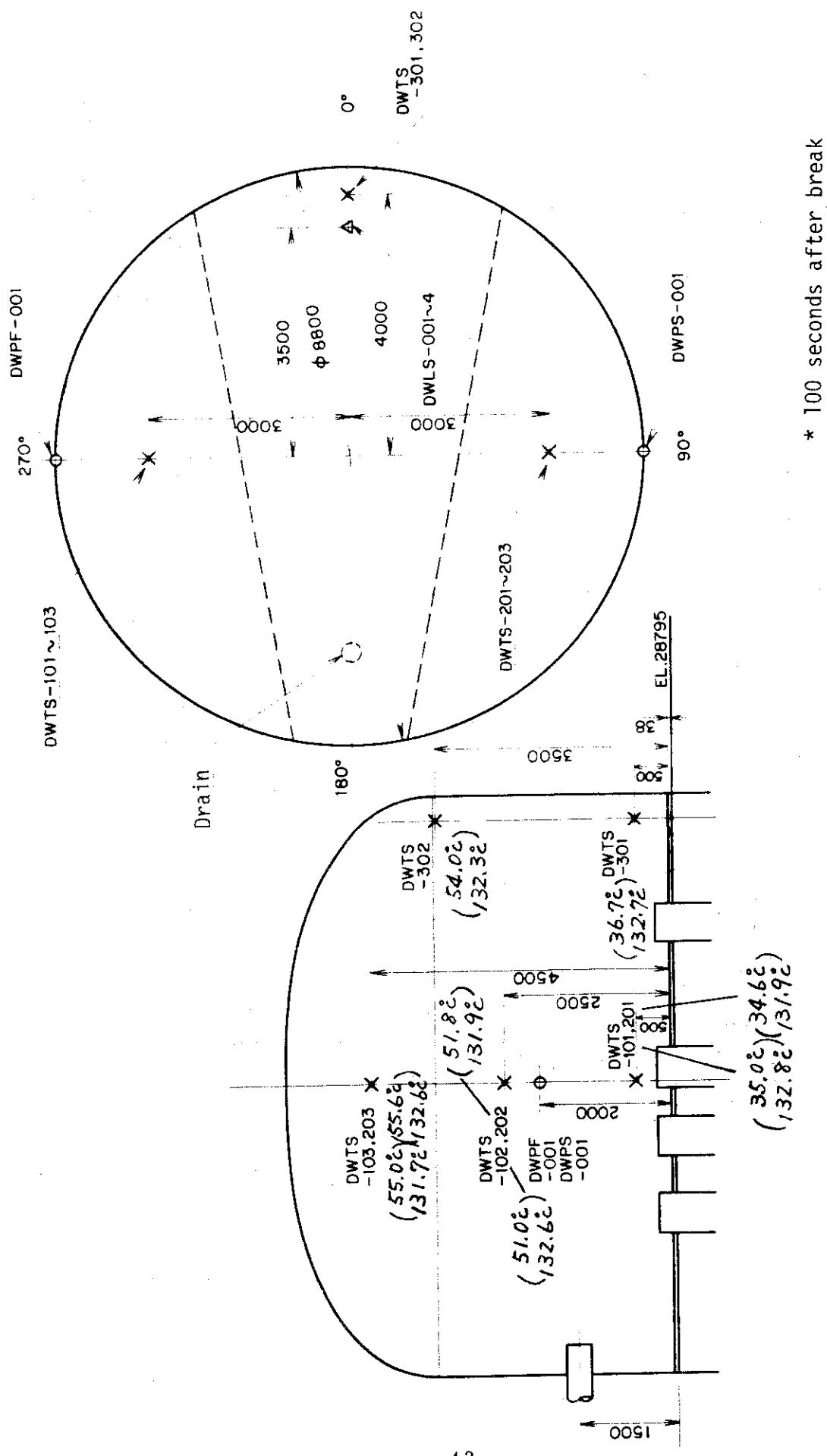


Fig. 3.3 Initial and Final* Temperature Distributions in Drywell

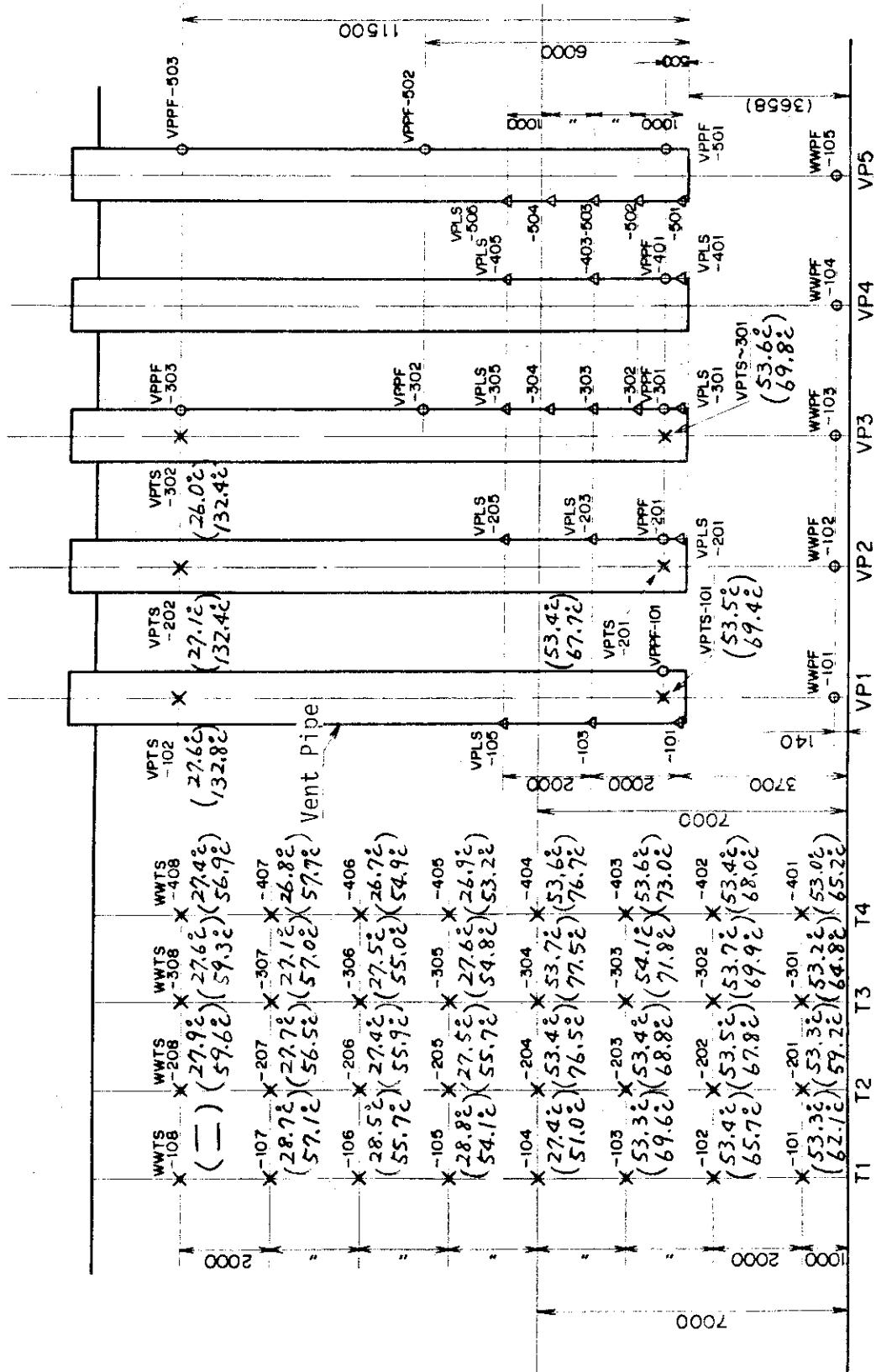


Fig. 3.4 Initial and Final* Temperature Distributions in Wetwell
* 100 seconds after break

Long Term Plots of Data

Long Term Plot Specification

Period 0 - 100 s

Plot No.	Recording System	Recording Rate (data/s)	Sampling Rate for Plots	Interval for Envelope Plots (s)	Remarks
L-0-1 to 36	Computer	50.00	1/3		
L-1-1 to 32	PCM Track-1	455.56	1/24	1.00	
L-2-1 to 14	PCM Track-2	455.56	1/24	1.00	

List of Long Term Plots

Computer Recorded Channels

Plot L-0-1 Actuation Signals
 Plot L-0-2 Pressures in Pressure Vessel and Blowdown Pipe
 Plot L-0-3 Pressures in Drywell and Wetwell Airspace
 Plot L-0-4 DP over Pressure Vessel
 Plot L-0-5 DP across Wetwell Pool Surface
 Plot L-0-6 DP across Diaphragm Floor
 Plot L-0-7 Temperatures in Pressure Vessel
 Plot L-0-8 Temperatures in Pressure Vessel and Blowdown Pipe
 Plot L-0-9 Temperatures in Drywell (DWTS-101 - 103)
 Plot L-0-10 Temperatures in Drywell (DWTS-201 - 203)
 Plot L-0-11 Temperatures in Drywell (DWTS-301 - 302)
 Plot L-0-12 Temperatures in Vent Pipe (VP1)
 Plot L-0-13 Temperatures in Vent Pipe (VP2)
 Plot L-0-14 Temperatures in Vent Pipe (VP3)
 Plot L-0-15 Temperatures in Wetwell (WWTS-101 - 104)
 Plot L-0-16 Temperatures in Wetwell (WWTS-105 - 108)
 Plot L-0-17 Temperatures in Wetwell (WWTS-201 - 204)
 Plot L-0-18 Temperatures in Wetwell (WWTS-205 - 208)
 Plot L-0-19 Temperatures in Wetwell (WWTS-301 - 304)
 Plot L-0-20 Temperatures in Wetwell (WWTS-305 - 308)
 Plot L-0-21 Temperatures in Wetwell (WWTS-401 - 404)
 Plot L-0-22 Temperatures in Wetwell (WWTS-405 - 408)
 Plot L-0-23 Water Level in Pressure Vessel
 Plot L-0-24 Water Level in Drywell (VP's 1 and 2)
 Plot L-0-25 Water Level in Vent Pipe (VP's 3 and 4)
 Plot L-0-26 Water Level in Vent Pipe (VP5)
 Plot L-0-27 Water Level in Vent Pipe (WWLS-104 - 116)
 Plot L-0-28 Water Level in Wetwell (WWLS-201 - 216)
 Plot L-0-29 Water Level in Wetwell (WWLS-303 - 315)
 Plot L-0-30 Water Level in Wetwell (WWLS-401 - 416)
 Plot L-0-31 Water Level in Wetwell (WWLS-503 - 515)
 Plot L-0-32 Water Level in Wetwell (WWLS-604 - 616)
 Plot L-0-33 Water Level in Wetwell (WWLS-704 - 716)
 Plot L-0-34 Water Level in Wetwell (WWLS-804 - 816)
 Plot L-0-35 Water Level in Wetwell (WWLS-221 - 228)
 Plot L-0-36 Water Level in Wetwell

List of Long Term Plots (continued)

PCM Track-1 Channels

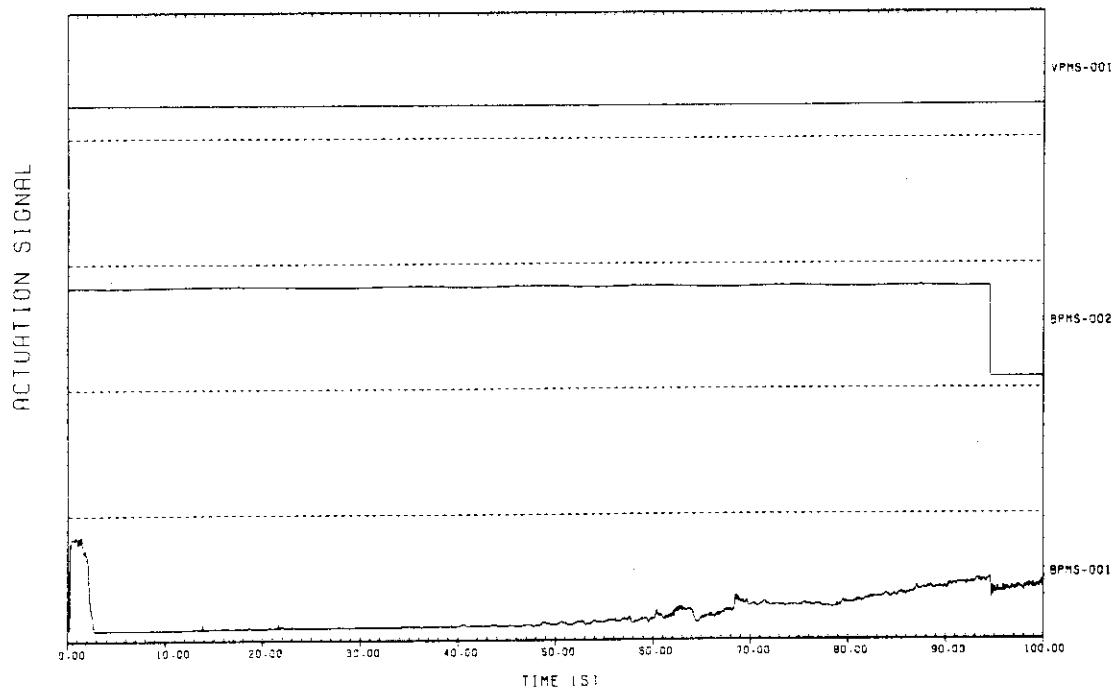
Plot L-1-1	Pressures in Drywell and Wetwell Airspace	
Plot L-1-2	Pressure in Vent Pipe	(VPPF-101)
Plot L-1-3	Pressure in Vent Pipe	(VPPF-201)
Plot L-1-4	Pressure in Vent Pipe	(VPPF-301)
Plot L-1-5	Pressure in Vent Pipe	(VPPF-302)
Plot L-1-6	Pressure in Vent Pipe	(VPPF-303)
Plot L-1-7	Pressure in Vent Pipe	(VPPF-401)
Plot L-1-8	Pressure in Vent Pipe	(VPPF-501)
Plot L-1-9	Pressure in Vent Pipe	(VPPF-502)
Plot L-1-10	Pressure in Vent Pipe	(VPPF-503)
Plot L-1-11	Pressure in Wetwell	(WWPF-101)
Plot L-1-12	Pressure in Wetwell	(WWPF-102)
Plot L-1-13	Pressure in Wetwell	(WWPF-103)
Plot L-1-14	Pressure in Wetwell	(WWPF-104)
Plot L-1-15	Pressure in Wetwell	(WWPF-105)
Plot L-1-16	Pressure in Wetwell	(WWPF-106)
Plot L-1-17	Pressure in Wetwell	(WWPF-107)
Plot L-1-18	Pressure in Wetwell	(WWPF-201)
Plot L-1-19	Pressure in Wetwell	(WWPF-202)
Plot L-1-20	Pressure in Wetwell	(WWPF-203)
Plot L-1-21	Pressure in Wetwell	(WWPF-301)
Plot L-1-22	Pressure in Wetwell	(WWPF-302)
Plot L-1-23	Pressure in Wetwell	(WWPF-303)
Plot L-1-24	Pressure in Wetwell	(WWPF-401)
Plot L-1-25	Pressure in Wetwell	(WWPF-402)
Plot L-1-26	Pressure in Wetwell	(WWPF-501)
Plot L-1-27	Pressure in Wetwell	(WWPF-502)
Plot L-1-28	Pressure in Wetwell	(WWPF-602)
Plot L-1-29	Pressure in Wetwell	(WWPF-702)
Plot L-1-30	Strain of Vent Pipe Brace	(VPSF-101)
Plot L-1-31	Strain of Vent Pipe Brace	(VPSF-102)
Plot L-1-32	Strain of Vent Pipe Brace	(VPSF-201)

PCM Track-2 Channels

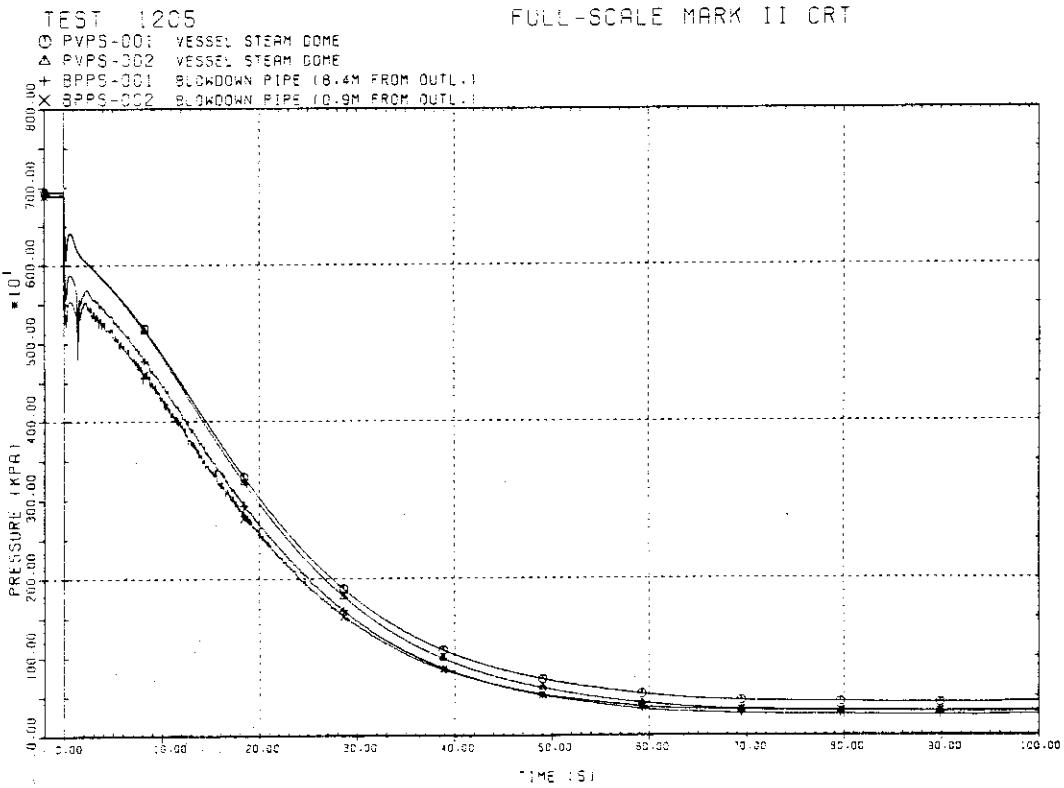
Plot L-2-1	Acceleration of Vent Pipe Outlet	(VPAF-102)
Plot L-2-2	Acceleration of Vent Pipe Outlet	(VPAF-201)
Plot L-2-3	Acceleration of Vent Pipe Outlet	(VPAF-202)
Plot L-2-4	Acceleration of Containment Structure	(WWAF-005)
Plot L-2-5	Acceleration of Containment Structure	(WWAF-006)
Plot L-2-6	Acceleration of Containment Structure	(WWAF-007)
Plot L-2-7	Acceleration of Containment Structure	(WWAF-008)
Plot L-2-8	Acceleration of Containment Structure	(WWAF-009)
Plot L-2-9	Acceleration of Containment Structure	(WWAF-010)
Plot L-2-10	Acceleration of Containment Structure	(WWAF-011)
Plot L-2-11	Acceleration of Containment Structure	(WWAF-012)
Plot L-2-12	Phase Boundary Signals	(WWLF-101 - 108)
Plot L-2-13	Phase Boundary Signals	(WWLF-201 - 209)
Plot L-2-14	Phase Boundary Signals	(WWLF-301 - 308)

TEST 1205

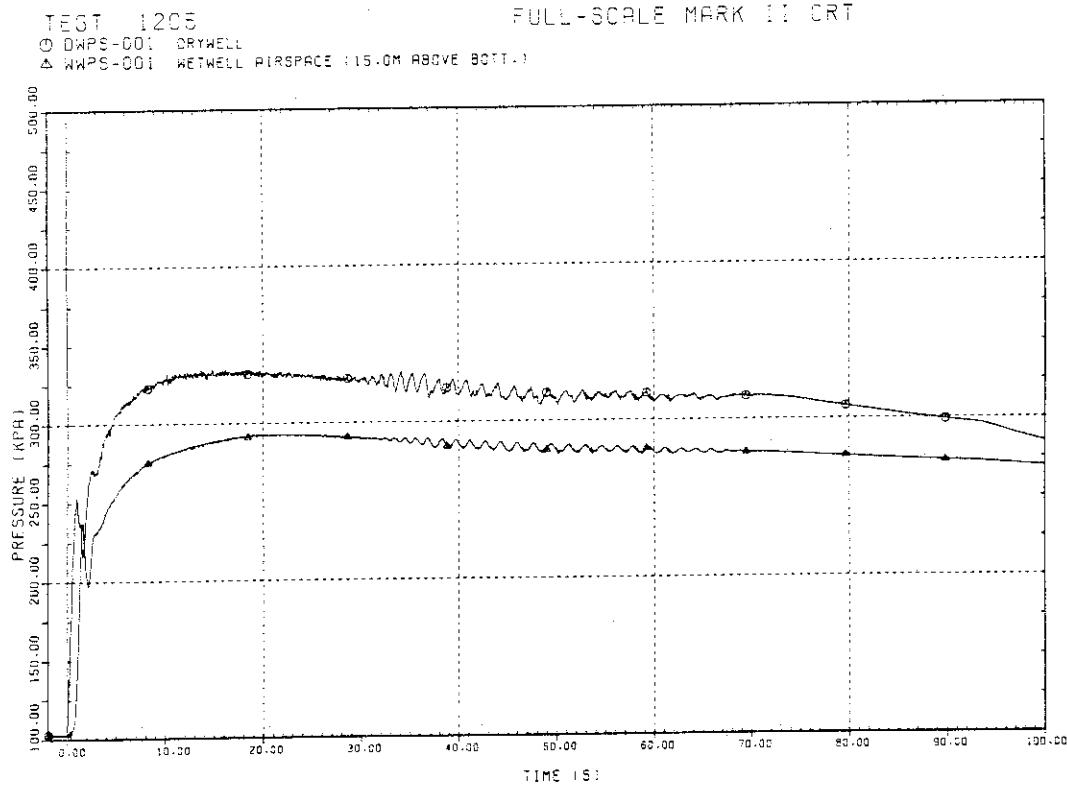
FULL-SCALE MARK II CRT



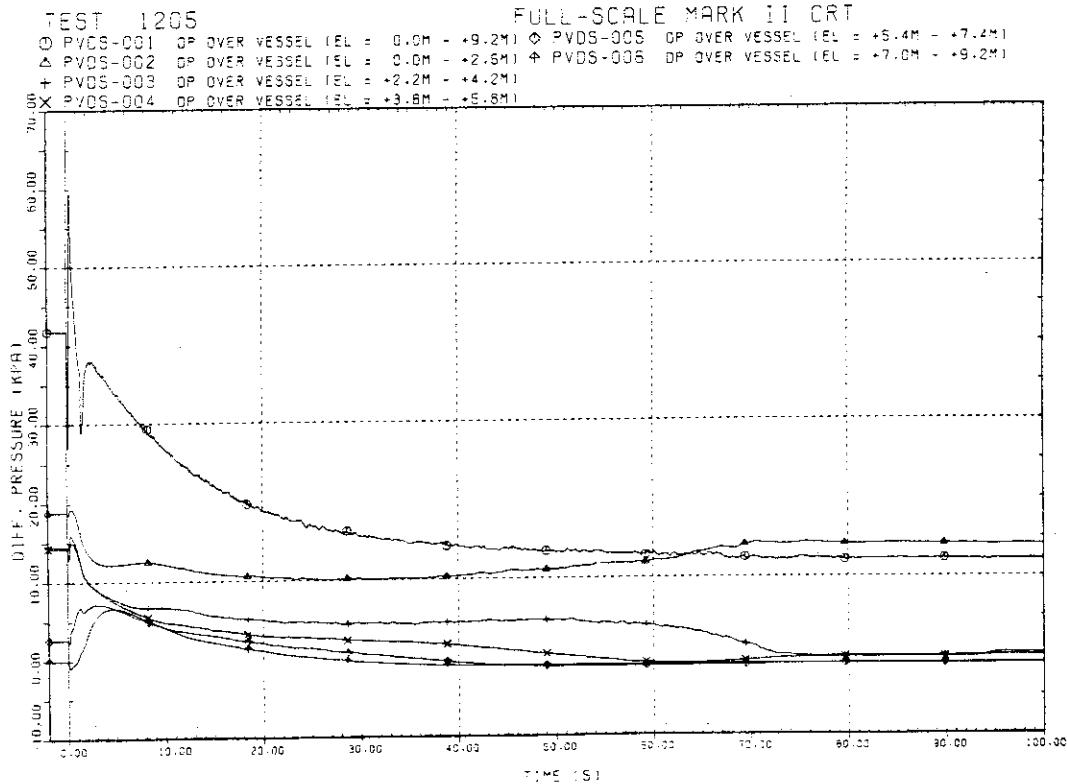
Plot L-0-1 Actuation Signals



Plot L-0-2 Pressures in Pressure Vessel and Blowdown Pipe

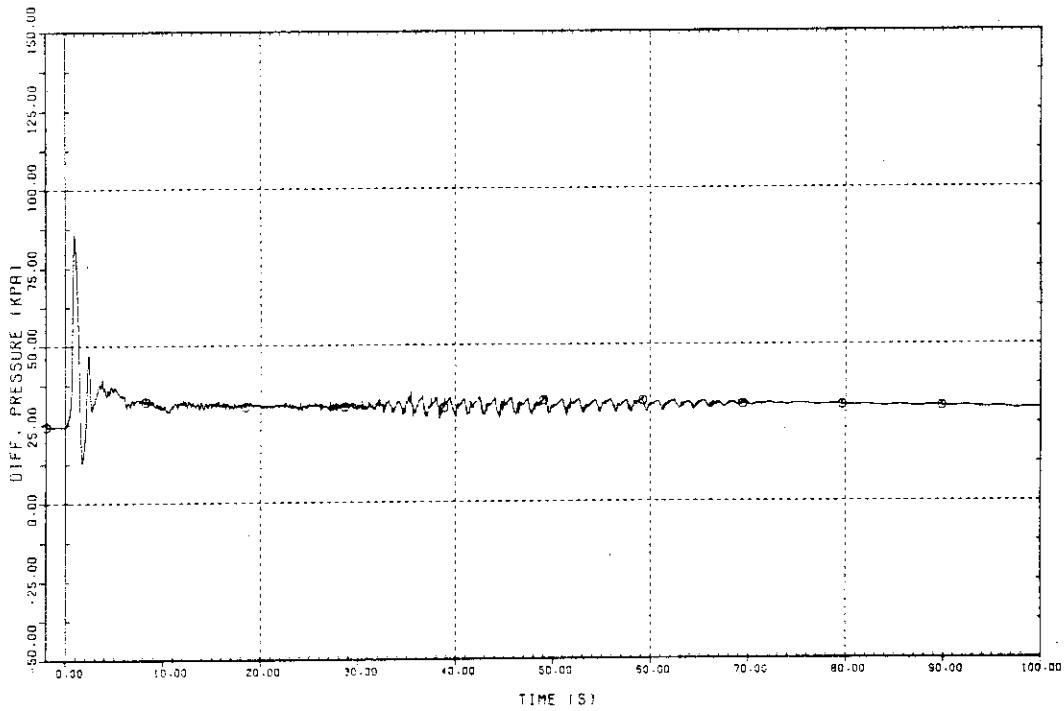


Plot L-0-3 Pressures in Drywell and Wetwell Airspace



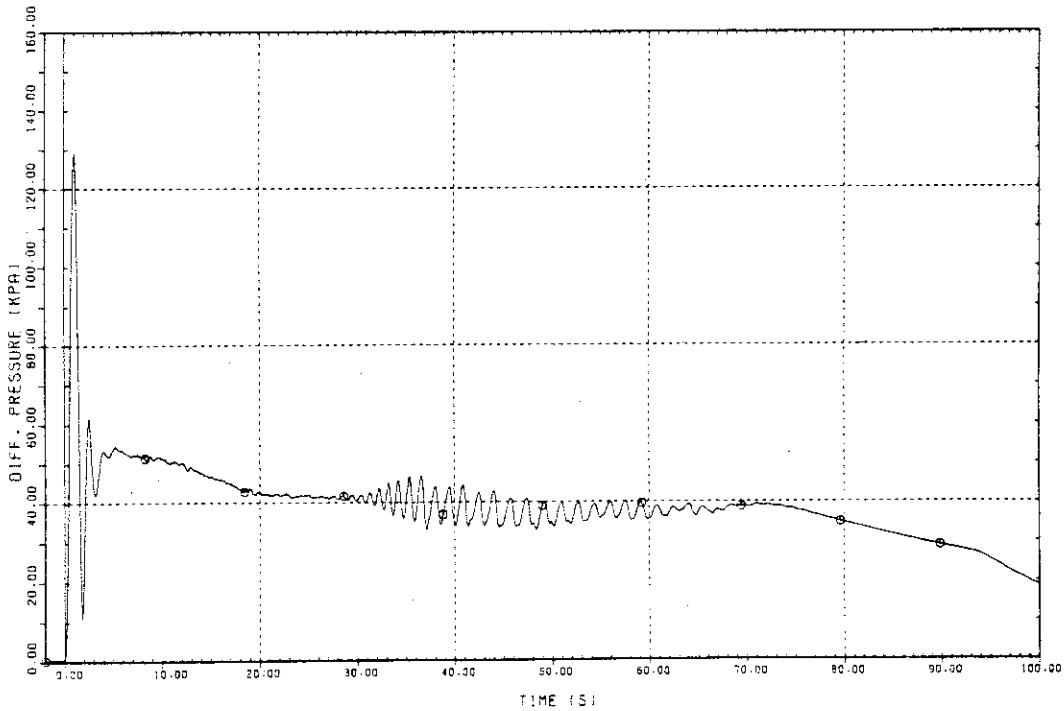
Plot L-0-4 DP over Pressure Vessel

TEST 1205
© WWOS-001 DP OVER POOL (EL = 4.5M -15.5M)

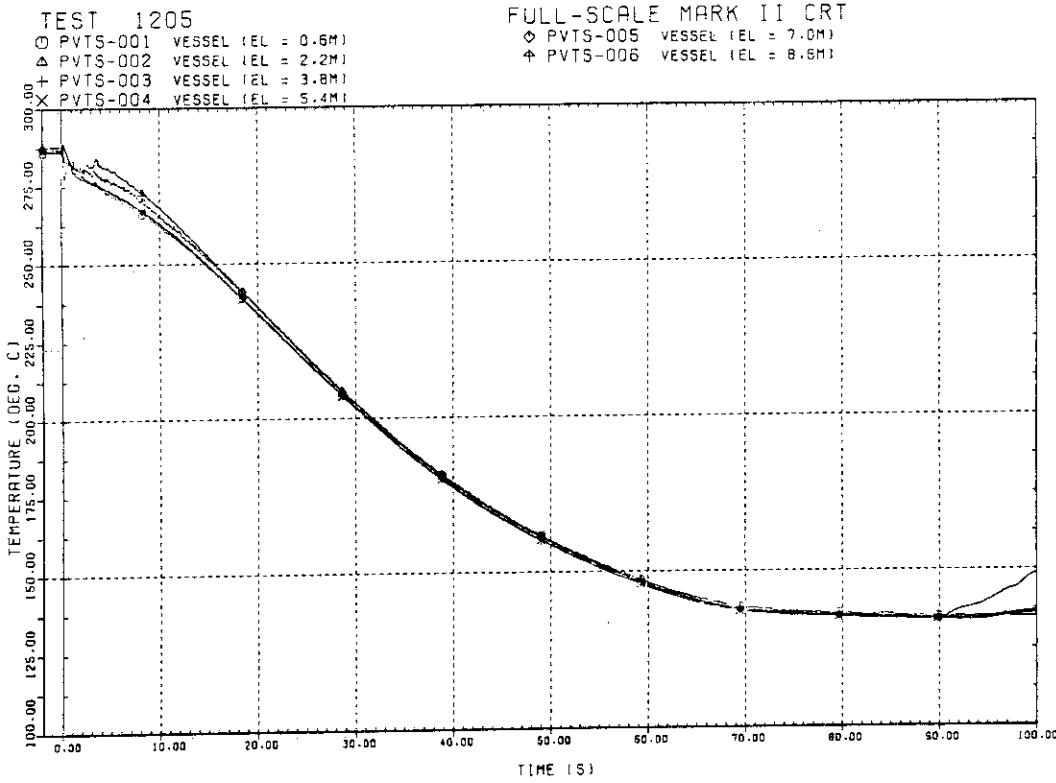


Plot L-0-5 DP across Wetwell Pool Surface

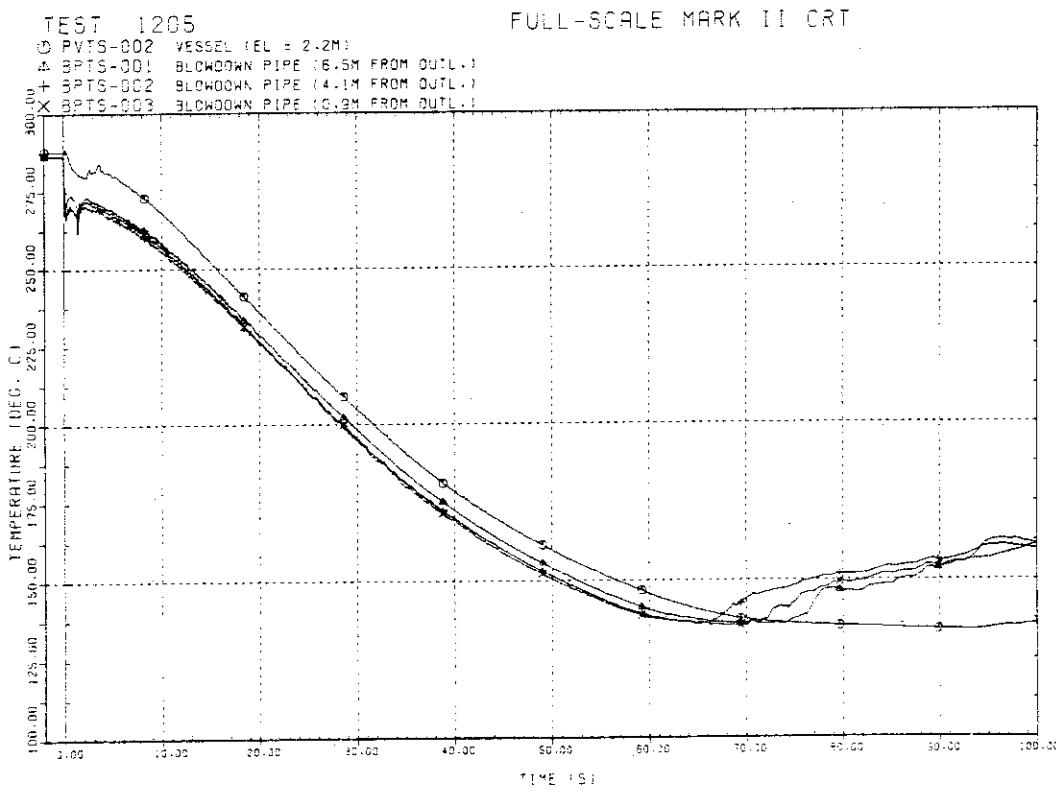
TEST 1205
© WWOS-002 DP ACROSS DIAPHRAGM FLOOR



Plot L-0-6 DP across Diaphragm Floor



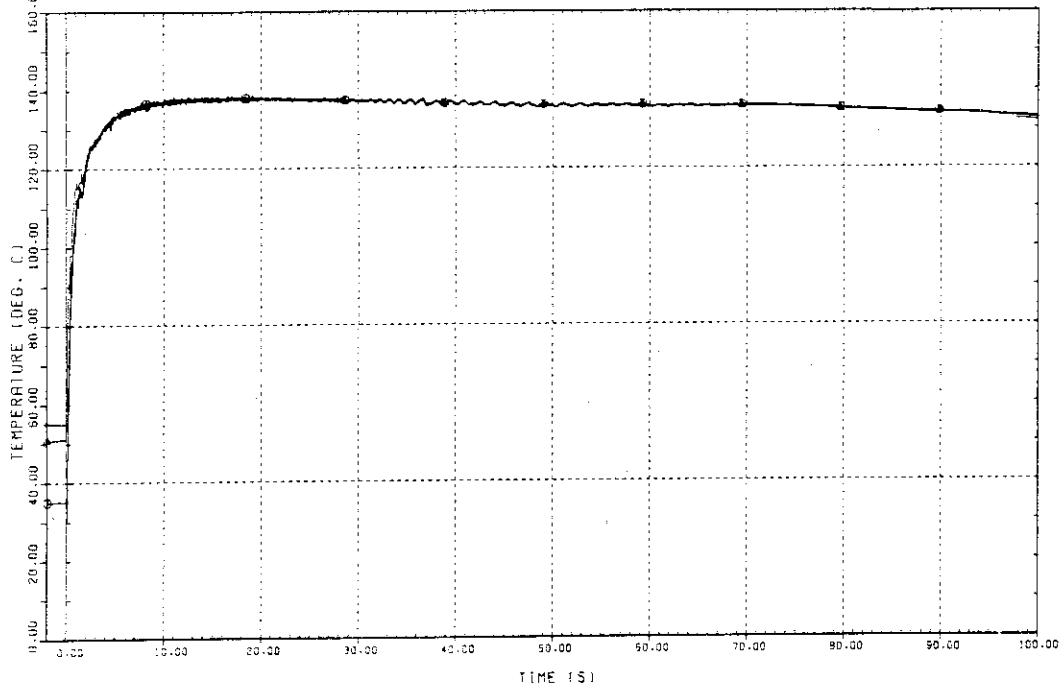
Plot L-0-7 Temperatures in Pressure Vessel



Plot L-0-8 Temperatures in Pressure Vessel and Blowdown Pipe

TEST 1205
 O DWTS-101 DRYWELL (0.5M ABOVE DFI)
 ▲ DWTS-102 DRYWELL (2.5M ABOVE DFI)
 + DWTS-103 DRYWELL (4.5M ABOVE DFI)

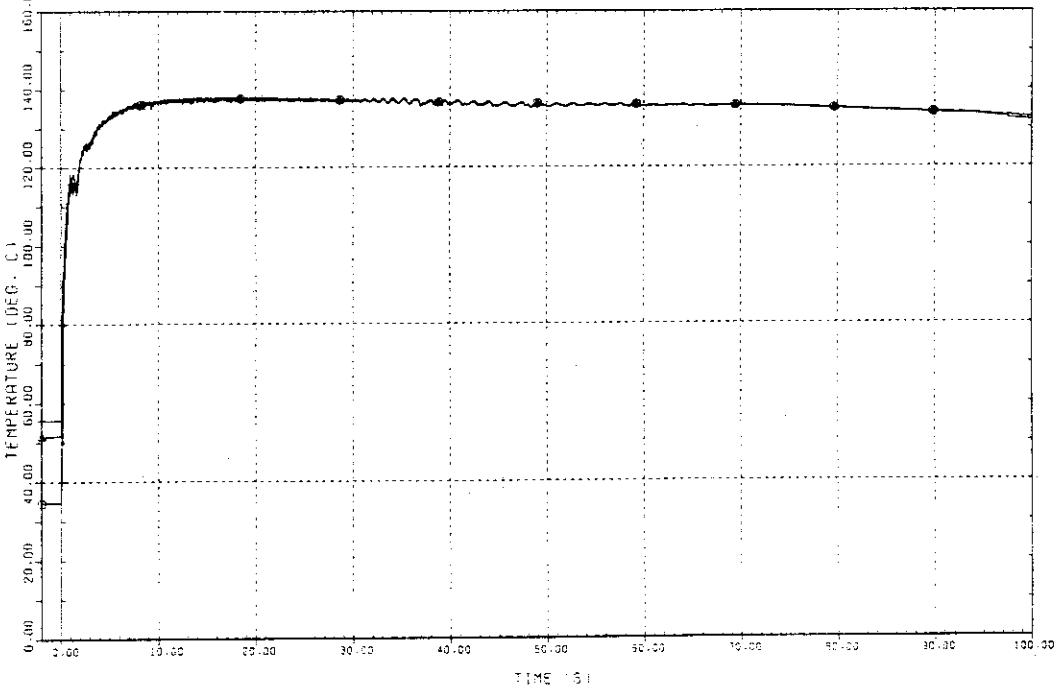
FULL-SCALE MARK II CRT



Plot L-0-9 Temperatures in Drywell

TEST 1205
 O DWTS-201 DRYWELL (0.5M ABOVE DFI)
 ▲ DWTS-202 DRYWELL (2.5M ABOVE DFI)
 + DWTS-203 DRYWELL (4.5M ABOVE DFI)

FULL-SCALE MARK II CRT

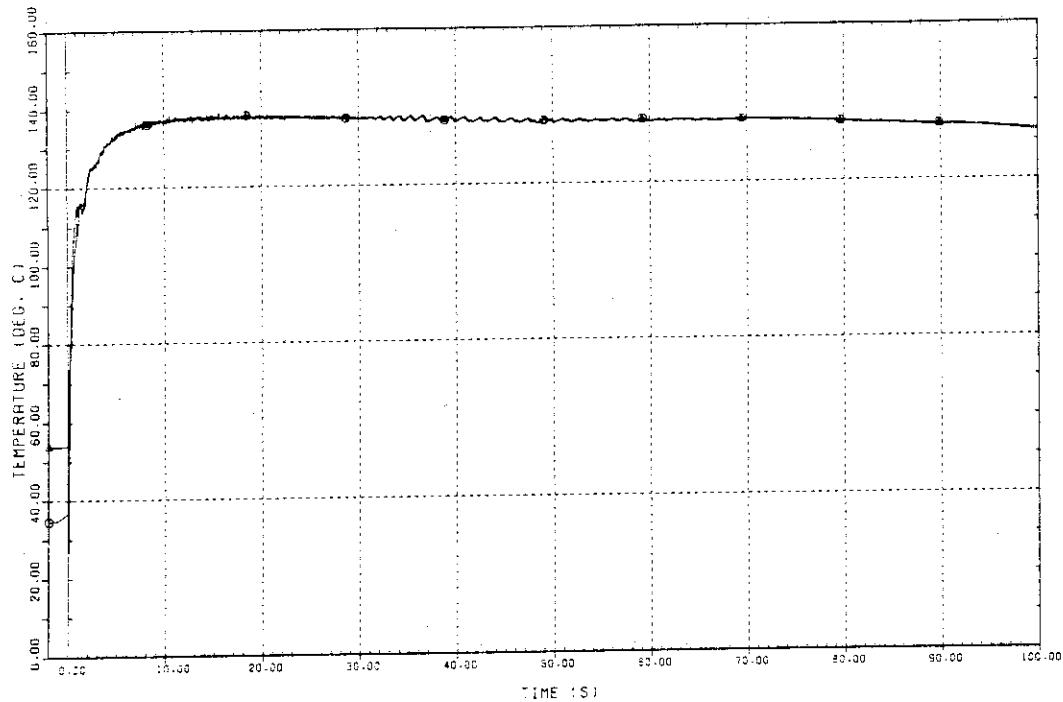


Plot L-0-10 Temperatures in Drywell

TEST 1205

DWTS-301 DRYWELL (0.5M ABOVE ODF)
DWTS-302 DRYWELL (3.5M ABOVE ODF)

FULL-SCALE MARK II CRT

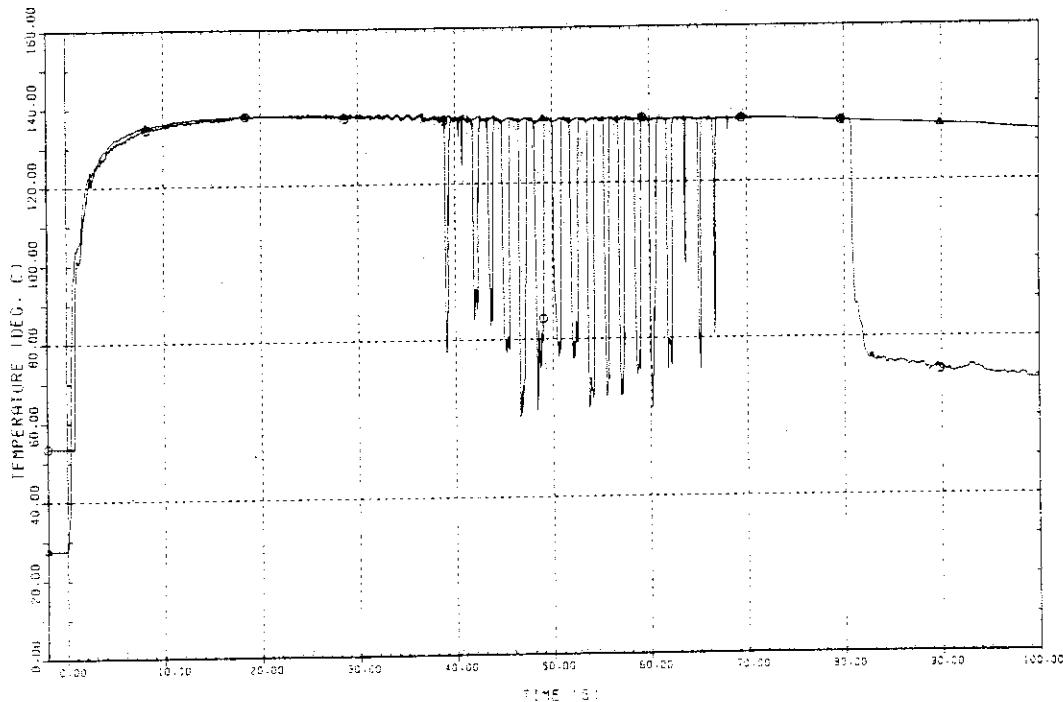


Plot L-0-11 Temperatures in Drywell

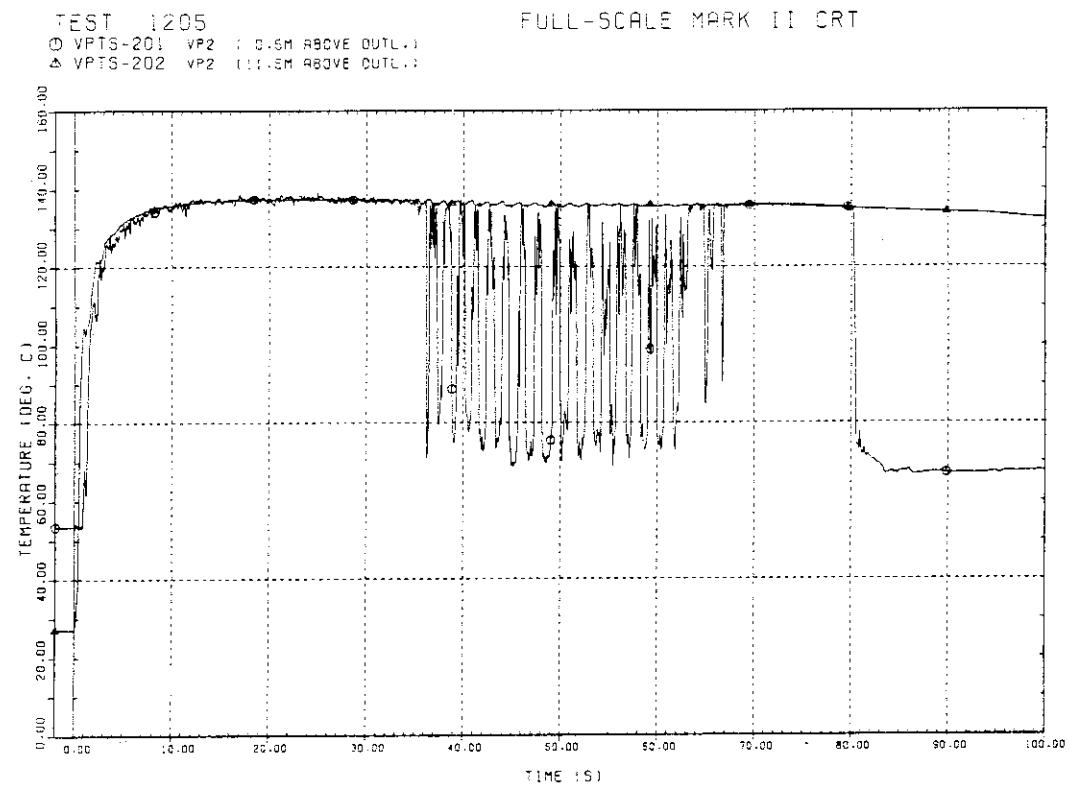
TEST 1205

VPTS-101 VPI (0.5M ABOVE OUTL.)
VPTS-102 VPI (1.5M ABOVE OUTL.)

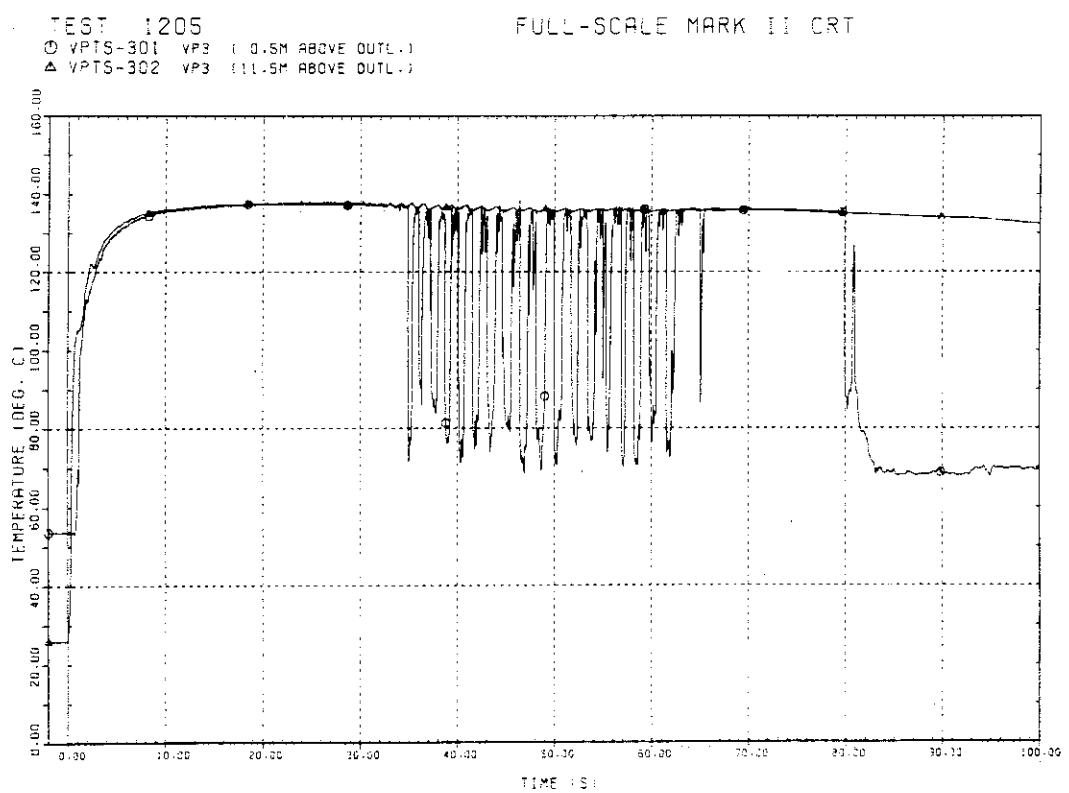
FULL-SCALE MARK II CRT



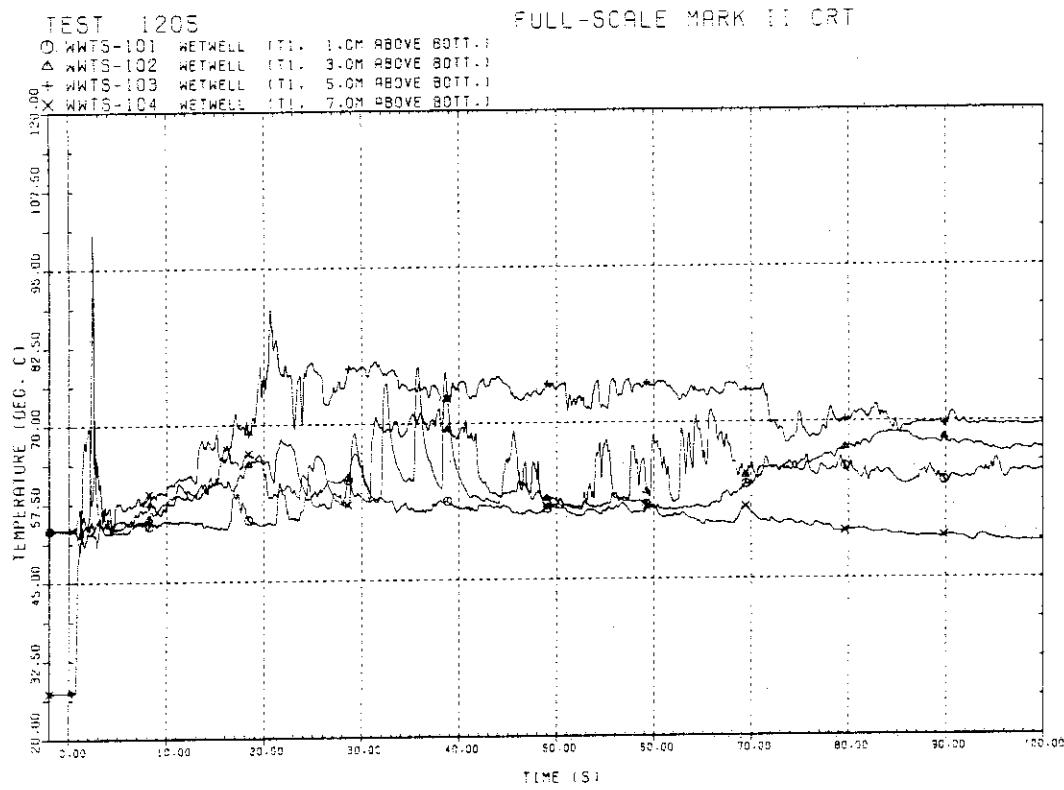
Plot L-0-12 Temperatures in Vent Pipe



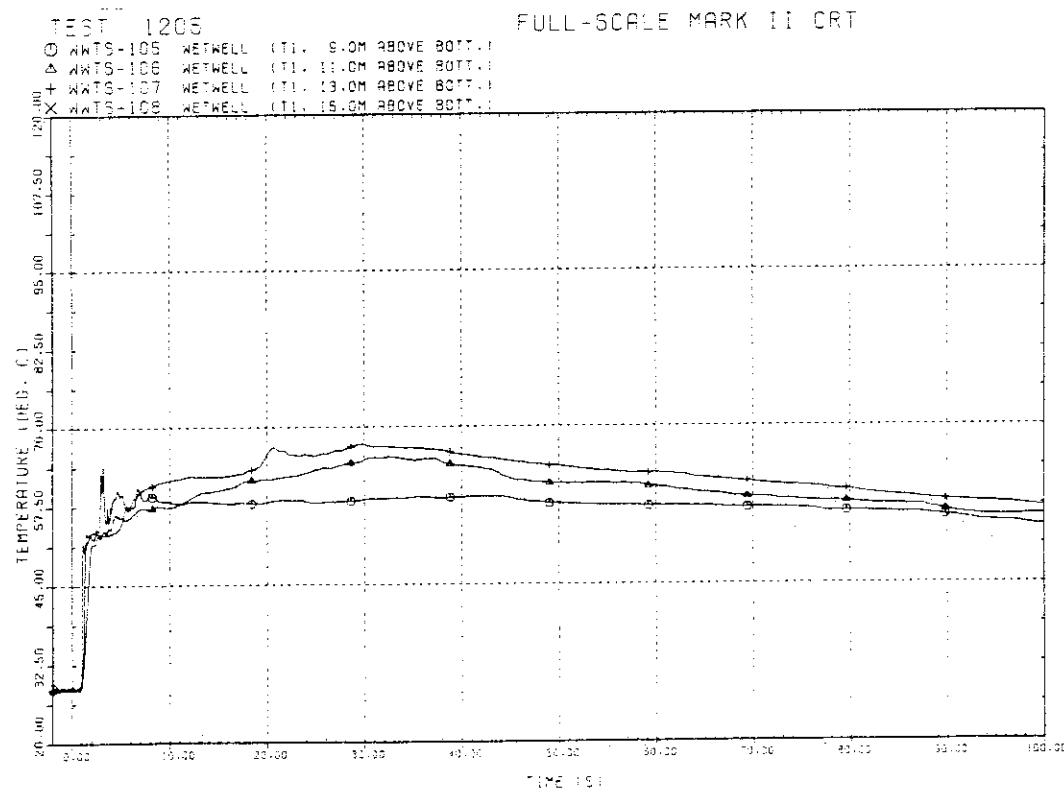
Plot L-0-13 Temperatures in Vent Pipe



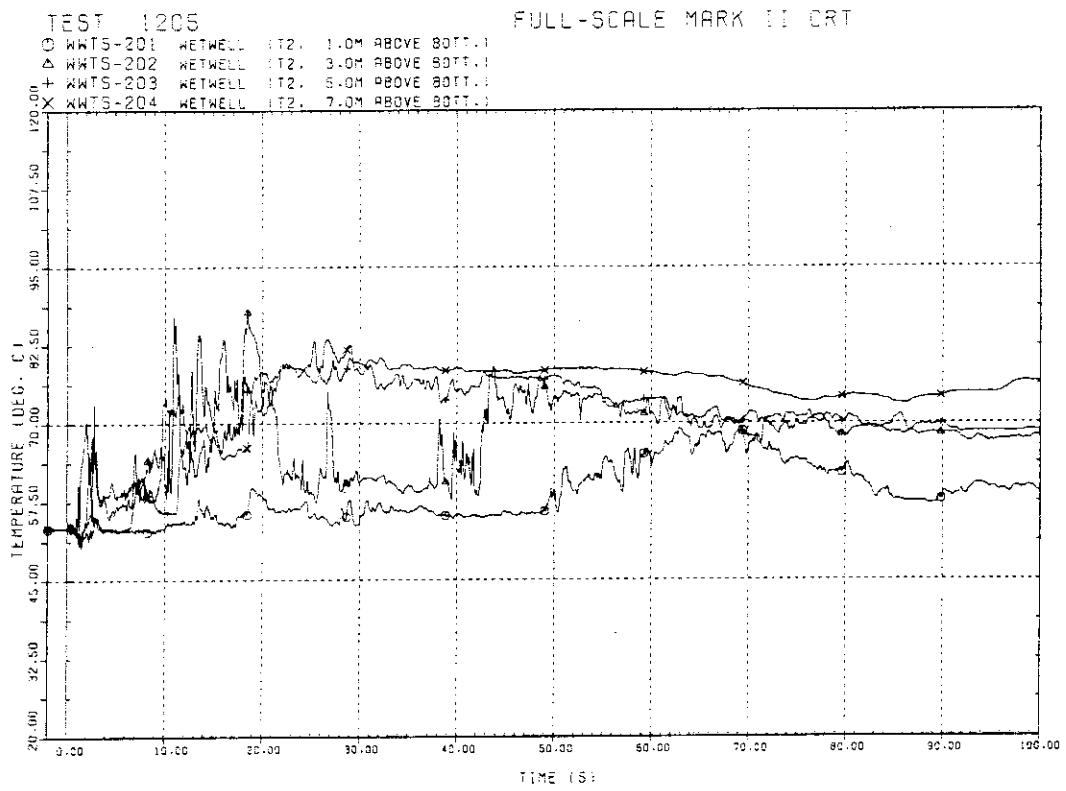
Plot L-0-14 Temperatures in Vent Pipe



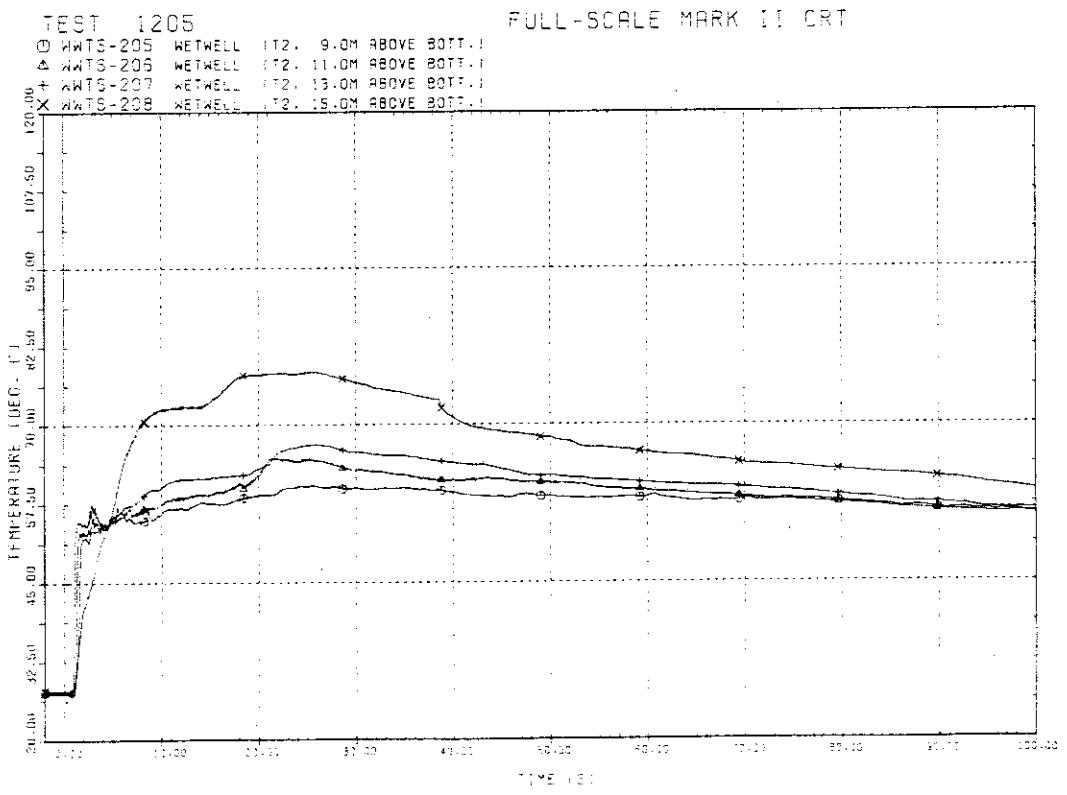
Plot L-0-15 Temperatures in Wetwell



Plot L-0-16 Temperatures in Wetwell



Plot L-0-17 Temperatures in Wetwell

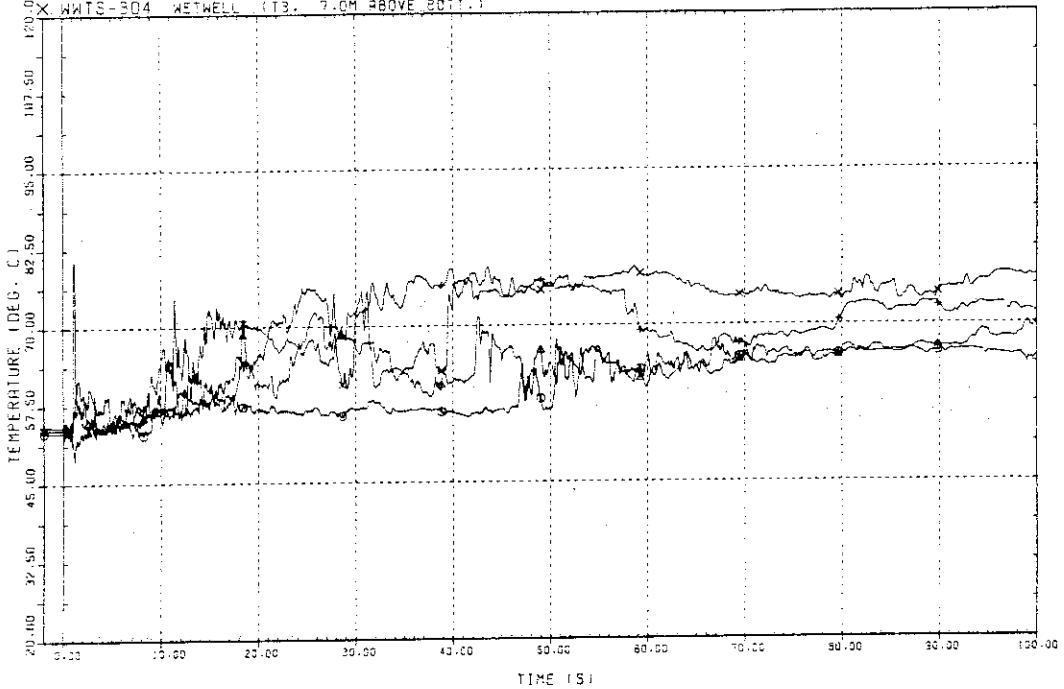


Plot L-0-18 Temperatures in Wetwell

TEST 1205

FULL-SCALE MARK II CRT

O WWTS-301 WETWELL IT3, 1.0M ABOVE BOTT.
 △ WWTS-302 WETWELL IT3, 3.0M ABOVE BOTT.
 + WWTS-303 WETWELL IT3, 5.0M ABOVE BOTT.
 X WWTS-304 WETWELL IT3, 7.0M ABOVE BOTT.

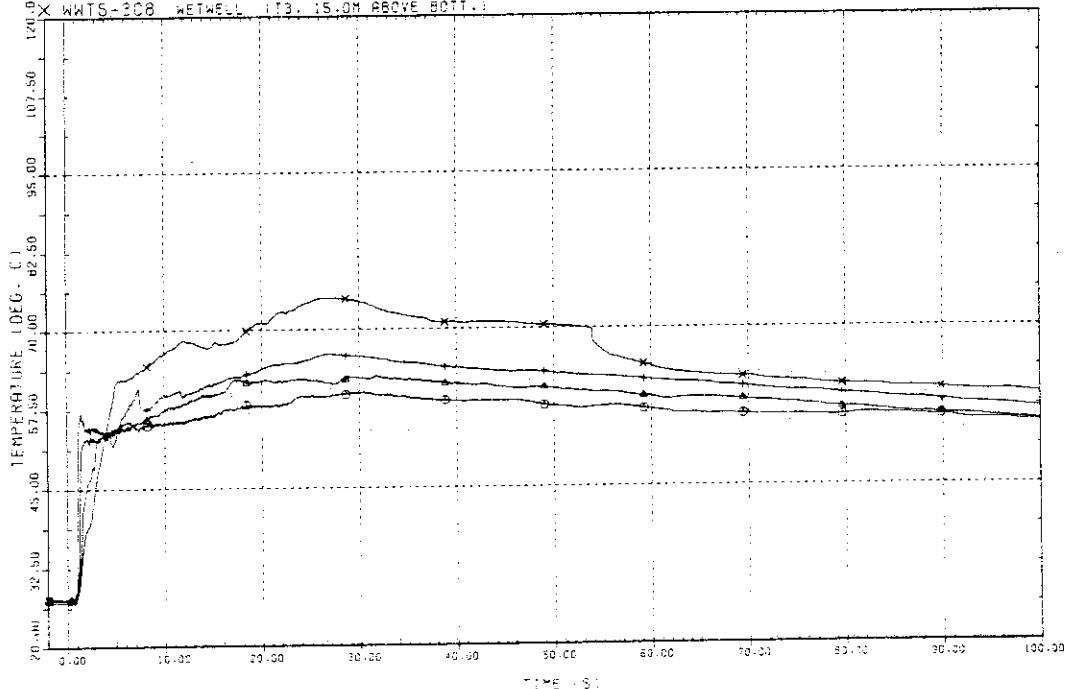


Plot L-0-19 Temperatures in Wetwell

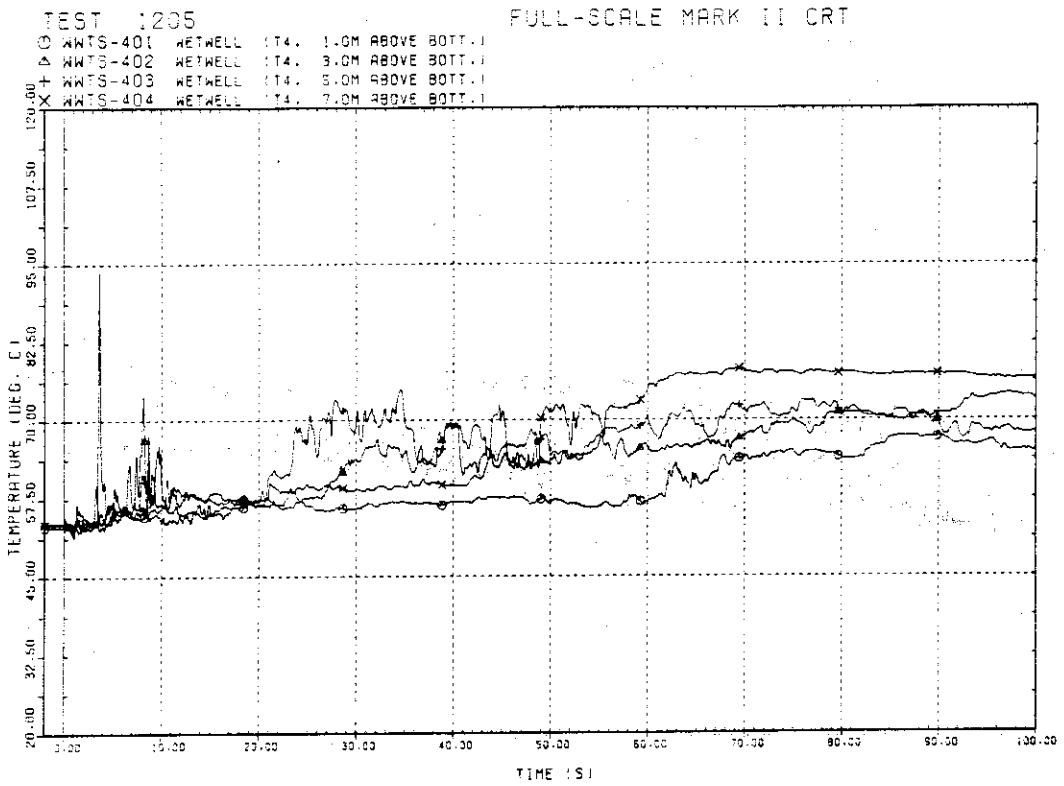
TEST 1205

FULL-SCALE MARK II CRT

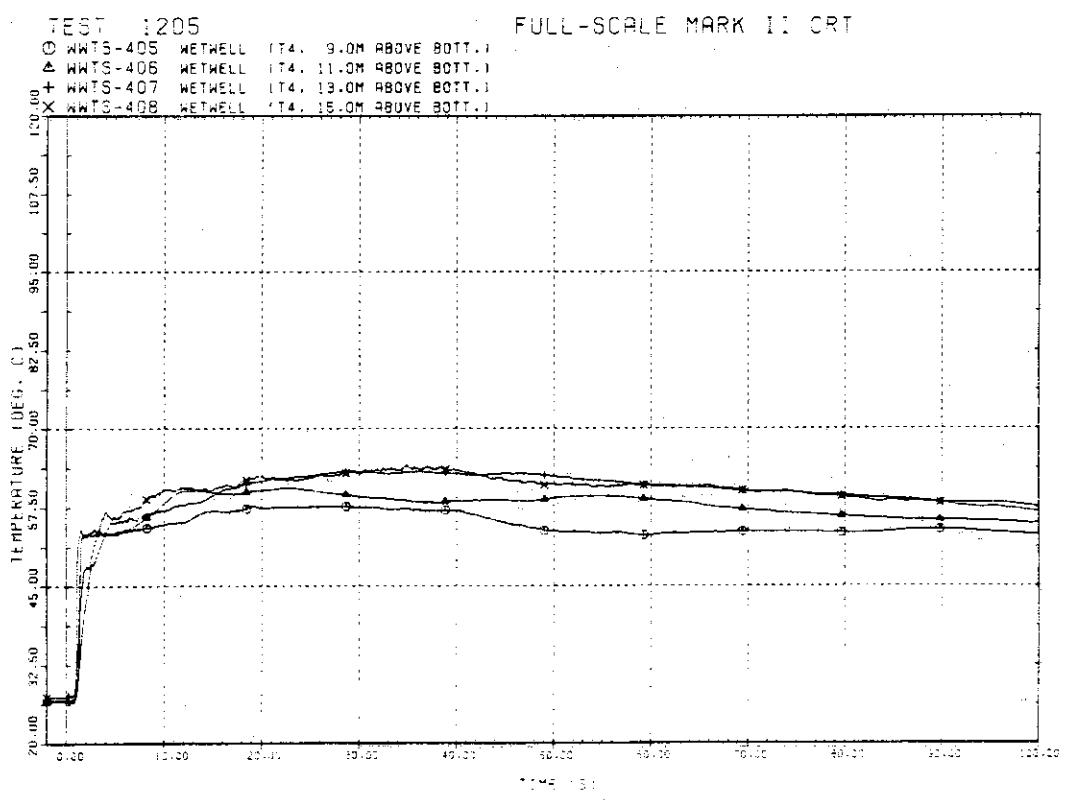
O WWTS-305 WETWELL IT3, 9.0M ABOVE BOTT.
 △ WWTS-306 WETWELL IT3, 11.0M ABOVE BOTT.
 + WWTS-307 WETWELL IT3, 13.0M ABOVE BOTT.
 X WWTS-308 WETWELL IT3, 15.0M ABOVE BOTT.



Plot L-0-20 Temperatures in Wetwell



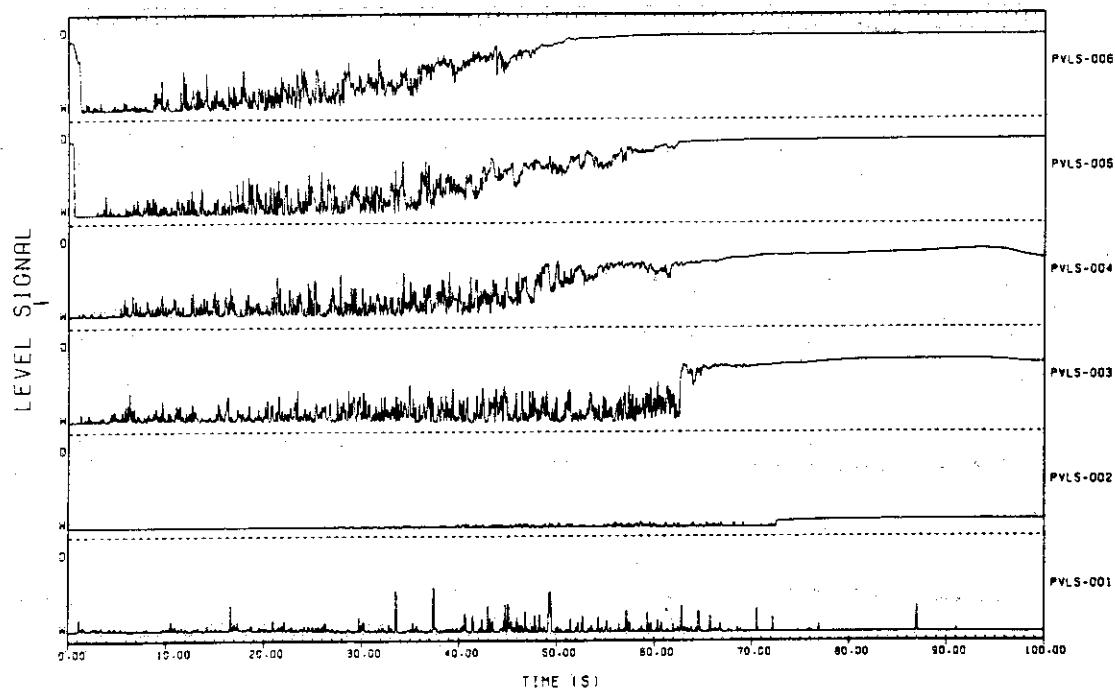
Plot L-0-21 Temperatures in Wetwell



Plot L-0-22 Temperatures in Wetwell

TEST 1205

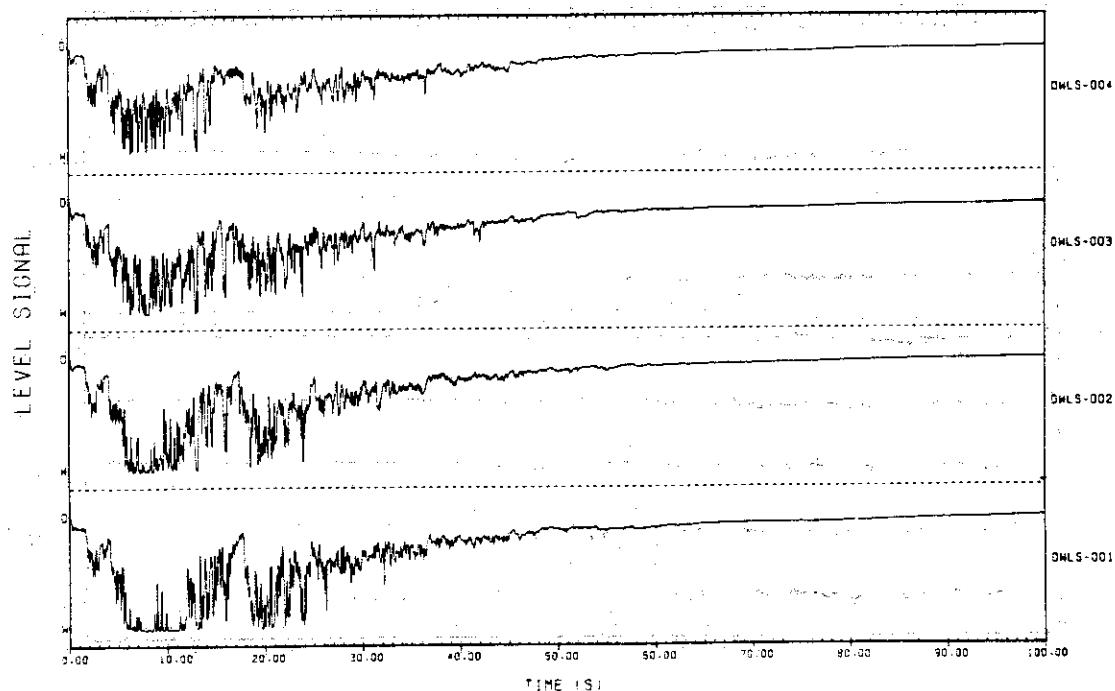
FULL-SCALE MARK II CRT



Plot L-0-23 Water Level in Pressure Vessel

TEST 1205

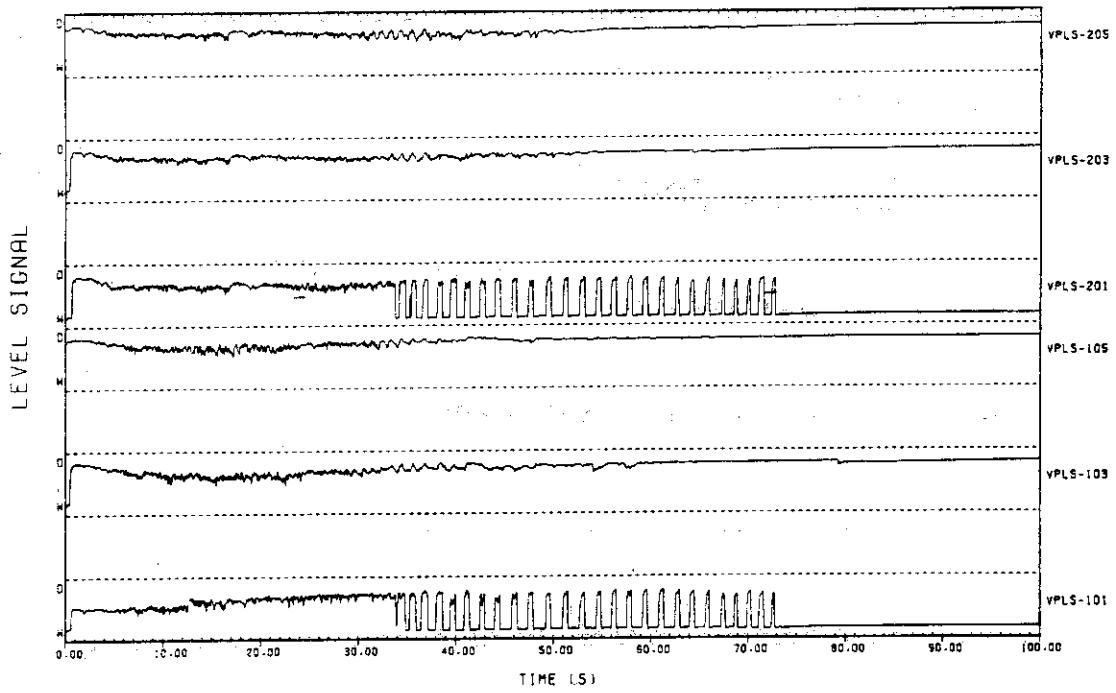
FULL-SCALE MARK II CRT



Plot L-0-24 Water Level in Drywell

TEST 1205

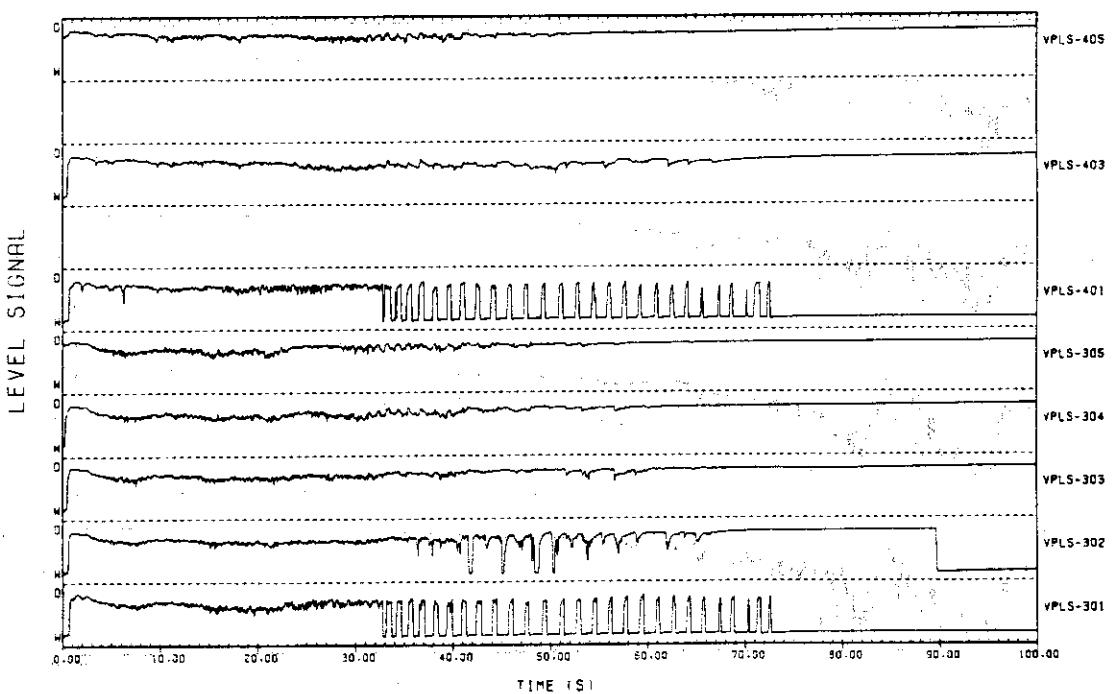
FULL-SCALE MARK II CRT



Plot L-0-25 Water Level in Vent Pipe

TEST 1205

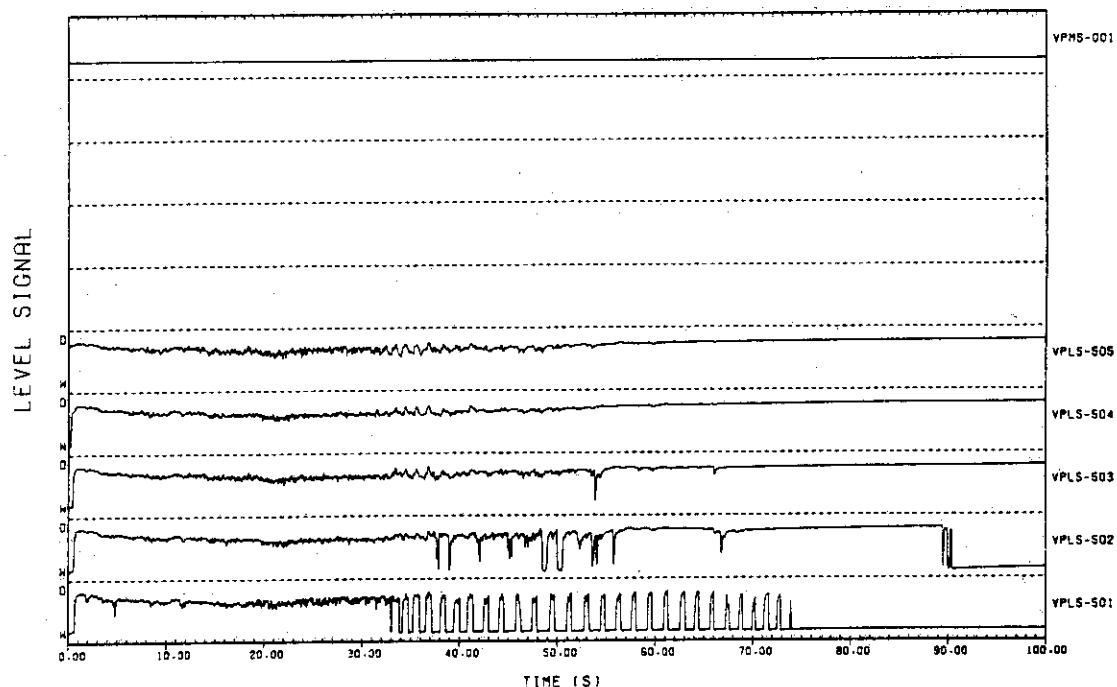
FULL-SCALE MARK II CRT



Plot L-0-26 Water Level in Vent Pipe

TEST 1205

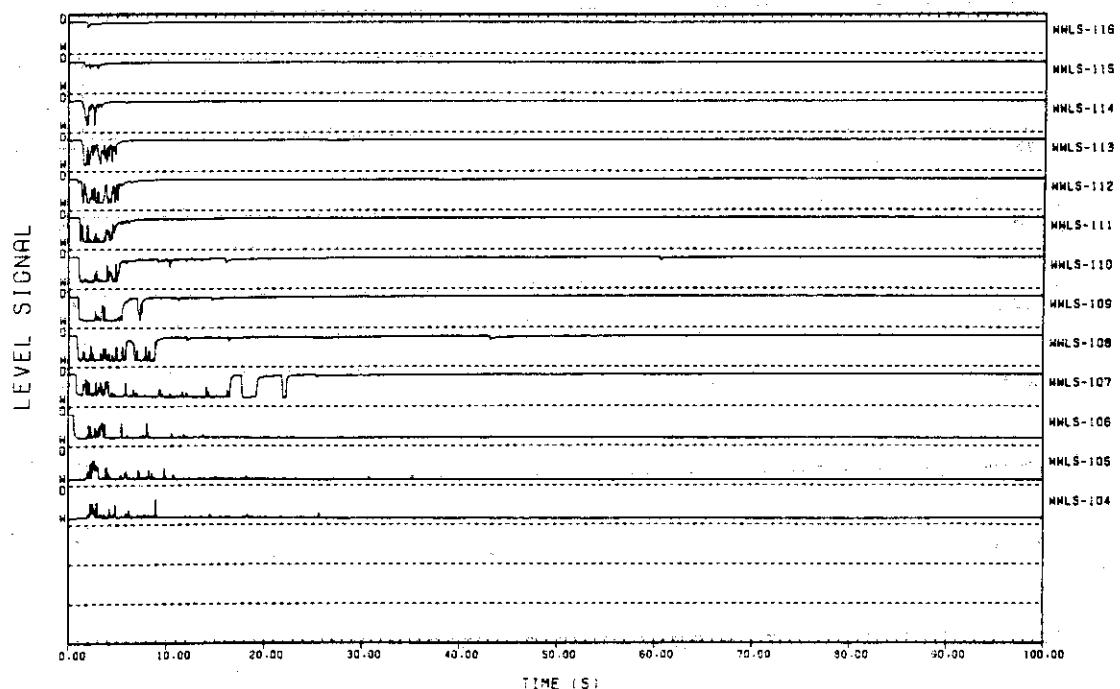
FULL-SCALE MARK II CRT



Plot L-0-27 Water Level in Vent Pipe

TEST 1205

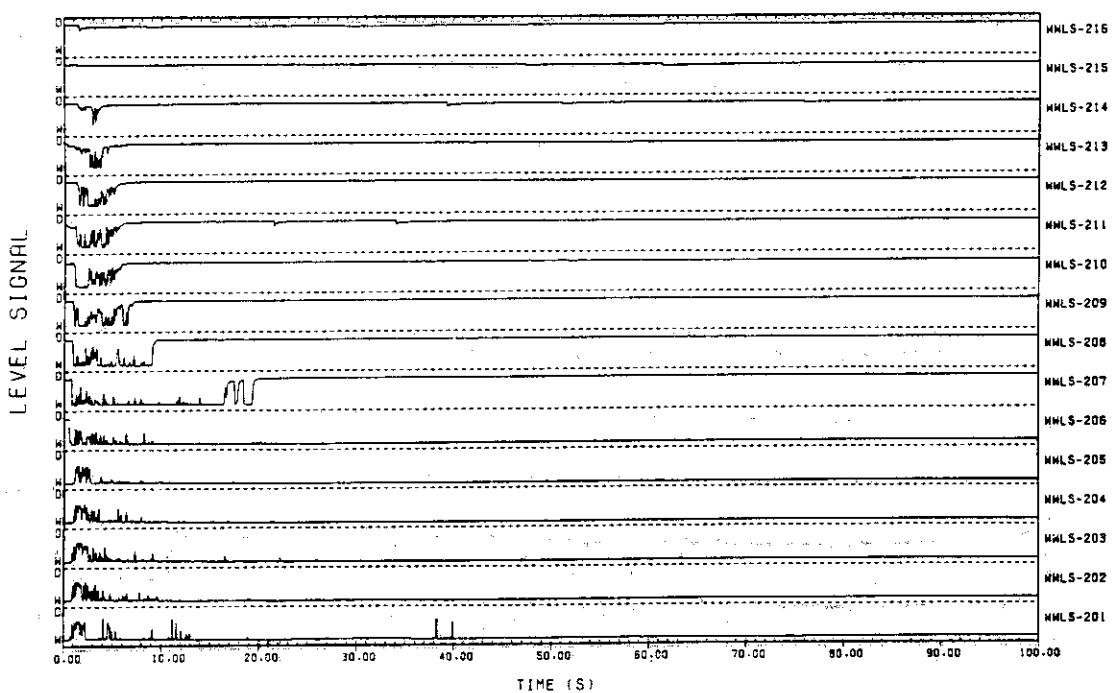
FULL-SCALE MARK II CRT



Plot L-0-28 Water Level in Wetwell

TEST 1205

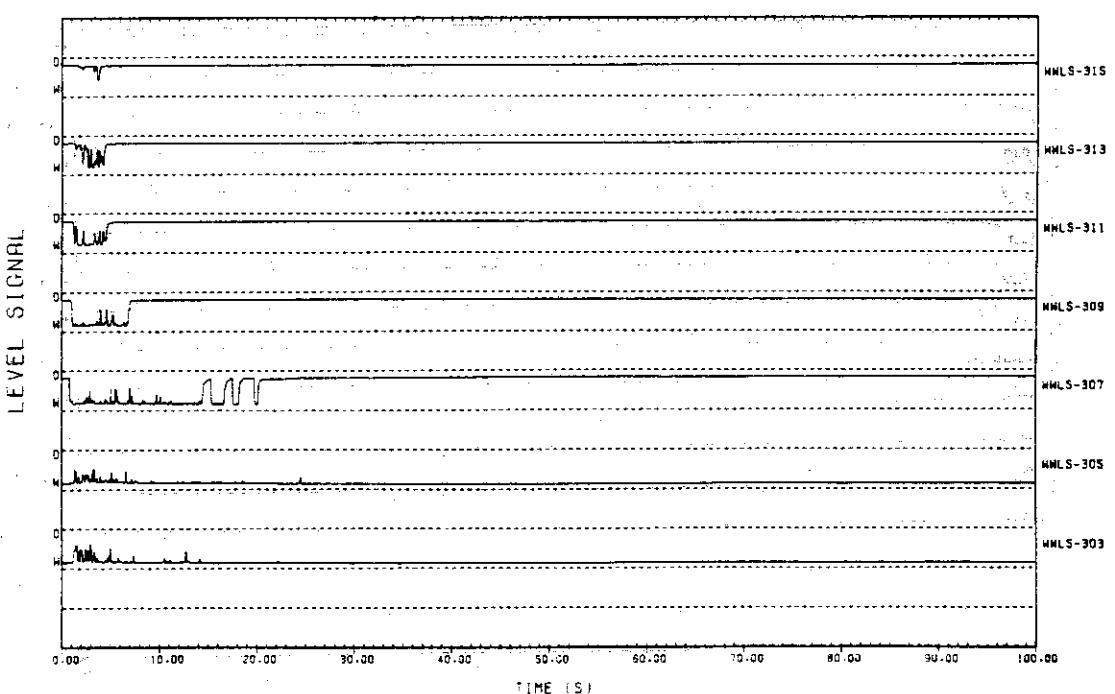
FULL-SCALE MARK II CRT



Plot L-0-29 Water Level in Wetwell

TEST 1205

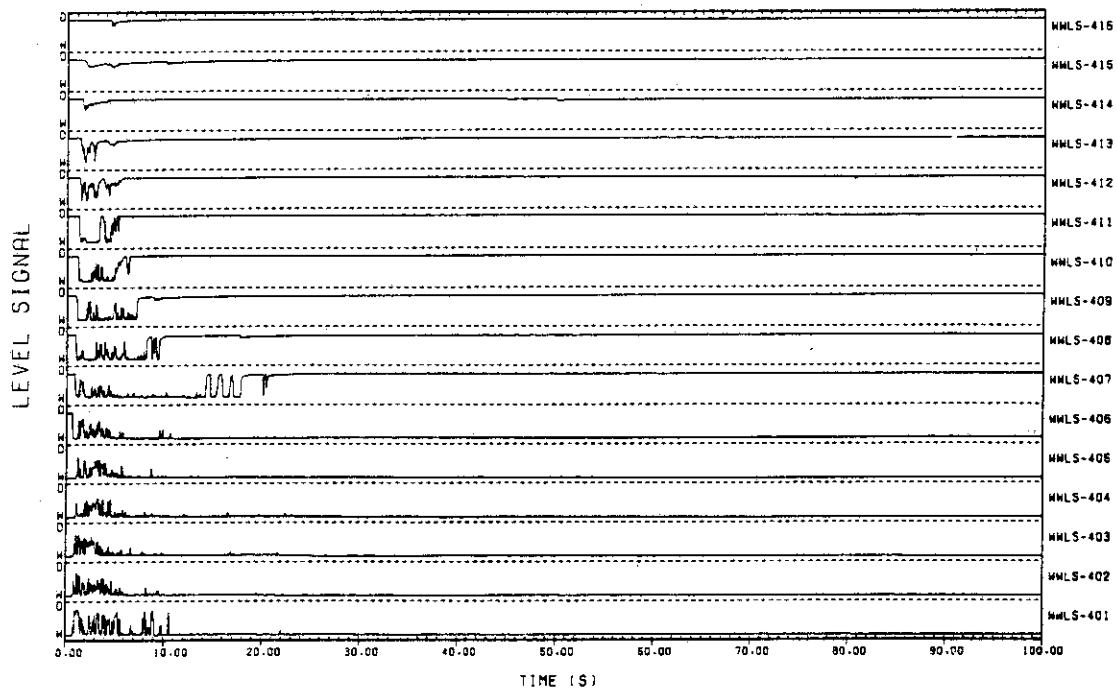
FULL-SCALE MARK II CRT



Plot L-0-30 Water Level in Wetwell

TEST 1205

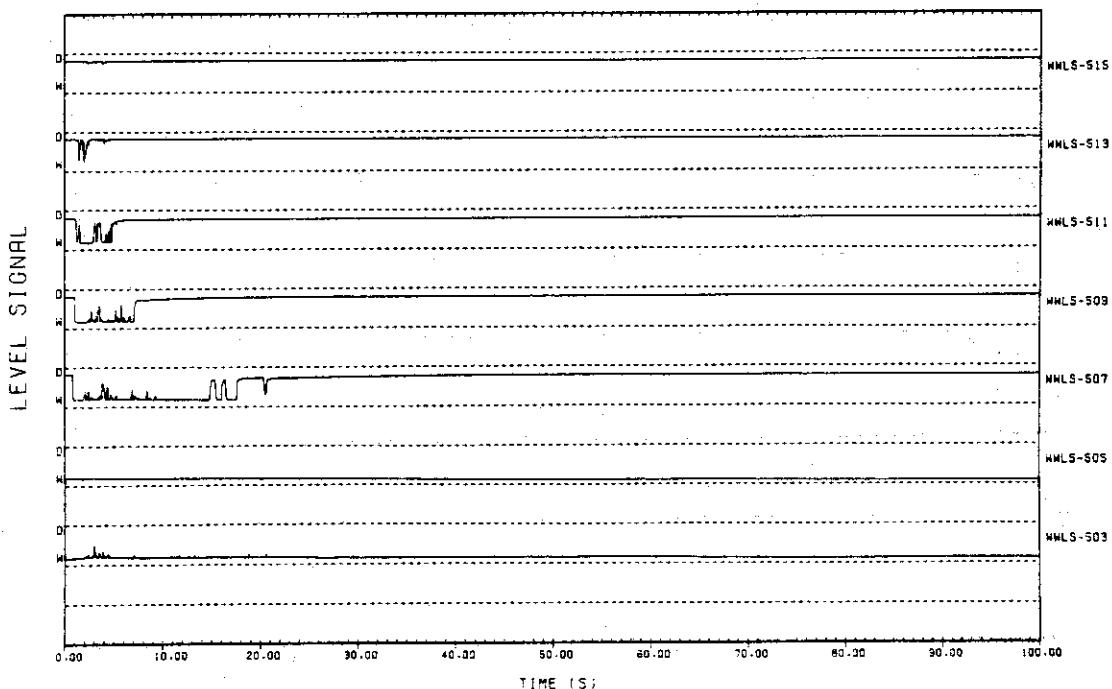
FULL-SCALE MARK II CRT



Plot L-0-31 Water Level in Wetwell

TEST 1205

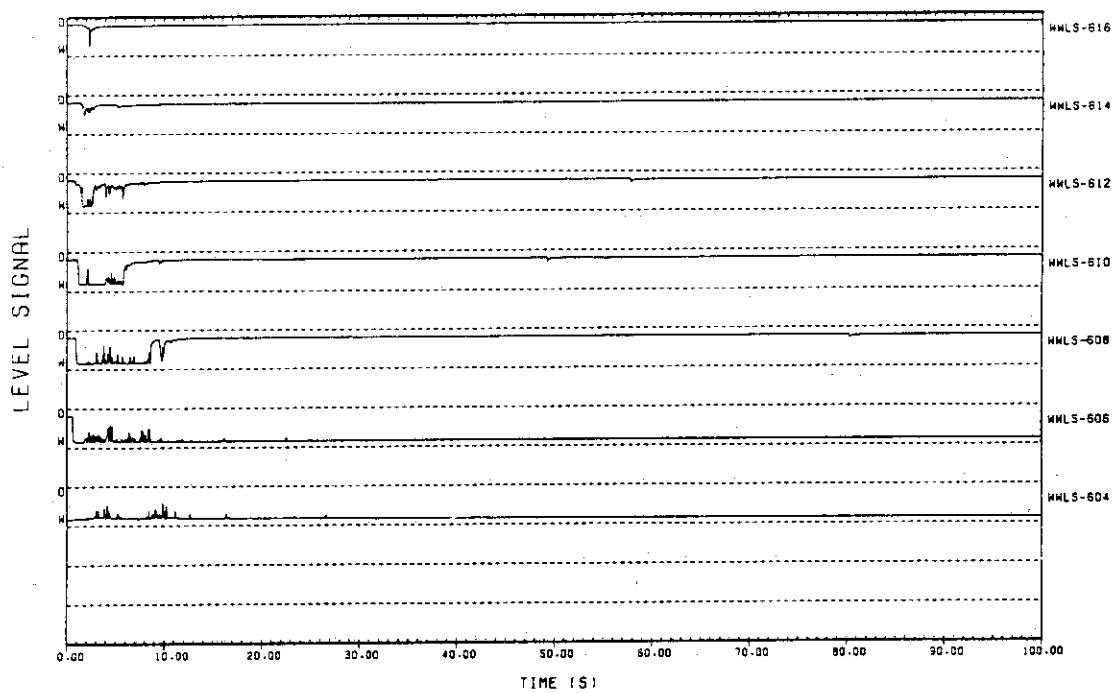
FULL-SCALE MARK II CRT



Plot L-0-32 Water Level in Wetwell

TEST 1205

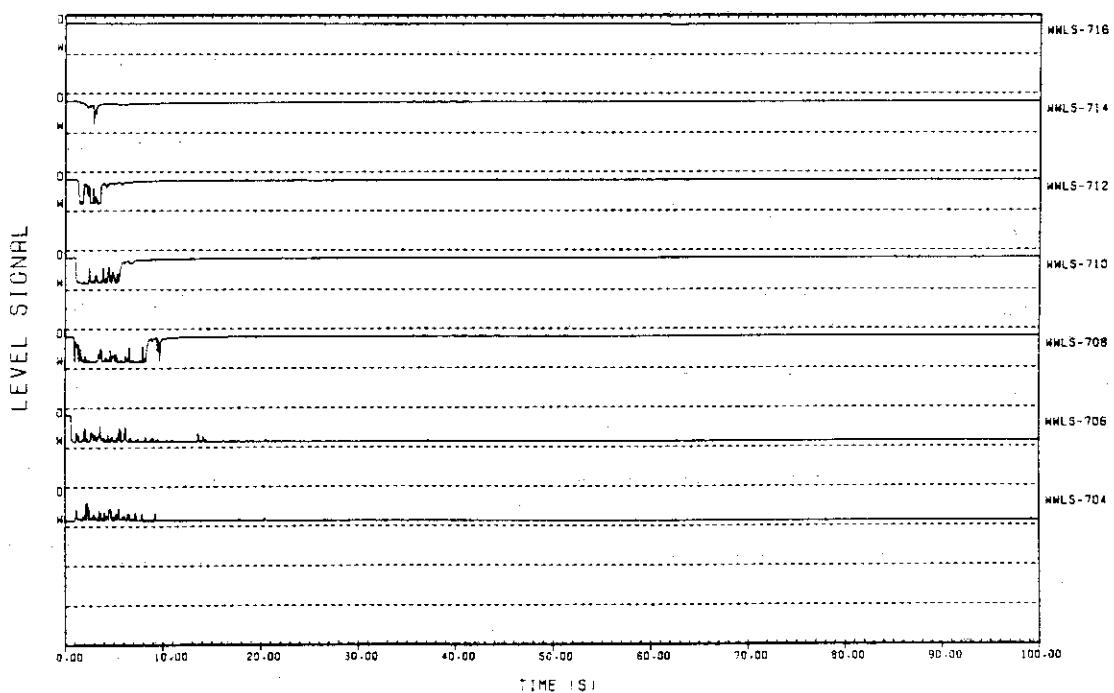
FULL-SCALE MARK II CRT



Plot L-0-33 Water Level in Wetwell

TEST 1205

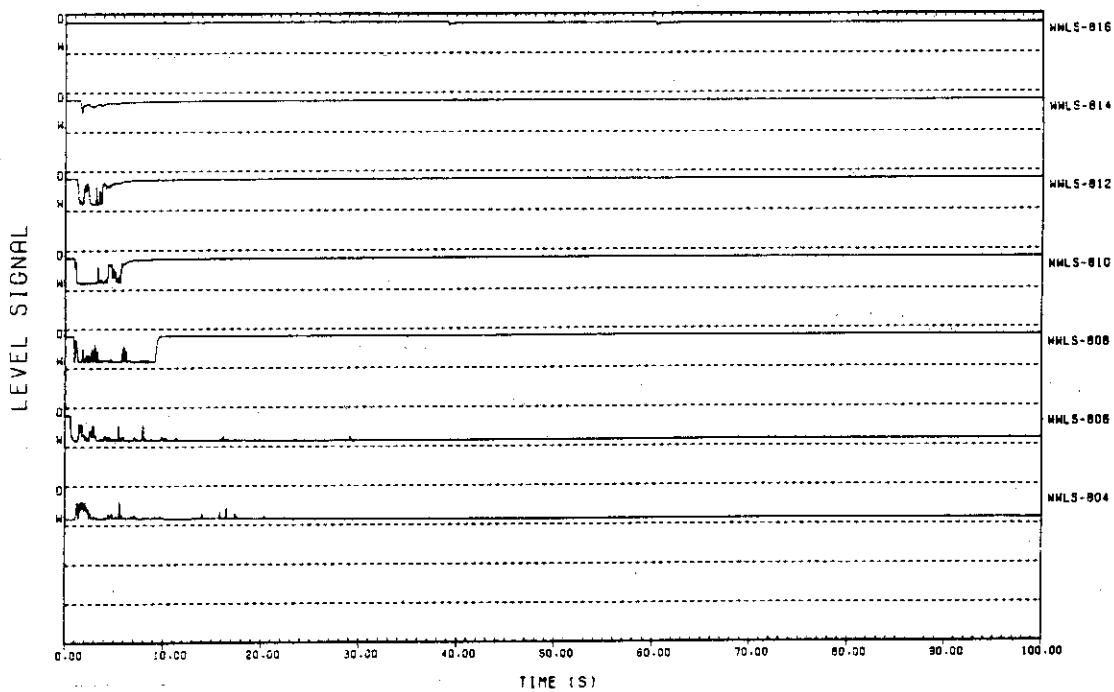
FULL-SCALE MARK II CRT



Plot L-0-34 Water Level in Wetwell

TEST 1205

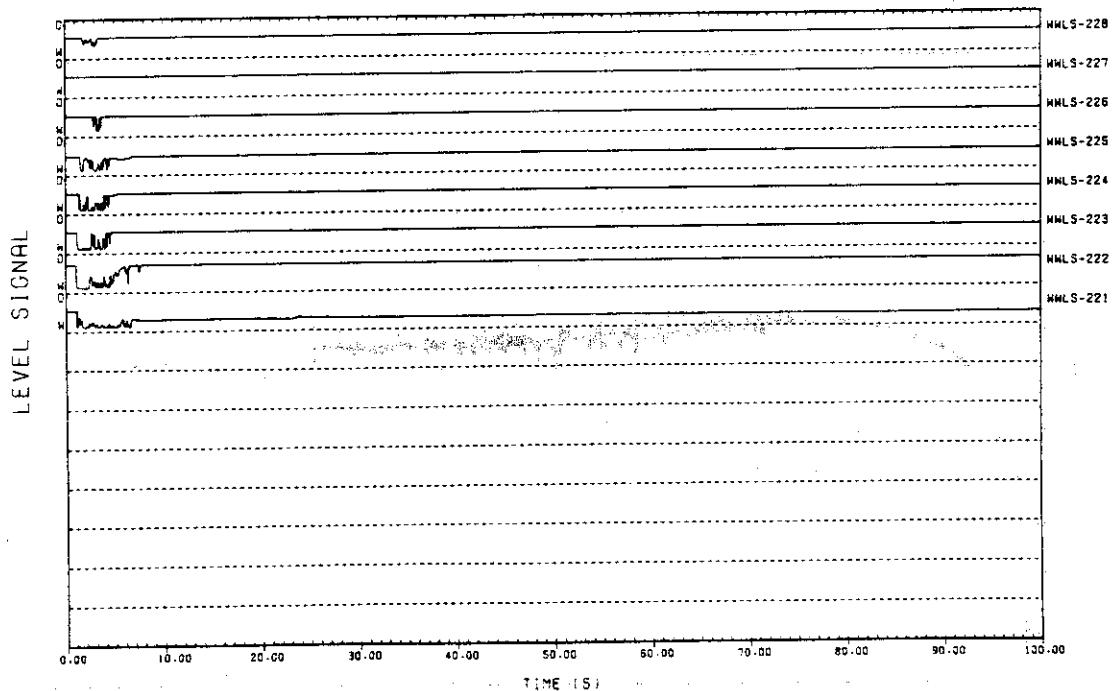
FULL-SCALE MARK II CRT



Plot L-0-35 Water Level in Wetwell

TEST 1205

FULL-SCALE MARK II CRT



Plot L-0-36 Water Level in Wetwell

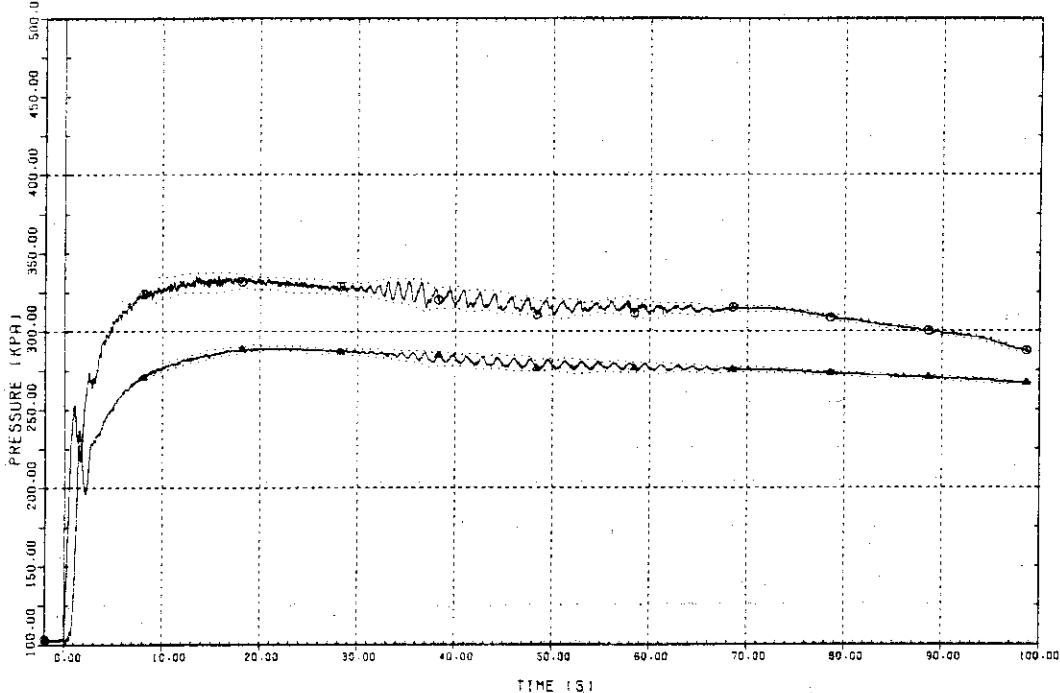
TEST 1205

◎ DWPF-001 DRYWELL

△ WWPF-001 WETWELL AIRSPACE (15.0M ABOVE BOTTOM)

PLCT WITH ENVELOPE

FULL-SCALE MARK II CRT



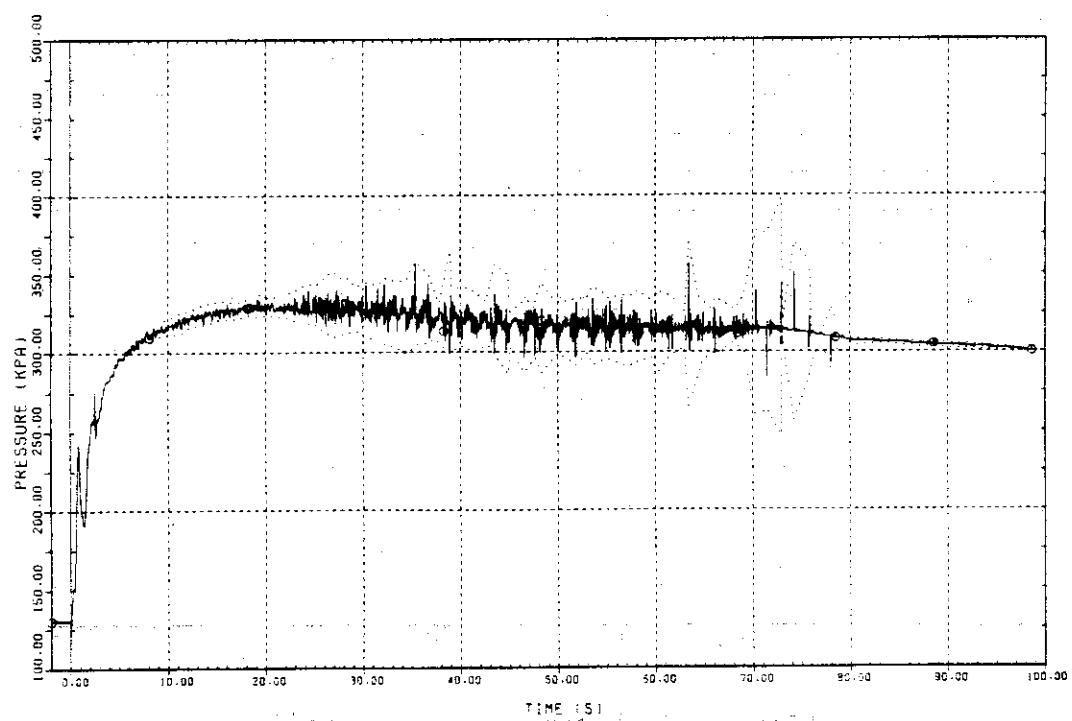
Plot L-1-1 Pressures in Drywell and Wetwell Airspace

TEST 1205

◎ VPPF-101 VPI (0.5M ABOVE OUTL.)

PLCT WITH ENVELOPE

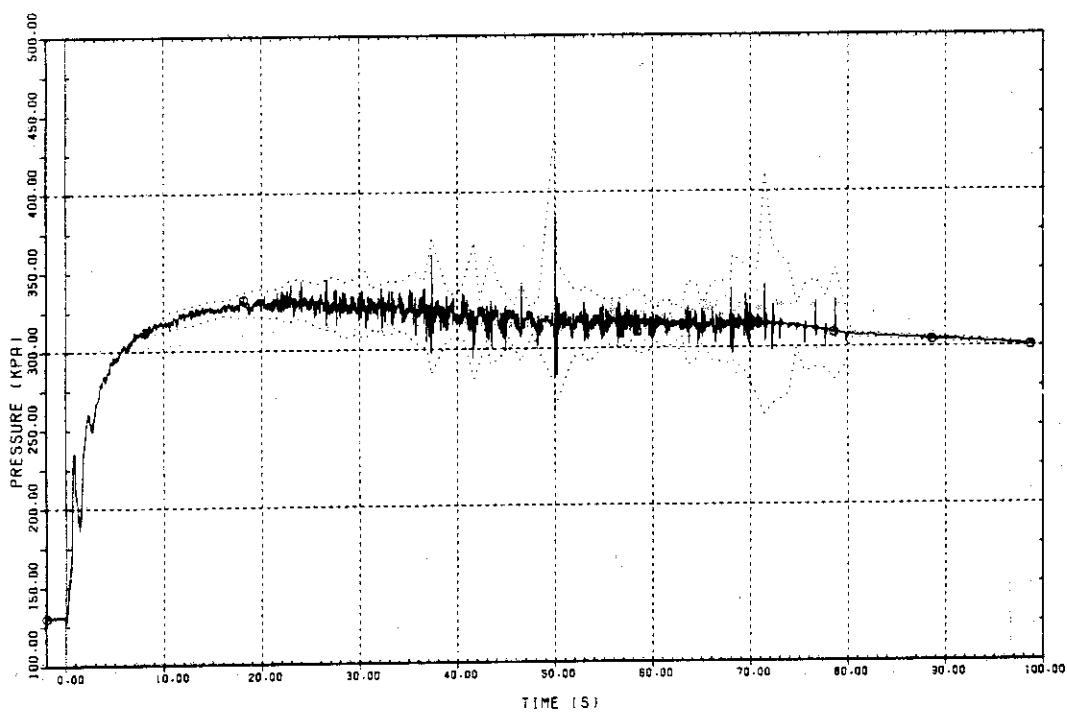
FULL-SCALE MARK II CRT



Plot L-1-2 Pressure in Vent Pipe

TEST 1205
 © VPPF-201 VP2 (0.5M ABOVE OUTL.)
 PLOT WITH ENVELOPE

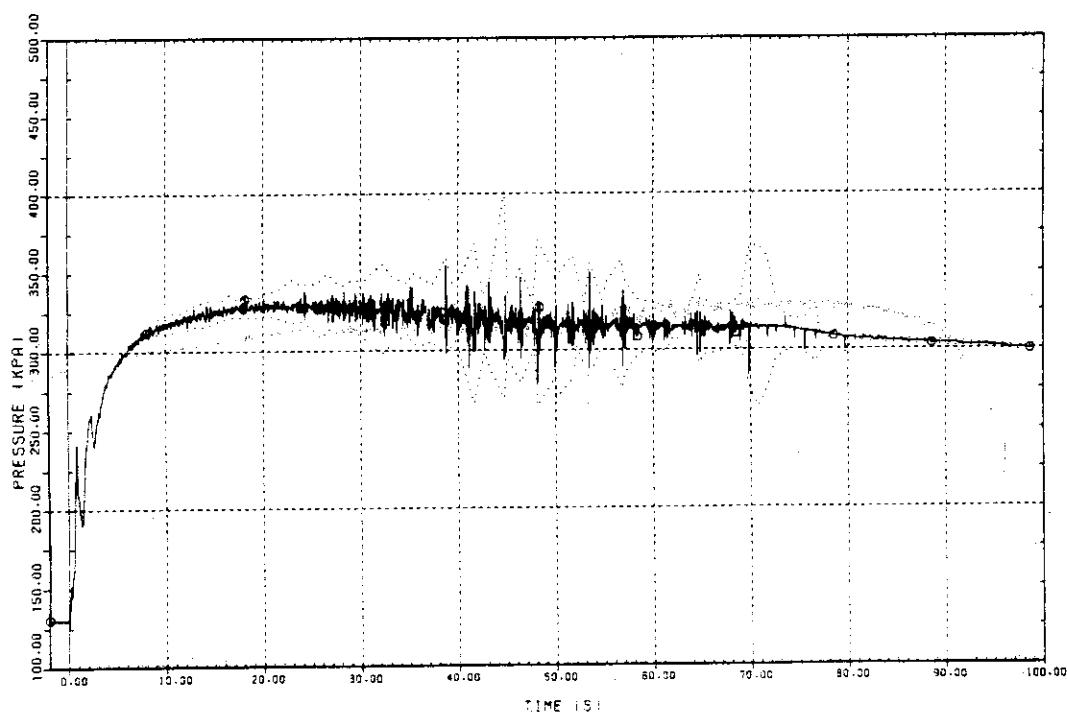
FULL-SCALE MARK II CRT



Plot L-1-3: Pressure in Vent Pipe

TEST 1205
 © VPPF-301 VP3 (0.5M ABOVE OUTL.)
 PLOT WITH ENVELOPE

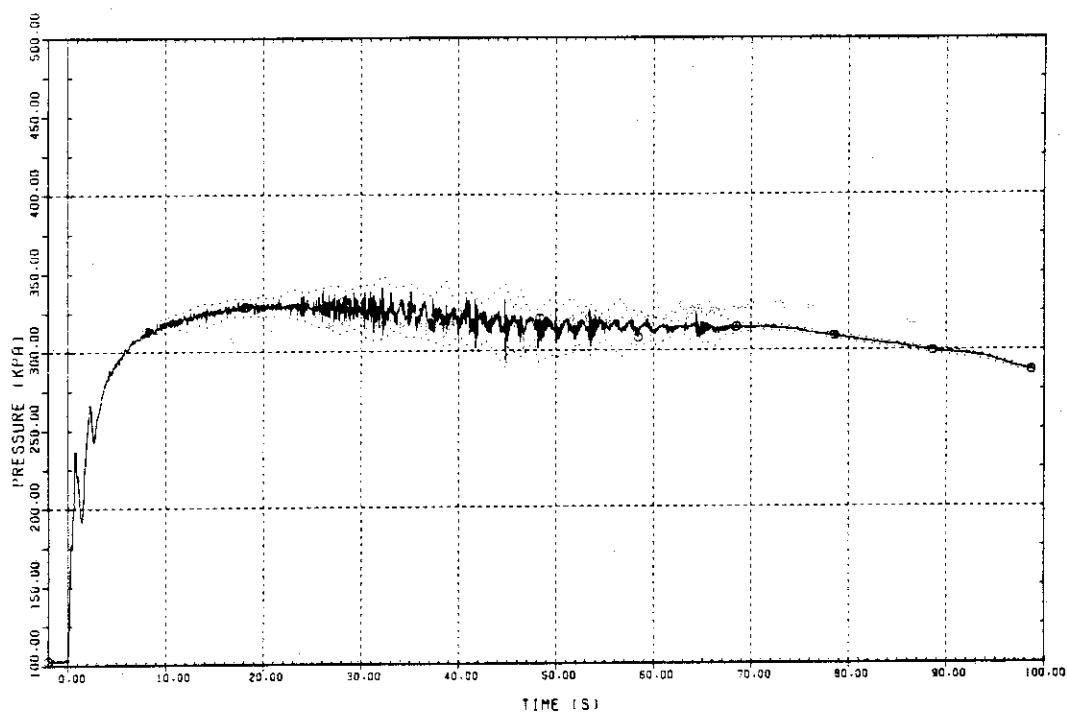
FULL-SCALE MARK II CRT



Plot L-1-4: Pressure in Vent Pipe

TEST 1205
O VPPF-302 VP3 (6.0M ABOVE OUTL.)
PLOT WITH ENVELOPE

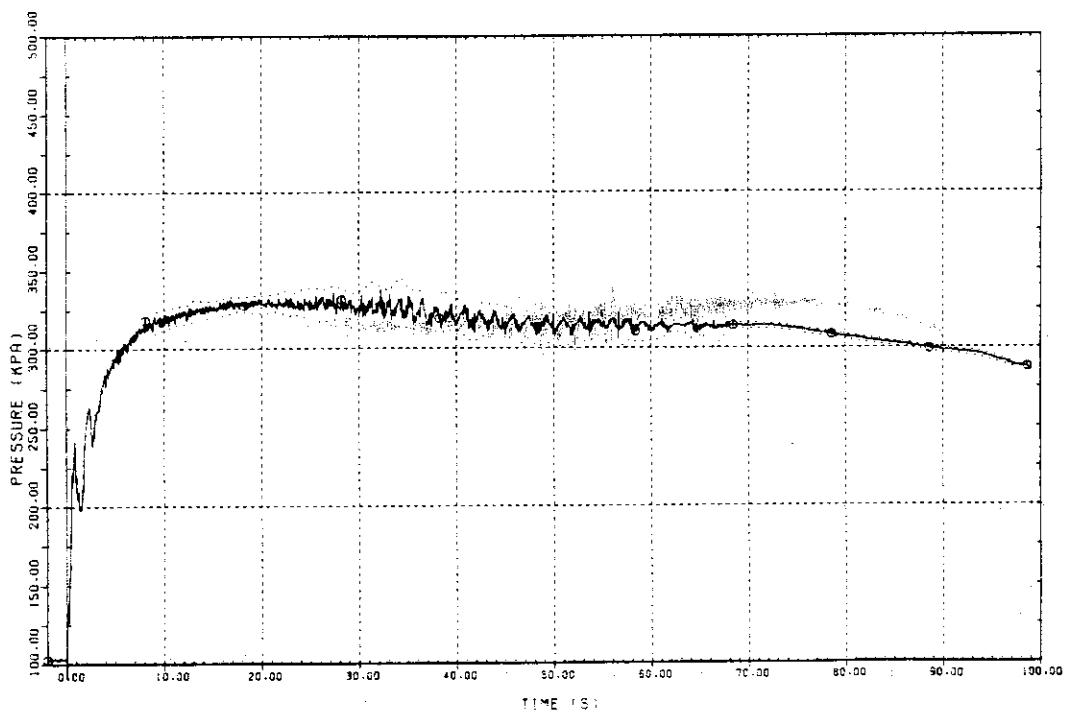
FULL-SCALE MARK II CRT



Plot L-1-5 Pressure in Vent Pipe

TEST 1205
O VPPF-303 VP3 (11.5M ABOVE OUTL.)
PLOT WITH ENVELOPE

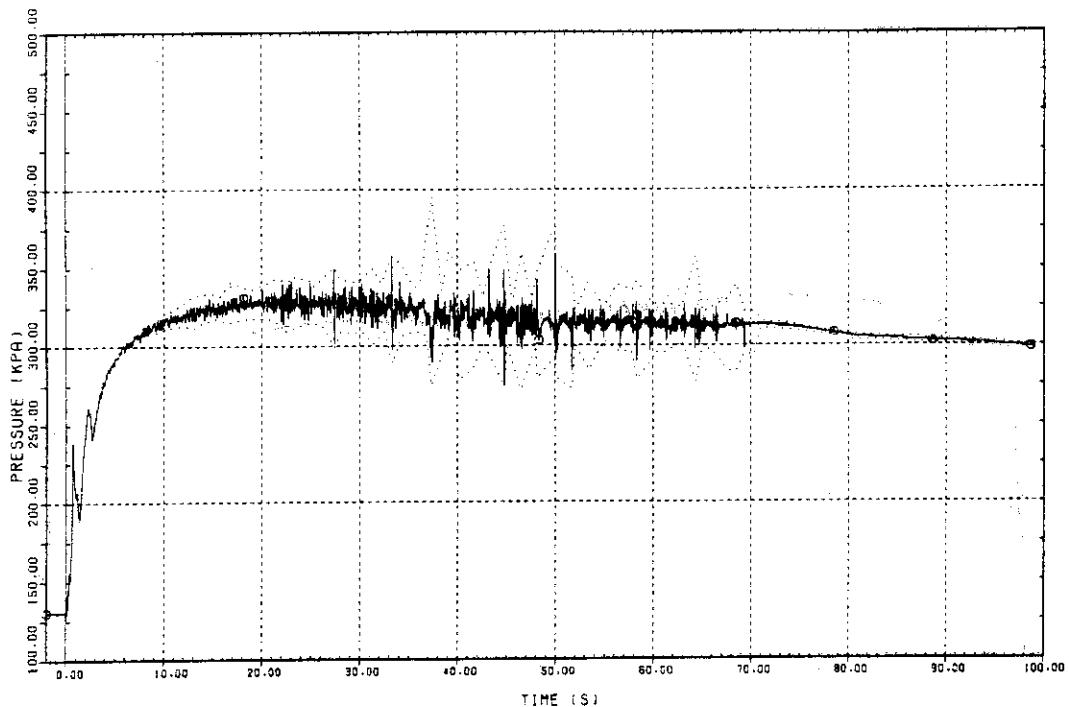
FULL-SCALE MARK II CRT



Plot L-1-6 Pressure in Vent Pipe

TEST 1205
① VPPF-401 VP4 (0.5M ABOVE OUTL.)
PLOT WITH ENVELOPE

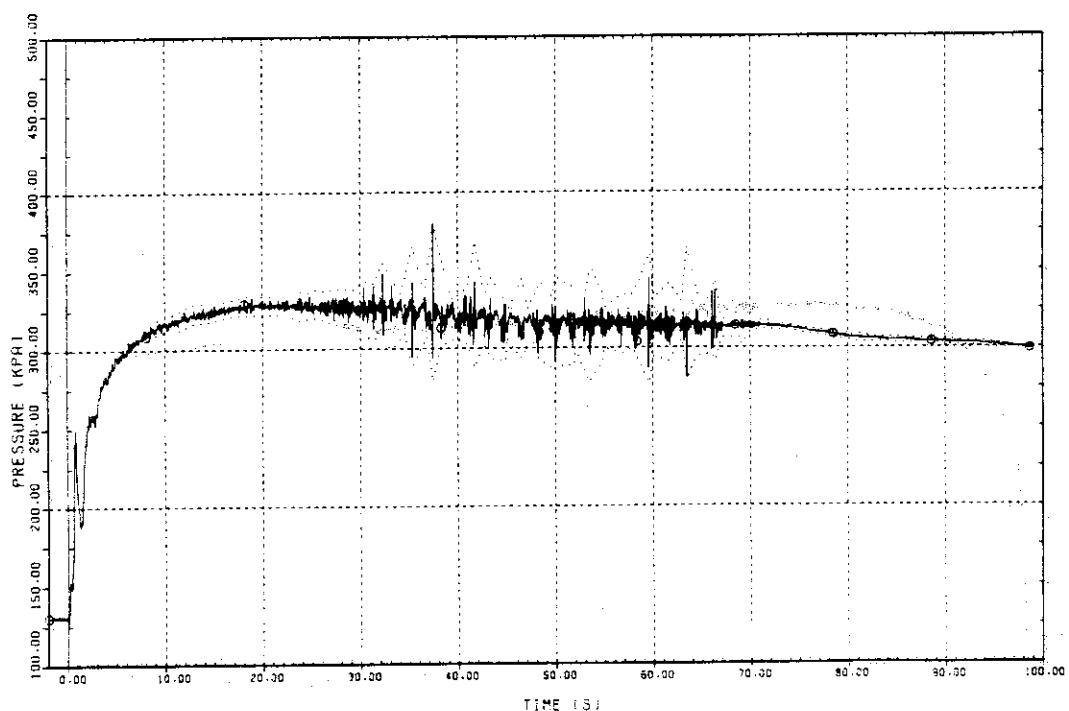
FULL-SCALE MARK II CRT



Plot L-1-7 Pressure in Vent Pipe

TEST 1205
① VPPF-501 VPS (0.5M ABOVE OUTL.)
PLOT WITH ENVELOPE

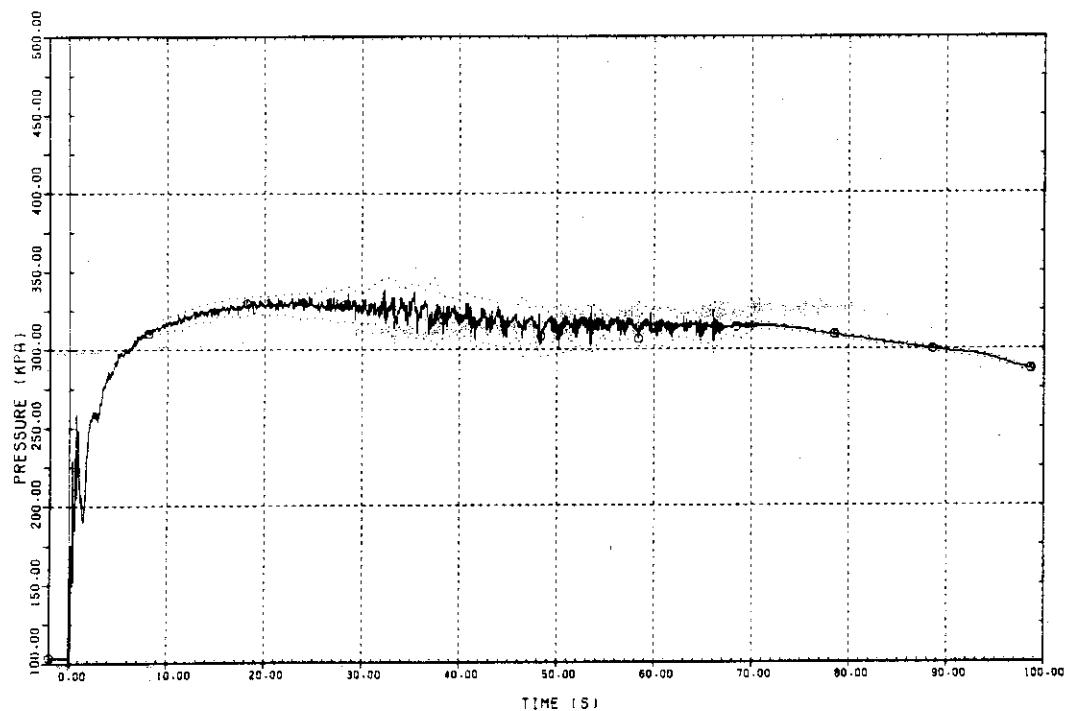
FULL-SCALE MARK II CRT



Plot L-1-8 Pressure in Vent Pipe

TEST 1205
○ VPPF-502 VPS (5.0M ABOVE OUTL.)
PLOT WITH ENVELOPE

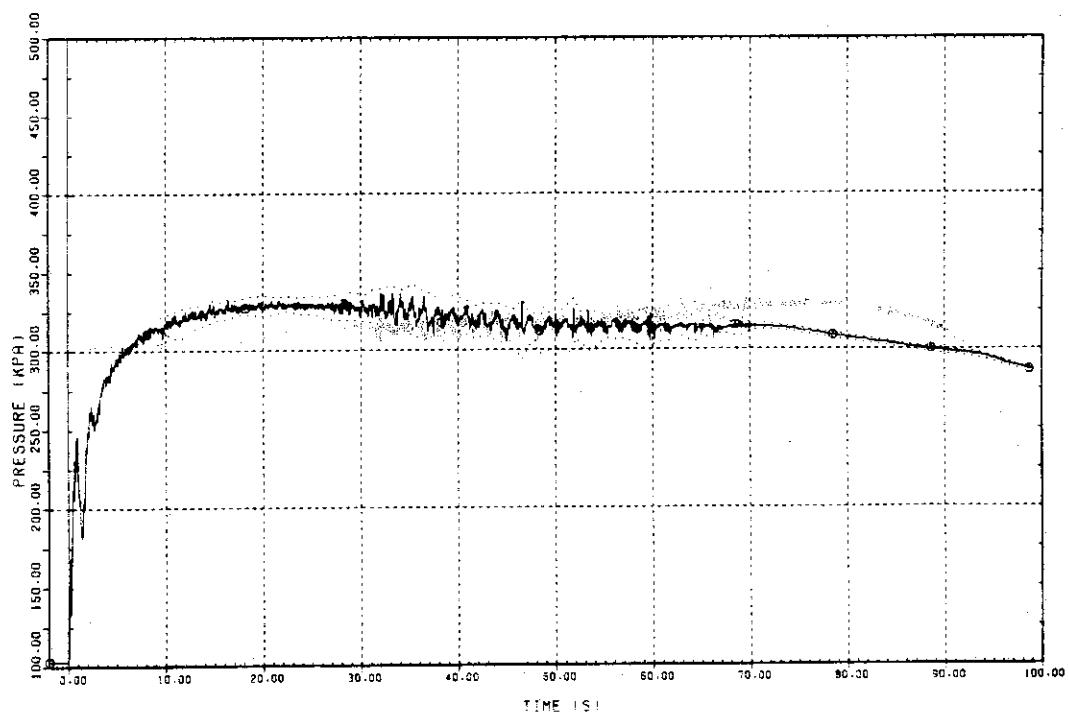
FULL-SCALE MARK II CRT



Plot L-1-9 Pressure in Vent Pipe

TEST 1205
○ VPPF-503 VPS (11.5M ABOVE OUTL.)
PLOT WITH ENVELOPE

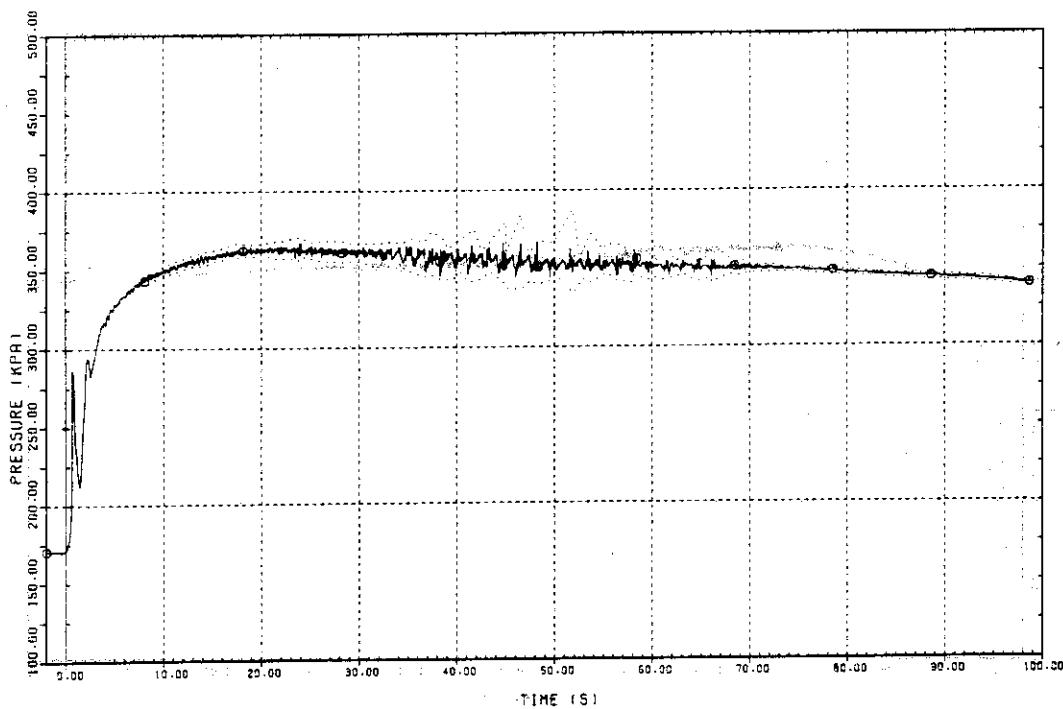
FULL-SCALE MARK II CRT



Plot L-1-10 Pressure in Vent Pipe

TEST 1205
② WMPF-101 POOL BOTT., UNDER VP1
PLOT WITH ENVELOPE

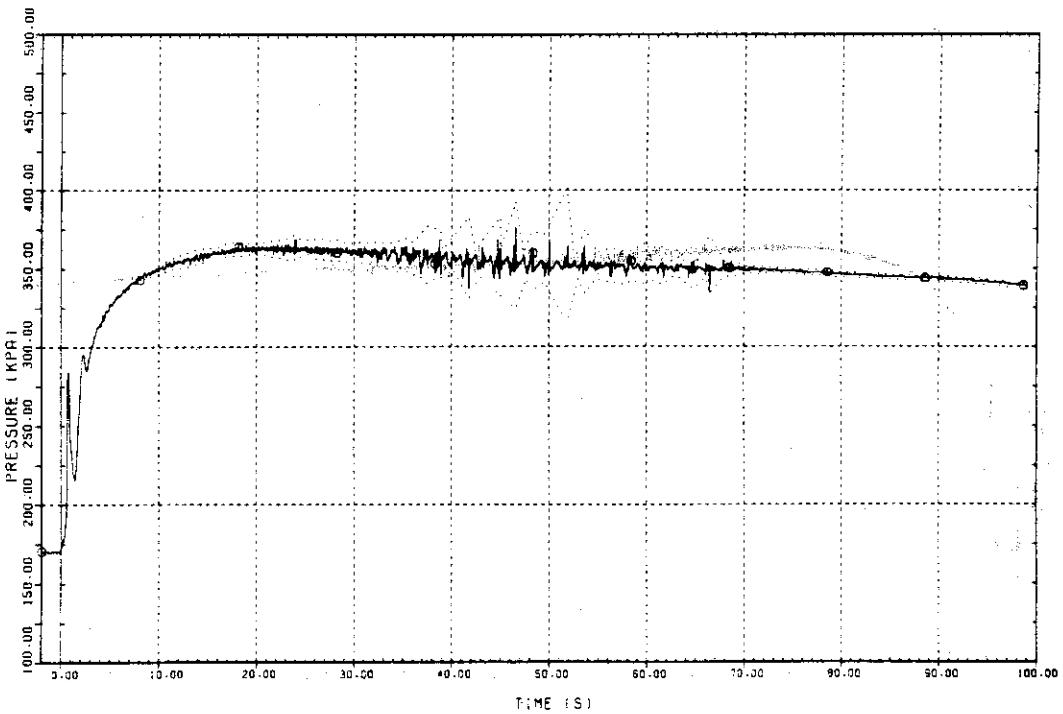
FULL-SCALE MARK II CRT



Plot L-1-11 Pressure in Wetwell

TEST 1205
② WMPF-102 POOL BOTT., UNDER VP2
PLOT WITH ENVELOPE

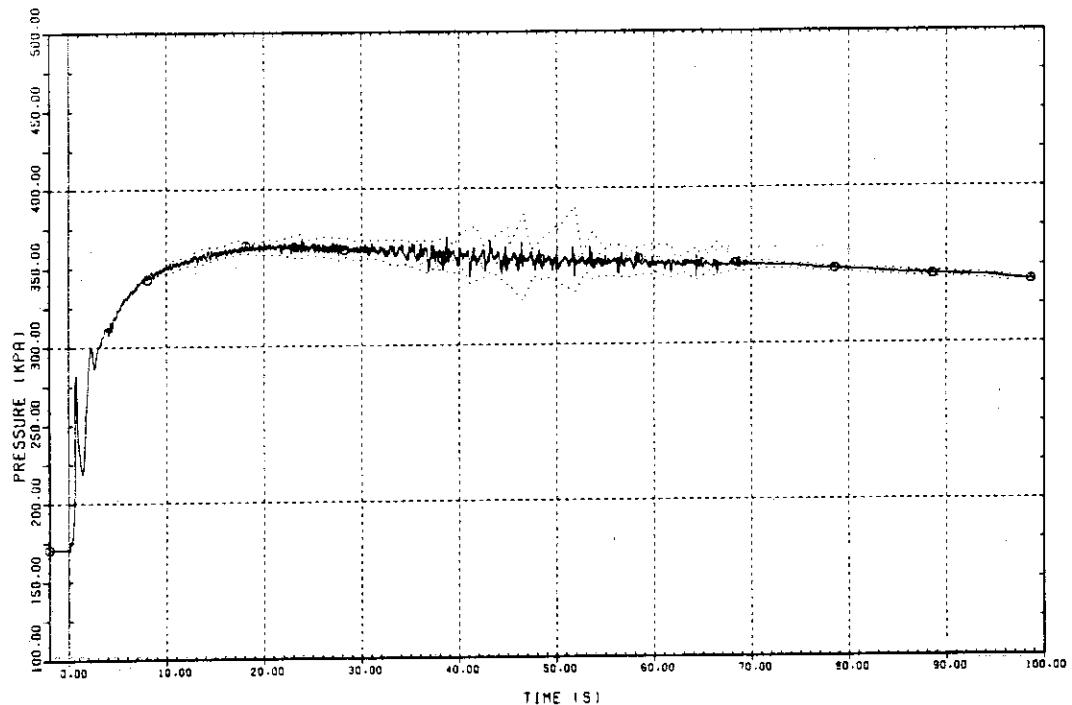
FULL-SCALE MARK II CRT



Plot L-1-12 Pressure in Wetwell

TEST 1205
© WWPF-103 POOL BOTT., UNDER VP3
PLOT WITH ENVELOPE

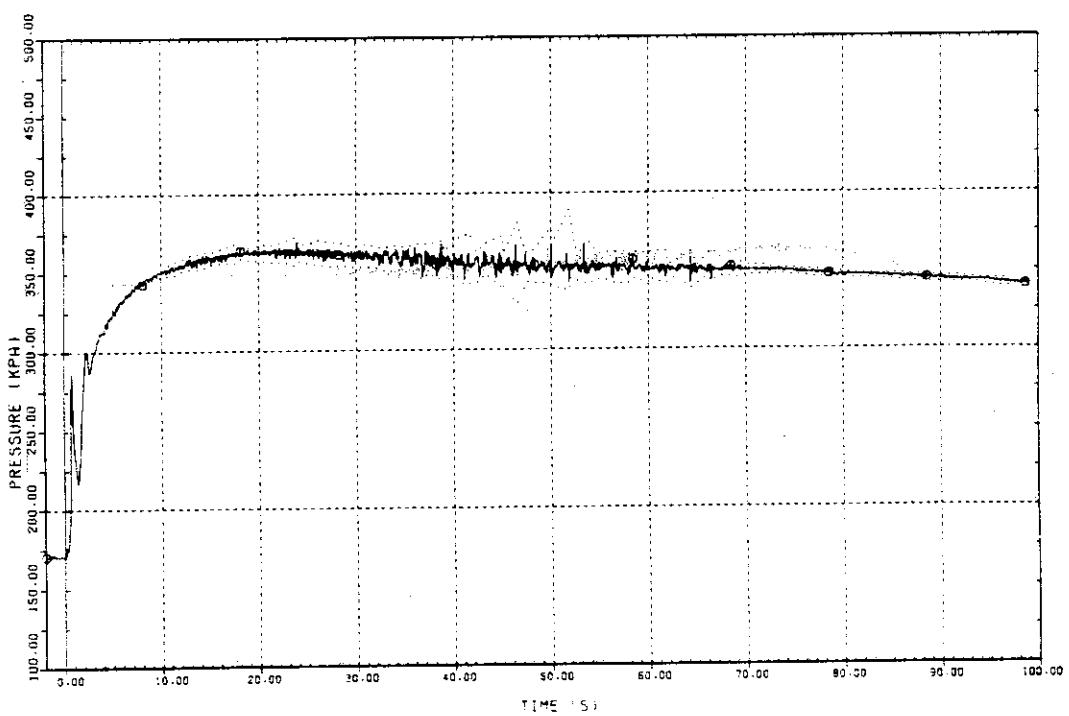
FULL-SCALE MARK II CRT



Plot L-1-13 Pressure in Wetwell

TEST 1205
© WWPF-104 POOL BOTT., UNDER VP4
PLOT WITH ENVELOPE

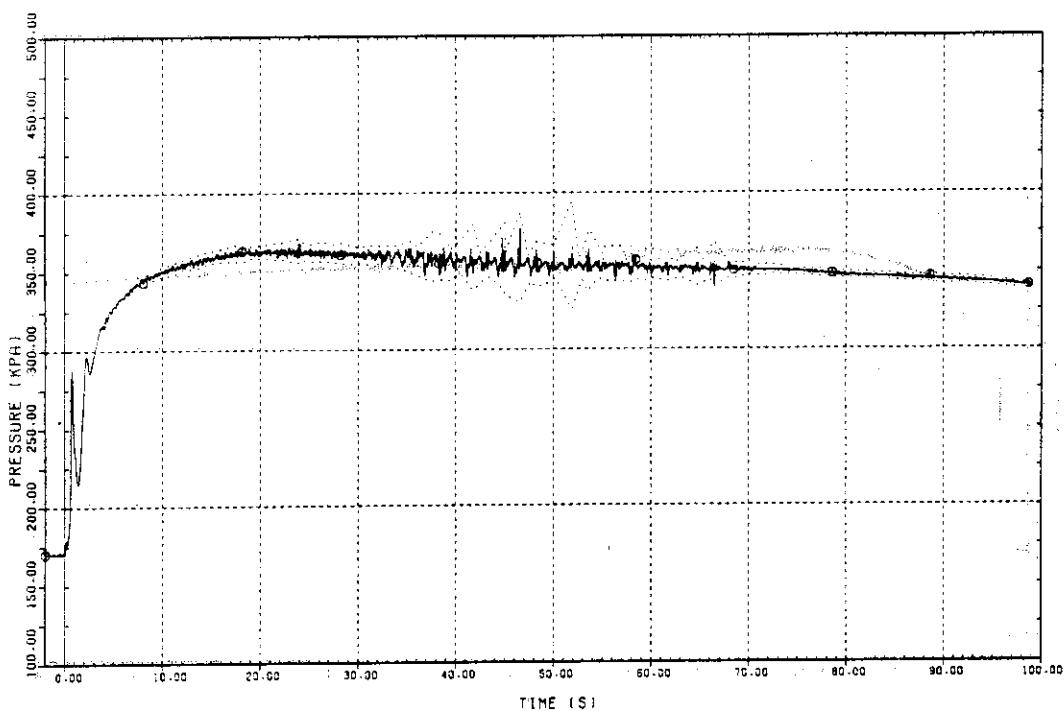
FULL-SCALE MARK II CRT



Plot L-1-14 Pressure in Wetwell

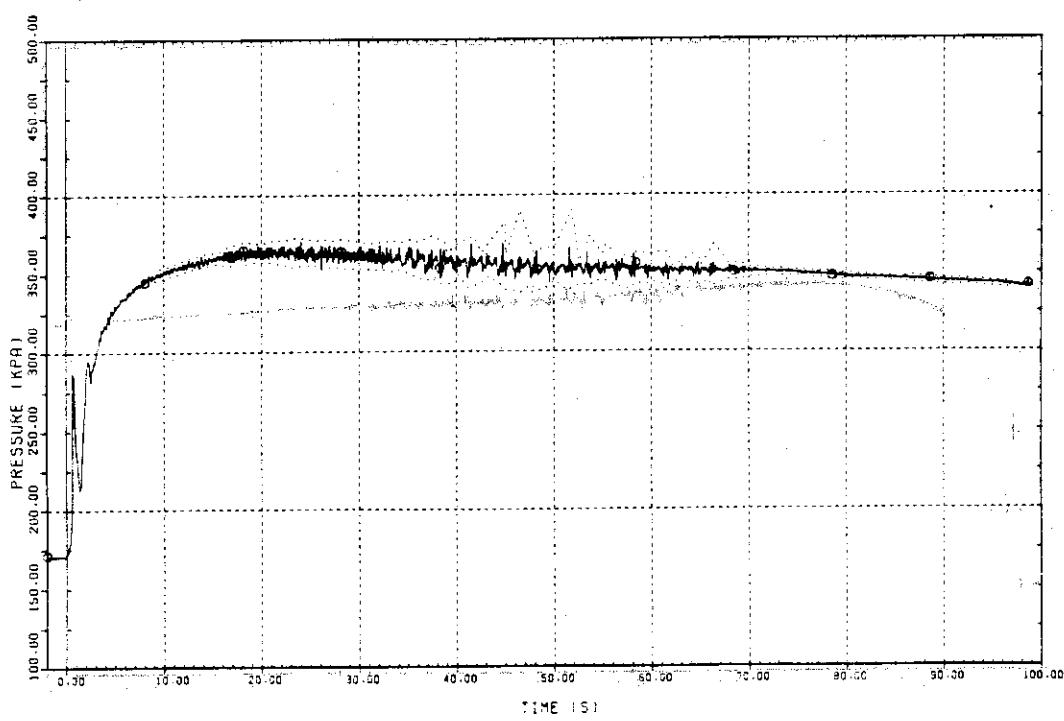
TEST 1205
 © WWPF-105 POOL BOTT., UNDER VPS
 PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT



TEST 1205
 © WWPF-106 POOL BOTT., BETW. VPI, VP6 & PEDESTAL
 PLOT WITH ENVELOPE

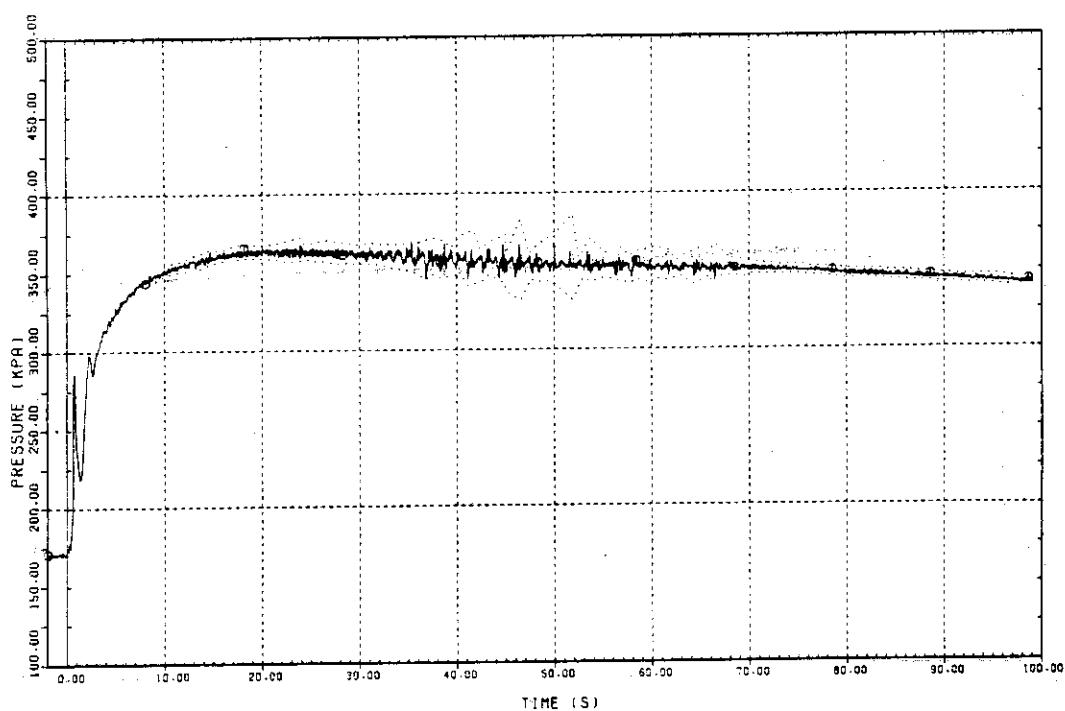
FULL-SCALE MARK II CRT



TEST 1205

© WWPF-107 POOL BOTT., BETW. VP2 & VP3
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

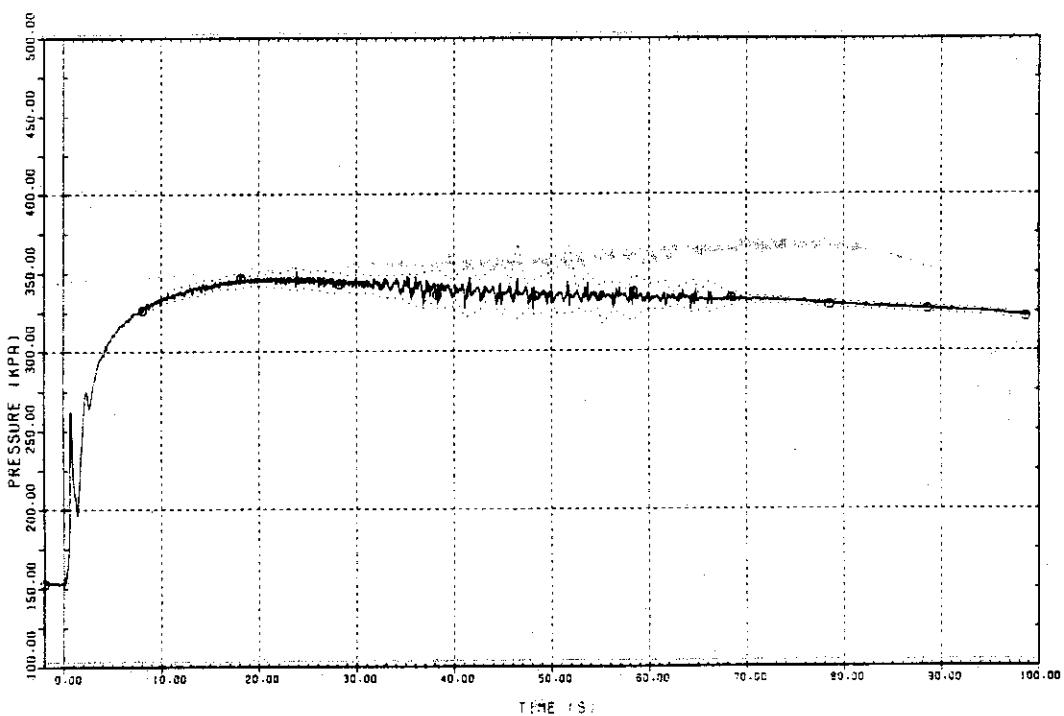


Plot L-1-17 Pressure in Wetwell

TEST 1205

© WWPF-201 WALL BESIDE VP2 (P1, 1.8M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

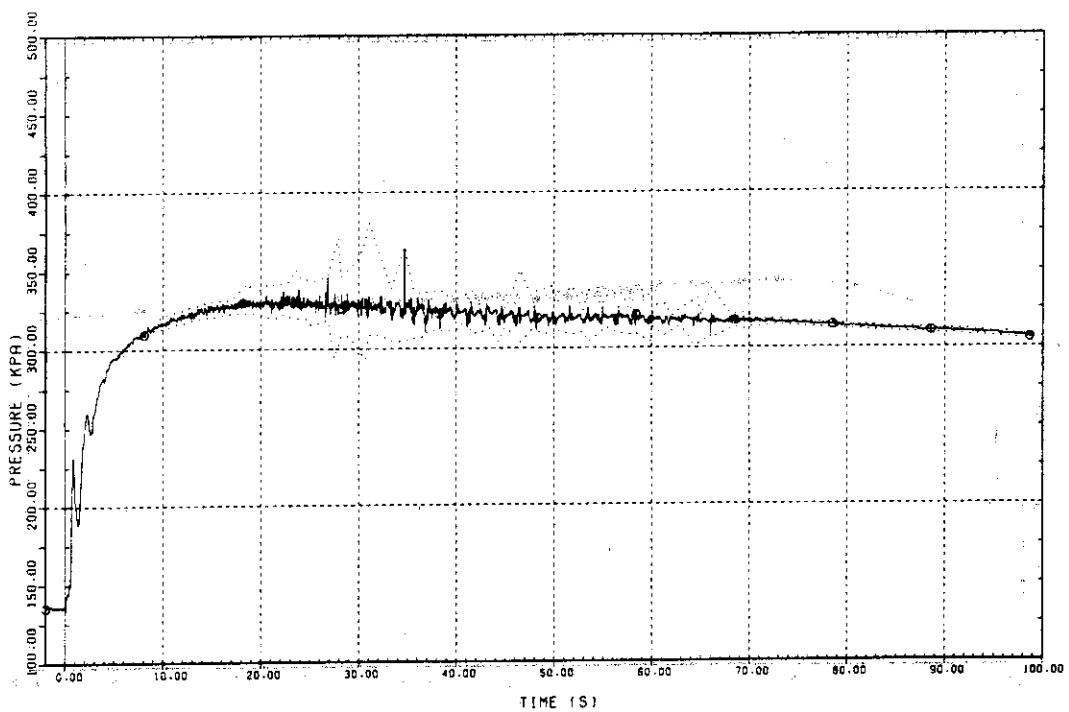


Plot L-1-18 Pressure in Wetwell

TEST 1205

④ WWPF-202 WALL BESIDE VP2 (P1, 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

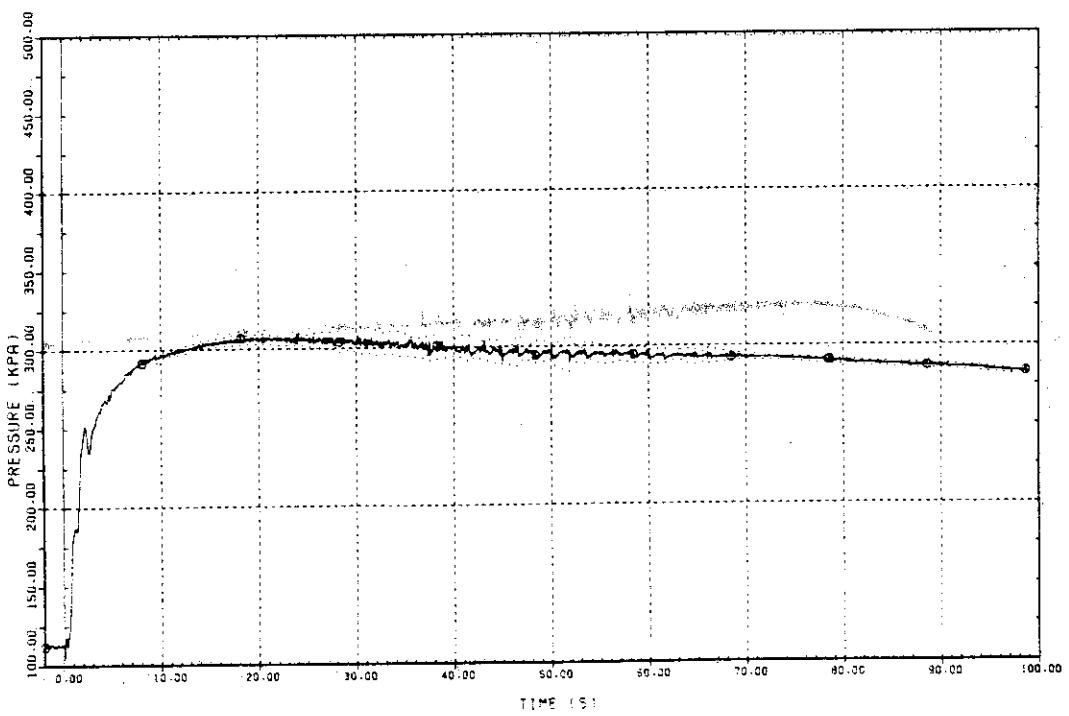


Plot L-1-19 Pressure in Wetwell

TEST 1205

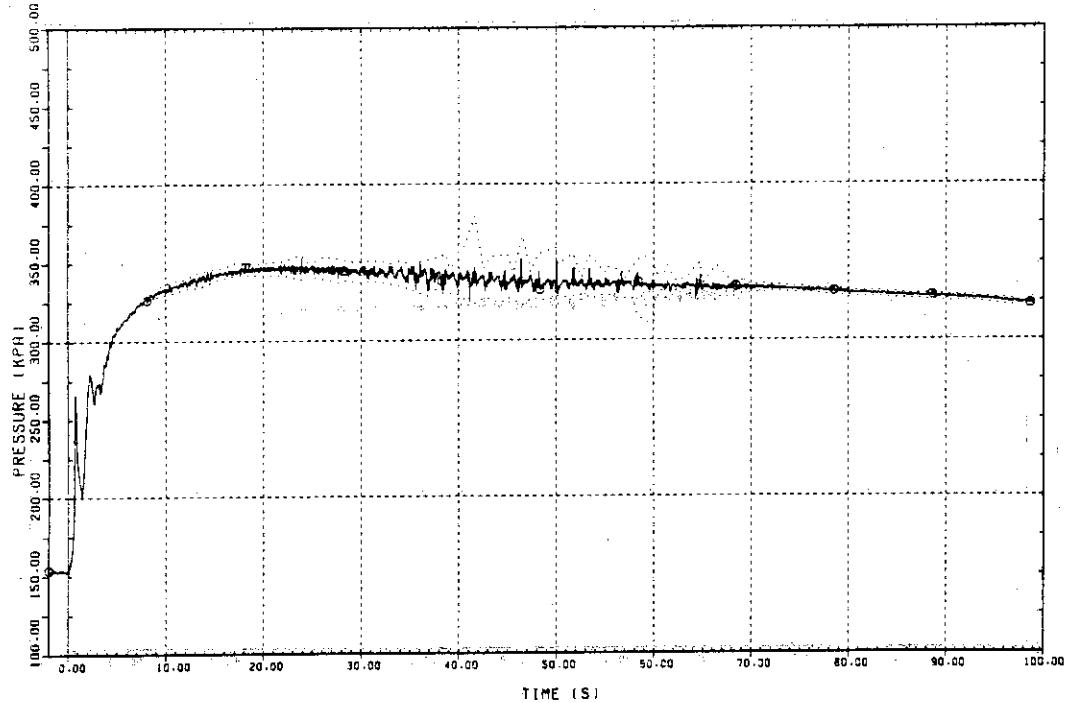
④ WWPF-203 WALL BESIDE VP2 (P1, 6.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT



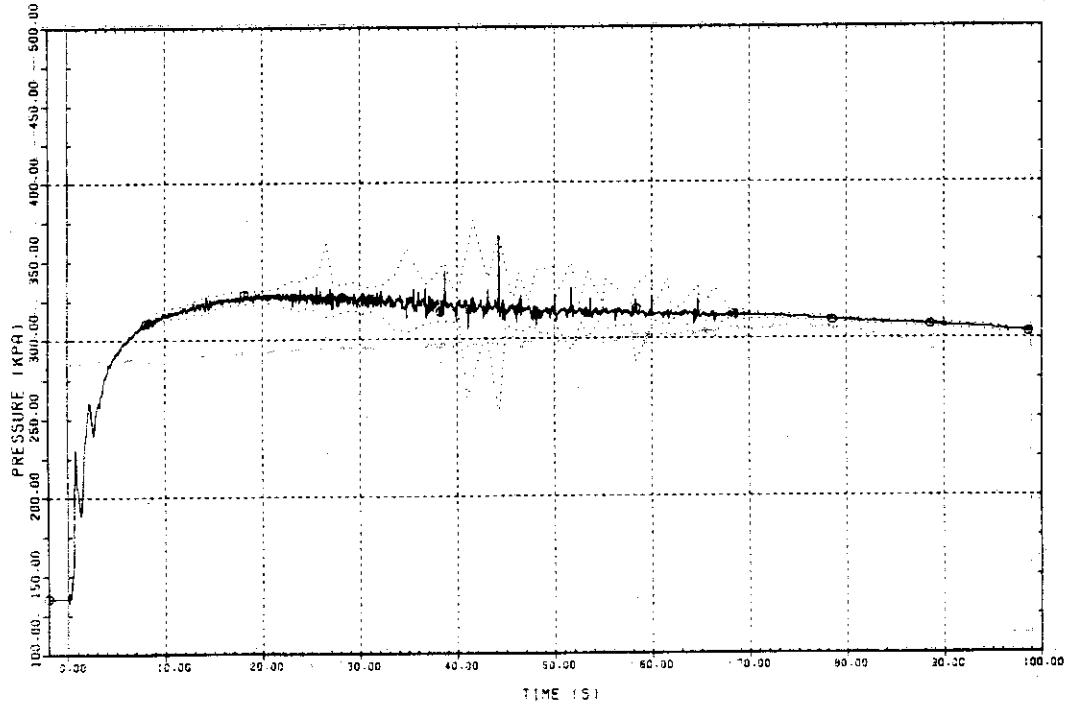
Plot L-1-20 Pressure in Wetwell

TEST 1205
① WWPF-301 WALL BESIDE VP3 (P2, 1.8M ABOVE BOTT.)
PLOT WITH ENVELOPE



Plot L-1-21 Pressure in Wetwell

TEST 1205
② WWPF-302 WALL BESIDE VP3 (P2, 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE



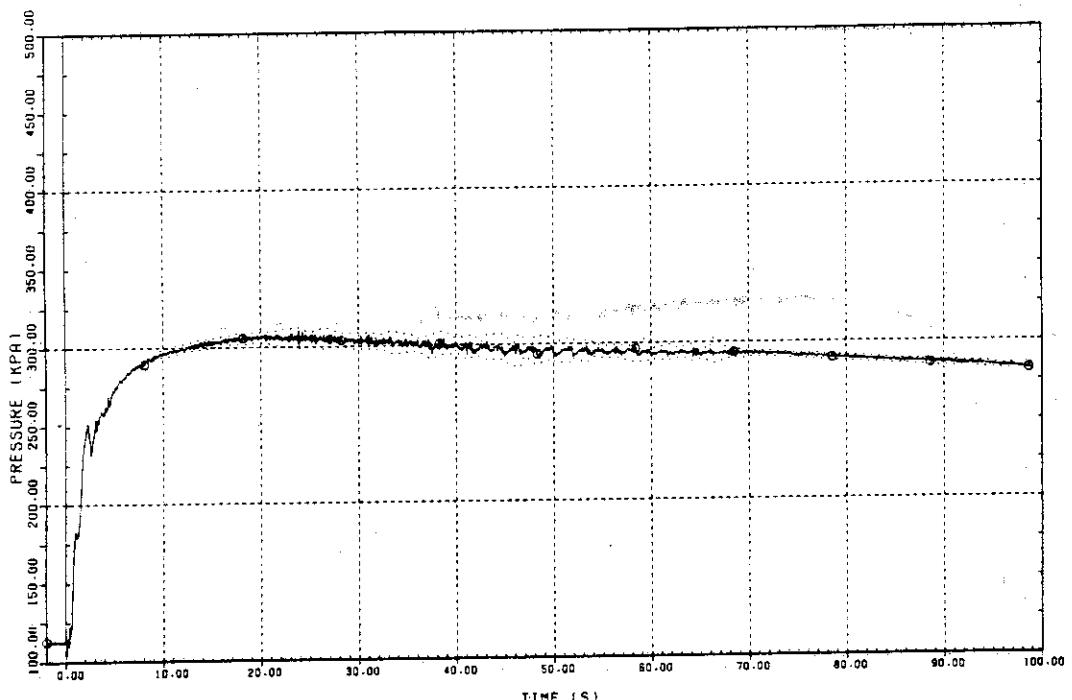
Plot L-1-22 Pressure in Wetwell

TEST 1205

O WHPF-303 WALL BESIDE VP3 (P2, 6.0M ABOVE BOTL.)

FULL-SCALE MARK II CRT

PLOT WITH ENVELOPE



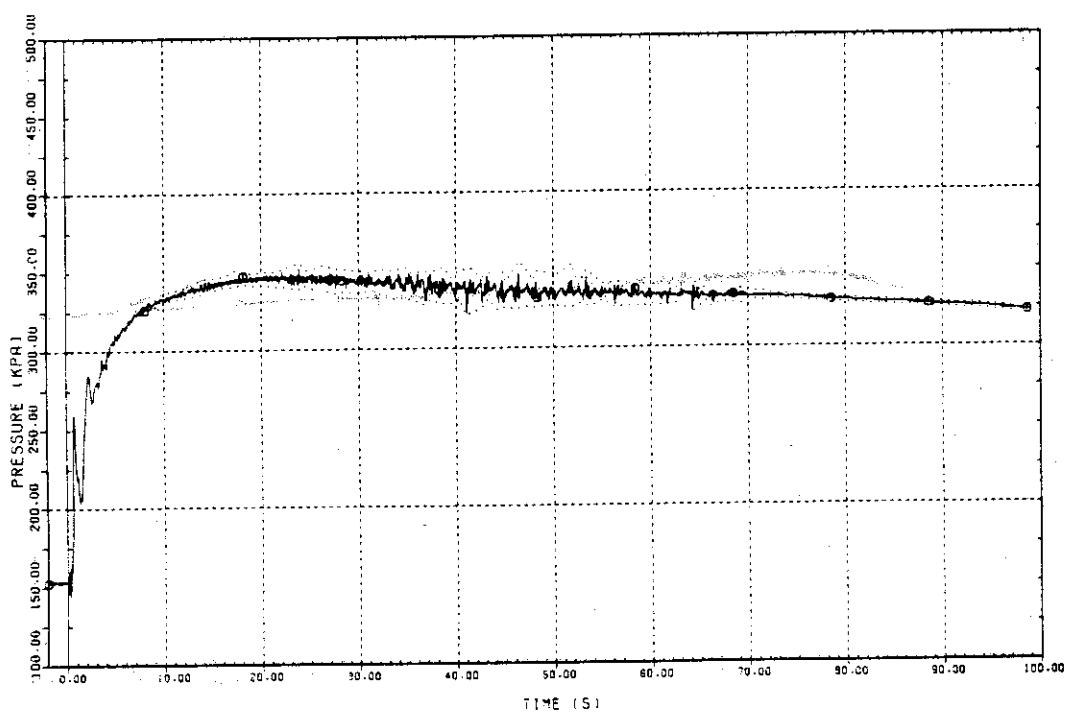
Plot L-1-23 Pressure in Wetwell

TEST 1205

O WHPF-401 SHELL BESIDE VP3 (P3, 1.8M ABOVE BOTL.)

FULL-SCALE MARK II CRT

PLOT WITH ENVELOPE

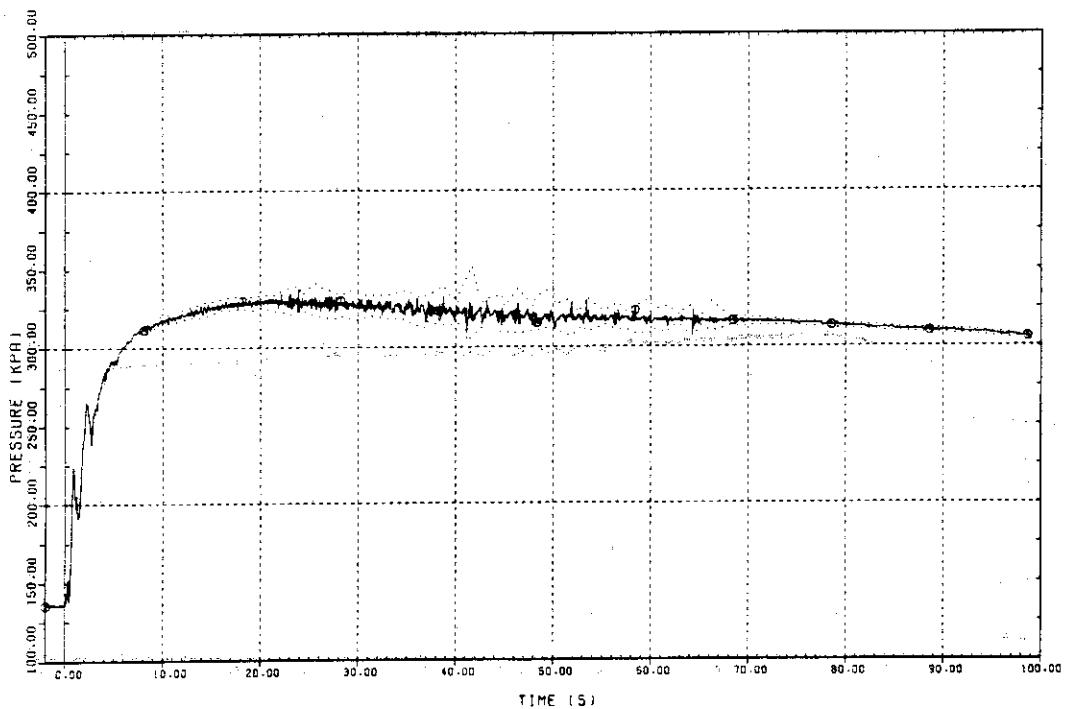


Plot L-1-24 Pressure in Wetwell

TEST 1205

© WWPF-402 SHELL BESIDE VP3 (P3, 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

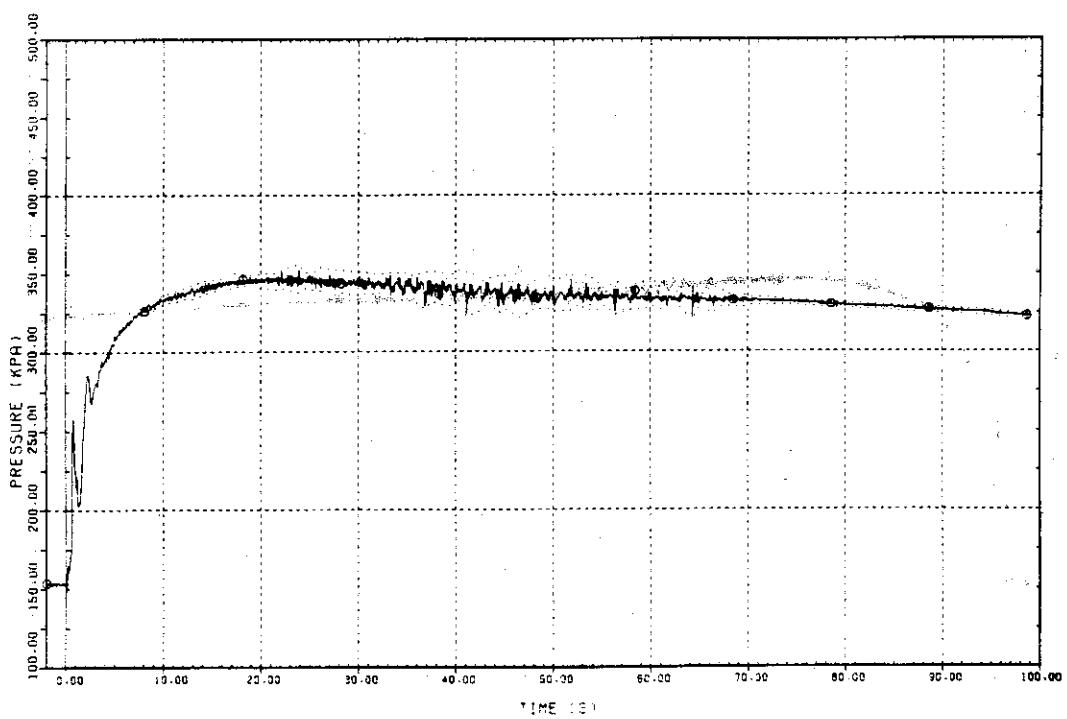


Plot L-1-25 Pressure in Wetwell

TEST 1205

© WWPF-501 SHELL BESIDE VP4 (P4, 1.8M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

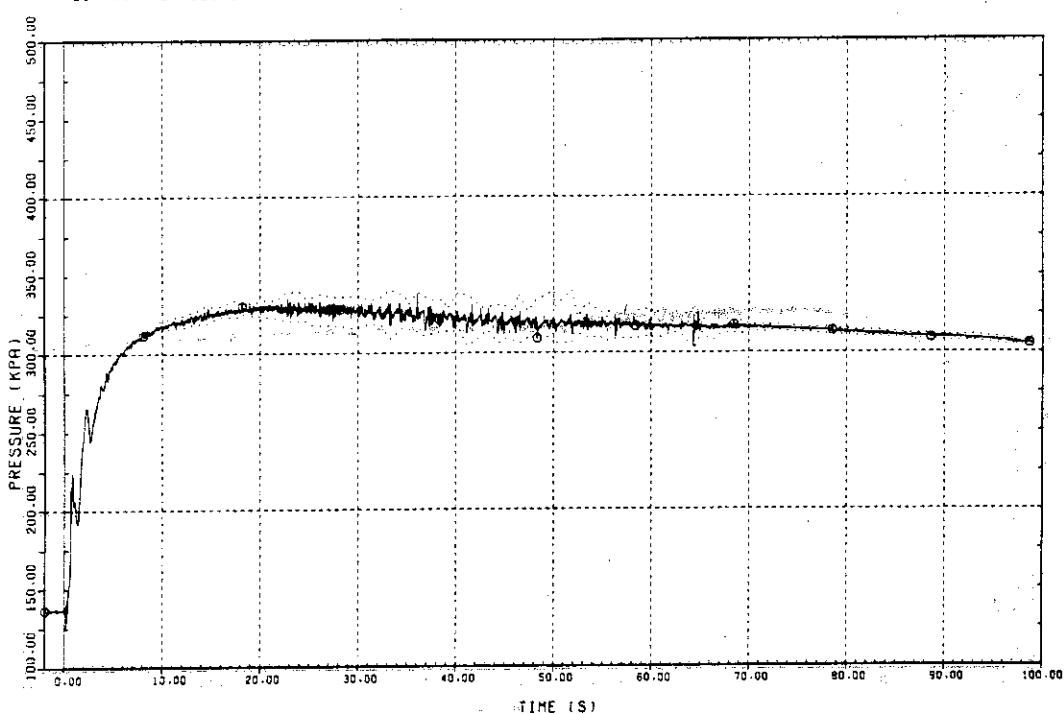


Plot L-1-26 Pressure in Wetwell

TEST 1205

© WWPF-502 SHELL BESIDE VP4 (P4, 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

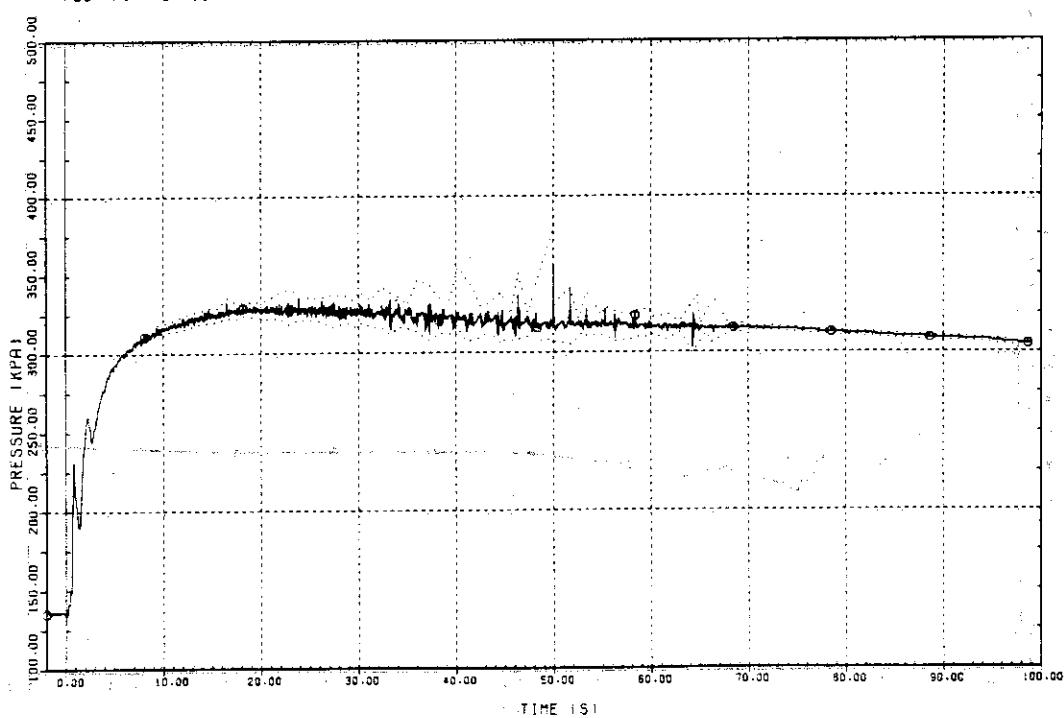


Plot L-1-27 Pressure in Wetwell

TEST 1205

© WWPF-602 WALL BESIDE VP4 (P5, 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

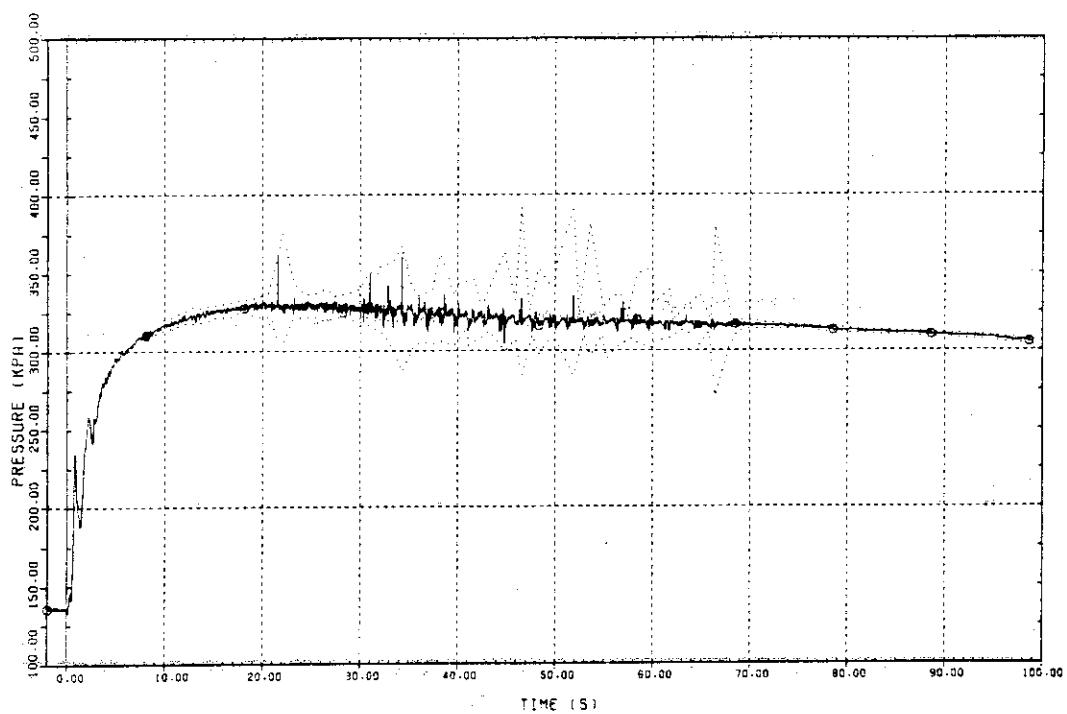


Plot L-1-28 Pressure in Wetwell

TEST 1205

O WWPF-702 WALL BESIDE VP7 (P6. 3.6M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

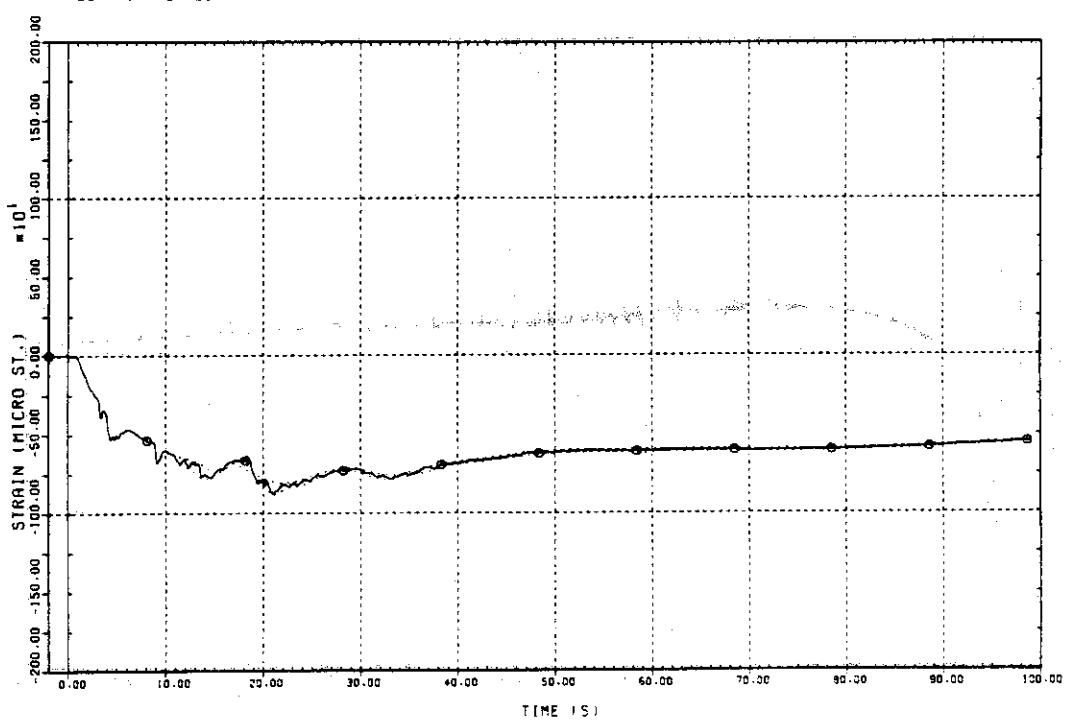


Plot L-1-29 Pressure in Wetwell

TEST 1205

O VPSF-101 LOWER BRACE BETH. VP1 & WALL
PLOT WITH ENVELOPE

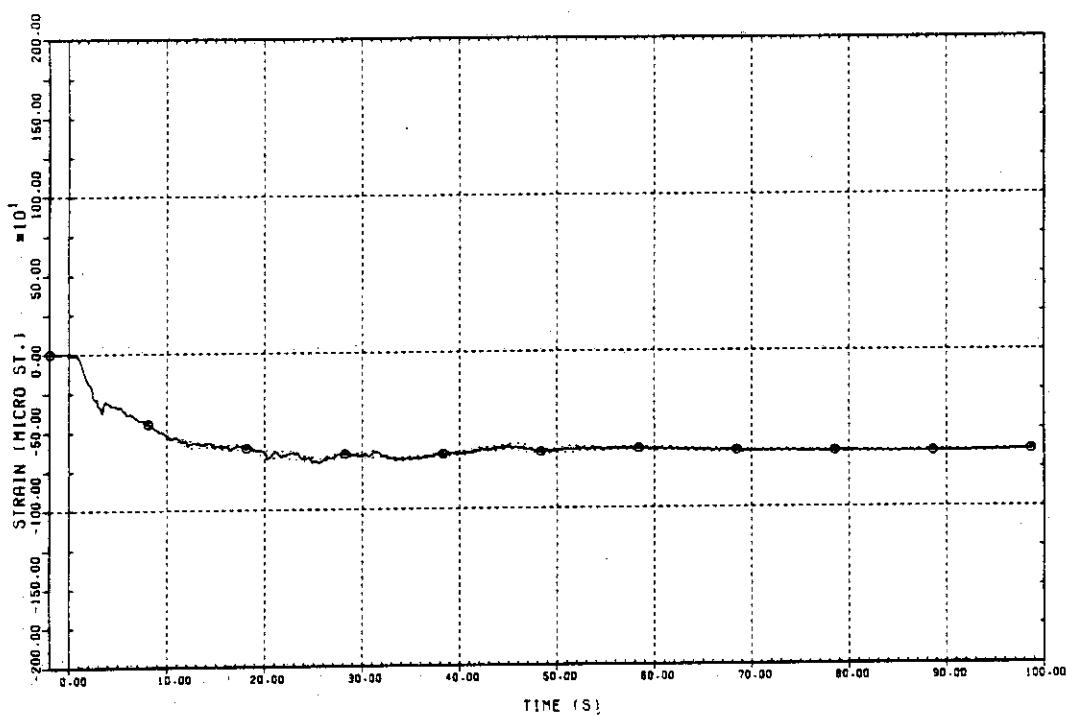
FULL-SCALE MARK II CRT



Plot L-1-30 Strain of Vent Pipe Brace

TEST 1205
© VPSF-102 LOWER BRACE BETW. VP1 & VP2
PLOT WITH ENVELOPE

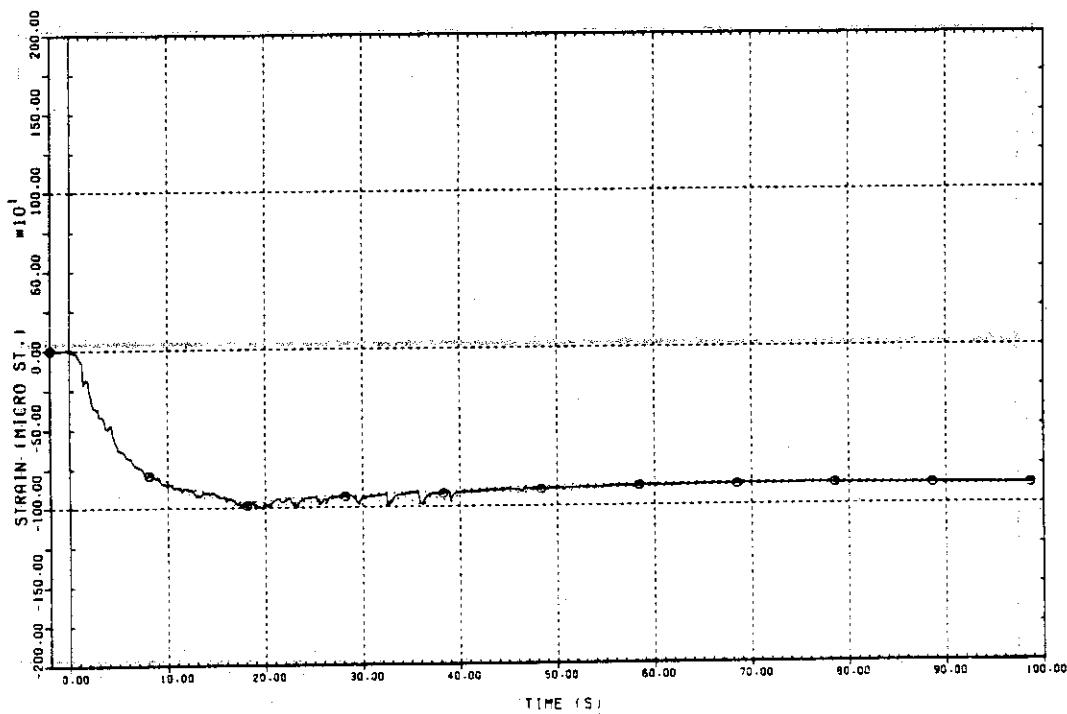
FULL-SCALE MARK II CRT



Plot L-1-31 Strain of Vent Pipe Brace

TEST 1205
© VPSF-201 UPPER BRACE BETW. VP1 & PEDESTAL
PLOT WITH ENVELOPE

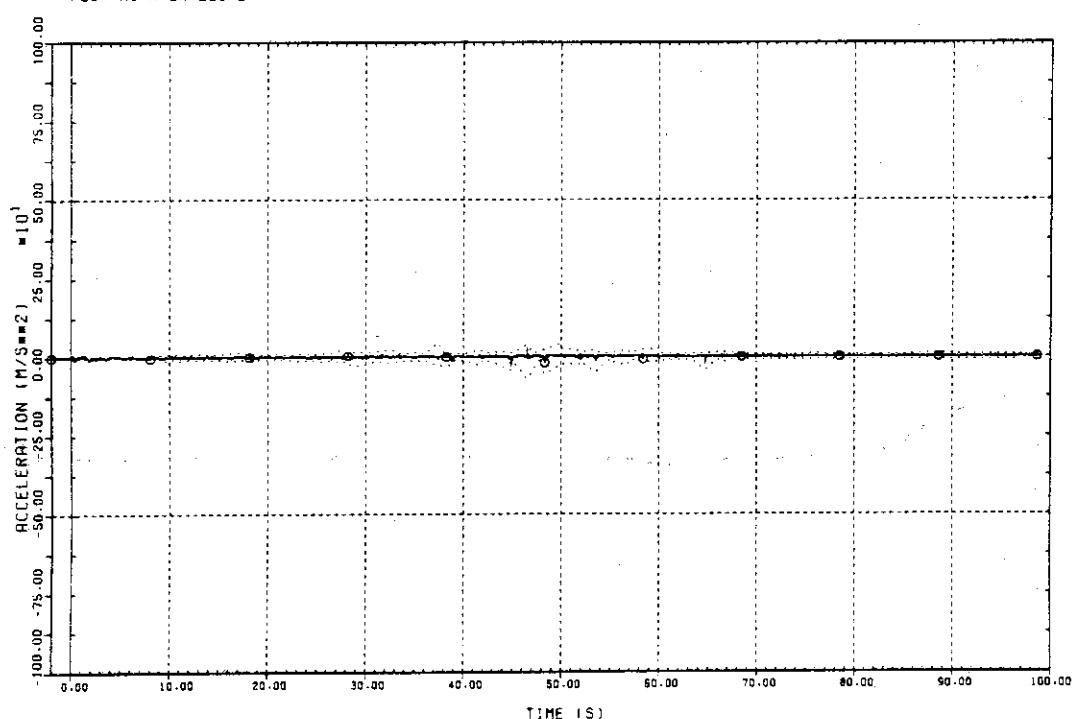
FULL-SCALE MARK II CRT



Plot L-1-32 Strain of Vent Pipe Brace

TEST 1205
① VPAF-102 VPS OUTL. (90DEG)
PLOT WITH ENVELOPE

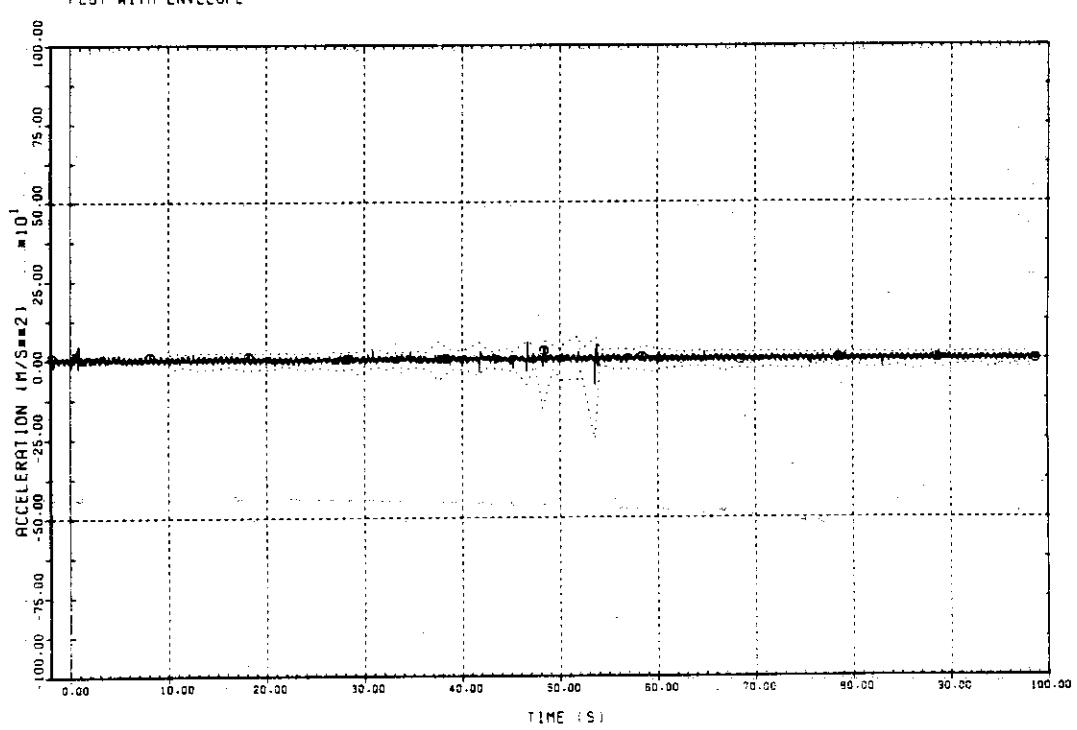
FULL-SCALE MARK II CRT



Plot L-2-1 Acceleration of Vent Pipe Outlet

TEST 1205
② VPAF-201 VPS OUTL. (90DEG)
PLOT WITH ENVELOPE

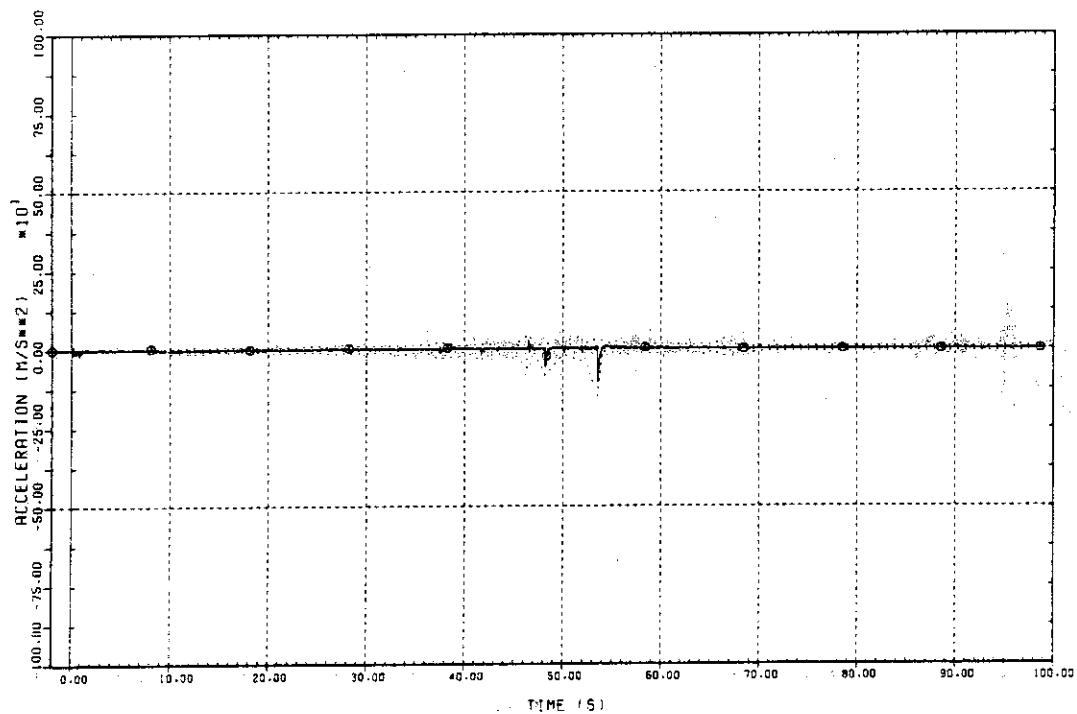
FULL-SCALE MARK II CRT



Plot L-2-2 Acceleration of Vent Pipe Outlet

TEST 1205
 ○ VPAF-202 VPS OUTL. (90DEG)
 PLOT WITH ENVELOPE

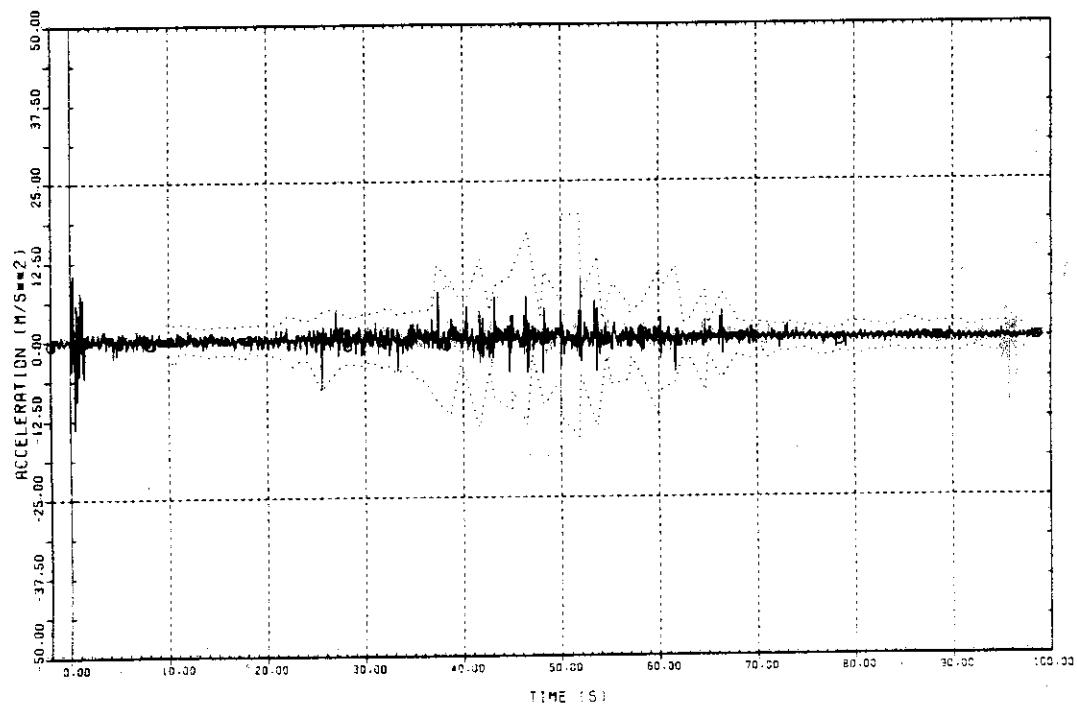
FULL-SCALE MARK II CRT



Plot L-2-3 Acceleration of Vent Pipe Outlet

TEST 1205
 ○ WWAF-005 SHELL BESIDE VP3 (3.0M ABOVE BOTT.)
 PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

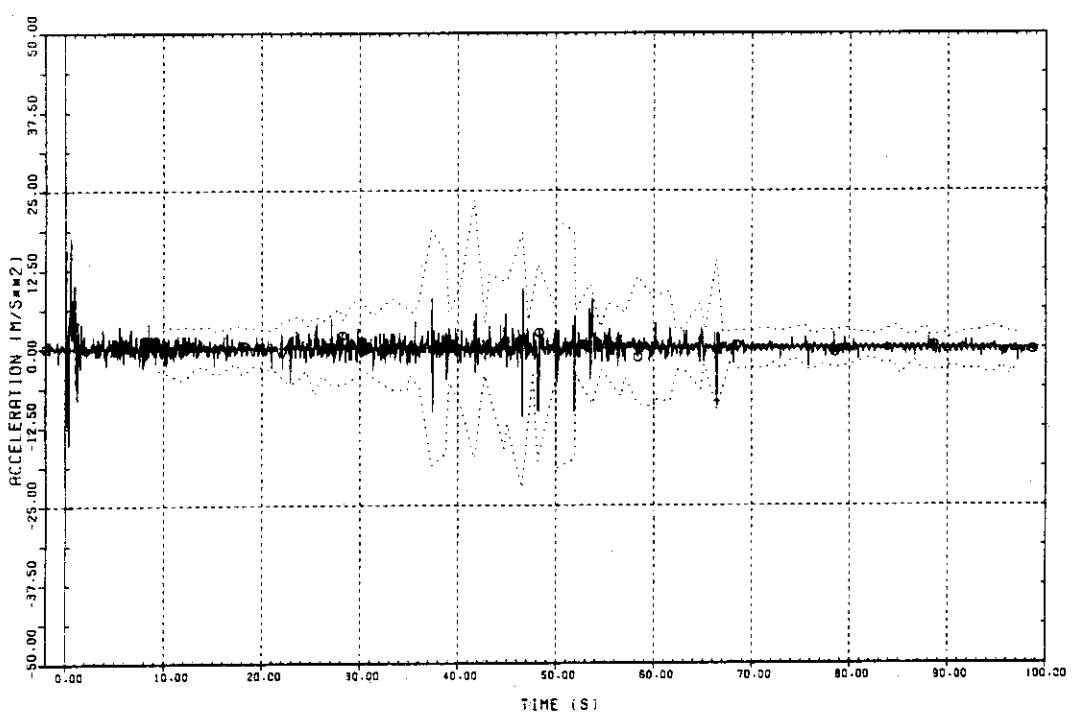


Plot L-2-4 Acceleration of Containment Structure

TEST 1205

© WWAFF-006 SHELL BESIDE VP3 (6.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

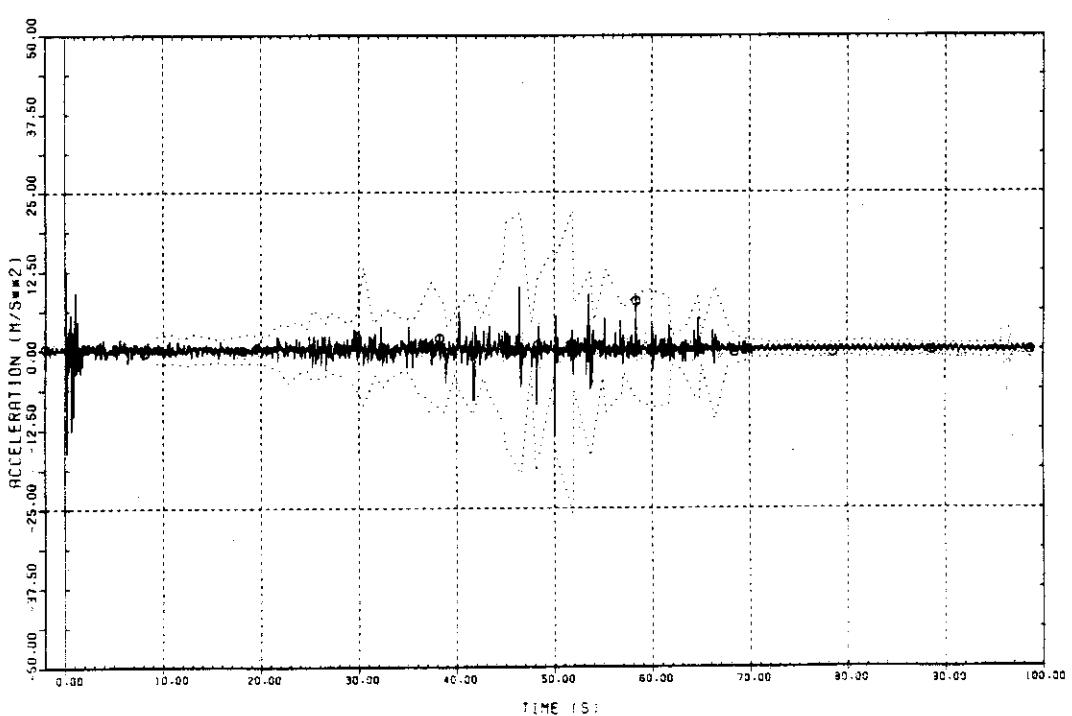


Plot L-2-5 Acceleration of Containment Structure

TEST 1205

© WWAFF-007 SHELL BESIDE VP4 (3.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

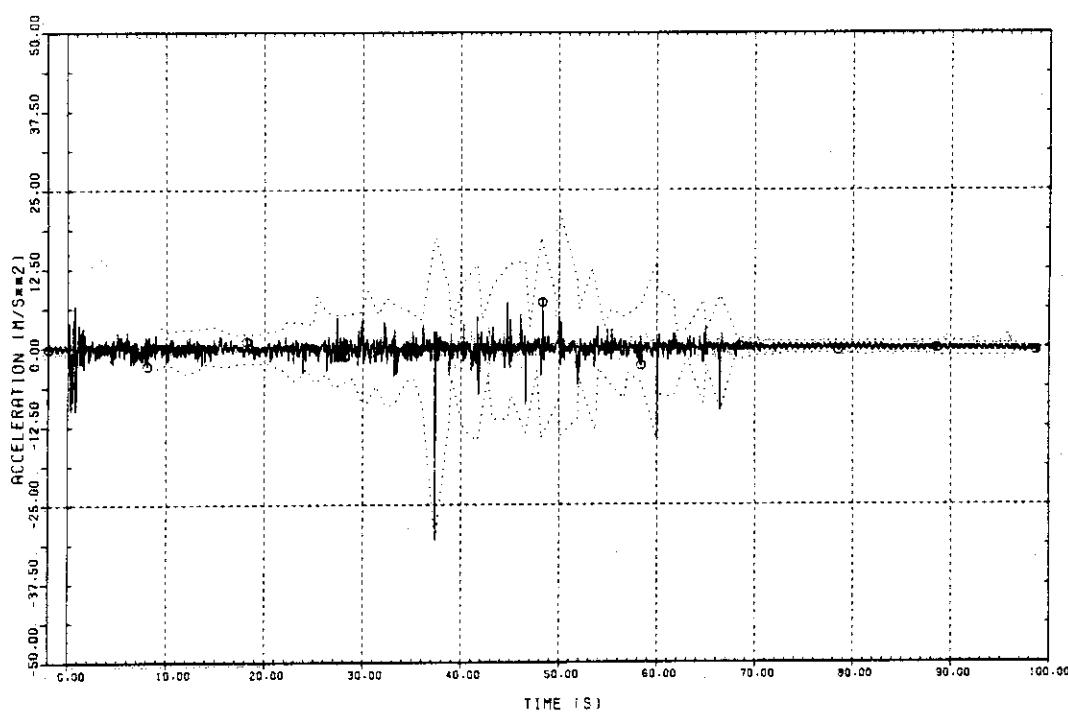


Plot L-2-6 Acceleration of Containment Structure

TEST 1205

© HWAFF-008 SHELL BESIDE VP4 (5.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

FULL-SCALE MARK II CRT

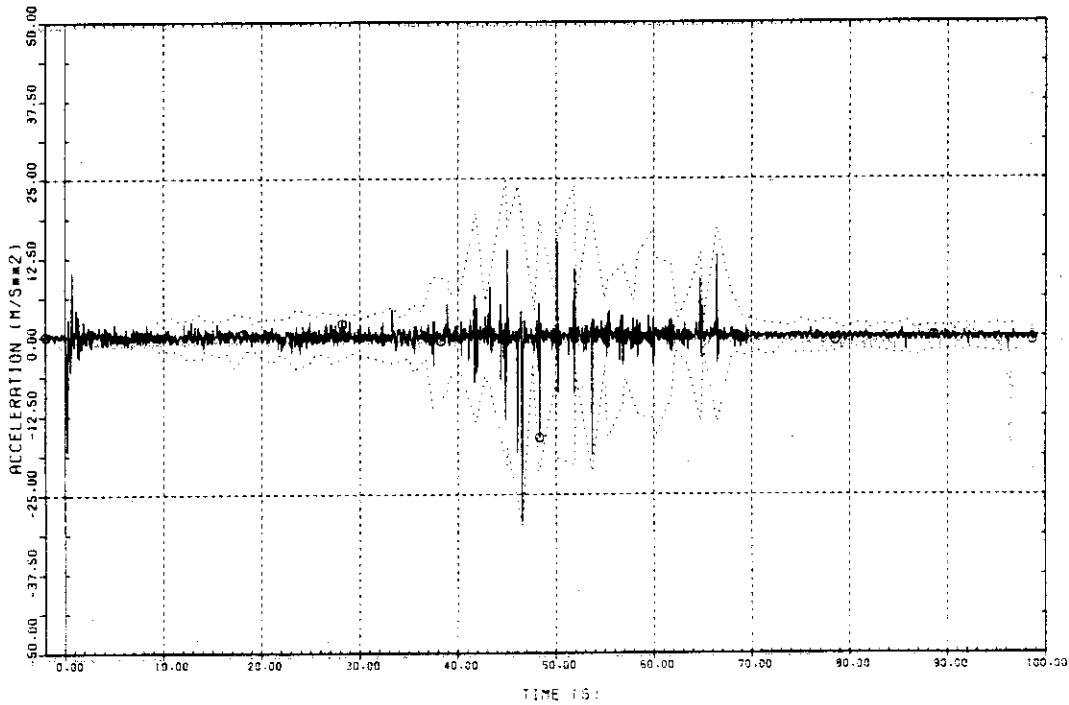


Plot L-2-7 Acceleration of Containment Structure

TEST 1205

© HWAFF-009 PEDESTAL (3.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

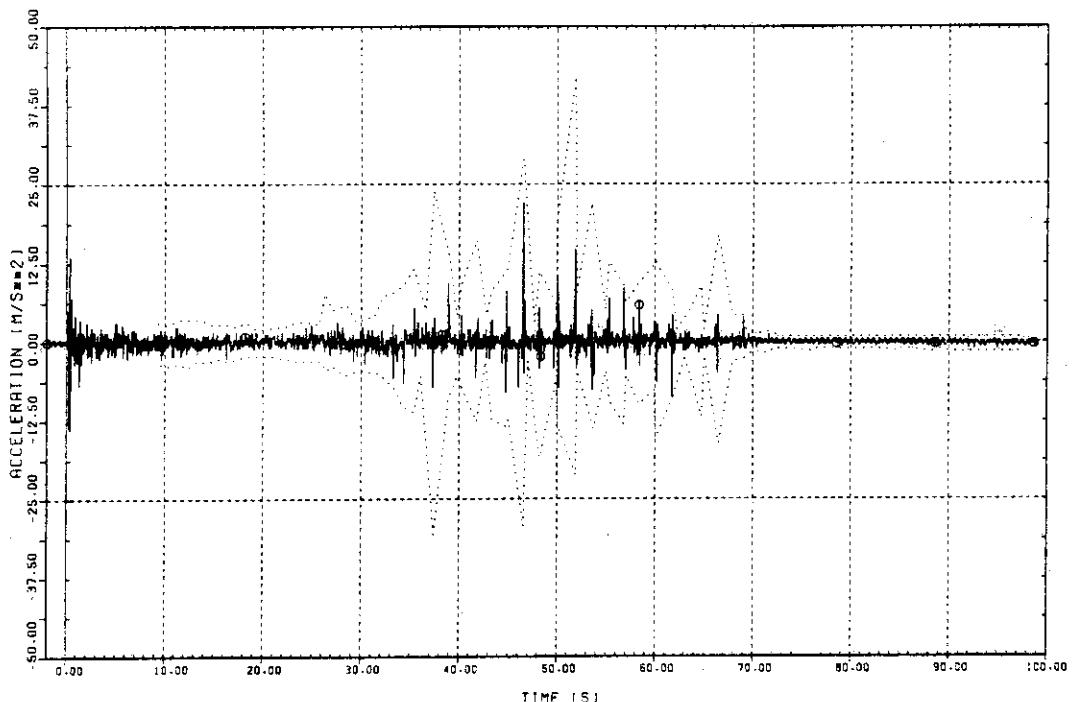
FULL-SCALE MARK II CRT



Plot L-2-8 Acceleration of Containment Structure

TEST 1205
© WWAFF-010 PEDESTAL (6.0M ABOVE BOTT.)
PLOT WITH ENVELOPE

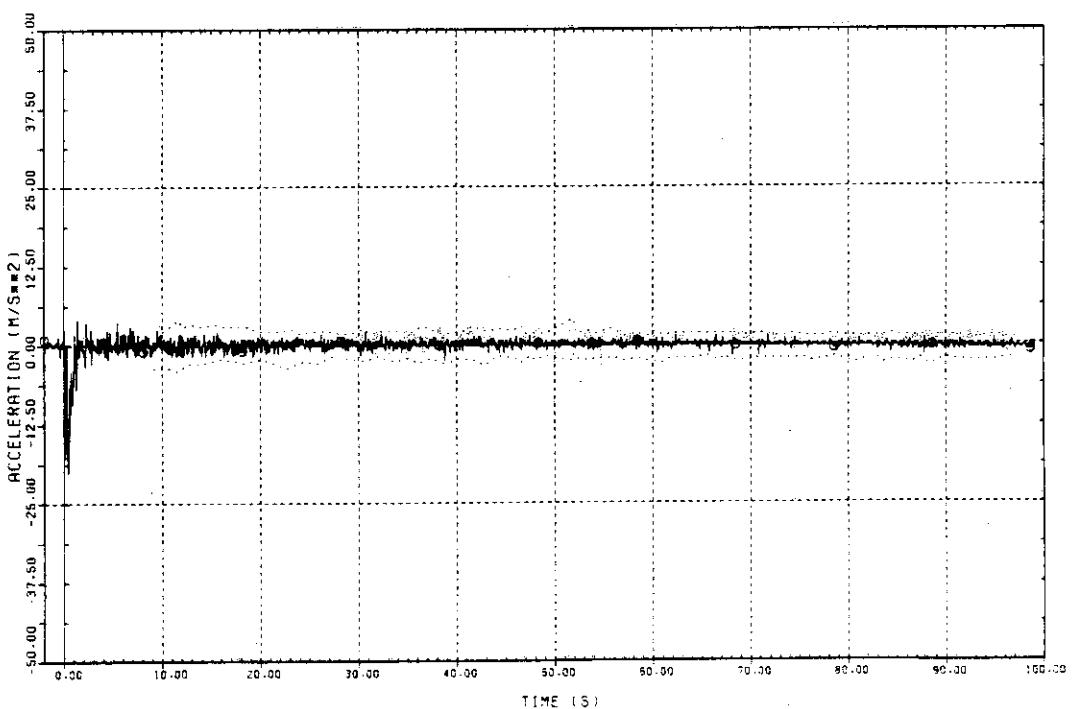
FULL-SCALE MARK II CRT



Plot L-2-9 Acceleration of Containment Structure

TEST 1205
© WWAFF-011 SHELL AT 0 DEG
PLOT WITH ENVELOPE

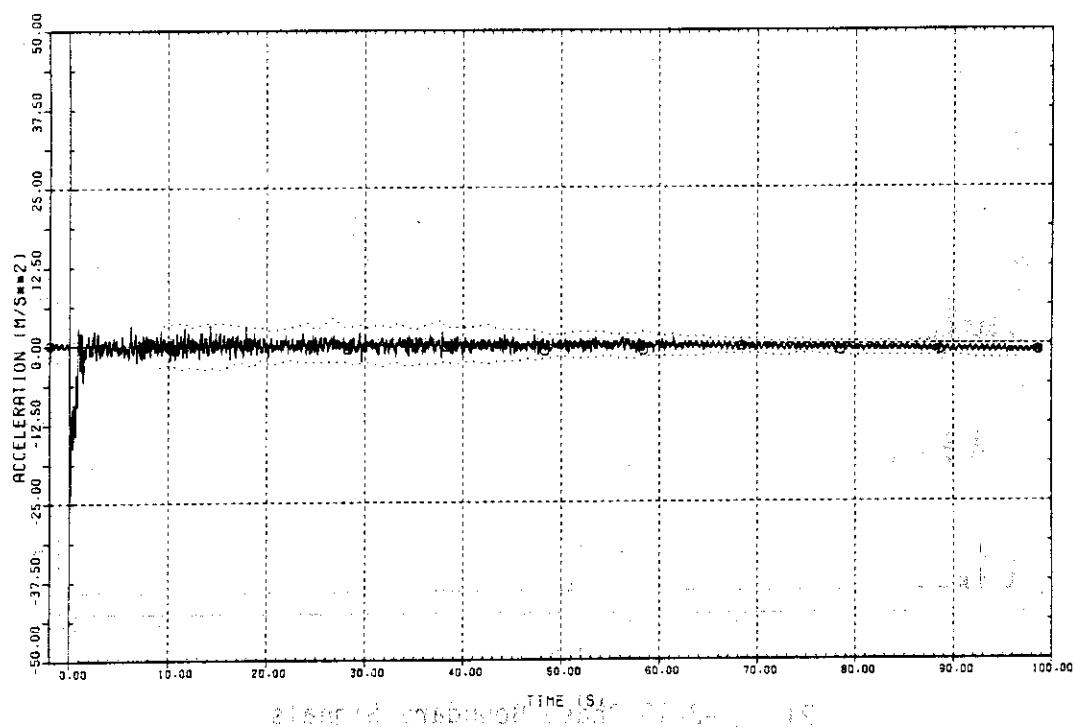
FULL-SCALE MARK II CRT



Plot L-2-10 Acceleration of Containment Structure

TEST 1205
 WMLF-012 SHELL AT 0 DEG
 PLOT WITH ENVELOPE

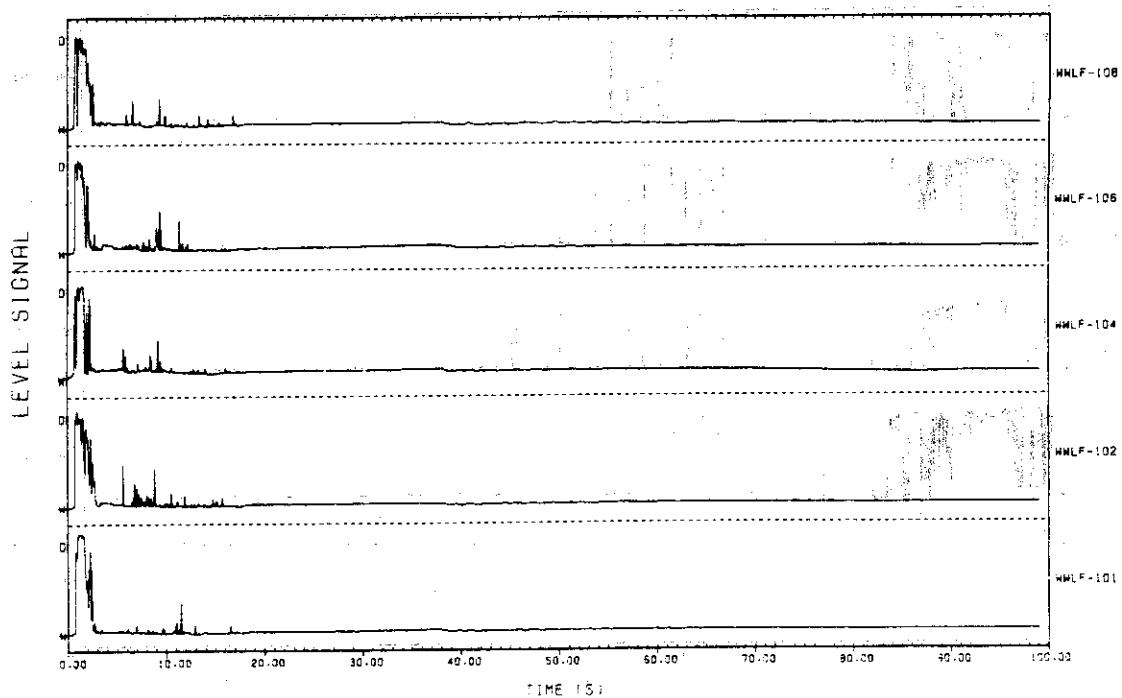
FULL-SCALE MARK II CRT



Plot L-2-11 Acceleration of Containment Structure

TEST 1205

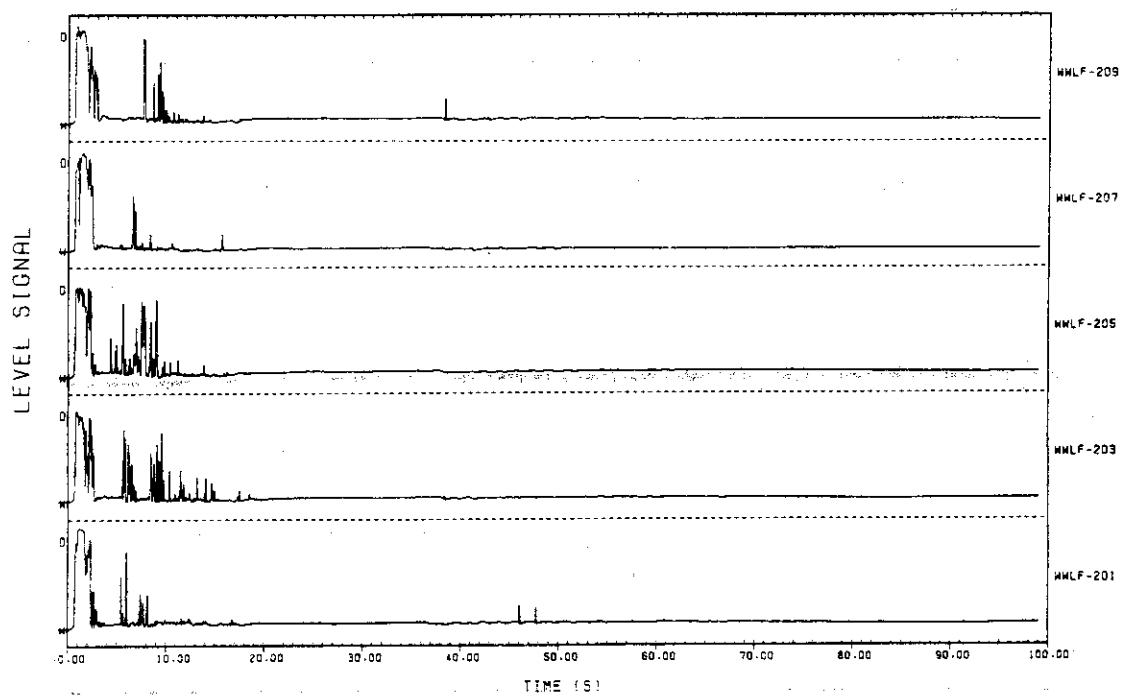
FULL-SCALE MARK II CRT



Plot L-2-12 Phase Boundary Signals

TEST 1205

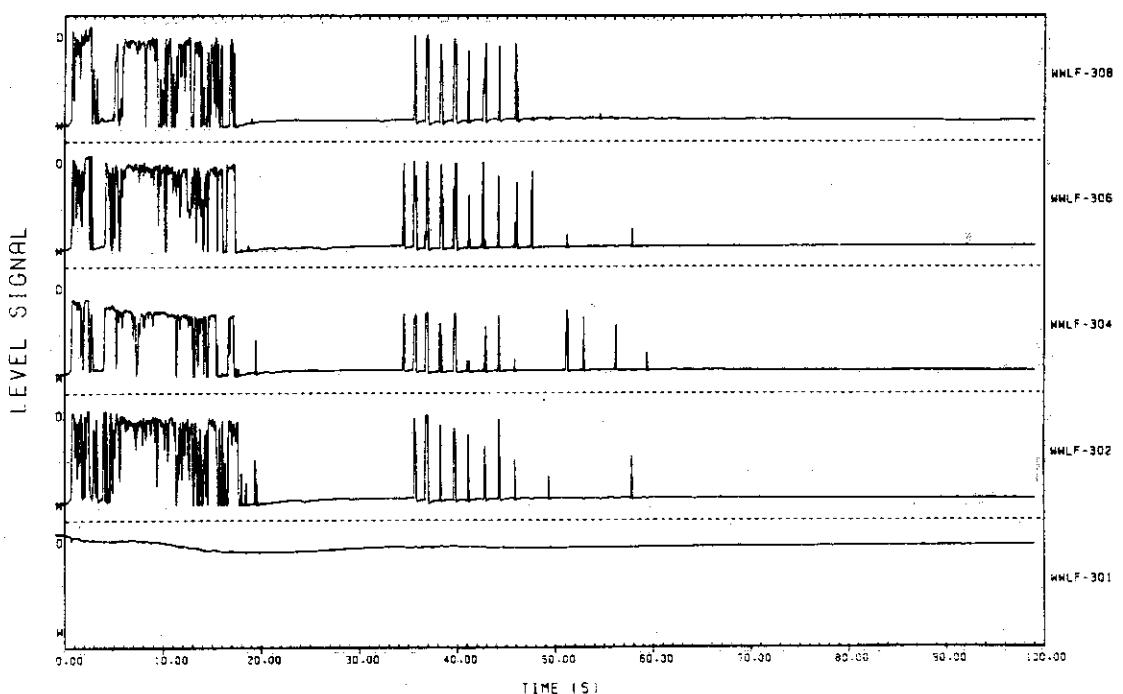
FULL-SCALE MARK II CRT



Plot L-2-13 Phase Boundary Signals

TEST 1205

FULL-SCALE MARK II CRT



Plot L-2-14 Phase Boundary Signals

Short Term Plots of Data

Short Term Plot Specification

Period 0 - 5.0 s

Objective : Detailed Presentation of [x] Pool Swell.

[] High and Medium Steam Flux
Condensation Oscillation.

[] Chugging

Plot No.	Recording System	Recording Rate (data/s)	Sampling Rate for Plots	Remarks
S-0-1 to 29	Computer	50.00	1/1	
S-1-1 to 14	PCM Track-1	455.56	1/1	
S-2-1 to 14	PCM Track-2	455.56	1/1	
Supplement 1	Light Beam Recorder	Continuous		Wetwell water level signals.

List of Short Term Plots

Computer Recorded Channels

Plot S-0-1 Pressures in Pressure Vessel and Blowdown Pipe
Plot S-0-2 Pressures in Drywell and Wetwell Airspace
Plot S-0-3 DP over Pressure Vessel
Plot S-0-4 Temperatures in Pressure Vessel
Plot S-0-5 Temperatures in Pressure Vessel and Blowdown Pipe
Plot S-0-6 Temperatures in Drywell (DWTS-101 - 103)
Plot S-0-7 Temperatures in Drywell (DWTS-201 - 203)
Plot S-0-8 Temperatures in Drywell (DWTS-301 - 302)
Plot S-0-9 Temperatures in Vent Pipe (VP1)
Plot S-0-10 Temperatures in Vent Pipe (VP2)
Plot S-0-11 Temperatures in Vent Pipe (VP3)
Plot S-0-12 Temperatures in Wetwell (WWTS-101 - 108)
Plot S-0-13 Temperatures in Wetwell (WWTS-201 - 208)
Plot S-0-14 Temperatures in Wetwell (WWTS-301 - 308)
Plot S-0-15 Temperatures in Wetwell (WWTS-401 - 408)
Plot S-0-16 Water Level in Pressure Vessel
Plot S-0-17 Water Level in Drywell (VP's 1 and 2)
Plot S-0-18 Water Level in Vent Pipe (VP's 3 and 4)
Plot S-0-19 Water Level in Vent Pipe (VP5)
Plot S-0-20 Water Level in Vent Pipe (WWLS-104 - 116)
Plot S-0-22 Water Level in Wetwell (WWLS-201 - 216)
Plot S-0-23 Water Level in Wetwell (WWLS-303 - 315)
Plot S-0-24 Water Level in Wetwell (WWLS-401 - 416)
Plot S-0-25 Water Level in Wetwell (WWLS-503 - 515)
Plot S-0-26 Water Level in Wetwell (WWLS-604 - 616)
Plot S-0-27 Water Level in Wetwell (WWLS-704 - 716)
Plot S-0-28 Water Level in Wetwell (WWLS-804 - 816)
Plot S-0-29 Water Level in Wetwell (WWLS-221 - 228)

List of Short Term Plots (continued)

PCM Track-1 Channels

Plot S-1-1	Pressures in Drywell and Wetwell Airspace	
Plot S-1-2	Pressures in Vent Pipe	(VPPF-101,201,401)
Plot S-1-3	Pressures in Vent Pipe	(VPPF-301,302,303)
Plot S-1-4	Pressures in Vent Pipe	(VPPF-501,502,503)
Plot S-1-5	Pressures in Wetwell	(WWPF-101,106)
Plot S-1-6	Pressures in Wetwell	(WWPF-105,107)
Plot S-1-7	Pressures in Wetwell	(WWPF-201,202,203,102)
Plot S-1-8	Pressures in Wetwell	(WWPF-301,302,303,103)
Plot S-1-9	Pressures in Wetwell	(WWPF-401,402,103)
Plot S-1-10	Pressures in Wetwell	(WWPF-501,502,104)
Plot S-1-11	Pressures in Wetwell	(WWPF-602,702)
Plot S-1-12	Strain of Vent Pipe Brace	(VPSF-101)
Plot S-1-13	Strain of Vent Pipe Brace	(VPSF-102)
Plot S-1-14	Strain of Vent Pipe Brace	(VPSF-201)

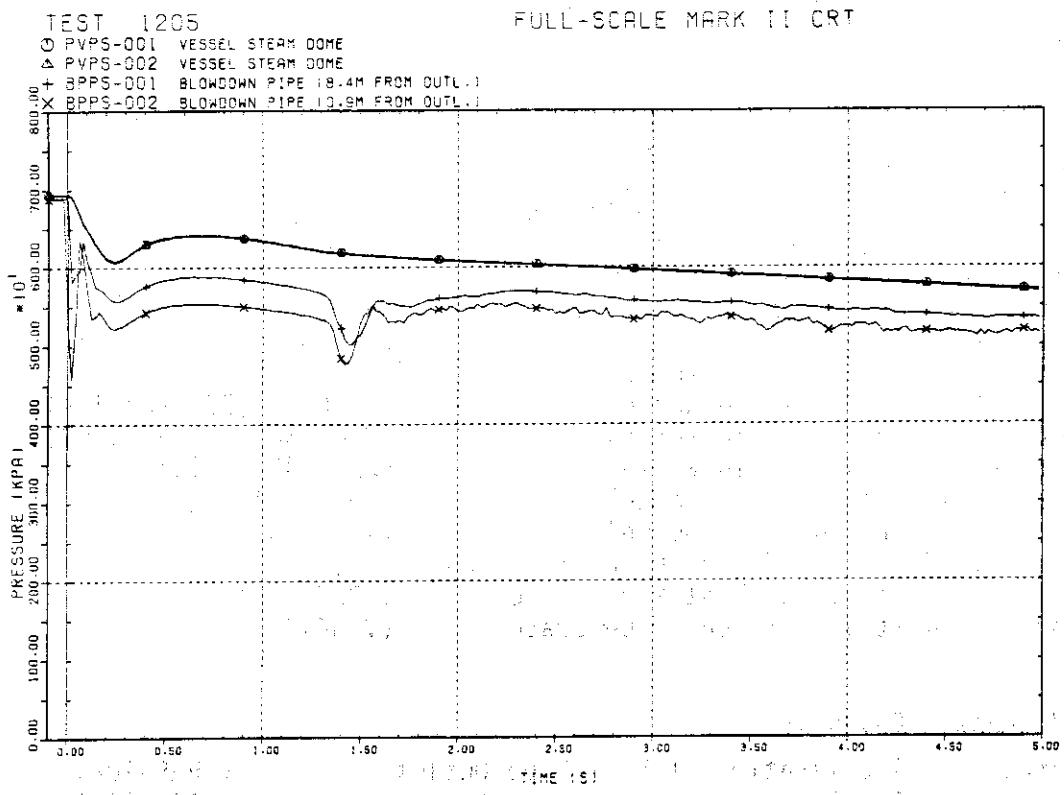
PCM Track-2 Channels

Plot S-2-1	Acceleration of Vent Pipe Outlet	(VPAF-102)
Plot S-2-2	Acceleration of Vent Pipe Outlet	(VPAF-201)
Plot S-2-3	Acceleration of Vent Pipe Outlet	(VPAF-202)
Plot S-2-4	Acceleration of Containment Structure	(WWAF-005)
Plot S-2-5	Acceleration of Containment Structure	(WWAF-006)
Plot S-2-6	Acceleration of Containment Structure	(WWAF-007)
Plot S-2-7	Acceleration of Containment Structure	(WWAF-008)
Plot S-2-8	Acceleration of Containment Structure	(WWAF-009)
Plot S-2-9	Acceleration of Containment Structure	(WWAF-010)
Plot S-2-10	Acceleration of Containment Structure	(WWAF-011)
Plot S-2-11	Acceleration of Containment Structure	(WWAF-012)
Plot S-2-12	Phase Boundary Signals	(WWLF-101 - 108)
Plot S-2-13	Phase Boundary Signals	(WWLF-201 - 209)
Plot S-2-14	Phase Boundary Signals	(WWLF-301 - 308)

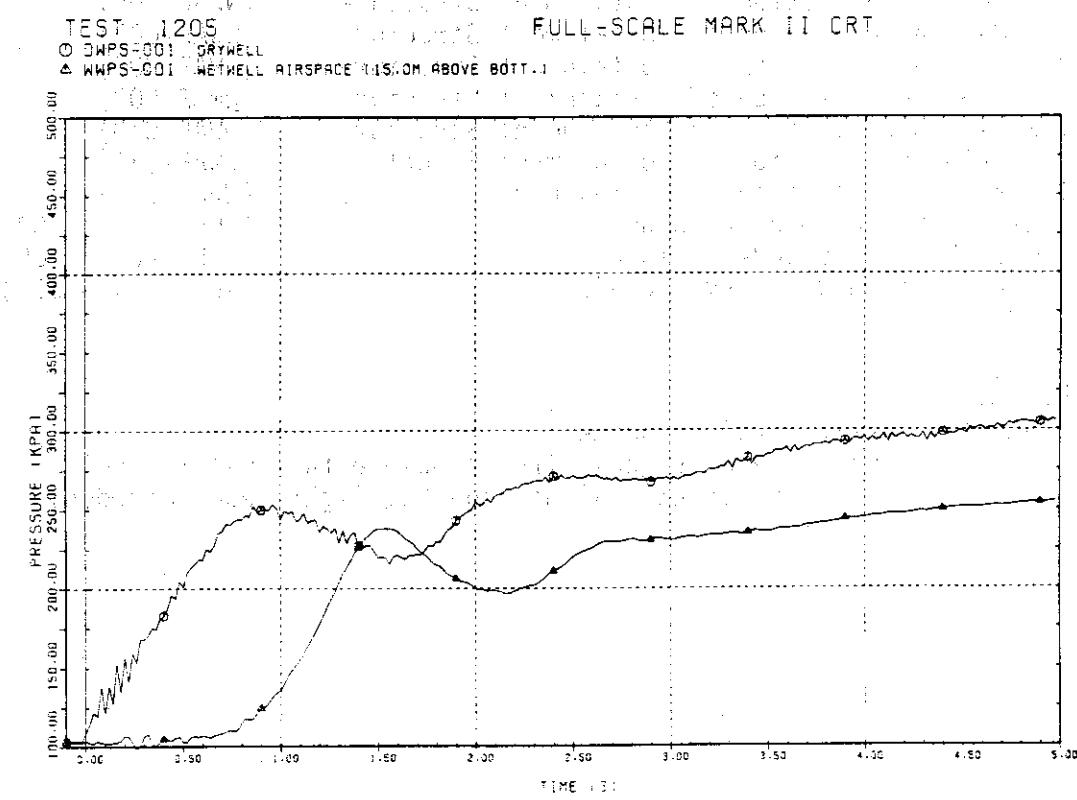
Supplement

Supplement 1 Water Level in Wetwell

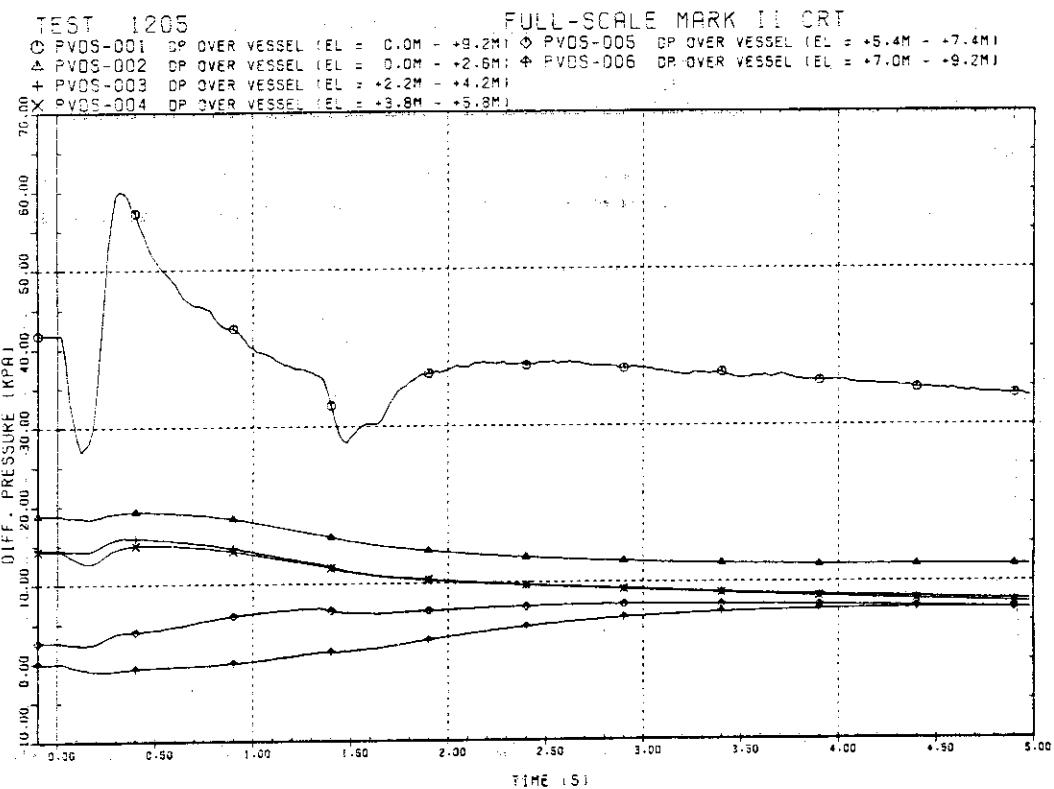
(Water level signals from supplementary water level detectors located along line L1, light beam recorded)



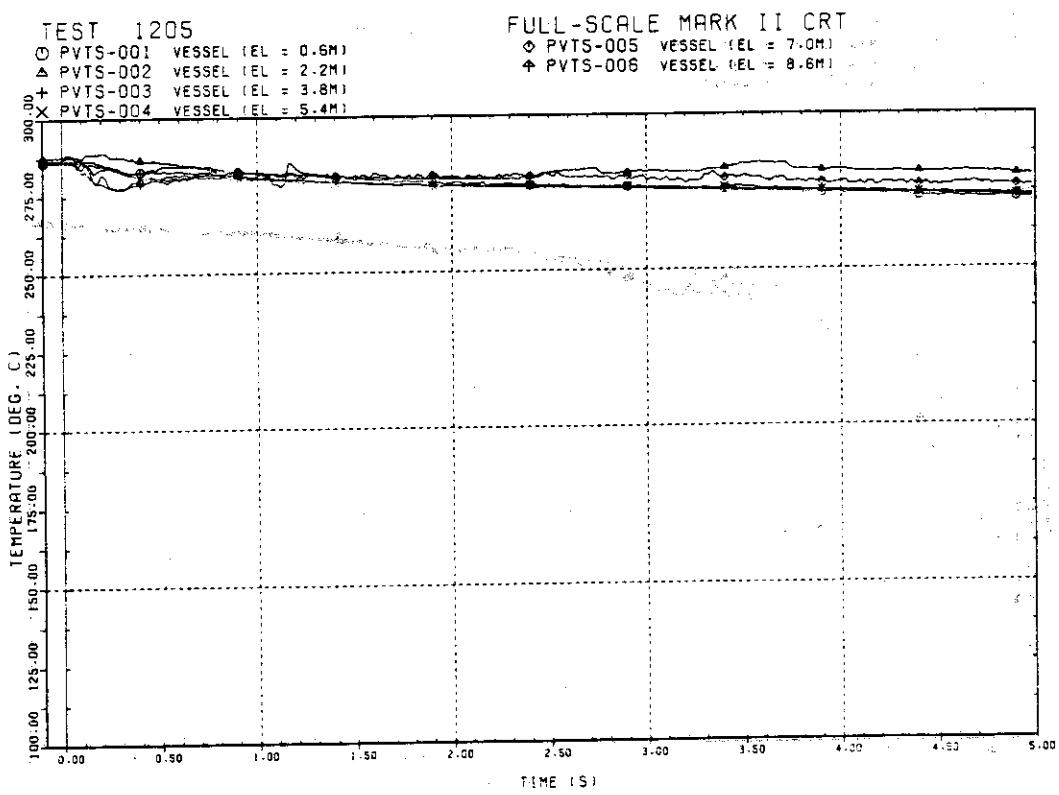
Plot S-0-1 Pressures in Pressure Vessel and Blowdown Pipe



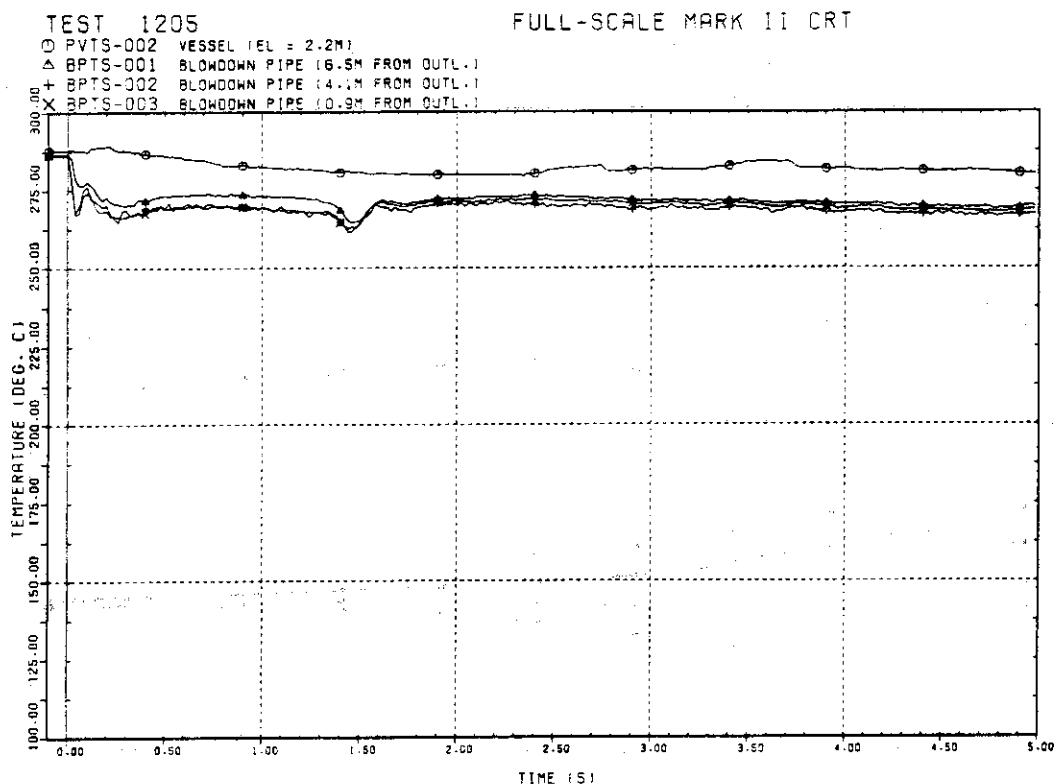
Plot S-0-2 Pressures in Drywell and Wetwell Airspace



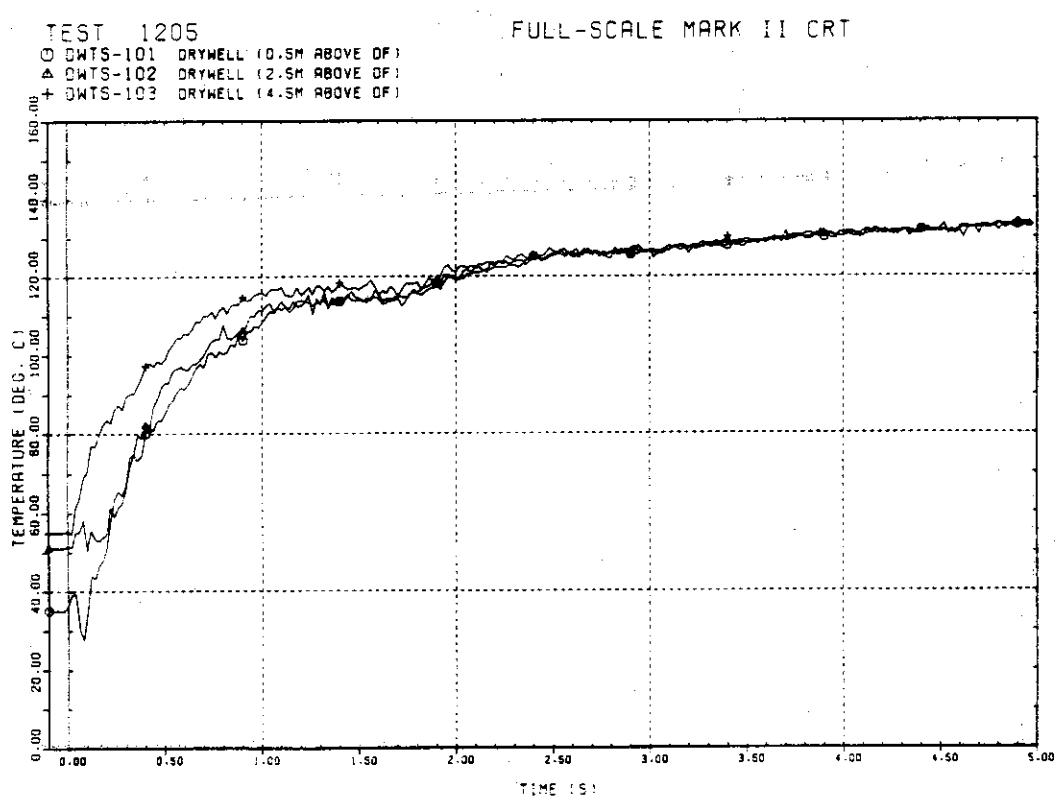
Plot S-0-3 DP over Pressure Vessel



Plot S-0-4 Temperatures in Pressure Vessel



Plot S-0-5 Temperatures in Pressure Vessel and Blowdown Pipe

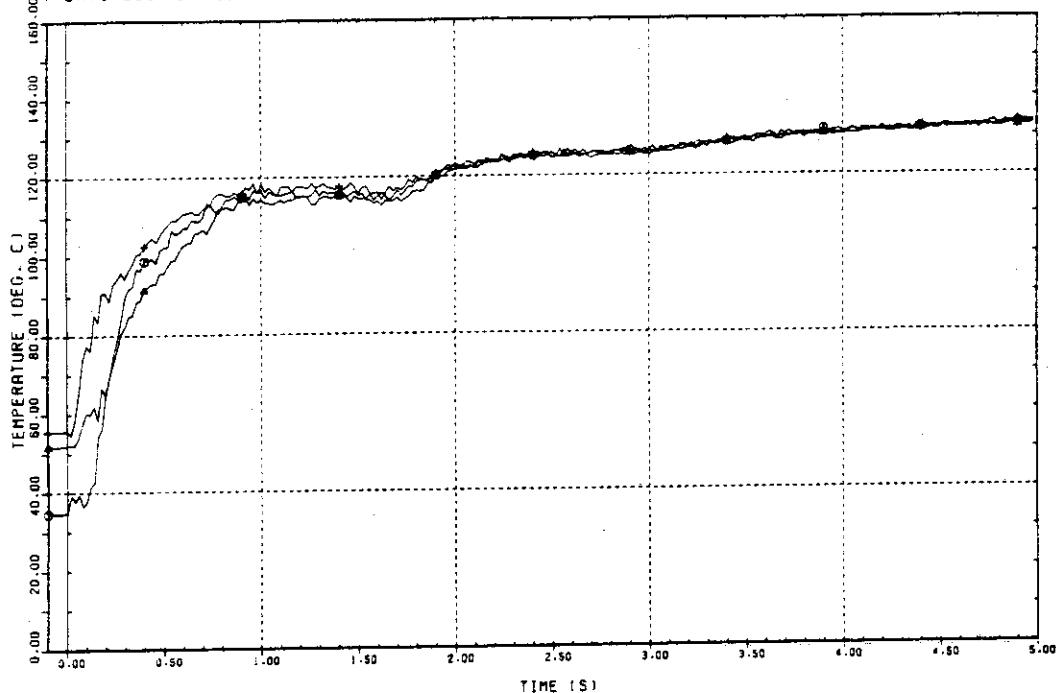


Plot S-0-6 Temperatures in Drywell

TEST 1205

○ DWTS-201 DRYWELL (0.5M ABOVE DF)
 △ DWTS-202 DRYWELL (2.5M ABOVE DF)
 + DWTS-203 DRYWELL (4.5M ABOVE DF)

FULL-SCALE MARK II CRT

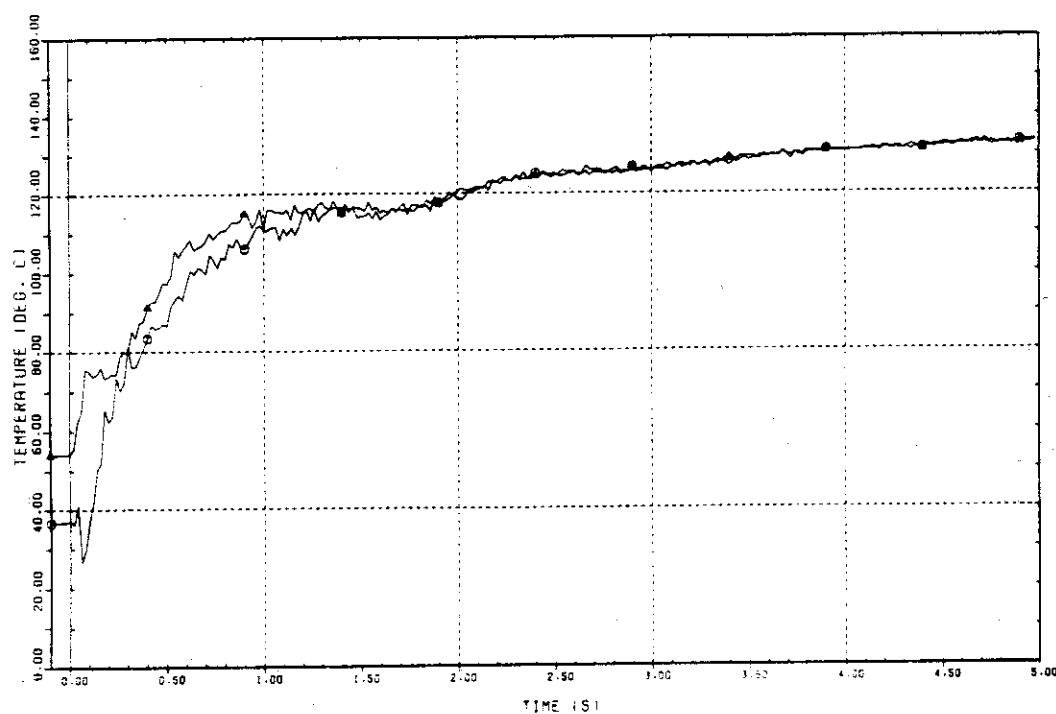


Plot S-0-7 Temperatures in Drywell

TEST 1205

○ DWTS-301 DRYWELL (0.5M ABOVE DF)
 △ DWTS-302 DRYWELL (1.5M ABOVE DF)

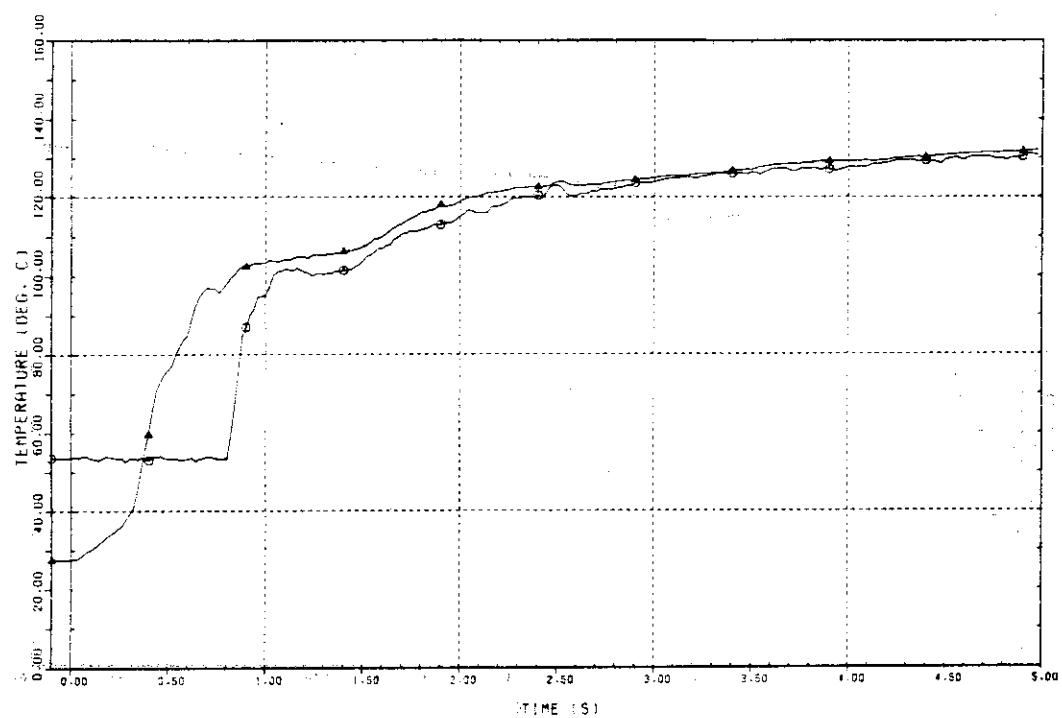
FULL-SCALE MARK II CRT



Plot S-0-8 Temperatures in Drywell

TEST 1205
 ○ VPTS-101 VP1 (0.5M ABOVE OUTL.)
 △ VPTS-102 VP1 (11.5M ABOVE OUTL.)

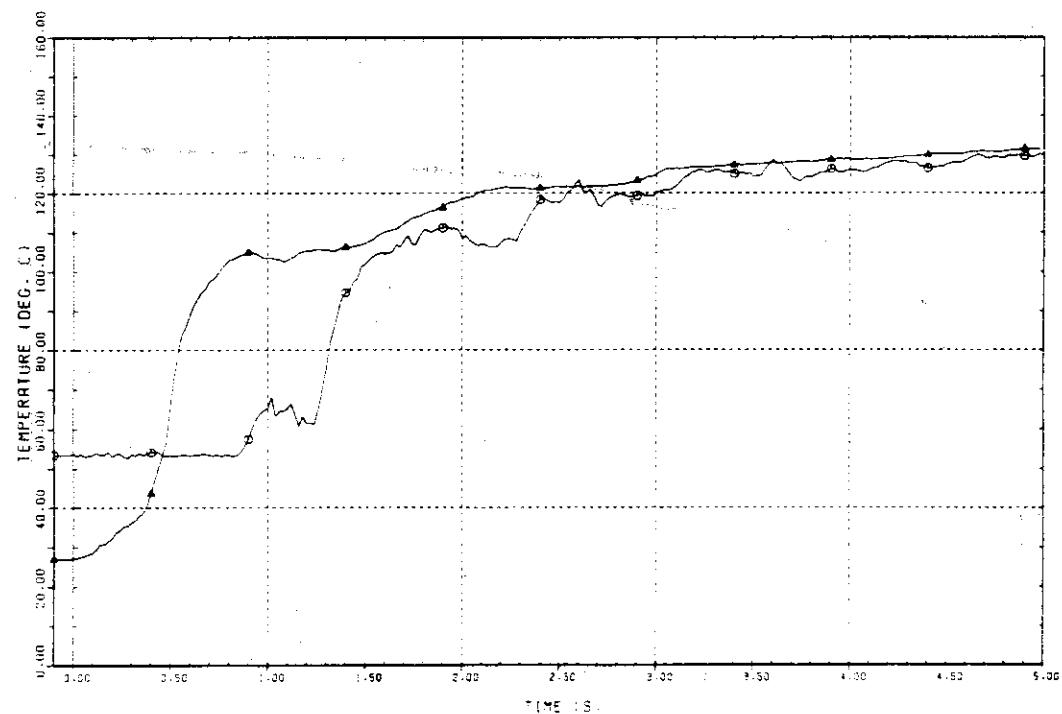
FULL-SCALE MARK II CRT



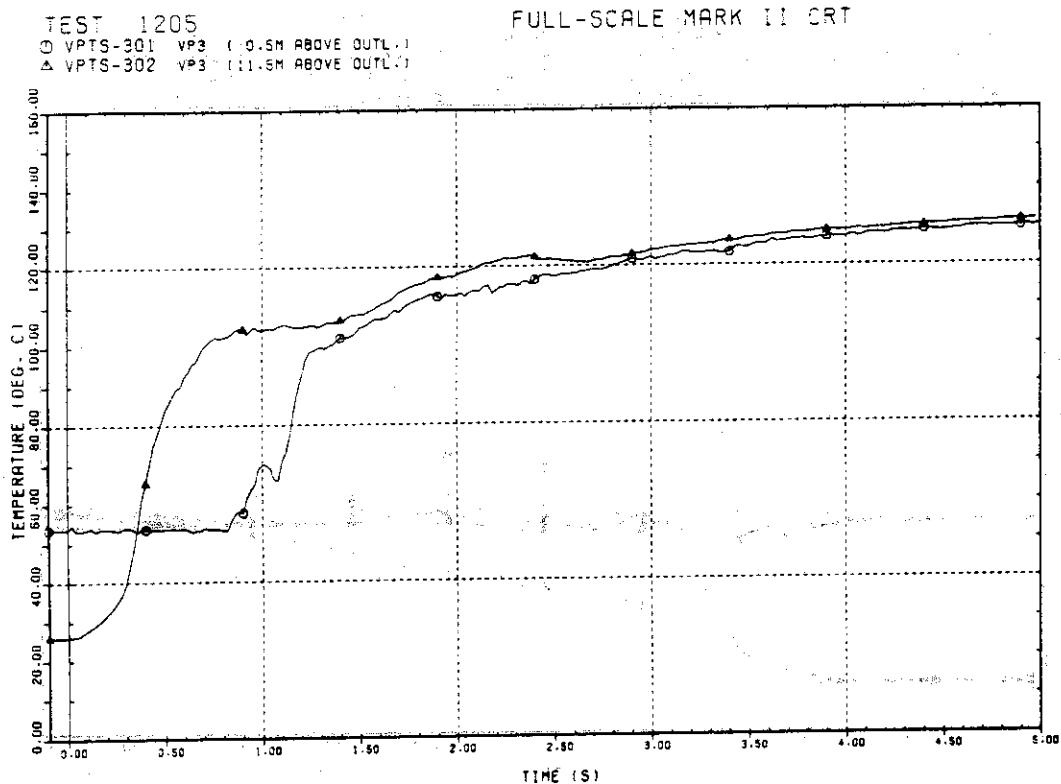
Plot S-0-9 Temperatures in Vent Pipe

TEST 1205
 ○ VPTS-201 VP2 (0.5M ABOVE OUTL.)
 △ VPTS-202 VP2 (11.5M ABOVE OUTL.)

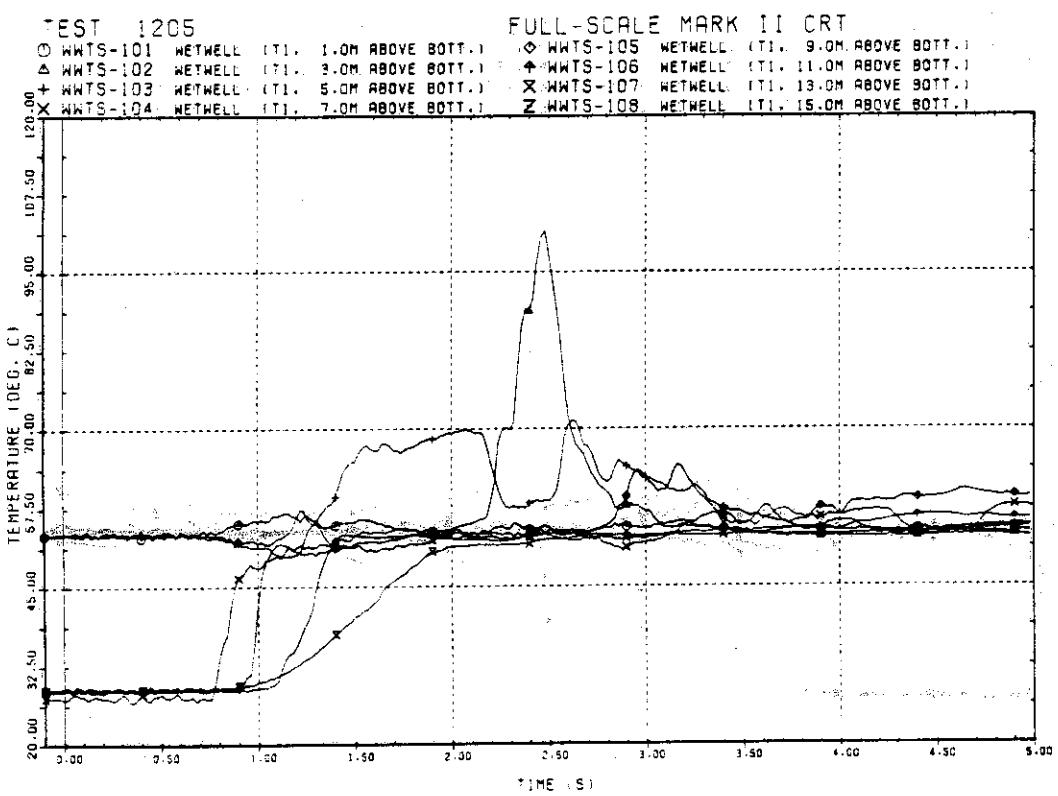
FULL-SCALE MARK II CRT



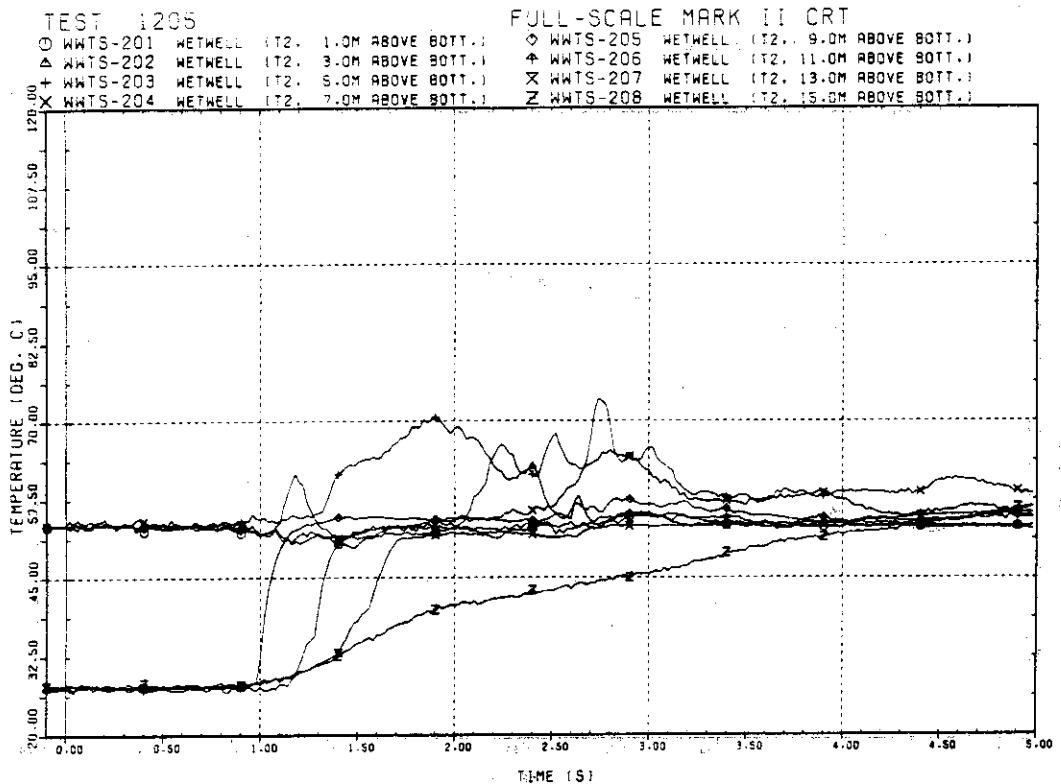
Plot S-0-10 Temperatures in Vent Pipe



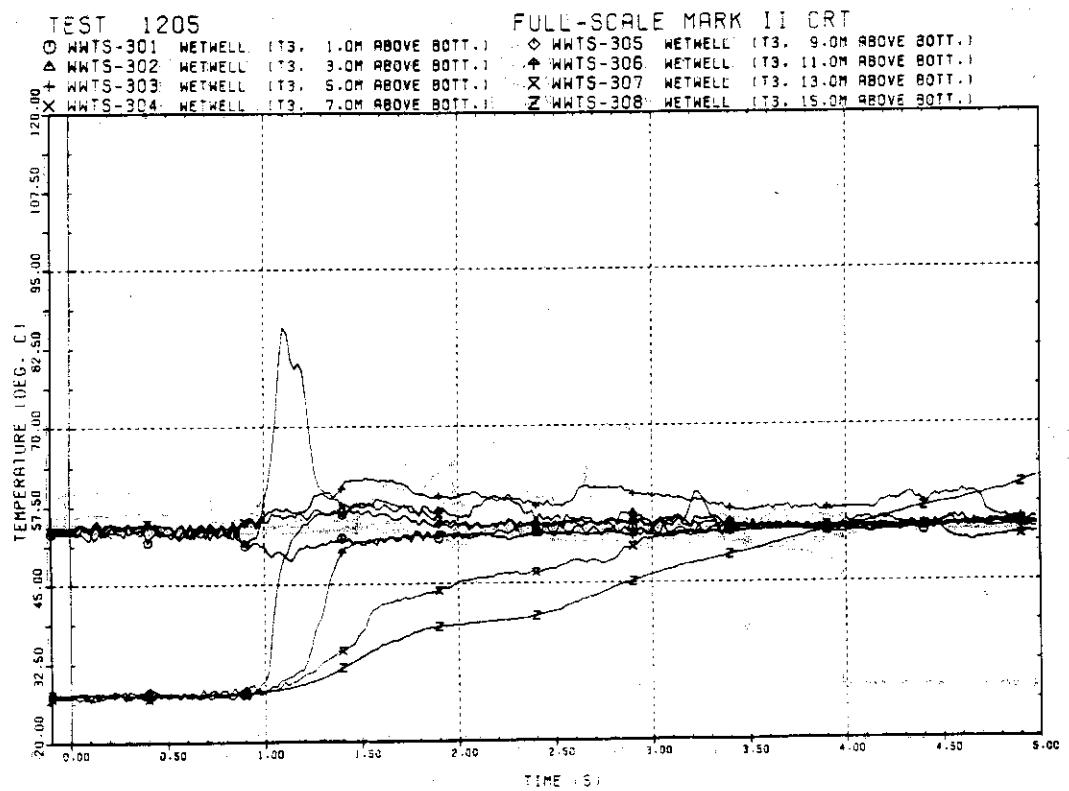
Plot S-0-11 Temperatures in Vent Pipe



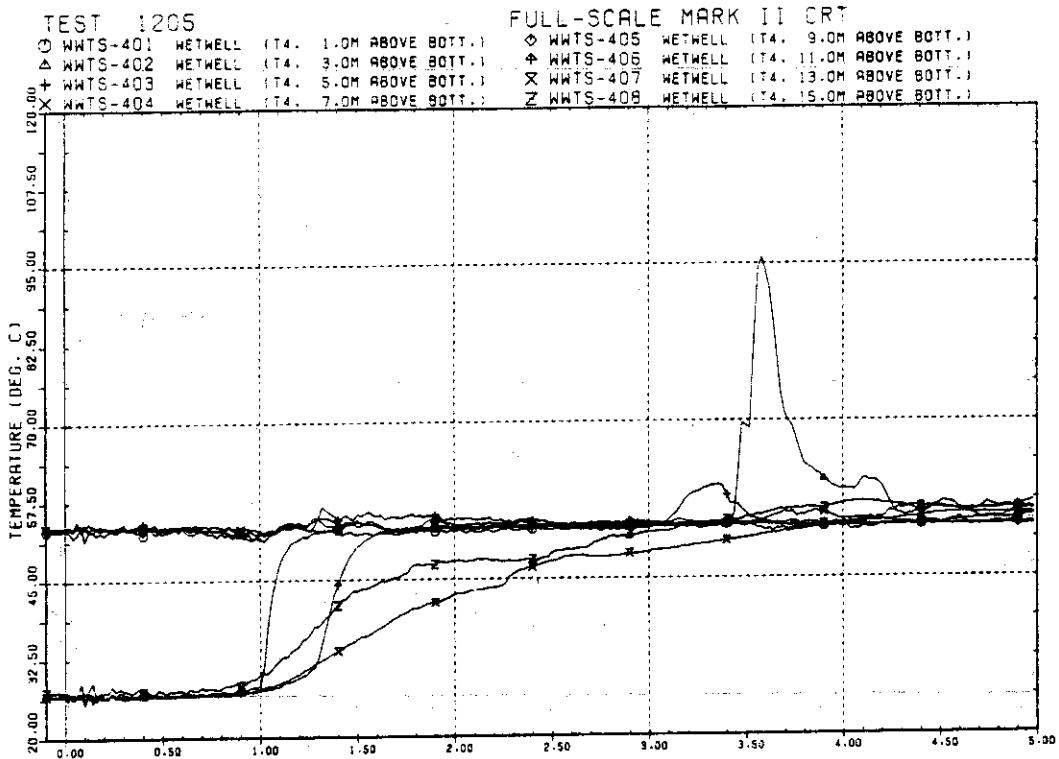
Plot S-0-12 Temperatures in Wetwell



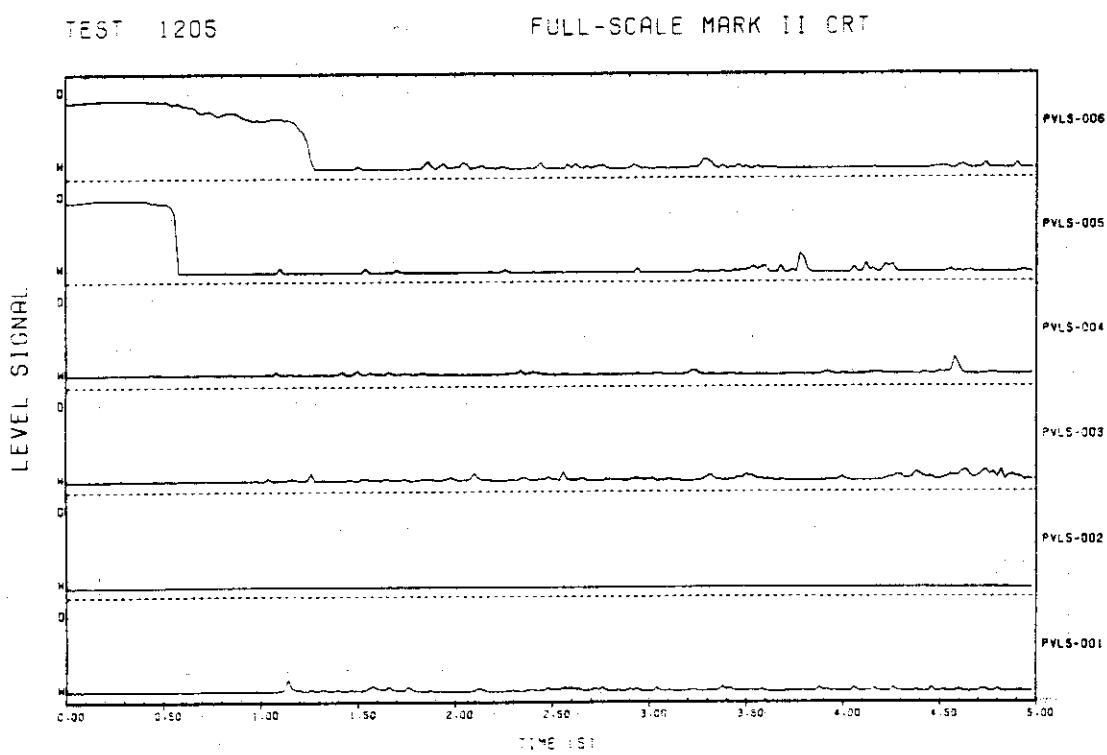
Plot S-0-13 Temperatures in Wetwell



Plot S-0-14 Temperatures in Wetwell



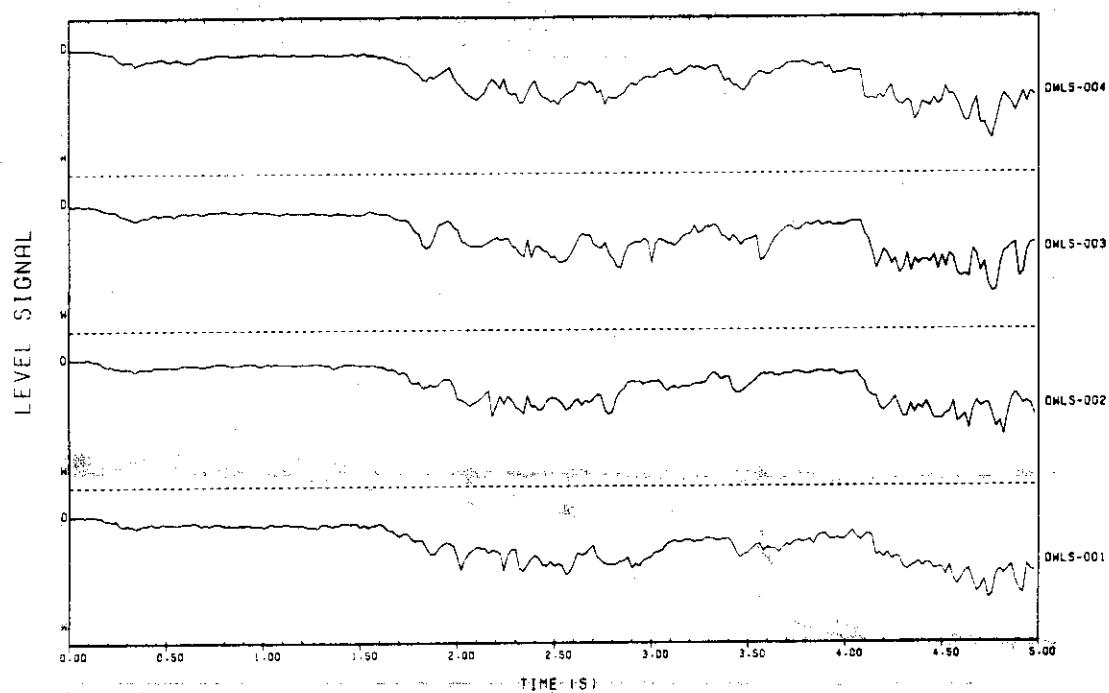
Plot S-0-15 Temperatures in Wetwell



Plot S-0-16 Water Level in Pressure Vessel

TEST 1205

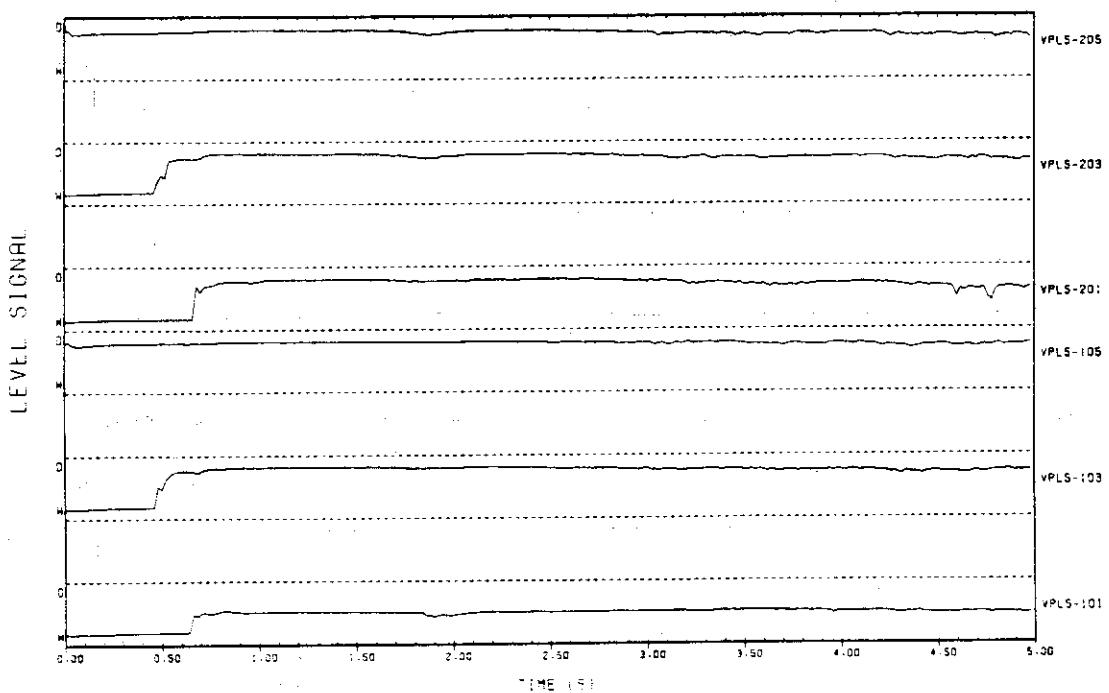
FULL-SCALE MARK II CRT



Plot S-0-17 Water Level in Drywell

TEST 1205

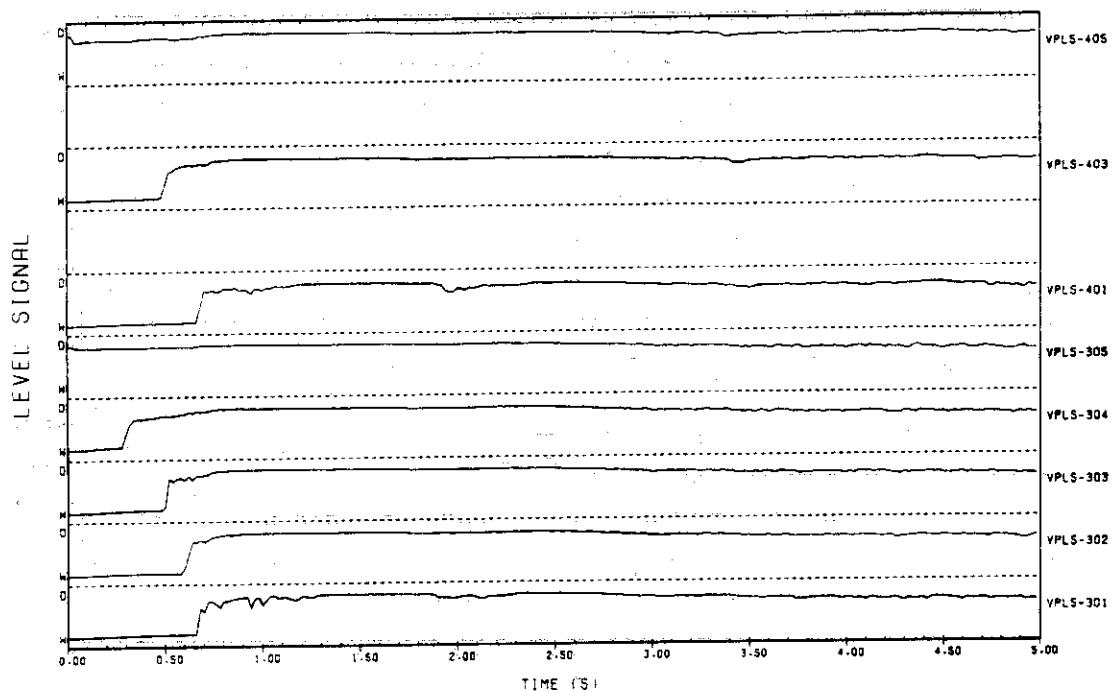
FULL-SCALE MARK II CRT



Plot S-0-18 Water Level in Vent Pipe

TEST 1205

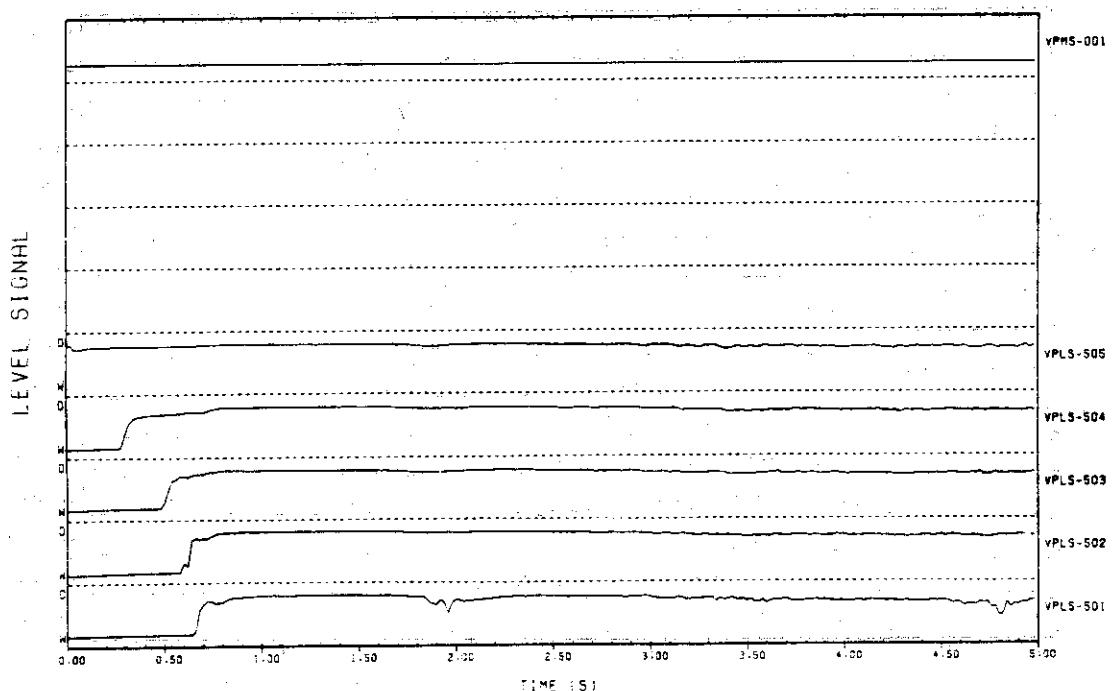
FULL-SCALE MARK II CRT



Plot S-0-19 Water Level in Vent Pipe

TEST 1205

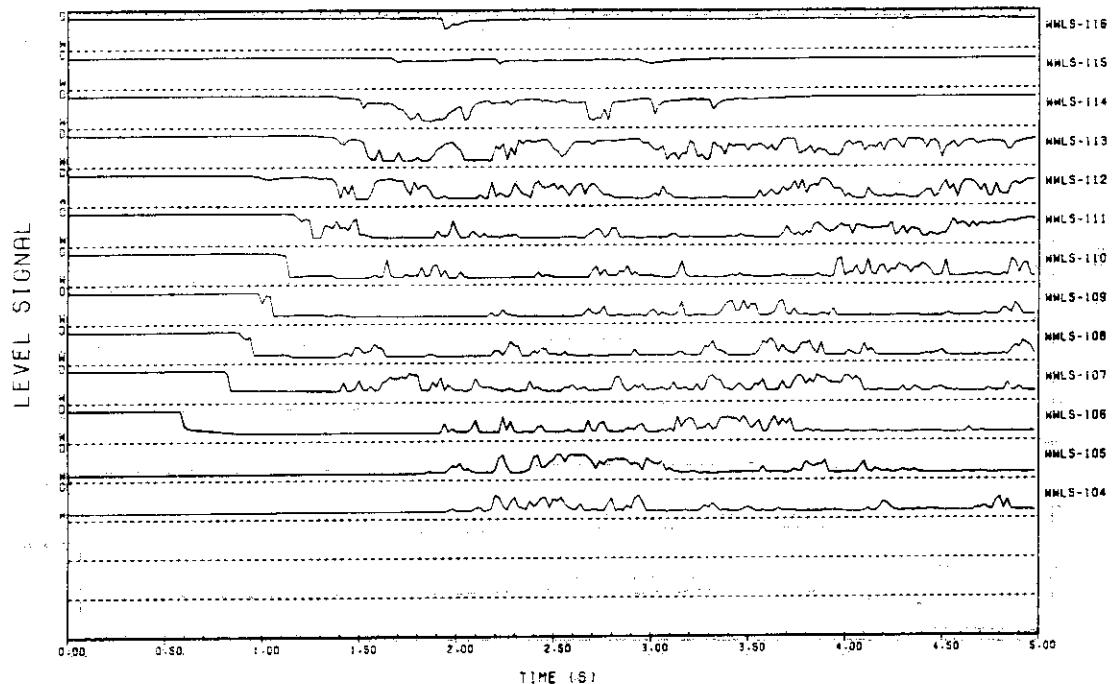
FULL-SCALE MARK II CRT



Plot S-0-20 Water Level in Vent Pipe

TEST 1205

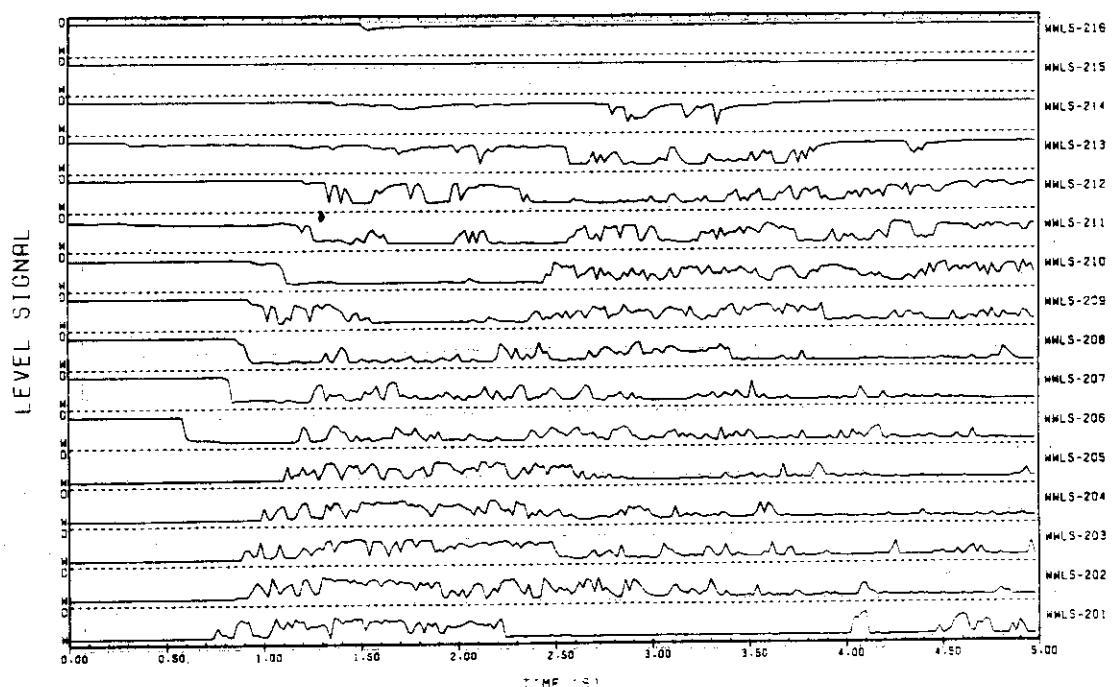
FULL-SCALE MARK II CRT



Plot S-0-21 Water Level in Wetwell

TEST 1205

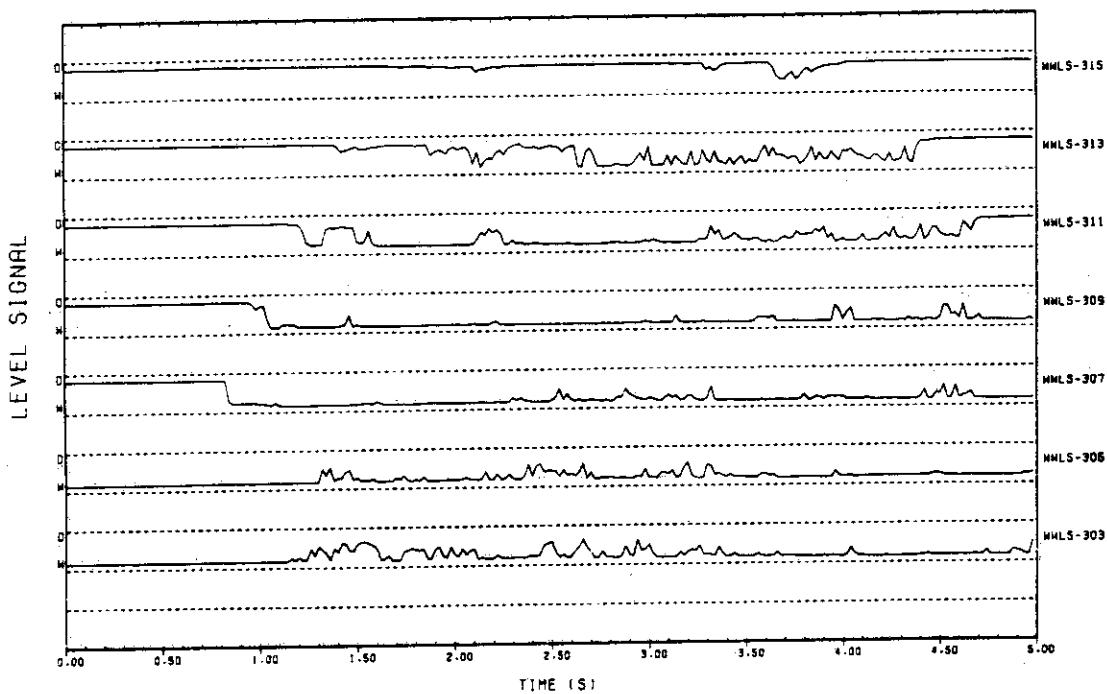
FULL-SCALE MARK II CRT



Plot S-0-22 Water Level in Wetwell

TEST 1205

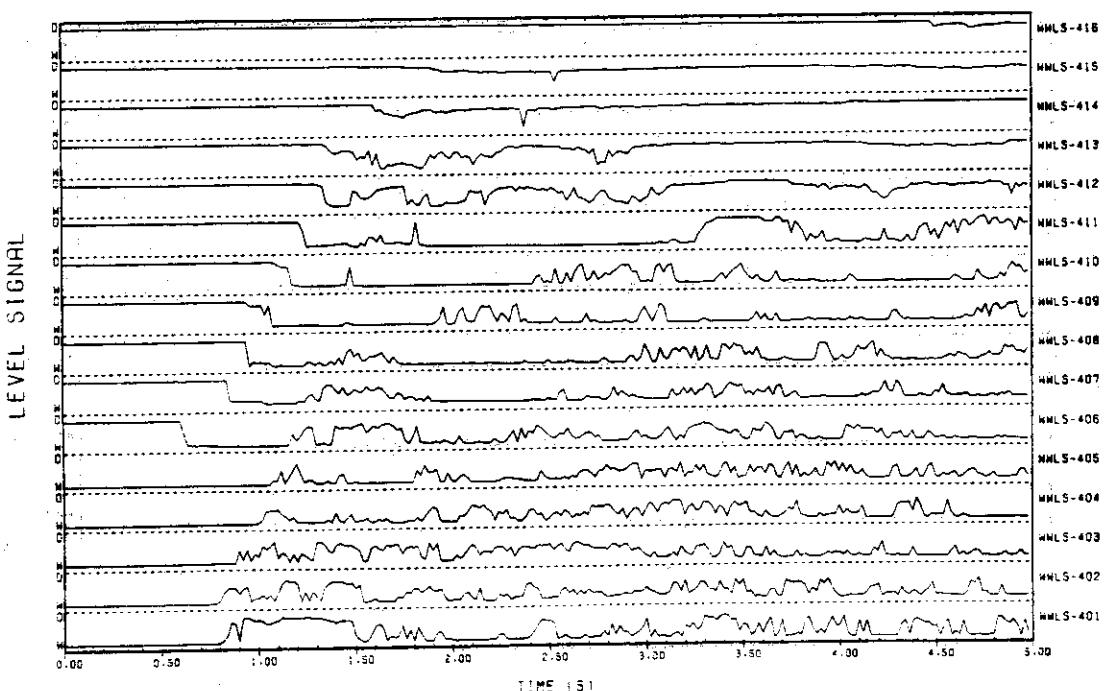
FULL-SCALE MARK II CRT



Plot S-0-23 Water Level in Wetwell

TEST 1205

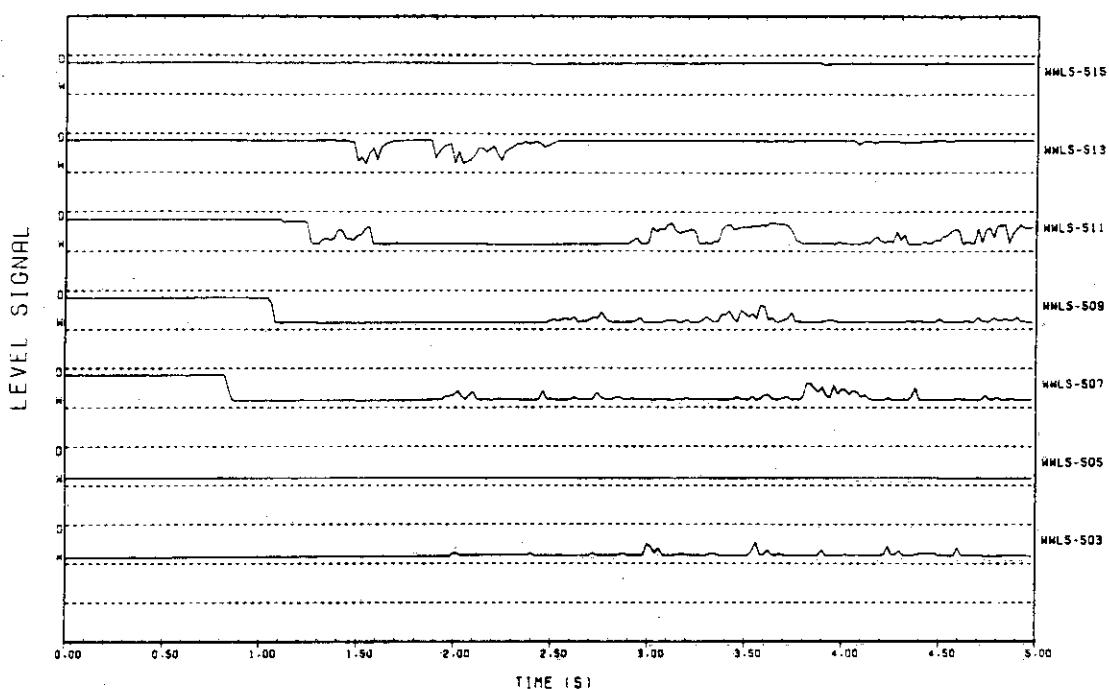
FULL-SCALE MARK II CRT



Plot S-0-24 Water Level in Wetwell

TEST 1205

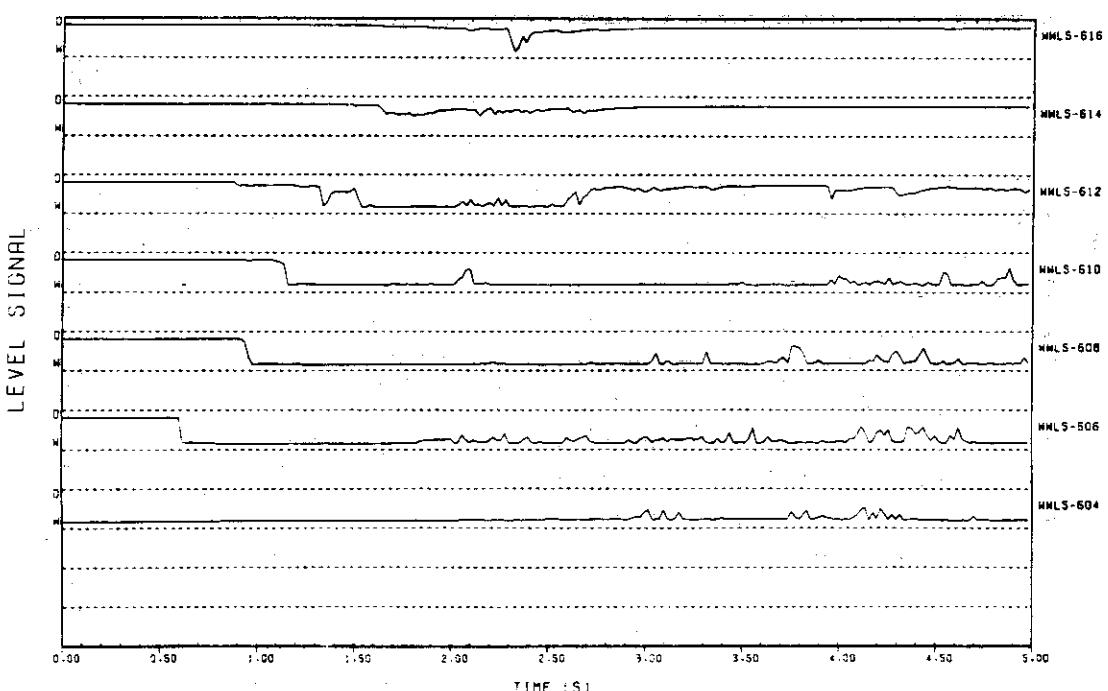
FULL-SCALE MARK II CRT



Plot S-0-25 Water Level in Wetwell

TEST 1205

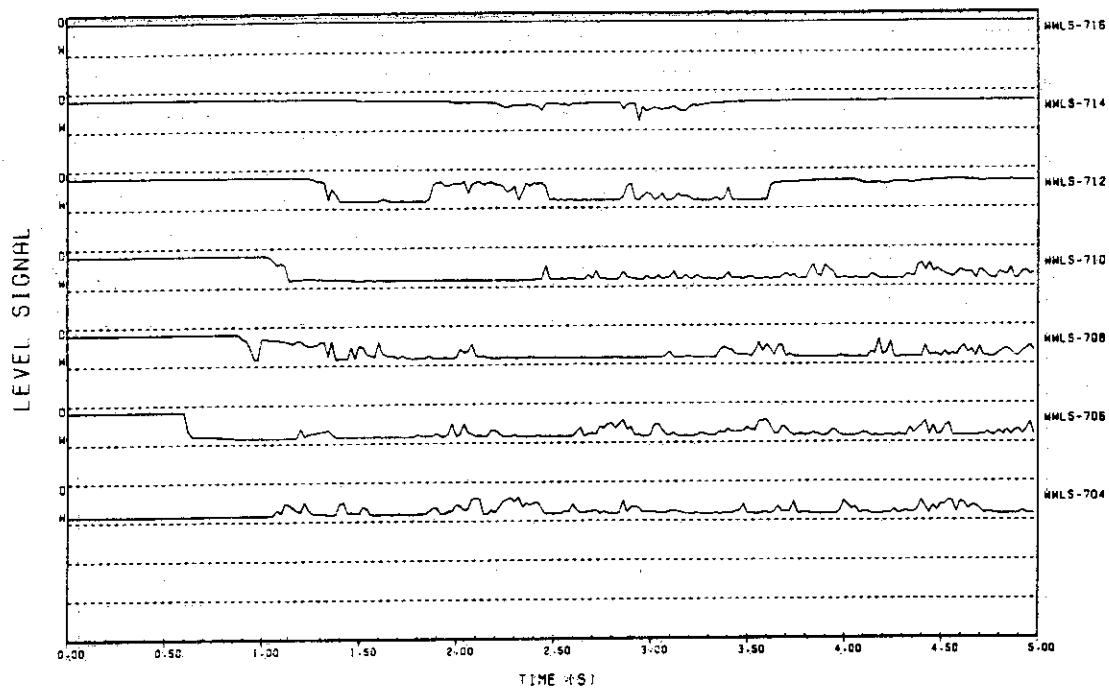
FULL-SCALE MARK II CRT



Plot S-0-26 Water Level in Wetwell

TEST 1205

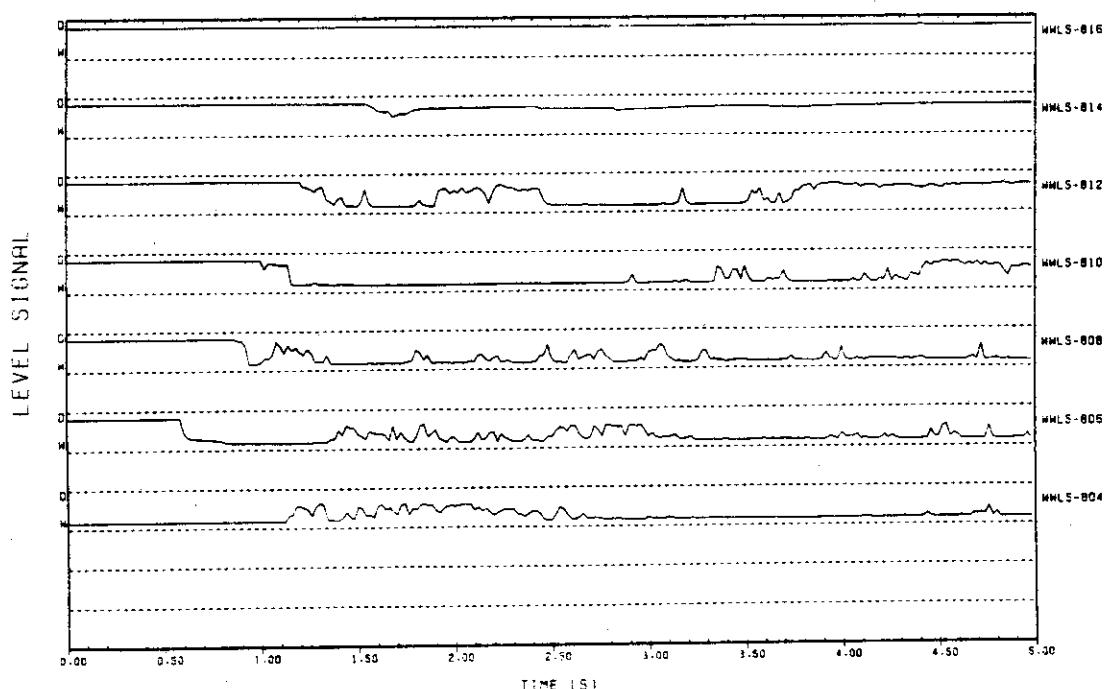
FULL-SCALE MARK II CRT



Plot S-0-27 Water Level in Wetwell

TEST 1205

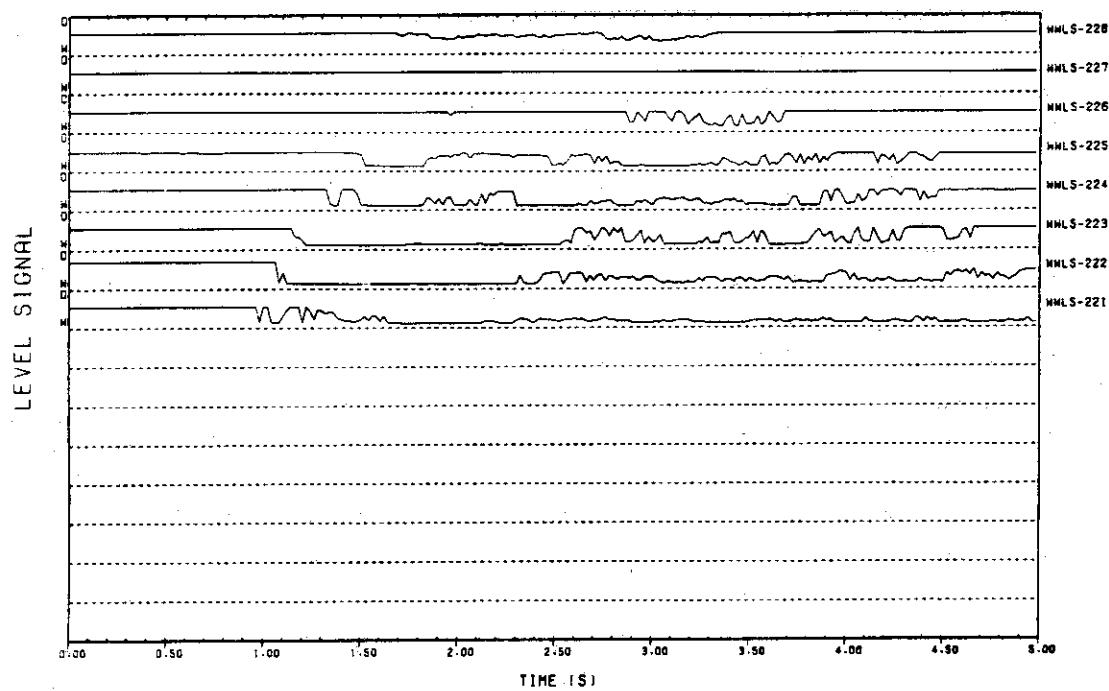
FULL-SCALE MARK II CRT



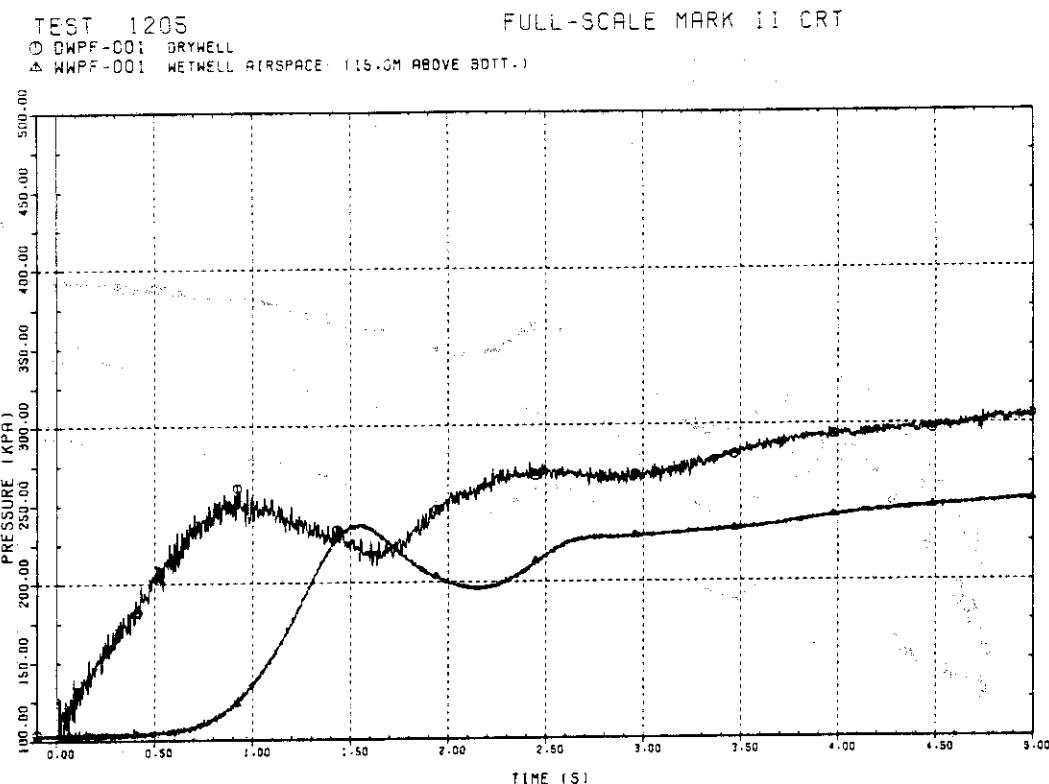
Plot S-0-28 Water Level in Wetwell

TEST 1205

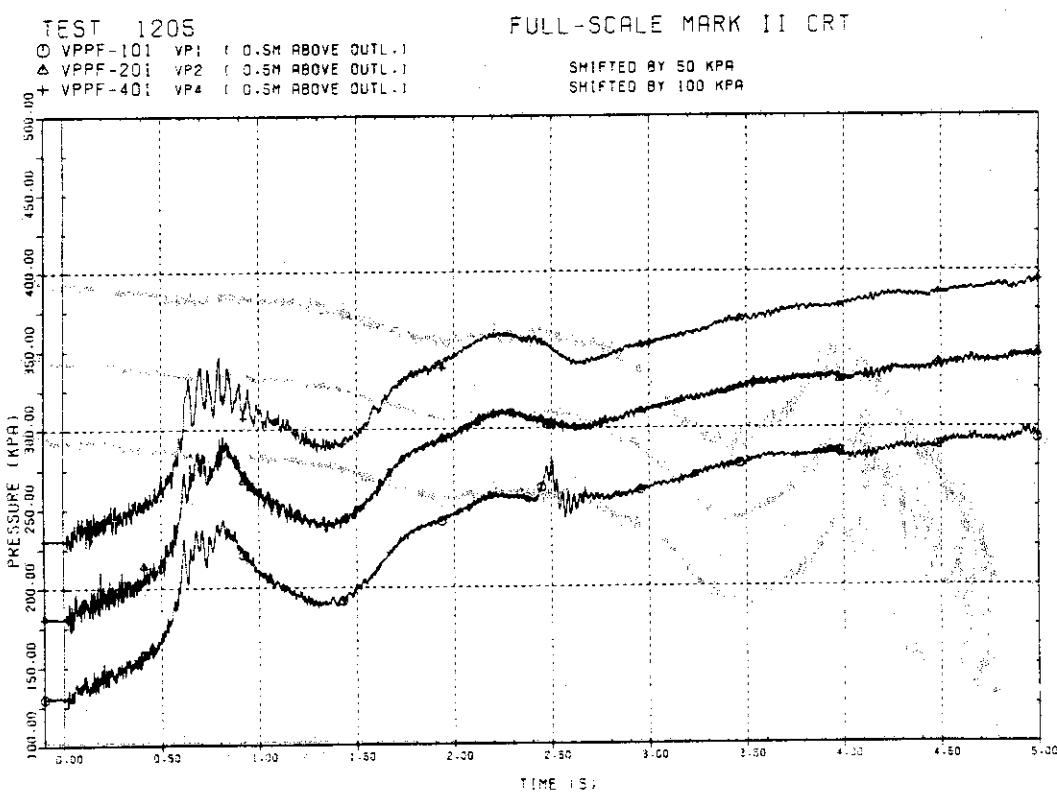
FULL-SCALE MARK II CRT



Plot S-0-29 Water Level in Wetwell



Plot S-1-1 Pressures in Drywell and Wetwell Airspace



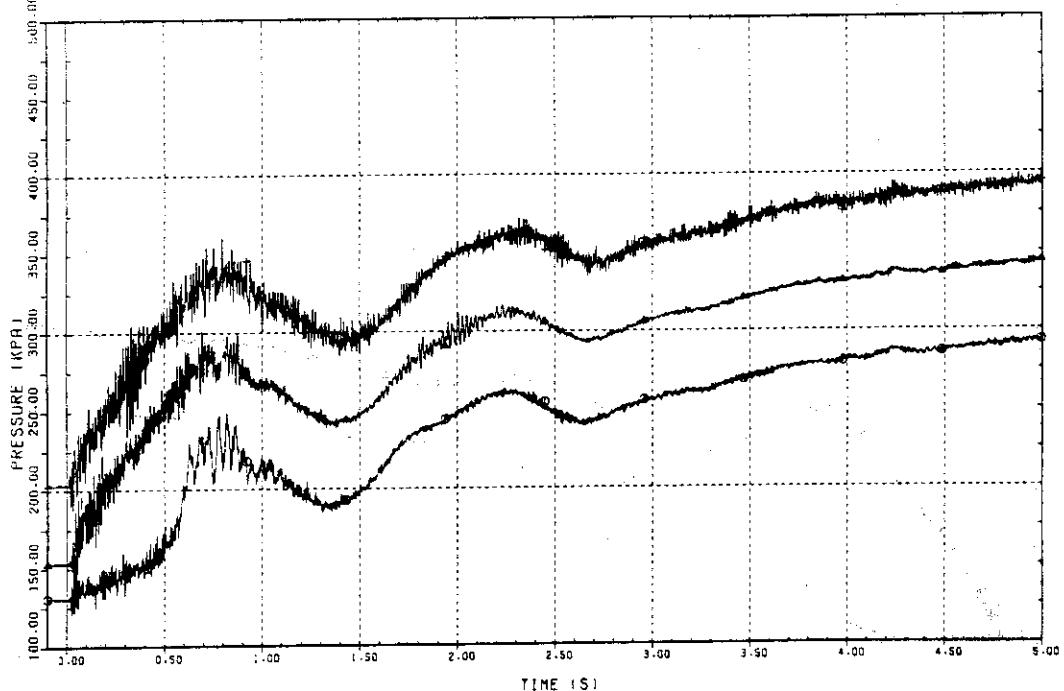
Plot S-1-2 Pressures in Vent Pipe

TEST 1205

○ VPPF-301 VP3 (0.5M ABOVE OUTL.)
 ▲ VPPF-302 VP3 (5.0M ABOVE OUTL.)
 + VPPF-303 VP3 (11.5M ABOVE OUTL.)

FULL-SCALE MARK II CRT

SHIFTED BY 50 KPA
 SHIFTED BY 100 KPA



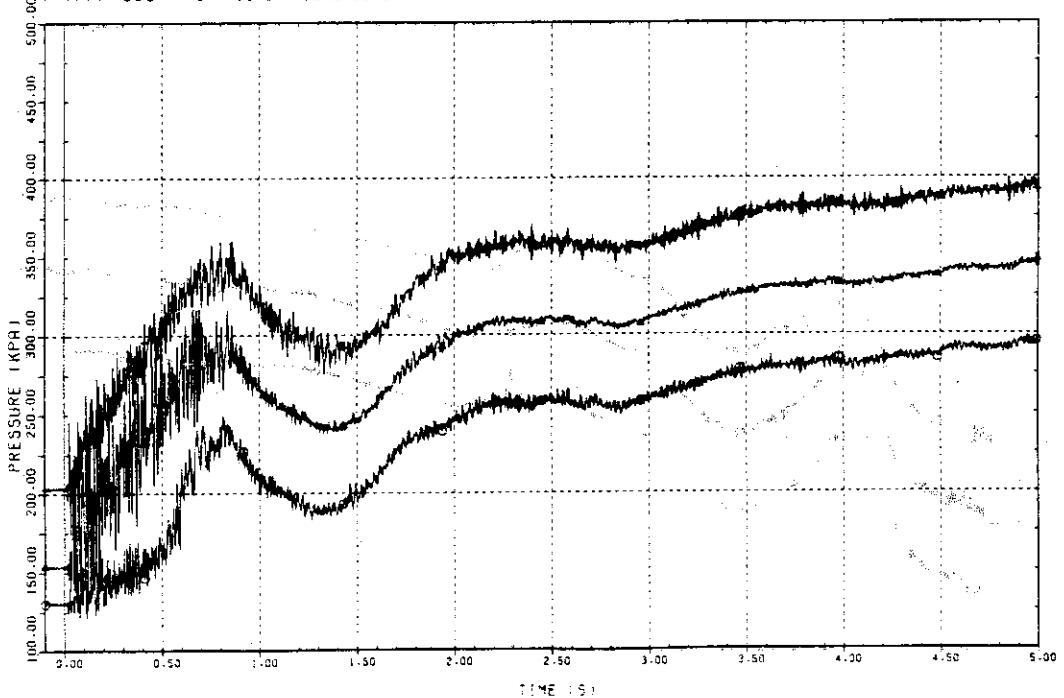
Plot S-1-3 Pressures in Vent Pipe

TEST 1205

○ VPPF-501 VPS (0.5M ABOVE OUTL.)
 ▲ VPPF-502 VPS (5.0M ABOVE OUTL.)
 + VPPF-503 VPS (11.5M ABOVE OUTL.)

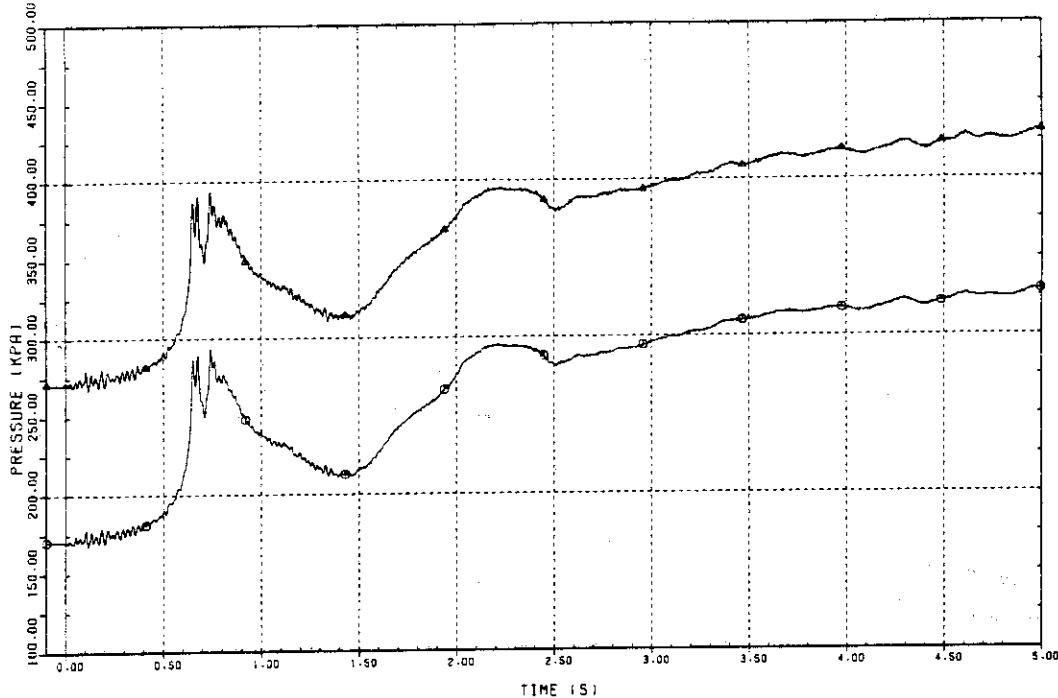
FULL-SCALE MARK II CRT

SHIFTED BY 50 KPA
 SHIFTED BY 100 KPA

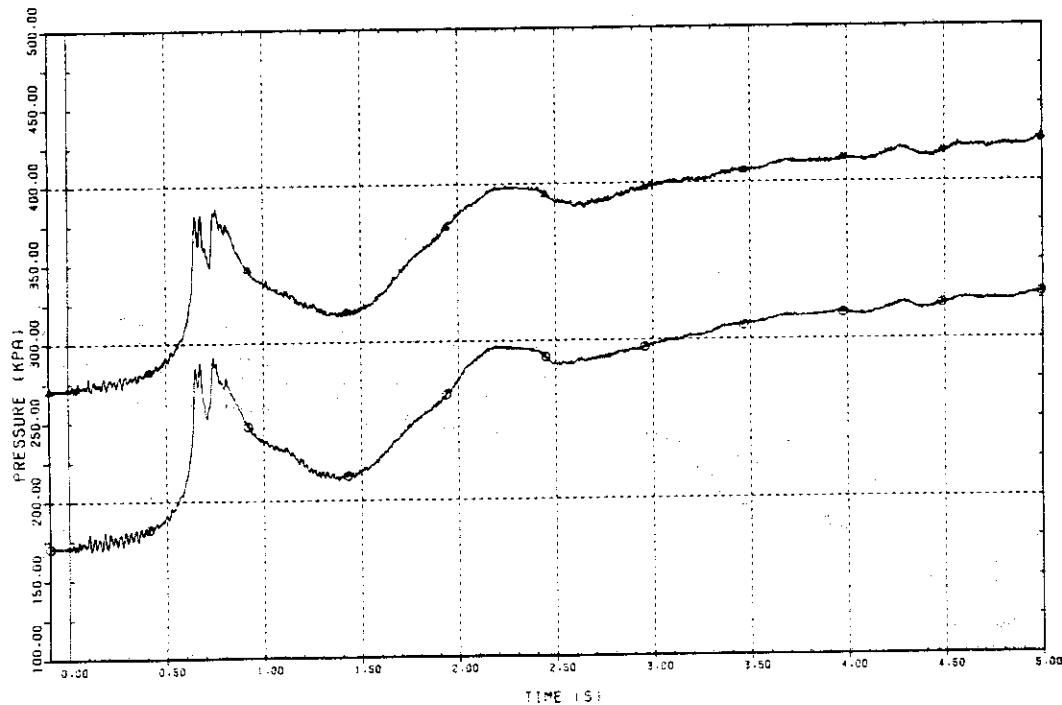


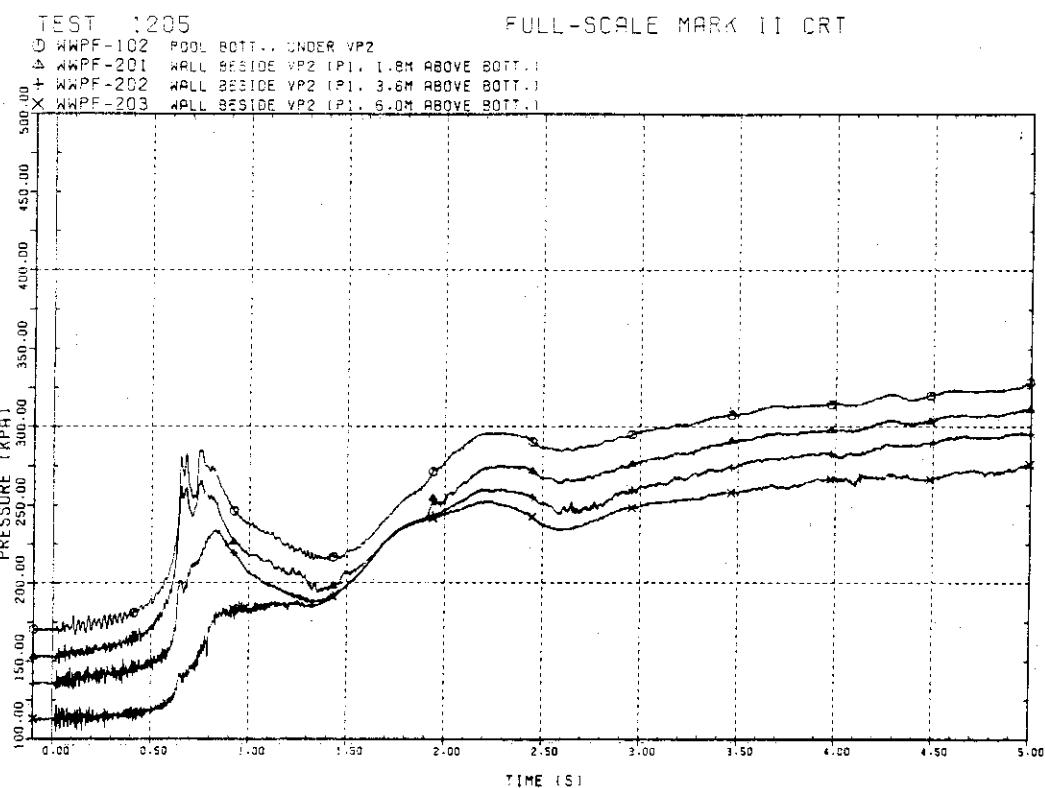
Plot S-1-4 Pressures in Vent Pipe

TEST 1205
 ○ WWPF-101 POOL BOTT.. UNDER VP1
 △ WWPF-106 POOL BOTT.. BETW. VP1, VP6 & PEDESTAL SHIFTED BY 100 KPA

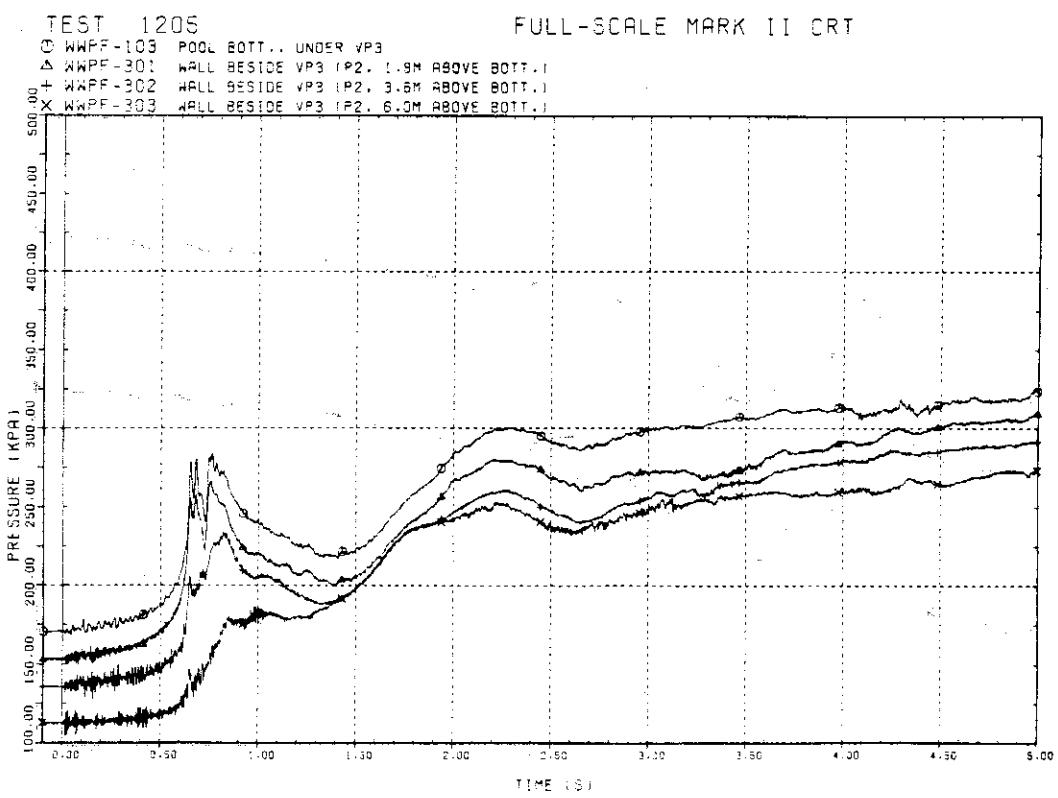


TEST 1205
 ○ WWPF-105 POOL BOTT.. UNDER VPS
 △ WWPF-107 POOL BOTT.. BETW. VP2 & VP3 SHIFTED BY 100 KPA





Plot S-1-7 Pressures in Wetwell

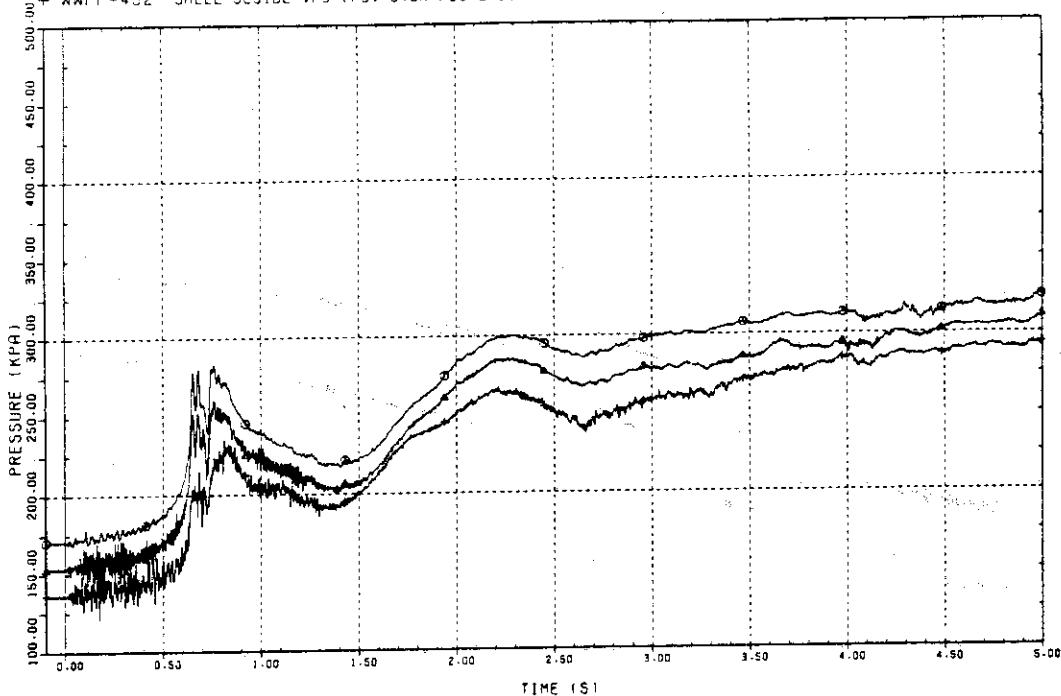


Plot S-1-8 Pressures in Wetwell

TEST 1205

FULL-SCALE MARK II CRT

- WWPF-103 POOL BOTT.. UNDER VP3
- △ WWPF-401 SHELL BESIDE VP3 (P3, 1.8M ABOVE BOTT.)
- + WWPF-402 SHELL BESIDE VP3 (P3, 3.6M ABOVE BOTT.)

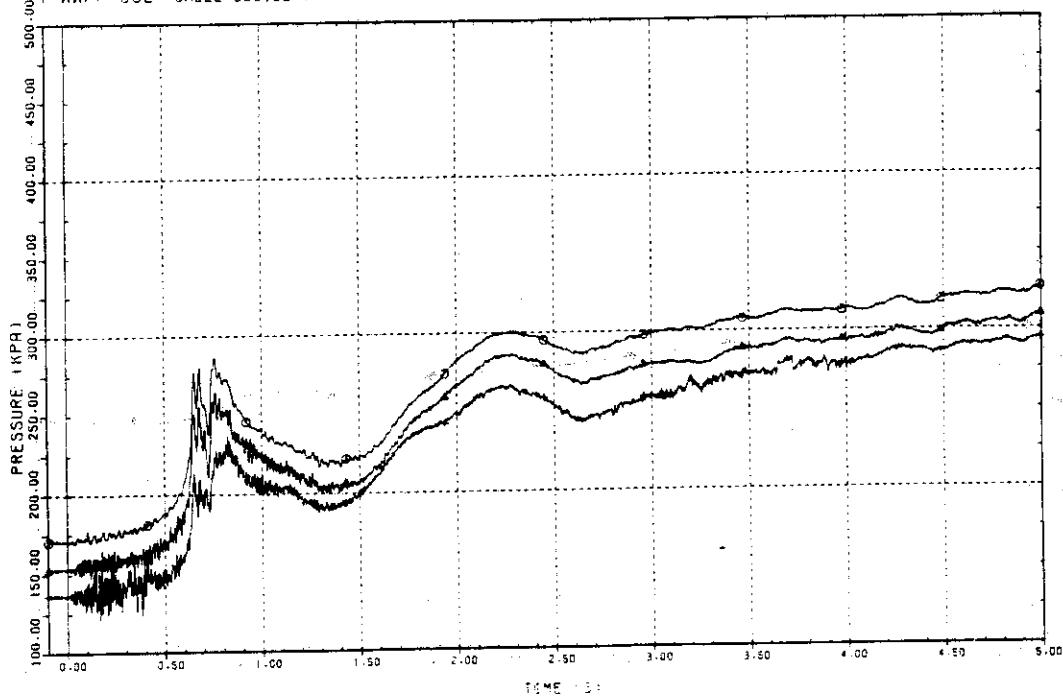


Plot S-1-9 Pressures in Wetwell

TEST 1205

FULL-SCALE MARK II CRT

- WWPF-104 POOL BOTT.. UNDER VP4
- △ WWPF-501 SHELL BESIDE VP4 (P4, 1.8M ABOVE BOTT.)
- + WWPF-502 SHELL BESIDE VP4 (P4, 3.6M ABOVE BOTT.)



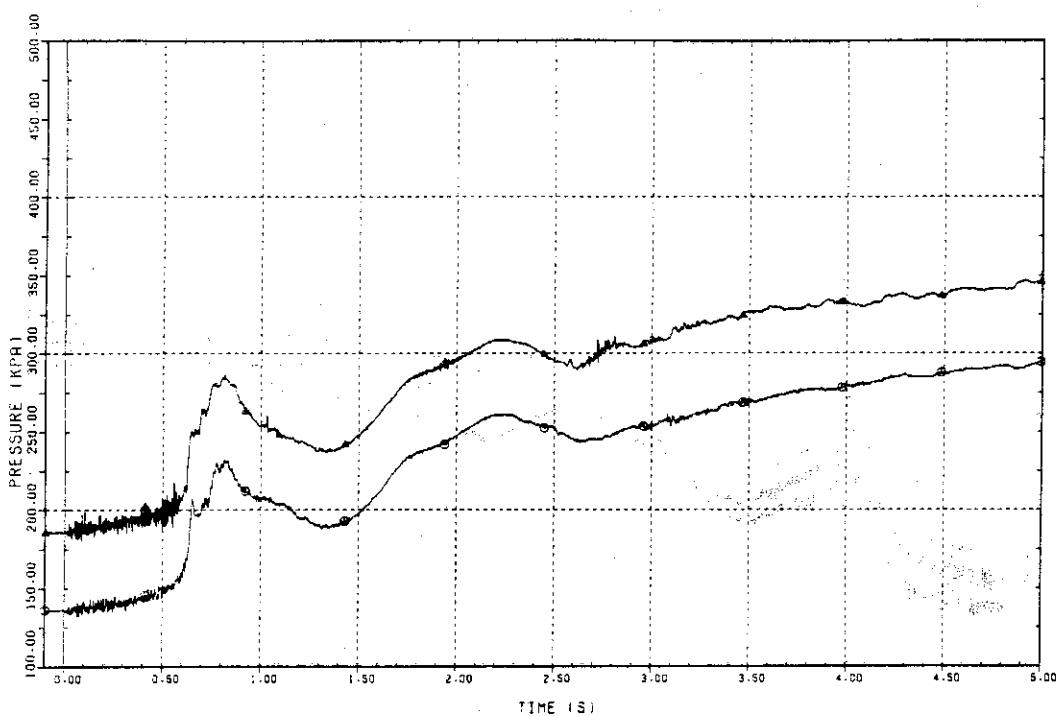
Plot S-1-10 Pressures in Wetwell

TEST 1205

FULL-SCALE MARK II CRT

○ WWPF-502 WALL BESIDE VP4 (PS, 3.6M ABOVE BOTT.)

△ WWPF-702 WALL BESIDE VP7 (PS, 3.6M ABOVE BOTT.) SHIFTED BY 50 KPA

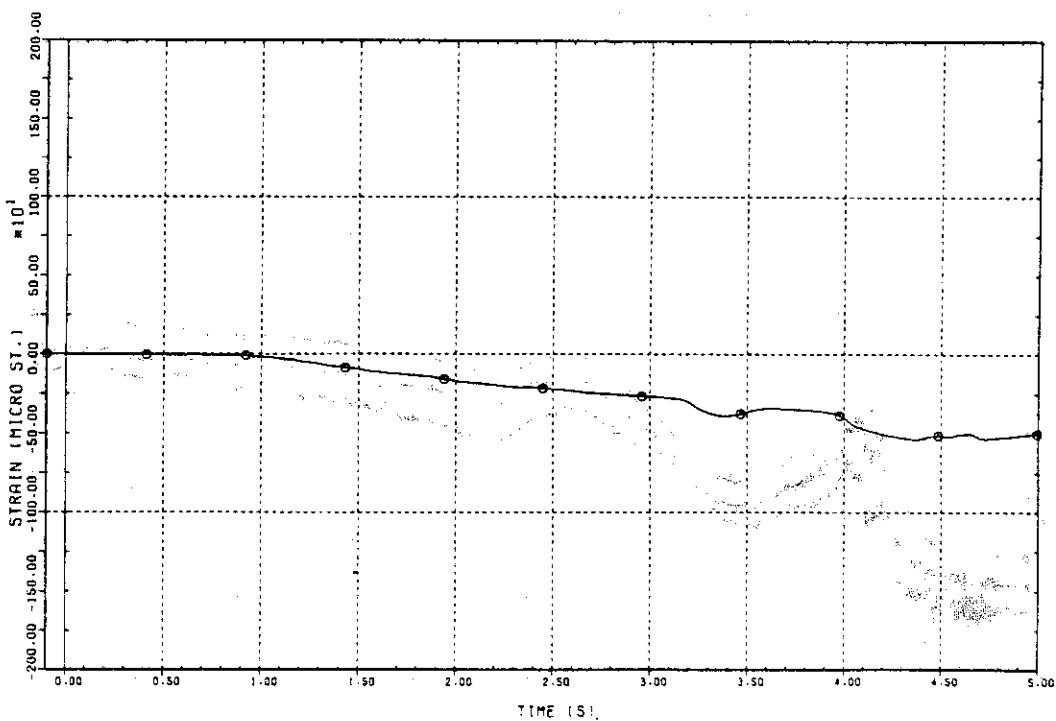


Plot S-1-11 Pressures in Wetwell

TEST 1205

FULL-SCALE MARK II CRT

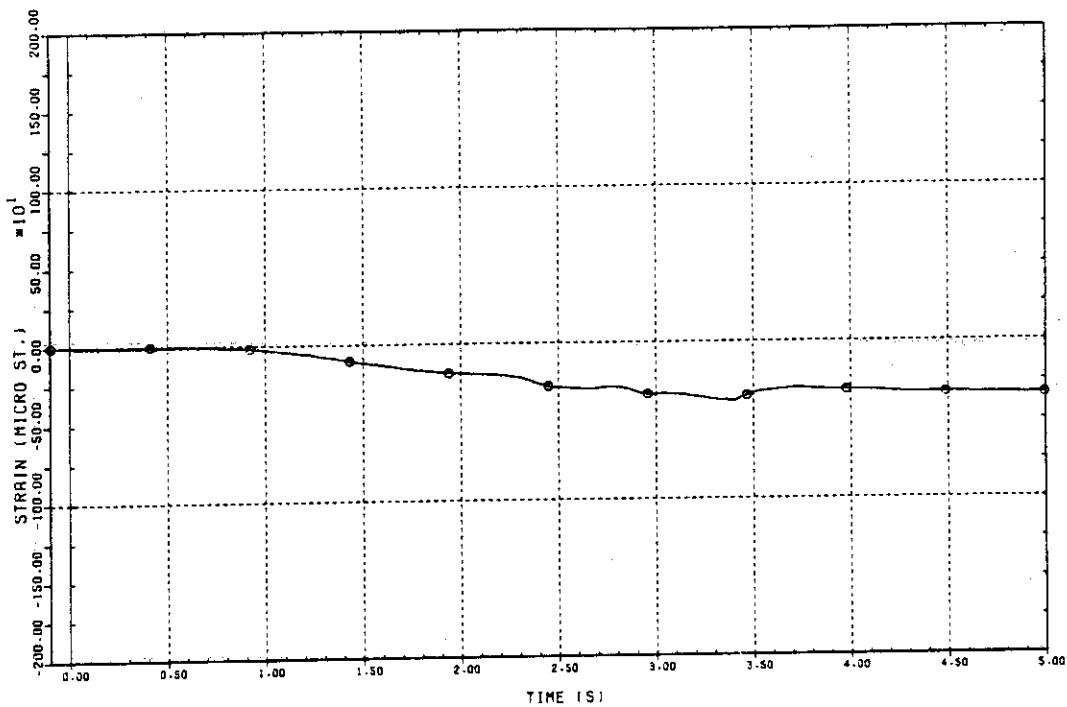
○ VPSF-101 LOWER BRACE BETW. VP1 & WALL



Plot S-1-12 Strain of Vent Pipe Brace

TEST 1205
O VPSF-102 LOWER BRACE BETW. VP1 & VP2

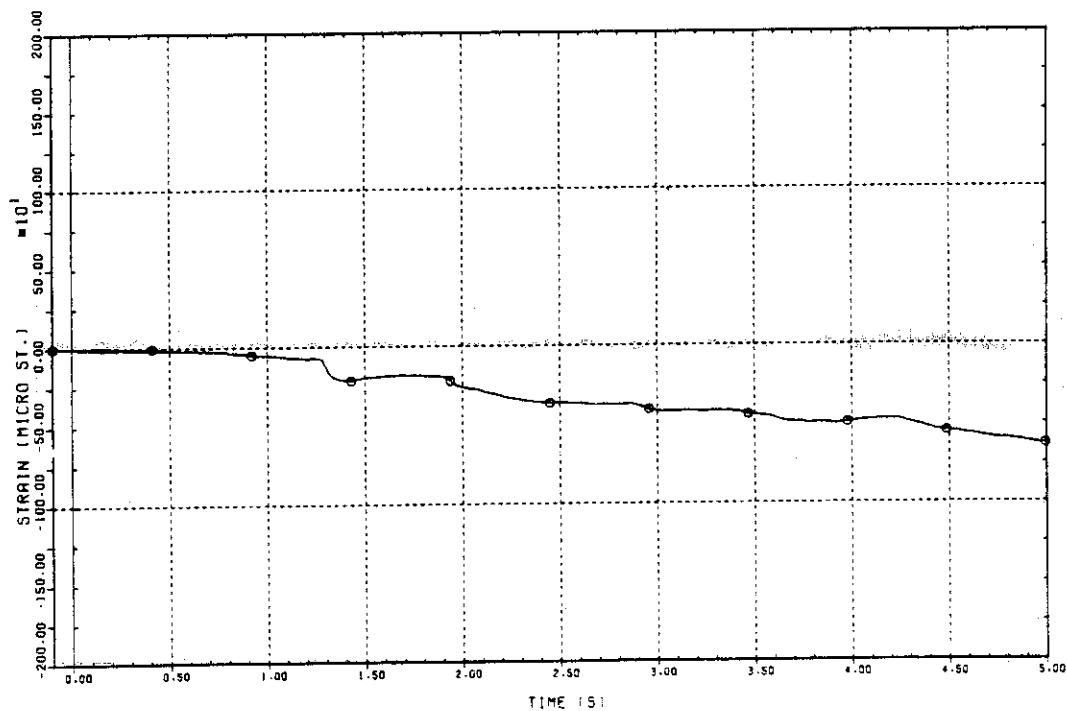
FULL-SCALE MARK II CRT



Plot S-1-13 Strain of Vent Pipe Brace

TEST 1205
O VPSF-201 UPPER BRACE BETW. VP1 & PEDESTAL

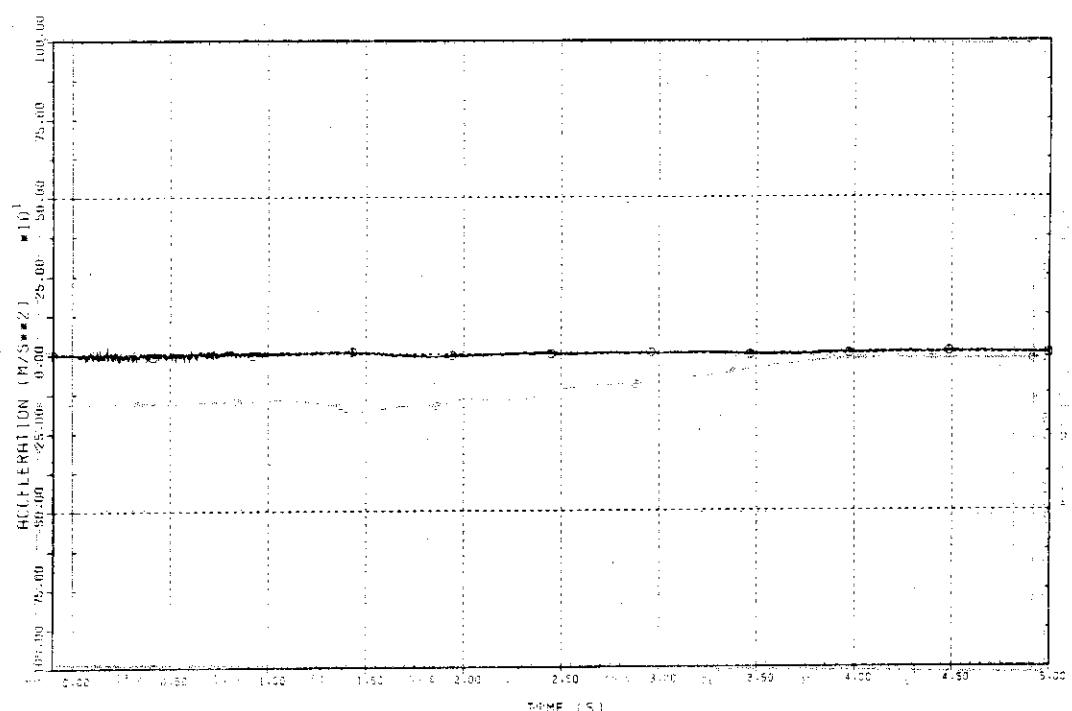
FULL-SCALE MARK II CRT



Plot S-1-14 Strain of Vent Pipe Brace

TEST 1205
③ VPAF-102 VPS OUTLET 100DEG)

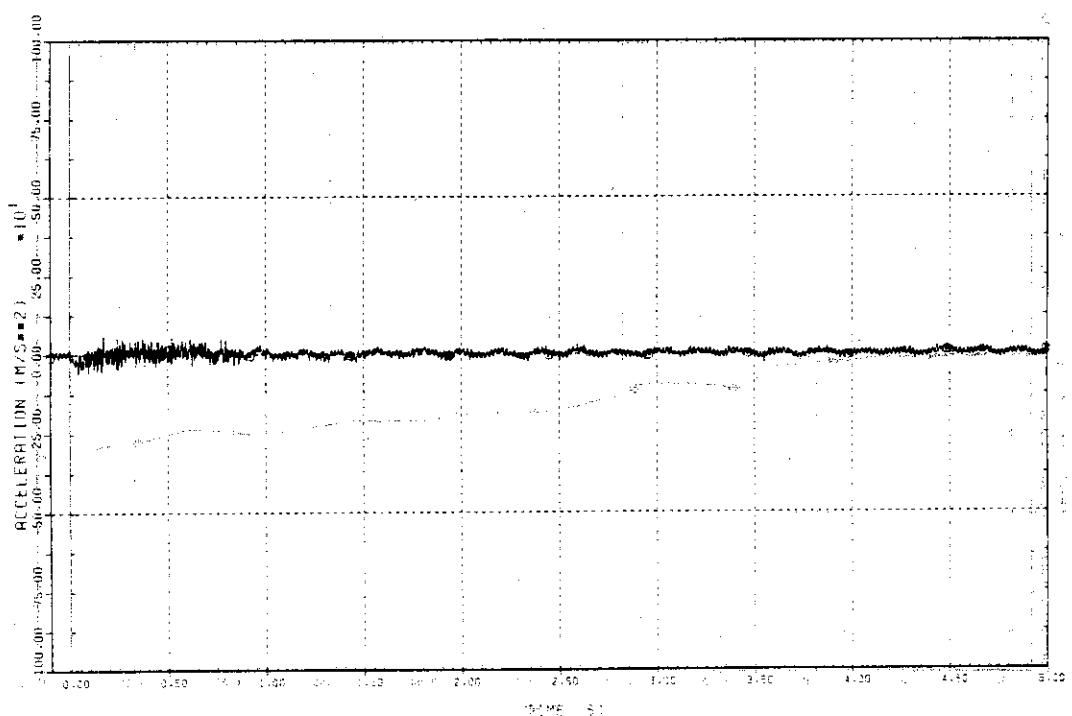
FULL-SCALE MARK III CRT



Plot S-2-1 Acceleration of Vent Pipe Outlet

TEST 1205
③ VPAF-201 VPS OUTLET 100DEG)

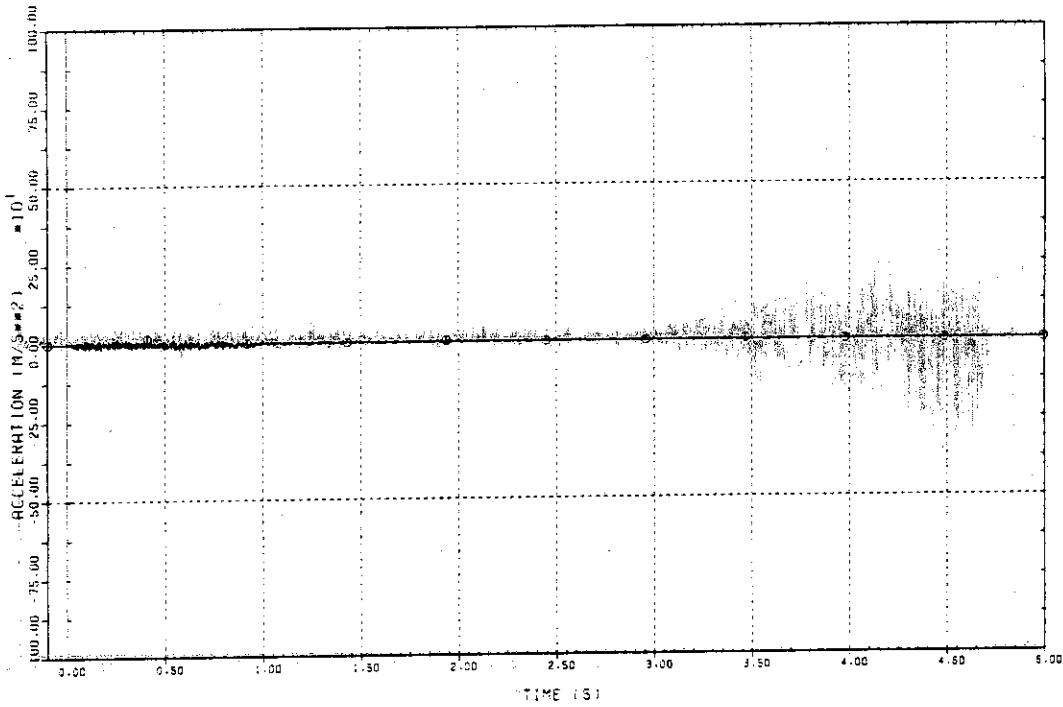
FULL-SCALE MARK III CRT



Plot S-2-2 Acceleration of Vent Pipe Outlet

TEST 1205
WPPF-202 VPS OUTL. (900EG)

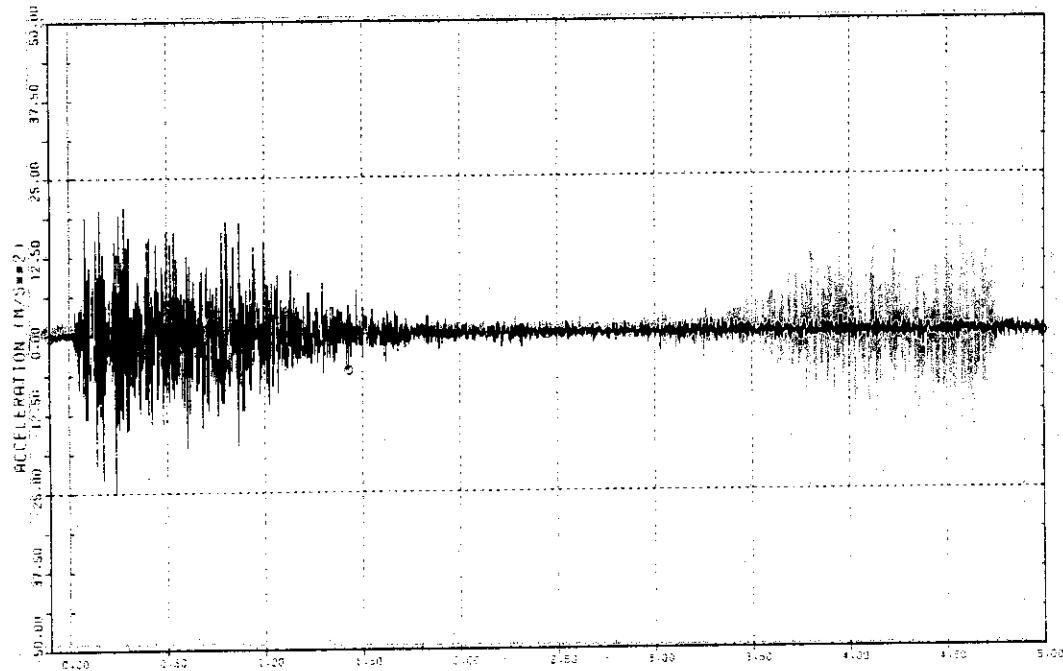
FULL-SCALE MARK II CRT



Plot S-2-3 Acceleration of Vent Pipe Outlet

TEST 1205
WPPF-205 SHELL BESIDE VP3 (3.0M ABOVE BOTT.)

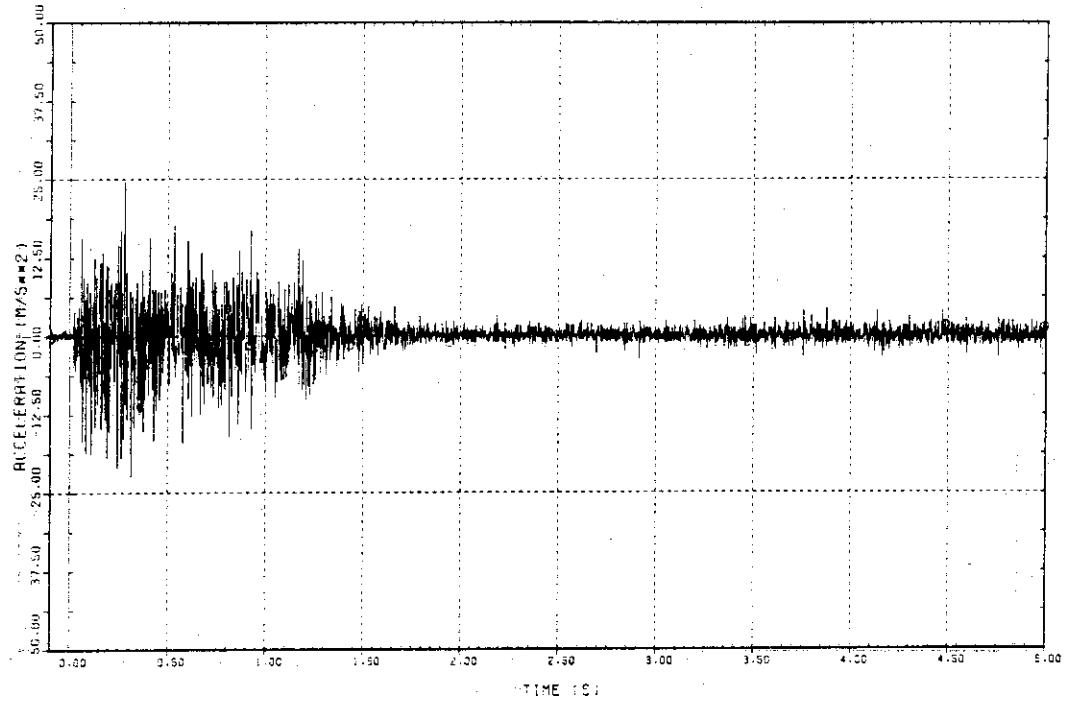
FULL-SCALE MARK II CRT



Plot S-2-4 Acceleration of Containment Structure

TEST 1205

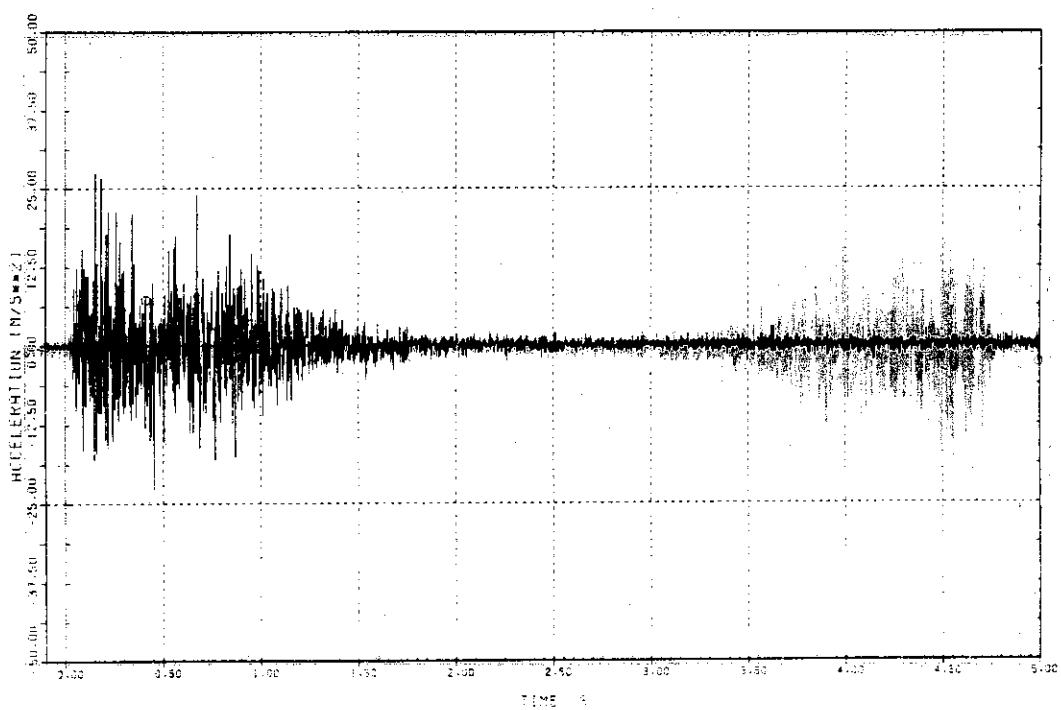
© WWRF-006 SHELL BESIDE VP3 (6.0M ABOVE BOTT.)



Plot S-2-5 Acceleration of Containment Structure

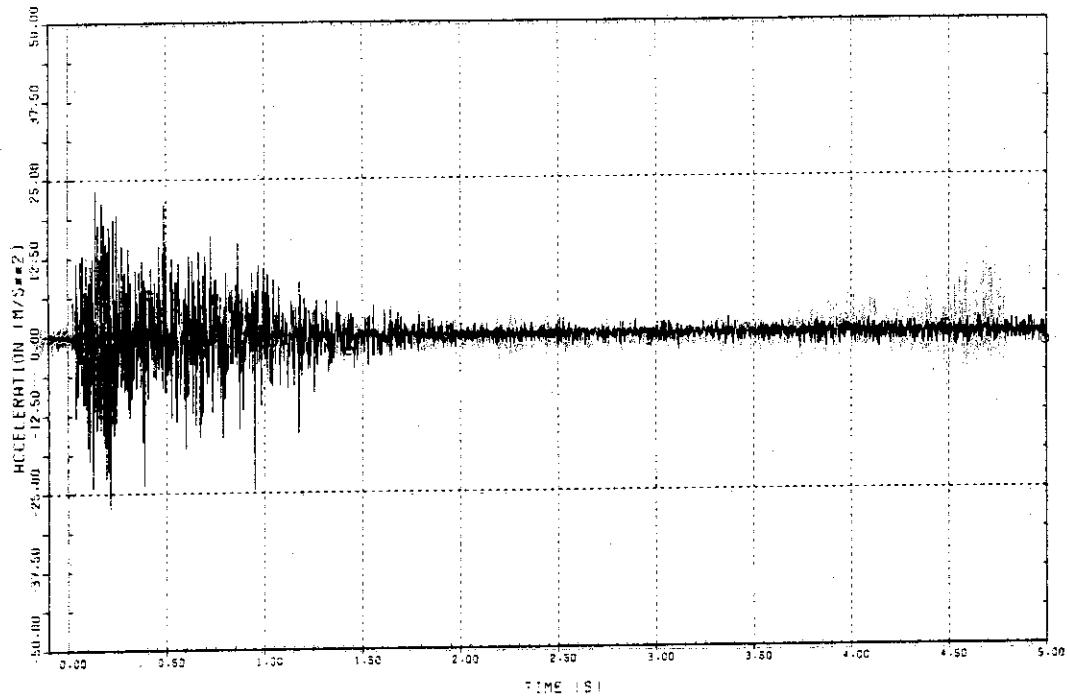
TEST 1205

© WWRF-007 SHELL BESIDE VP4 (3.0M ABOVE BOTT.)



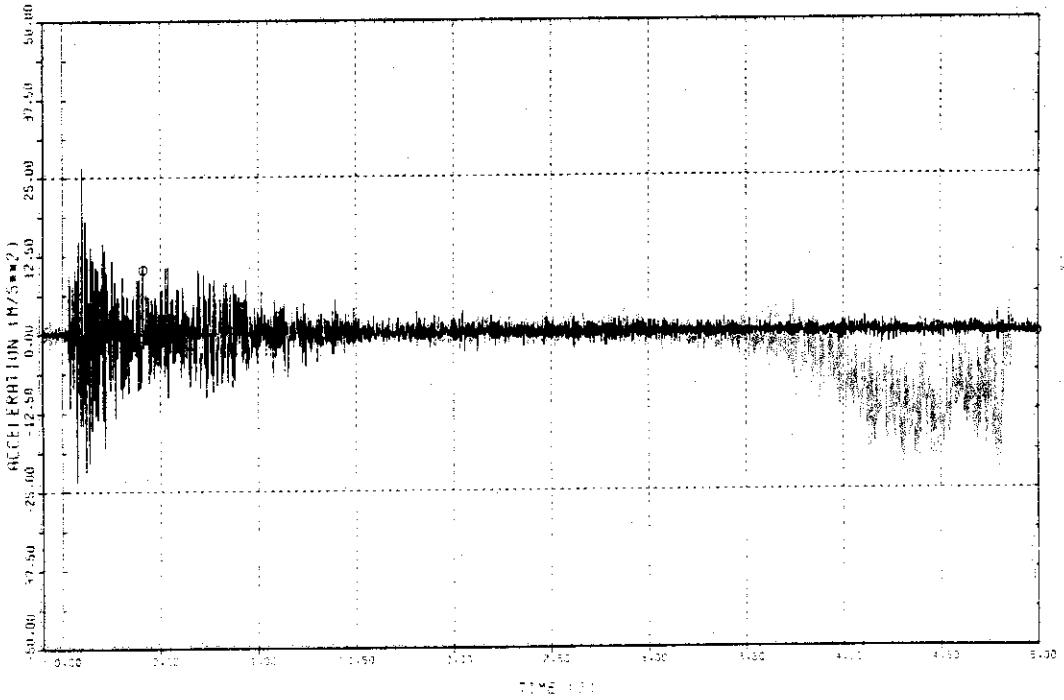
Plot S-2-6 Acceleration of Containment Structure

TEST 1205 FULL-SCALE MARK II CRT
G WWAF-008 SHELL BEAMING VP4 16.0M ABOVE BOTTOM



Plot S-2-7 Acceleration of Containment Structure

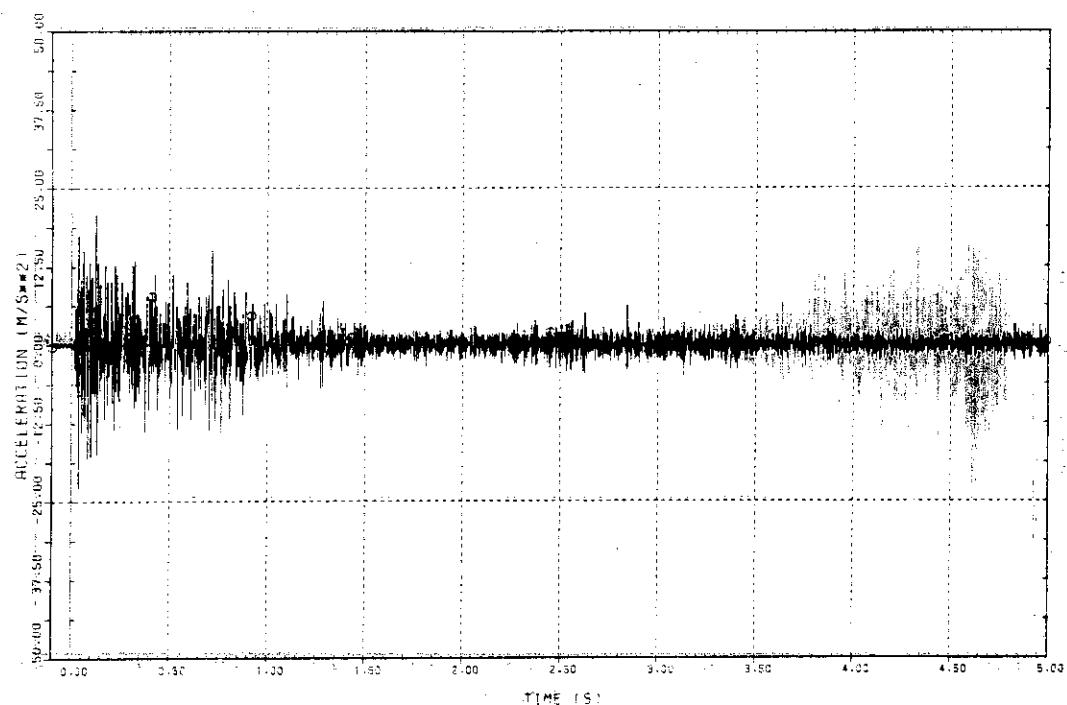
TEST 1205 FULL-SCALE MARK II CRT
G WWAF-009 PEDESTAL (3.0M ABOVE BOTTOM)



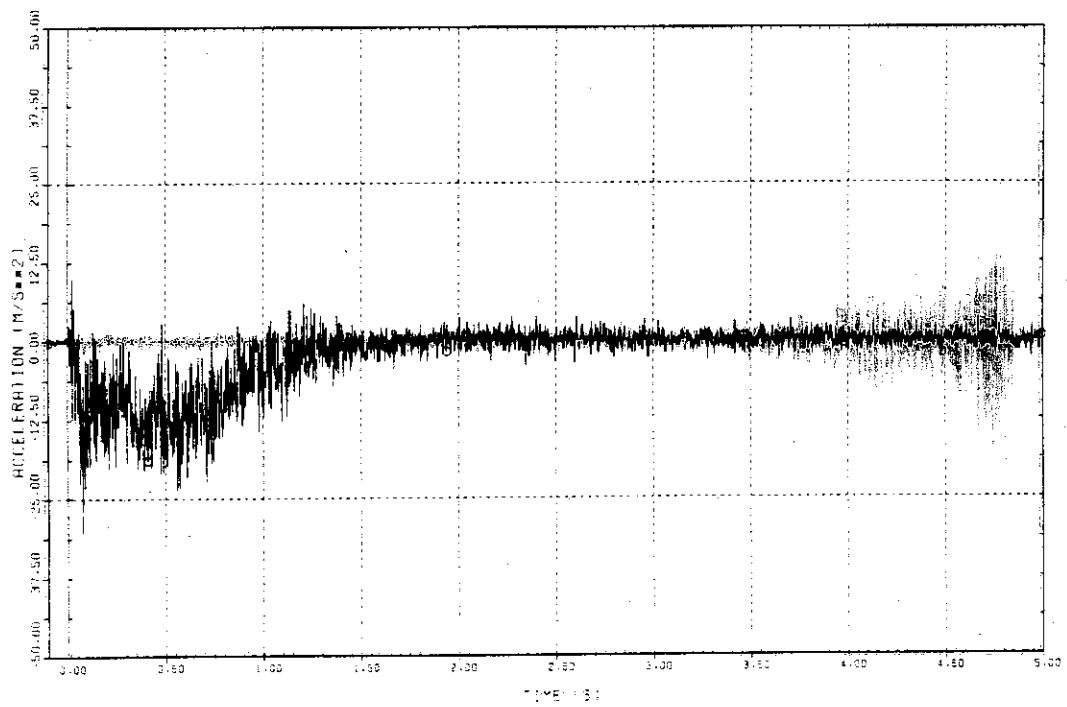
Plot S-2-8 Acceleration of Containment Structure

TEST 1205
© KWAF-010 PEDESTAL (5.0M ABOVE BOTT.)

FULL-SCALE MARK II CRT



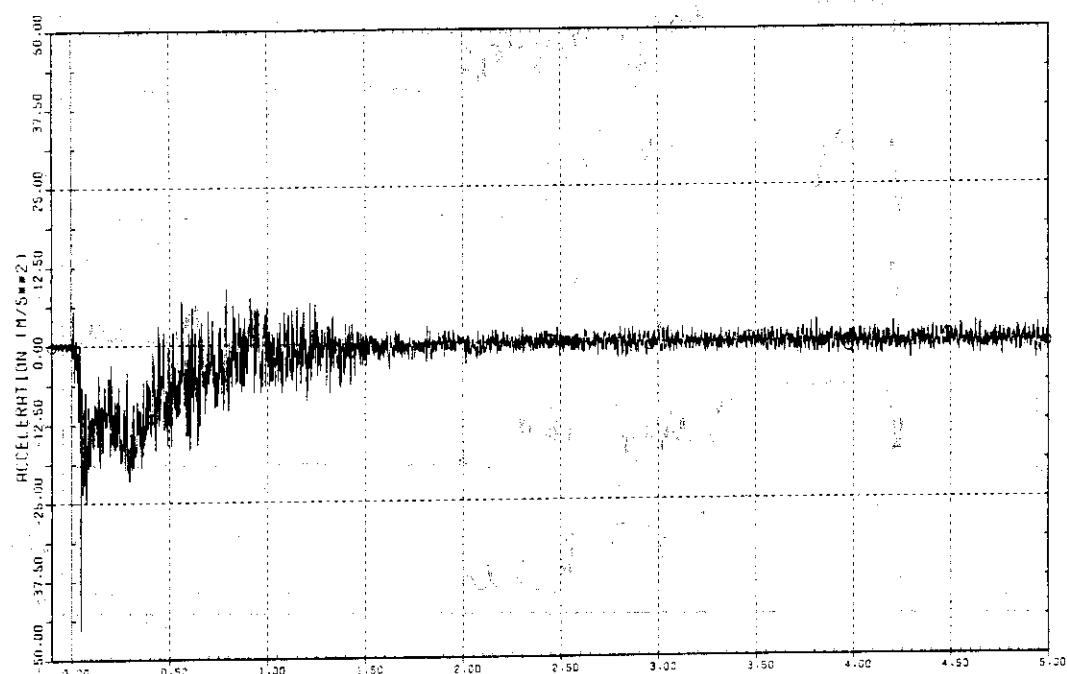
Plot S-2-9 Acceleration of Containment Structure

TEST 1205 FULL-SCALE MARK II CRT
© KWAF-011 SHELL AT DE LEVEL (OCEG)

Plot S-2-10 Acceleration of Containment Structure

TEST 1205
O WWRF-012 SHELL AT DEG LEVEL (90DEG)

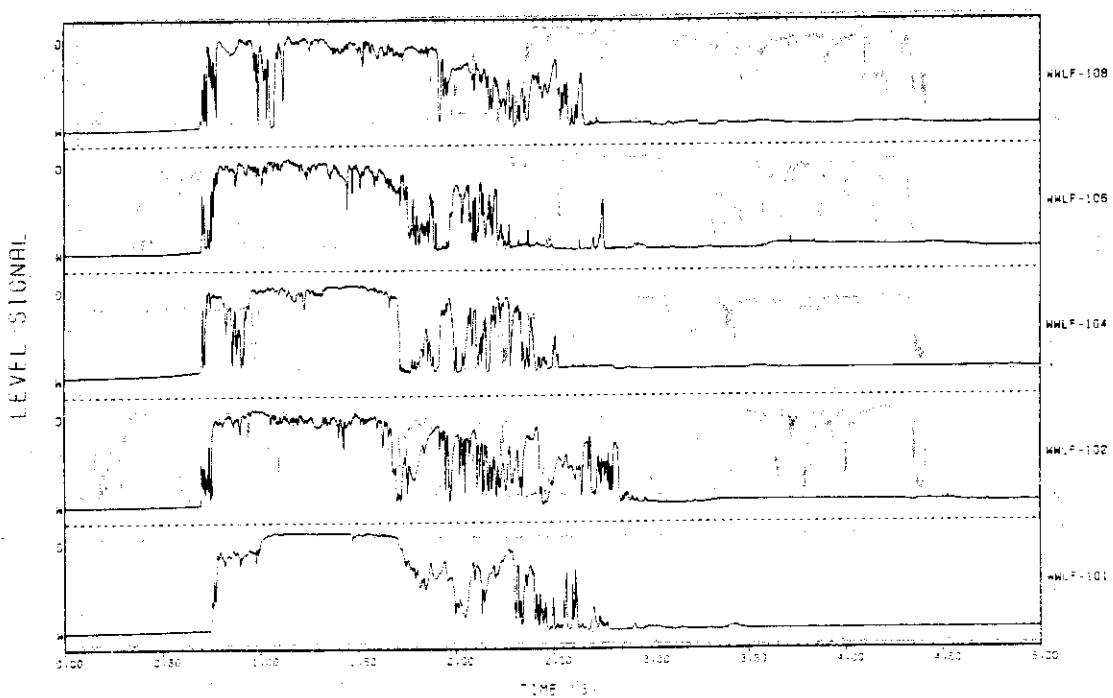
FULL-SCALE MARK II CRT



Plot S-2-11 Acceleration of Containment Structure

TEST 1205

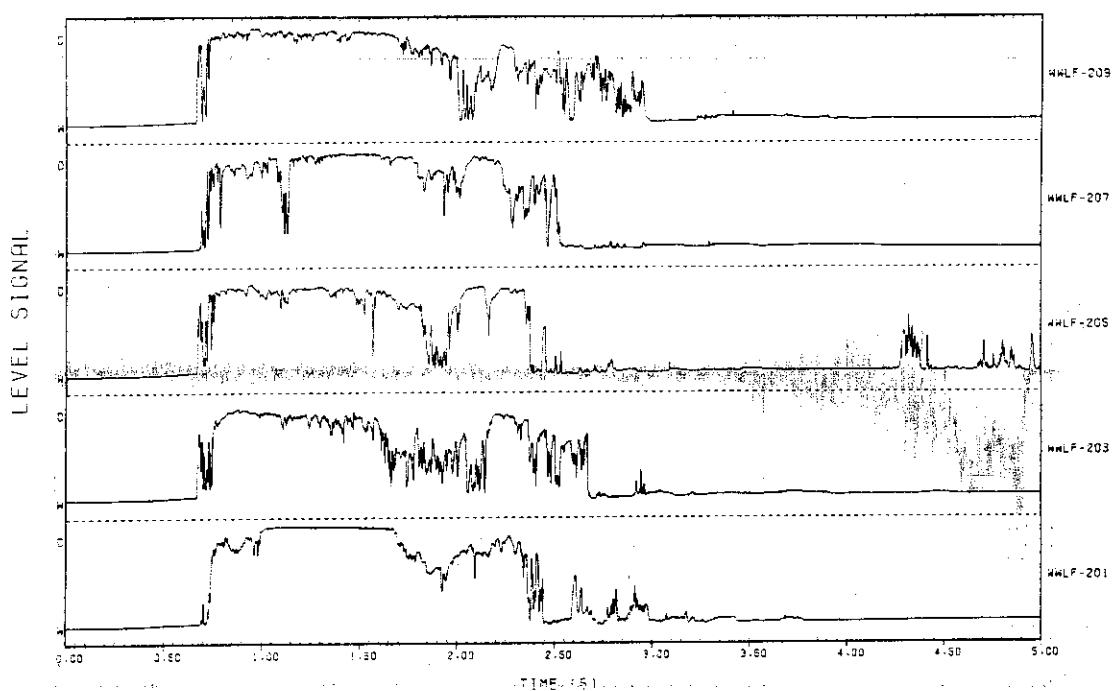
FULL-SCALE MARK II CRT



Plot S-2-12 Phase Boundary Signals

TEST 1205

FULL-SCALE MARK II CRT

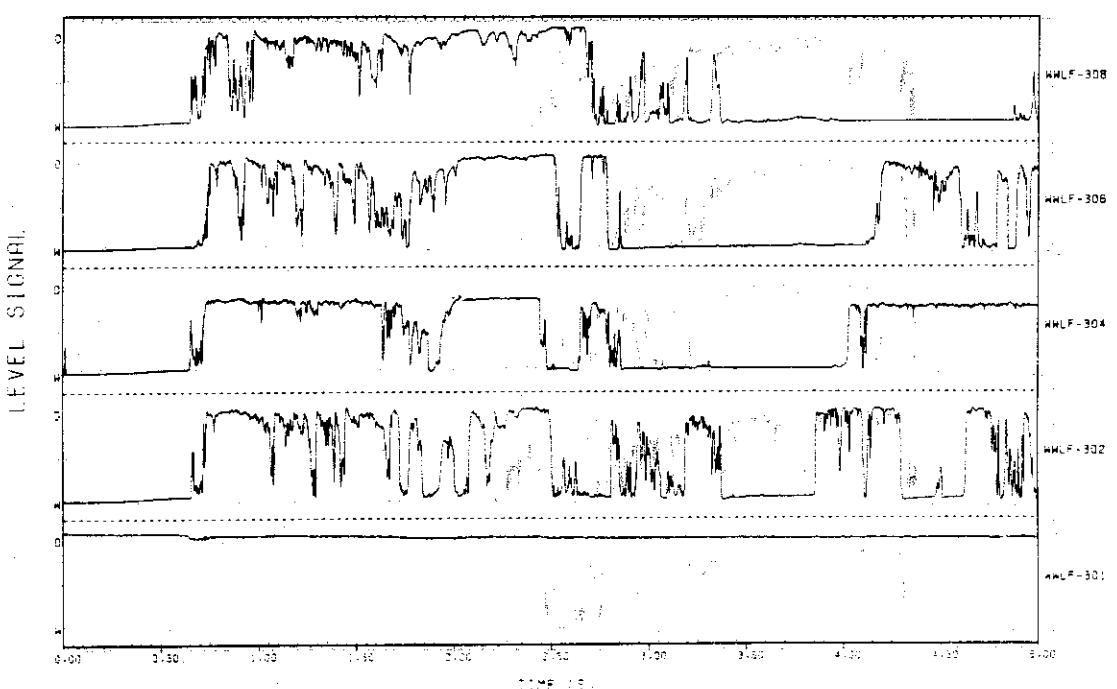


Plot S-2-13 Phase Boundary Signals

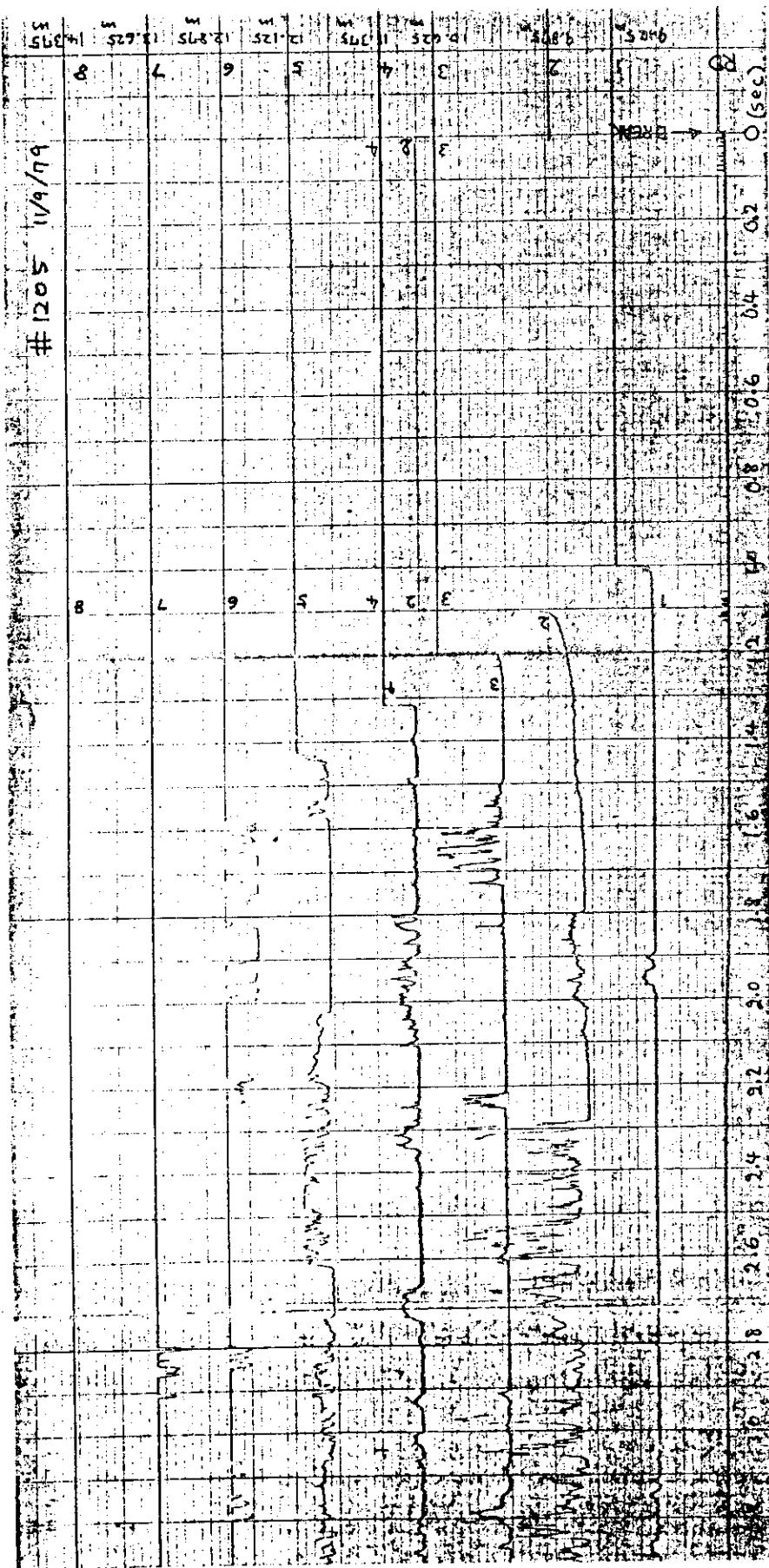
Instrumental signals used to determine the boundaries of the phases

TEST 1205

FULL-SCALE MARK II CRT



Plot S-2-14 Phase Boundary Signals



Supplement 1 Water Level in Wetwell
(Water level signals from supplementary water level
detectors located along line L1, light beam recorded)