5 Field Data and Charts of Data of Long-term Combined Soil Vapour Extraction/Air Sparging Tests

FIELD DATA SHEET : SVE/AS COMBINED TEST (LONG-TERM)

Date : ..... 2 - 11 - 1998 ..... Location/SVE ID : ..... VT3 .....

Vacuum/Extracted Air Flowrate : .....20 - 52 " H_2O / 2.8 -6.7 cfm ..... Sheet (1) of (4)

Pressure/AS Well Flowrate : .....153.5 - 196.8" H_2O / 2 cfm .....

Time Elapsed (hr)	SVE Well		AS Well		Soil Vapour Monitoring Probe Vacuum (in H_2O)												Blower Inlet Vacuum (in H_2O)	Blower Outlet							Carbon Adsorber Outlet				
					Distance from Extraction Well (m)																								
					1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)														
	Vacuum (in H_2O)	Depth to Water (m)	Pressure (in H_2O)	Flowrate (cfm)	Shallow Probe A1	Deep Probe A2	Shallow Probe B1	Deep Probe B2	Shallow Probe C1	Deep Probe C2	Shallow Probe D1	Deep Probe D2	Shallow Probe E1	Deep Probe E2	Shallow Probe F1	Deep Probe F2		Temp. (deg C)	Air Flow (cfm)	Pressure (in H_2O)	VOC (ppm)	CO_2 (%)	O_2 (%)	CH_4 (%)	Temp. (deg C)	VOC (ppm)	CO_2 (%)	O_2 (%)	CH_4 (%)
0	21	2.39	153.5	2	0.0	0.0	0.0	0.0	0.00	0.00	0.0	0.00	0	0.0	0.0	0.0	50	20	6.7	0	145	0.14	18.5	3.95	15	1.7	0.26	18.0	ND
1	20	-	196.8	2	1.5	0.0	0.0	0.0	0.00	0.05	1.6	0.05	0	0.1	0.1	0.2	45	20	4.3	0	121	0.11	18.9	0.94	14	3.0	0.10	19.1	ND
2	21	-	157.5	2	1.2	0.0	0.0	0.0	0.00	0.05	0.0	0.05	0	0.2	0.0	0.1	45	20	4.3	0	119	0.06	18.9	1.44	14	8.0	0.29	18.5	0.40
3	20	-	157.5	2	1.2	0.1	0.0	0.0	0.00	0.05	0.0	0.05	0	0.5	0.0	0.0	43	20	4.3	0	101	0.22	18.7	2.58	14	12.7	0.37	18.7	2.38
4	20	-	157.5	2	0.5	0.1	0.0	0.0	0.00	0.00	0.0	0.10	0	0.6	0.0	0.0	45	20	4.3	0	75.5	0.10	19.8	1.79	15	13.0	0.30	19.7	1.91
8	20	-	157.5	2	1.4	1.2	0.0	0.0	0.00	0.00	0.0	0.10	0	1.0	0.0	0.0	44	20	3.9	0	56.0	0.26	18.6	3.97	12	6.4	0.22	18.6	3.44
12	20	-	157.5	2	1.2	1.2	0.0	0.0	0.00	0.00	0.0	0.05	0	1.1	0.0	0.0	44	20	3.6	0	90.8	0.33	18.7	3.88	12	3.6	0.25	18.4	6.87
16	20	-	157.5	2	1.0	1.0	0.0	0.0	0.05	0.10	0.0	0.05	0	0.9	0.0	0.1	45	20	4.0	0	81.7	0.14	18.9	3.64	13	4.2	0.14	19.2	3.37
24	21	-	157.5	2	0.8	0.0	0.0	0.0	0.00	0.10	0.1	0.10	0	0.0	0.0	0.0	50	20	3.0	0	63.0	0.10	18.9	0.90	14	5.8	0.18	18.8	0.86
32	21	-	157.5	2	1.0	1.0	0.0	0.0	0.00	0.00	0.0	0.00	0	1.0	0.0	0.0	52	20	2.8	0	57.3	0.08	19.0	0.86	7	6.0	0.10	19.2	0.70
40	21	-	157.5	2	1.0	0.5	0.0	0.0	0.00	0.00	0.0	0.05	0	0.5	0.0	0.0	52	20	2.8	0	61.6	0.10	19.1	1.13	7	6.0	0.14	19.2	0.39
48	32	-	157.5	2	1.0	0.5	0.0	0.0	0.00	0.00	0.0	0.05	0	0.0	0.0	0.0	52	20	2.8	0	69.0	0.10	19.2	1.10	13	6.8	0.18	19.2	1.20
56	46	-	157.5	2	1.5	1.9	0.0	0.0	0.30	0.30	0.0	0.00	0	1.0	0.0	0.0	52	20	3.6	0	113	0.18	19.0	3.36	13	11.0	0.10	19.1	2.97
64	42	-	157.5	2	1.3	1.5	0.0	0.0	0.00	0.00	0.0	0.05	0	1.0	0.0	0.0	52	20	3.5	0	191	0.10	19.6	2.88	17	17.9	0.22	19.3	3.48
72	44	-	157.5	2	1.5	1.8	0.0	0.0	0.00	0.00	0.0	0.05	0	0.0	0.0	0.0	52	20	3.4	0	275	0.14	19.2	3.17	18	29.7	0.18	19.2	3.13
80	52	-	157.5	2	1.8	2.0	0.0	0.0	0.00	0.05	0.0	0.05	0	1.2	0.0	0.0	52	20	3.4	0	462	0.16	19.1	3.04	9	166	0.18	19.1	2.95
88	52	-	157.5	2	1.2	1.5	0.0	0.0	0.00	0.05	0.0	0.05	0	1.5	0.0	0.0	51	20	3.4	0	87.4	0.10	19.2	2.23	7	9.5	0.18	18.8	2.19
96	52	-	157.5	2	2.7	2.5	0.2	0.2	0.20	0.20	0.0	0.05	0	0.5	0.1	0.2	51	20	3.3	0	61.8	0.14	18.7	4.34	10	1.7	0.14	18.3	3.99
104	52	-	157.5	2	1.3	1.0	0.0	0.0	0.00	0.05	0.0	0.00	0	1.5	0.0	0.0	52	20	3.6	0	44.1	0.14	18.7	6.75	5	ND	0.14	18.3	7.76
112	52	-	157.5	2	0.4	0.0	0.0	0.0	0.00	0.00	0.0	0.05	0	1.5	0.0	0.0	51	20	4.0	0	681	0.22	19.9	10.6	5	18.5	0.22	19.6	7.71
120	52	-	157.5	2	0.2	0.0	0.0	0.0	0.00	0.00	0.0	0.00	0	1.2	0.0	0.0	51	20	3.9	0	774	0.16	19.2	8.86	5	22.4	0.16	19.2	7.44

FIELD DATA SHEET : SVE/AS COMBINED TEST (LONG-TERM)

Date : ..... 2 - 11 - 1998 ..... Location/SVE ID : ..... VT3 .....

Vacuum/Extracted Air Flowrate : .....20 - 52 " H_2O / 2.8 -6.7 cfm ..... Sheet (2) of (4)

Pressure/AS Well Flowrate : .....153.5 - 196.8" H_2O / 2 cfm .....

Remarks :

1. ND -- not detected (detection limit : CO_2, O_2, CH_4 < 0.01% VOC < 0.1ppm)
2. Goundwater level at SVE well could not be measured due to bubbling.
3. Water was pumped out to the ground after the 1st hr, so the vacuum reduced from 50 "H_2O to 45 "H_2O

FIELD DATA SHEET : SVE/AS COMBINED PILOT TEST (LONG-TERM)

Date : ..... 2 - 11 - 1998 .....

Location/SVE ID : ..... VT3 .....

Vacuum/Extracted Air Flowrate : ....20 - 52 " H_2O / 2.8 -6.7 cfm .....

Sheet (3) of (4)

Pressure/AS Well Flowrate : .....153.5 - 196.8" H_2O / 2 cfm .....

Time Elapse (hr)	Soil Vapour Monitoring Probe																																																	
	Distance from Extraction Well																																																	
	1m								5m								10m								20m								5m								5m							
	Shallow Probe A1				Deep Probe A2				Shallow Probe B1				Deep Probe B2				Shallow Probe C1				Deep Probe C2				Shallow Probe D1				Deep Probe D2				Shallow Probe E1				Deep Probe E2				Shallow Probe F1				Deep Probe F2			
	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)	VOC (ppm)	CO2 (%)	O2 (%)	CH4 (%)
0	60.0	0.14	19.8	2.29	9.6	0.02	20.1	0.04	244	0.49	13.2	3.01	177	0.33	6.30	3.21	4.7	0.02	19.7	0.35	95.0	0.45	2.10	21.5	28.0	0.53	11.9	10.9	11.4	0.57	17.3	8.25	83.9	2.01	4.00	2.27	8.6	0.02	19.8	0.19	41.0	0.30	14.8	5.60	20.6	0.76	15.0	4.86
1	29.1	0.02	20.2	0.11	11.9	0.02	20.2	ND	188	0.37	9.60	1.99	131	0.22	10.4	1.13	6.1	0.06	20.0	0.03	79.8	0.33	6.80	9.19	33.6	0.30	13.0	7.20	12.1	0.76	16.7	3.20	73.4	2.20	1.70	1.33	14.8	0.06	20.0	0.90	30.6	0.49	14.3	5.36	16.8	1.31	12.6	6.45
2	59.8	0.02	19.6	0.66	11.3	0.02	20.3	ND	105	0.18	12.4	0.66	143	0.14	8.40	0.74	9.1	0.02	20.1	ND	83.9	0.26	4.20	7.44	40.5	0.30	10.3	7.83	15.1	0.80	16.1	2.81	70.2	2.24	1.20	1.32	15.4	0.02	20.0	0.78	34.1	0.30	16.0	3.83	14.6	1.23	13.0	7.51
3	40.7	0.02	19.8	0.39	8.6	0.02	20.3	ND	134	0.30	12.5	0.97	159	0.22	7.40	1.24	8.7	0.02	20.0	0.23	78.7	0.26	6.30	8.55	44.7	0.18	10.4	9.08	19.2	0.80	16.3	3.40	71.6	2.36	1.20	0.80	11.7	0.02	20.2	0.54	34.0	0.18	16.3	3.09	12.1	1.07	13.5	7.50
4	52.6	0.05	19.9	0.54	11.6	0.02	20.2	0.58	116	0.22	12.2	0.70	139	0.22	7.50	0.90	7.4	0.02	20.0	0.27	70.2	0.25	6.50	7.04	46.2	0.18	8.10	8.88	14.3	0.53	17.7	1.90	64.4	2.40	1.50	0.97	10.1	0.06	20.1	0.82	38.5	0.34	14.5	7.59	13.2	1.50	11.3	13.6
8	47.1	0.02	20.1	1.01	13.8	ND	20.8	ND	32.9	0.06	20.4	0.58	57.2	0.14	15.5	0.70	15.1	0.02	20.4	0.42	45.7	0.25	6.20	8.45	33.4	0.18	8.10	10.9	18.5	0.61	17.7	4.26	52.1	2.44	2.40	0.50	11.0	ND	20.7	0.43	14.9	0.61	15.2	6.46	8.9	1.07	13.5	8.10
12	34.2	0.10	19.9	2.44	12.2	0.02	20.4	0.02	44.2	0.22	20.0	0.77	67.8	0.22	10.4	1.27	11.7	0.02	20.1	0.90	82.1	0.25	7.20	23.5	44.1	0.48	9.40	19.5	22.5	0.39	18.0	1.91	44.1	2.83	5.00	1.44	17.2	0.02	20.4	0.72	16.6	0.66	16.0	7.36	10.3	1.21	13.1	11.4
16	44.7	0.14	19.8	3.75	10.8	0.06	20.4	0.78	48.0	0.26	17.9	5.09	100	0.26	9.90	2.46	10.8	0.02	20.0	0.82	86.9	0.37	5.00	29.3	56.6	0.33	8.40	23.1	20.7	0.33	18.8	1.76	45.0	2.75	4.30	2.50	14.4	0.02	20.2	0.11	19.9	0.53	15.2	14.8	9.9	1.34	14.0	10.5
24	34.9	0.02	20.0	2.01	11.9	0.02	20.0	0.10	102	0.26	13.5	8.20	86.3	0.22	7.90	1.21	7.8	0.02	19.7	0.01	90.8	0.45	4.20	14.8	33.5	0.57	13.0	5.68	14.4	0.65	16.9	2.46	39.1	2.17	7.50	0.70	15.4	0.02	20.0	ND	17.1	0.96	12.6	9.70	10.8	1.08	12.9	10.1
32	21.8	0.02	20.0	0.38	12.1	0.02	20.0	0.07	54.0	0.06	19.0	0.62	51.1	0.18	13.3	0.63	11.3	0.02	19.7	0.27	40.1	0.37	2.50	12.1	22.4	0.41	10.1	9.30	15.1	0.61	17.0	3.24	28.0	2.36	7.00	0.31	7.5	0.02	20.0	0.27	7.1	0.61	14.7	6.68	4.1	1.11	11.7	12.0
40	32.9	0.06	19.9	1.80	14.0	0.02	20.0	0.01	89.9	0.37	14.0	10.1	80.7	0.30	14.0	3.13	13.7	0.06	19.7	0.31	75.9	0.41	5.40	33.2	62.7	0.41	7.90	11.0	18.2	0.96	15.7	6.10	29.4	2.40	7.80	0.90	11.0	0.06	19.9	0.82	12.1	0.72	14.3	8.46	9.4	0.96	13.2	10.9
48	10.6	0.02	19.6	0.07	1.7	0.02	20.0	ND	54.9	0.10	18.2	0.66	59.1	0.26	8.80	1.76	1.7	0.02	19.7	0.11	52.9	0.49	3.00	32.8	14.3	0.68	12.9	8.02	6.6	0.45	17.8	2.46	22.2	2.36	8.30	0.76	1.7	0.02	19.9	0.02	4.3	0.76	14.5	7.30	5.7	1.30	12.1	11.3
56	8.6	0.06	20.2	1.56	7.7	0.06	20.2	1.21	94.2	0.37	11.3	5.48	93.3	0.30	10.1	6.60	10.6	0.02	20.1	1.21	113	0.41	1.60	22.3	65.5	0.33	9.00	13.3	16.9	0.49	17.8	4.58	19.9	2.71	7.00	9.40	8.6	0.14	20.1	7.79	9.2	0.96	13.3	25.0	7.6	0.96	14.2	21.1
64	684	0.18	19.8	9.40	20.1	0.06	20.4	0.31	800	0.41	14.3	4.80	979	0.45	6.80	5.56	9.7	0.02	20.0	0.78	224	0.53	3.40	18.8	247	0.41	4.90	7.77	20.2	0.45	18.1	4.30	1108	2.49	9.70	4.30	15.4	0.06	20.4	0.39	10.6	0.92	13.3	12.5	8.2	0.84	14.8	10.2
72	15.4	0.02	20.2	0.29	14.3	0.02	20.2	0.23	981	0.41	12.0	4.61	816	0.37	10.8	5.95	12.9	0.03	20.1	0.31	889	0.41	3.60	24.2	108	0.43	14.2	4.58	18.6	0.37	18.4	2.03	1080	2.44	6.50	2.70	26.4	0.02	20.1	0.39	396	0.96	13.6	20.7	605	1.15	12.4	22.3
80	66.7	0.06	19.9	1.31	29.1	0.02	20.0	0.40	764	0.10	12.4	7.87	620	0.12	10.0	10.9	19.6	0.02	19.7	0.43	473	0.46	6.10	31.0	461	0.45	10.4	16.7	27.4	0.68	17.0	5.23	401	2.50	7.10	2.96	11.0	0.02	20.0	0.63	103	0.90	13.0	20.0	32.1	1.19	11.6	24.7
88	12.9	0.02	20.0	1.48	5.6	0.02	20.0	ND	48.7	0.33	12.2	4.38	63.0	0.30	9.90	5.20	3.9	0.02	20.0	0.15	58.8	0.37	4.50	15.7	91.7	0.45	7.80	5.01	10.8	0.76	16.5	3.75	18.9	2.91	10.3	0.82	13.7	0.02	20.0	ND	8.9	0.84	14.0	9.31	5.7	1.08	12.9	12.4
96	23.0	0.14	19.4	0.58	3.0	0.02	20.1	ND	38.6	0.18	11.8	9.30	41.8	0.30	8.90	9.30	1.2	0.02	19.9	0.11	83.9	0.37	4.70	18.4	42.8	0.80	11.2	9.00	7.7	0.41	18.1	1.84	21.4	1.86	14.3	0.66	1.7	0.02	20.1	ND	10.2	1.00	13.9	9.30	8.3	0.96	14.5	7.63
104	13.1	0.18	19.4	3.98	3.7	0.02	20.5	0.35	42.6	0.25	9.50	10.9	138	0.22	6.50	10.1	4.4	0.02	20.3	0.39	172	0.53	4.30	13.2	139	0.45	10.0	3.83	15.4	0.68	16.8	3.61	9.9	2.24	14.1	1.59	3.0	0.02	20.4	1.56	7.8	0.80	14.7	10.1	7.0	0.45	17.4	5.38
112	3.6	0.02	20.5	0.08	3.1	3.00	20.5	ND	364	0.41	18.0	6.73	279	0.53	14.7	5.98	1.7	0.02	20.3	0.20	298	0.57	5.70	17.4	497	0.25	12.7	22.7	18.5	0.41	18.5	2.07	691	1.42	17.8	2.24	4.9	0.02	20.5	0.12	8.6	0.61	16.5	8.61	48.4	1.30	13.4	0.89
120	14.2	0.02	20.2	0.44	4.7	0.02	20.2	ND	306	0.41	11.4	5.88	301	0.45	10.4	11.9	6.4	0.02	20.1	0.40	359	0.51	5.30	19.7	507	0.64	11.4	15.7	14.9	0.37	18.7	2.44	597	2.03	7.80	2.11	16.1	0.02	20.1	0.24	14.2	0.92	12.1	9.70	11.5	0.96	13.2	8.8

Remarks :

1. ND -- not detected (detection limit : CO_2, O_2, CH_4 < 0.01% VOC < 0.1ppm)
2. Gas was measured with a small pump

FIELD DATA SHEET : SVE/AS COMBINED PILOT TEST (LONG-TERM)

Date : ..... 2 - 11 - 1998 .....

Location/SVE ID : ..... VT3 .....

Vacuum/Extracted Air Flowrate : .....20 - 52 " H_2O / 2.8 - 6.7 cfm.....

Sheet (4) of (4)

Pressure/AS Well Flowrate : .....153.5 - 196.8" H_2O / 2 cfm

Time Elapsed (hr)	Groundwater Monitoring Wells																			
	Distance from Extraction Well																			
	2.5m					5.5m					2.5m					2.5m				
	Shallow W1			Deep W2		Shallow W3			Deep W4		Deep W5		Shallow W6			Deep W7		Shallow W8		
	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)
0	2.36	ND	0.40	ND	0.41	2.36	ND	0.25	ND	0.90	ND	0.36	2.32	ND	0.41	ND	0.50	2.38	ND	0.52
1	2.37	ND	0.63	ND	0.43	2.35	ND	0.25	ND	1.20	ND	0.37	2.29	ND	0.39	ND	0.50	2.32	ND	0.70
2	2.35	ND	0.64	ND	0.74	2.35	ND	0.44	ND	1.95	ND	0.51	2.37	ND	0.45	ND	0.91	2.38	ND	0.54
3	2.34	ND	0.46	ND	0.83	2.34	ND	0.55	ND	0.84	ND	0.35	2.30	ND	0.43	ND	0.26	2.34	ND	0.51
4	2.28	ND	0.40	ND	0.55	2.36	ND	0.47	ND	0.59	ND	0.33	2.23	ND	0.41	ND	0.50	2.31	ND	0.55
8	2.33	ND	0.69	ND	0.80	2.37	ND	0.56	ND	0.97	ND	0.55	2.38	ND	0.34	ND	0.53	2.30	ND	0.50
12	2.35	ND	0.52	ND	0.62	2.34	ND	0.38	ND	0.51	ND	0.38	2.30	ND	0.28	ND	0.51	2.39	ND	0.44
16	2.34	ND	0.81	ND	0.63	2.36	ND	1.53	ND	0.64	ND	0.58	2.31	ND	0.44	ND	0.58	2.38	ND	0.42
24	2.40	ND	1.02	ND	0.41	2.39	ND	0.26	ND	0.87	ND	0.48	2.33	ND	0.43	ND	0.49	2.38	ND	0.51
32	2.37	ND	0.92	ND	0.51	2.39	ND	0.38	ND	0.66	ND	0.54	2.32	ND	0.41	ND	0.53	2.36	ND	0.60
40	2.36	ND	0.86	ND	0.50	2.41	ND	0.41	ND	0.69	ND	0.50	2.33	ND	0.41	ND	0.60	2.37	ND	0.57
48	2.31	ND	0.61	ND	0.66	2.41	ND	0.67	ND	1.52	ND	0.91	2.27	ND	0.44	ND	1.06	2.34	ND	0.55
56	2.38	ND	1.81	ND	0.78	2.38	ND	0.40	ND	1.58	ND	0.62	2.36	ND	1.06	ND	1.25	2.38	ND	1.05
64	2.37	ND	1.14	ND	0.82	2.39	ND	0.44	ND	1.24	ND	0.49	2.32	ND	0.33	ND	1.42	2.35	ND	0.60
72	2.35	ND	0.99	ND	0.66	2.40	ND	0.44	ND	1.06	ND	0.36	2.35	ND	0.47	ND	0.41	2.39	ND	0.36
80	2.39	ND	1.04	ND	0.71	2.33	ND	0.48	ND	0.93	ND	0.44	2.38	ND	0.51	ND	0.43	2.40	ND	0.43
88	2.39	ND	1.30	ND	0.48	2.38	ND	0.35	ND	0.70	ND	0.38	2.40	ND	0.55	ND	0.77	2.41	ND	0.48
96	2.44	ND	1.20	ND	0.45	2.43	ND	0.37	ND	0.49	ND	0.32	2.42	ND	0.49	ND	0.62	2.46	ND	0.56
104	2.34	ND	1.09	ND	0.36	2.41	ND	0.40	ND	0.80	ND	0.41	2.35	ND	0.47	ND	0.39	2.37	ND	0.33
112	2.50	ND	0.86	ND	0.42	2.43	ND	0.30	ND	0.92	ND	0.33	2.49	ND	0.70	ND	0.48	2.42	ND	0.34
120	2.45	ND	1.01	ND	0.49	2.43	ND	0.39	ND	0.84	ND	0.37	2.45	ND	0.59	ND	0.57	2.44	ND	0.37

Remarks :

1. ND -- not detected

FIELD DATA SHEET : SVE/AS COMBINED TEST (LONG-TERM)

Date : ..... 21 - 10 - 1998 ..... Location/SVE ID : ..... VT4 .....

Vacuum/Extracted Air Flowrate : ..... 5 - 10" H_2O / 30 - 80 cfm ..... Sheet (1) of (3)

Pressure/AS Well Flowrate : .....137.8" H_2O / 8 cfm .....

Time Elapsed (hr)	SVE Well		AS Well		Soil Vapour Monitoring Probe Vacuum (in H_2O)												Blower Inlet Vacuum (in H_2O)	Blower Outlet							Carbon Adsorber Outlet				
					Distance from Extraction Well (m)																								
					1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)														
	Vacuum (in H_2O)	Depth to Water (m)	Pressure (in H_2O)	Flowrate (cfm)	Shallow Probe A1	Deep Probe A2	Shallow Probe B1	Deep Probe B2	Shallow Probe C1	Deep Probe C2	Shallow Probe D1	Deep Probe D2	Shallow Probe E1	Deep Probe E2	Shallow Probe F1	Deep Probe F2		Temp. (deg C)	Air Flow (cfm)	Pressure (in H_2O)	VOC (ppm)	CO_2 (%)	O_2 (%)	CH_4 (%)	Temp. (deg C)	VOC (ppm)	CO_2 (%)	O_2 (%)	CH_4 (%)
0	10	2.72	137.8	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	15	24	80	20	280	8.20	9.10	20.8	18	ND	10.3	5.10	19.5
1	10	2.71	137.8	8	1.0	0.7	0.5	0.5	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	31	79	20	320	8.90	9.50	22.3	20	ND	11.9	5.20	21.9
2	10	2.71	137.8	8	1.0	0.7	0.3	0.3	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	31	78	20	392	10.4	6.10	25.4	20	2.4	11.1	5.20	19.6
3	10	2.71	137.8	8	0.8	0.8	0.3	0.3	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	31	77	20	412	10.9	6.20	26.7	20	4.3	10.9	5.10	19.2
4	10	2.71	137.8	8	0.9	0.8	0.2	0.3	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	31	77	20	384	10.8	5.50	26.6	20	1.3	10.8	5.40	18.8
8	10	2.67	137.8	8	1.0	0.8	0.3	0.3	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	31	77	22	378	10.5	6.20	28.4	20	1.3	9.60	5.90	20.3
12	10	2.67	137.8	8	1.0	0.8	0.3	0.3	0.5	0.6	0.4	0.40	0.50	0.60	0.20	0.20	15	22	79	22	357	9.21	7.20	25.4	20	282	9.23	7.00	26.2
16	10	2.67	137.8	8	1.0	0.8	0.3	0.3	0.5	0.6	0.4	0.40	0.50	0.50	0.20	0.20	15	22	79	22	482	9.29	7.50	27.4	20	476	8.97	7.60	28.4
24	5	2.73	137.8	8	0.2	0.2	0.0	0.2	0.1	0.1	0.1	0.10	0.00	0.00	0.00	0.00	5	24	30	36	260	7.84	8.80	14.8	20	80.0	8.50	8.80	10.4
32	5	2.72	137.8	8	0.2	0.2	0.0	0.0	0.1	0.1	0.0	0.00	0.00	0.00	0.00	0.00	5	26	30	36	529	9.04	8.80	17.6	20	8.1	8.74	8.90	12.9
40	5	2.75	137.8	8	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.00	0.00	0.00	0.00	0.00	7	24	30	35	482	10.1	7.80	19.9	20	2.3	10.0	8.80	13.7
48	5	2.72	137.8	8	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.10	0.00	0.00	0.00	0.00	5	31	40	62	660	10.4	8.40	16.4	25	25.9	10.4	7.90	11.1
56	5	2.68	137.8	8	0.2	0.2	0.0	0.0	0.1	0.1	0.1	0.10	0.10	0.15	0.05	0.05	7	34	40	62	512	10.2	8.50	20.2	25	89.4	10.6	7.70	17.2
64	5	2.69	137.8	8	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.05	0.15	0.20	0.05	0.05	7	30	40	62	410	9.60	7.90	18.4	23	320	9.60	7.70	16.0
72	5	2.69	137.8	8	0.3	0.3	0.1	0.1	0.1	0.2	0.1	0.05	0.15	0.15	0.05	0.05	7	26	40	60	571	10.7	7.80	30.1	22	ND	10.6	7.80	27.9
80	5	2.65	137.8	8	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.05	0.15	0.15	0.05	0.05	7	34	40	60	553	9.04	8.80	20.2	21	ND	9.19	8.70	20.0
88	5	2.63	137.8	8	0.2	0.2	0.0	0.0	0.1	0.1	0.0	0.00	0.10	0.15	0.00	0.00	7	21	40	60	487	6.61	9.70	19.9	20	ND	6.40	10.1	20.1
96	5	2.61	137.8	8	0.2	0.2	0.0	0.0	0.1	0.1	0.0	0.00	0.10	0.10	0.00	0.00	7	23	40	60	512	8.94	8.90	23.3	21	1.3	8.14	9.90	22.0
104	5	2.61	137.8	8	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.00	0.15	0.15	0.00	0.00	7	22	40	60	604	8.99	7.90	28.3	21	28.7	8.56	9.70	25.1
112	5	2.59	137.8	8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.00	0.10	0.05	0.00	0.00	7	20	40	60	532	10.3	7.70	24.9	15	46.1	10.0	8.60	23.2

Remarks :

1. ND -- not detected (detection limit: CO_2, O_2, CH_4 < 0.01% VOC < 0.1ppm)
2. The combined test was terminated before the 120th hr because of the typhoon.
3. The SVE flowrate was instructed to start at 80 cfm and change to 30 cfm from the 24th hr and 40 cfm from the 48th hr.

FIELD DATA SHEET : SVE/AS COMBINED PILOT TEST (LONG-TERM)

Date : .... 21 - 10 - 1998 .... Location/SVE ID : .... VT4 ....

Vacuum/Extracted Air Flowrate : .... 5 - 10" H_2O / 30 - 80 cfm .... Sheet (2) of (3)

Pressure/AS Well Flowrate : ....137.8" H_2O / 8 cfm ....

Soil Vapour Monitoring Probe — Distance from Extraction Well

Time Elapsed (hr)	1m: Shallow Probe A1 VOC (ppm)	A1 CO2 (%)	A1 O2 (%)	A1 CH4 (%)	1m: Deep Probe A2 VOC (ppm)	A2 CO2 (%)	A2 O2 (%)	A2 CH4 (%)	5m: Shallow Probe B1 VOC (ppm)	B1 CO2 (%)	B1 O2 (%)	B1 CH4 (%)	5m: Deep Probe B2 VOC (ppm)	B2 CO2 (%)	B2 O2 (%)	B2 CH4 (%)
0	96.1	3.11	15.2	11.7	189	4.89	15.3	10.1	213	0.80	19.4	3.20	19.9	0.61	19.8	1.36
1	111	4.36	10.0	34.4	603	5.53	14.2	19.9	194	5.59	10.3	21.1	238	0.88	19.0	4.07
2	105	5.10	8.90	41.4	555	6.70	11.8	24.3	96.1	12.3	4.40	49.3	110	3.22	14.3	19.2
3	128	4.75	10.2	40.3	538	6.46	12.2	23.1	85.6	11.9	4.10	47.7	95.7	2.98	15.0	16.6
4	109	4.59	9.20	37.2	341	8.36	10.7	20.0	75.8	14.2	4.70	53.3	275	0.73	19.2	10.2
8	89.4	7.25	5.40	63.8	553	3.42	17.4	19.1	77.9	18.2	4.40	70.9	50.8	7.60	13.6	37.9
12	42.5	8.58	4.30	76.3	67.2	4.51	15.6	27.3	37.2	20.1	2.90	72.1	40.4	12.7	9.70	49.3
16	103	7.01	6.80	78.2	134	4.05	15.1	25.0	82.5	17.8	3.60	76.6	57.2	10.0	12.0	39.5
24	238	7.41	5.00	45.0	510	5.92	12.9	12.1	227	24.0	0.70	70.0	150	12.7	10.1	34.8
32	125	7.79	4.30	44.2	664	3.60	16.8	8.99	75.8	24.0	0.90	72.1	62.1	11.9	10.5	39.9
40	114	8.12	4.30	59.6	391	7.41	13.2	16.8	79.1	24.1	1.30	63.4	58.6	16.2	8.70	44.1
48	92.0	9.31	2.10	48.5	425	7.10	10.8	10.5	82.4	23.3	2.10	67.3	42.0	14.3	9.30	36.8
56	97.9	9.00	4.30	50.2	654	6.45	13.0	13.2	99.1	24.8	1.70	68.3	65.0	12.3	10.8	34.1
64	66.2	9.60	2.80	47.8	185	6.66	12.0	10.9	35.1	23.3	1.50	70.1	28.4	15.0	8.40	40.2
72	150	9.60	3.30	67.9	850	6.82	11.5	30.7	111	24.0	0.40	71.7	79.1	16.2	7.00	49.3
80	138	9.23	2.90	66.0	892	4.12	13.4	38.2	98.7	22.8	0.60	71.2	87.6	12.7	9.00	50.9
88	152	8.74	3.10	69.4	761	5.74	11.0	44.9	104	21.0	0.90	70.2	80.5	11.9	8.60	47.1
96	201	9.10	2.70	71.4	966	6.06	9.90	57.1	89.1	19.2	1.10	72.3	117	10.8	9.00	50.8
104	19[illegible]	10.1	2.60	74.4	872	7.10	9.00	66.1	141	19.0	1.00	73.3	152	10.1	8.70	57.7
112	134	12.1	2.40	78.9	665	9.26	8.70	70.1	101	18.7	0.70	75.2	134	11.4	8.50	66.2

Time Elapsed (hr)	10m: Shallow Probe C1 VOC (ppm)	C1 CO2 (%)	C1 O2 (%)	C1 CH4 (%)	10m: Deep Probe C2 VOC (ppm)	C2 CO2 (%)	C2 O2 (%)	C2 CH4 (%)	20m: Shallow Probe D1 VOC (ppm)	D1 CO2 (%)	D1 O2 (%)	D1 CH4 (%)	20m: Deep Probe D2 VOC (ppm)	D2 CO2 (%)	D2 O2 (%)	D2 CH4 (%)
0	134	0.45	20.0	2.89	192	0.14	21.0	4.70	307	0.78	20.2	2.13	175	0.22	20.8	0.27
1	78.4	4.00	11.8	26.2	79.3	2.72	13.0	16.8	161	5.57	9.60	20.3	342	2.99	9.10	6.93
2	64.5	9.60	6.90	45.1	46.2	10.4	4.30	43.0	127	10.8	3.80	33.0	225	6.70	4.60	18.8
3	72.4	9.12	7.90	41.5	44.0	8.96	4.60	40.5	144	9.04	5.40	29.7	190	5.92	6.20	19.1
4	108	6.16	8.40	23.1	83.1	7.86	4.70	40.1	117	8.73	5.90	27.1	186	4.74	6.00	19.9
8	68.1	13.9	5.70	57.1	72.9	18.9	2.40	62.6	128	13.1	3.60	39.9	153	10.8	4.80	34.0
12	49.5	15.4	5.40	55.2	53.2	18.6	2.50	54.8	72.6	13.9	3.10	38.7	90.2	15.0	2.40	39.1
16	82.3	15.8	5.00	76.5	99.1	18.6	2.20	72.3	150	13.1	4.60	49.7	190	15.8	2.10	45.4
24	226	14.2	6.50	37.5	265	20.5	1.40	47.3	240	14.6	2.80	32.4	161	16.2	2.40	30.5
32	73.0	18.6	2.80	58.3	88.9	20.9	1.30	57.2	101	15.0	2.70	41.8	157	17.4	1.40	40.6
40	92.7	19.7	2.60	59.1	94.1	20.1	1.20	60.0	148	16.2	1.70	60.6	193	17.4	1.30	50.2
48	10.0	17.0	3.80	46.6	52.1	19.3	2.60	48.5	32.0	15.0	2.50	32.5	45.0	17.4	1.10	33.2
56	73.7	15.4	4.90	45.2	91.4	22.0	1.40	51.7	102	16.6	1.50	40.1	167	18.1	1.20	38.6
64	34.8	19.3	3.20	60.1	41.7	20.5	1.20	60.0	82.5	15.4	3.00	49.1	57.0	18.6	1.00	40.6
72	93.0	19.3	2.80	57.6	60.5	22.0	0.90	60.7	225	15.3	2.90	59.7	284	18.6	0.04	66.3
80	100	18.9	2.30	66.4	118	19.7	0.80	68.2	234	15.0	1.80	60.4	304	17.0	0.90	69.2
88	81.2	16.5	2.90	69.5	106	20.1	1.10	70.2	194	15.1	2.30	62.3	262	16.6	0.70	61.3
96	126	14.0	3.10	71.2	80.2	16.9	1.10	63.2	130	14.7	1.60	66.7	301	17.4	0.90	60.1
104	166	17.2	2.90	73.3	112	15.7	0.90	66.3	87.3	15.0	1.50	69.9	216	17.0	0.70	67.7
112	96.3	15.1	3.00	69.9	101	14.3	0.70	74.4	76.1	13.2	1.40	65.7	134	19.1	0.90	67.9

Time Elapsed (hr)	5m: Shallow Probe E1 VOC (ppm)	E1 CO2 (%)	E1 O2 (%)	E1 CH4 (%)	5m: Deep Probe E2 VOC (ppm)	E2 CO2 (%)	E2 O2 (%)	E2 CH4 (%)	5m: Shallow Probe F1 VOC (ppm)	F1 CO2 (%)	F1 O2 (%)	F1 CH4 (%)	5m: Deep Probe F2 VOC (ppm)	F2 CO2 (%)	F2 O2 (%)	F2 CH4 (%)
0	87.7	0.01	20.9	0.69	257	7.45	10.0	13.7	132	5.66	12.3	6.90	64.0	3.15	16.9	9.05
1	113	ND	7.60	17.1	376	5.01	8.70	14.7	188	8.07	6.90	7.75	182	7.09	8.10	7.45
2	122	ND	5.20	18.0	470	7.99	6.30	18.0	216	6.38	10.1	6.49	180	6.38	10.1	6.61
3	141	ND	4.90	18.4	450	8.80	6.00	18.4	186	6.70	9.60	7.09	160	7.21	8.80	8.14
4	163	ND	5.40	17.0	432	7.14	6.60	17.1	201	6.59	9.10	6.98	181	7.05	8.90	7.12
8	139	ND	7.90	14.7	449	7.99	6.60	18.4	198	5.33	12.1	6.40	188	5.64	10.9	7.75
12	99.3	ND	11.0	11.3	283	7.91	6.80	15.6	137	4.04	14.7	4.22	129	3.96	10.9	5.09
16	145	ND	12.0	11.9	782	7.37	8.00	16.4	201	3.23	16.4	3.23	175	3.64	10.0	7.44
24	120	0.02	9.80	10.9	130	11.9	3.10	16.4	105	3.38	16.3	1.64	98.0	1.08	19.0	4.46
32	140	0.10	9.20	13.6	388	12.7	1.50	19.9	174	3.22	16.7	2.62	100	3.66	16.7	9.80
40	151	0.10	7.40	18.8	280	12.3	1.40	24.6	170	3.43	16.7	3.12	79.2	4.16	15.6	10.4
48	26.0	0.02	6.00	12.8	234	12.7	2.10	14.4	57.0	2.72	17.4	0.78	87.2	3.19	17.0	3.91
56	91.7	0.10	6.90	14.7	412	6.61	3.90	21.0	64.7	3.04	16.8	2.12	103	3.80	16.2	4.95
64	80.6	0.10	5.70	14.0	202	12.1	2.20	14.8	72.5	1.90	18.9	7.46	49.7	3.19	17.5	11.2
72	198	0.22	8.60	67.3	1101	13.1	2.20	60.6	178	2.10	18.0	2.60	87.1	3.11	17.3	10.5
80	214	0.18	10.5	57.7	966	10.7	2.70	62.3	197	1.27	18.4	4.62	90.9	2.32	18.0	14.0
88	111	0.06	11.7	62.9	874	9.00	2.00	67.1	166	1.03	17.5	7.05	70.6	4.05	17.9	17.2
96	69.1	0.07	11.1	69.3	600	8.70	1.90	72.1	99.7	1.12	17.7	8.09	90.4	3.83	15.1	15.3
104	95.3	0.07	10.7	68.7	713	8.00	1.60	71.6	132	1.93	17.0	7.93	103	4.92	14.0	15.1
112	90.1	0.13	10.9	78.2	512	9.10	1.40	75.2	93.1	2.01	15.2	11.0	108	5.03	16.1	18.4

Remarks :

1. ND -- not detected (detection limit: CO_2, O_2, CH_4 < 0.01% VOC < 0.1ppm)
2. AS and SVE were carried out to remove helium before the combined test.
3. The combined test was terminated before the 120th hr because of the typhoon.
4. Gas was measured with a small pump.

FIELD DATA SHEET : SVE/AS COMBINED PILOT TEST (LONG-TERM)

Date : ..... 21 - 10 - 1998 .....

Vacuum/Extracted Air Flowrate : ..... 5 - 10" H_2O / 30 - 80 cfm .....

Pressure/AS Well Flowrate : .....137.8" H_2O / 8 cfm .....

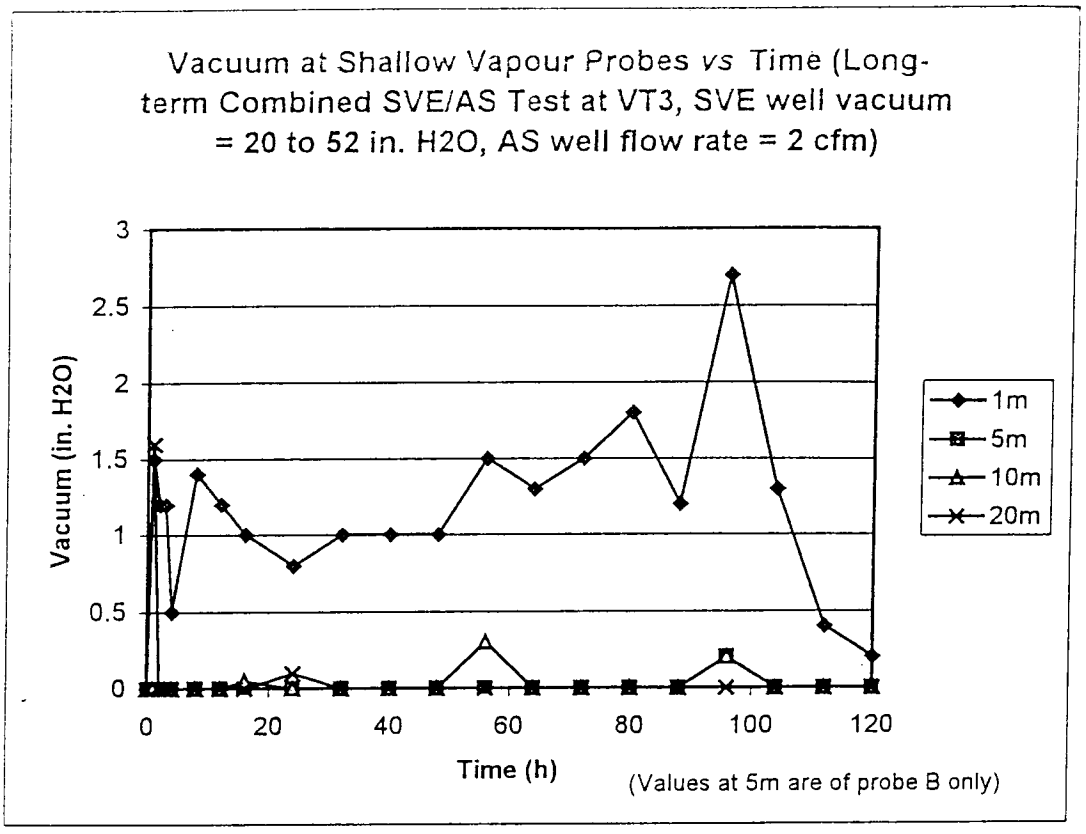
Location/SVE ID : ..... VT4 .....

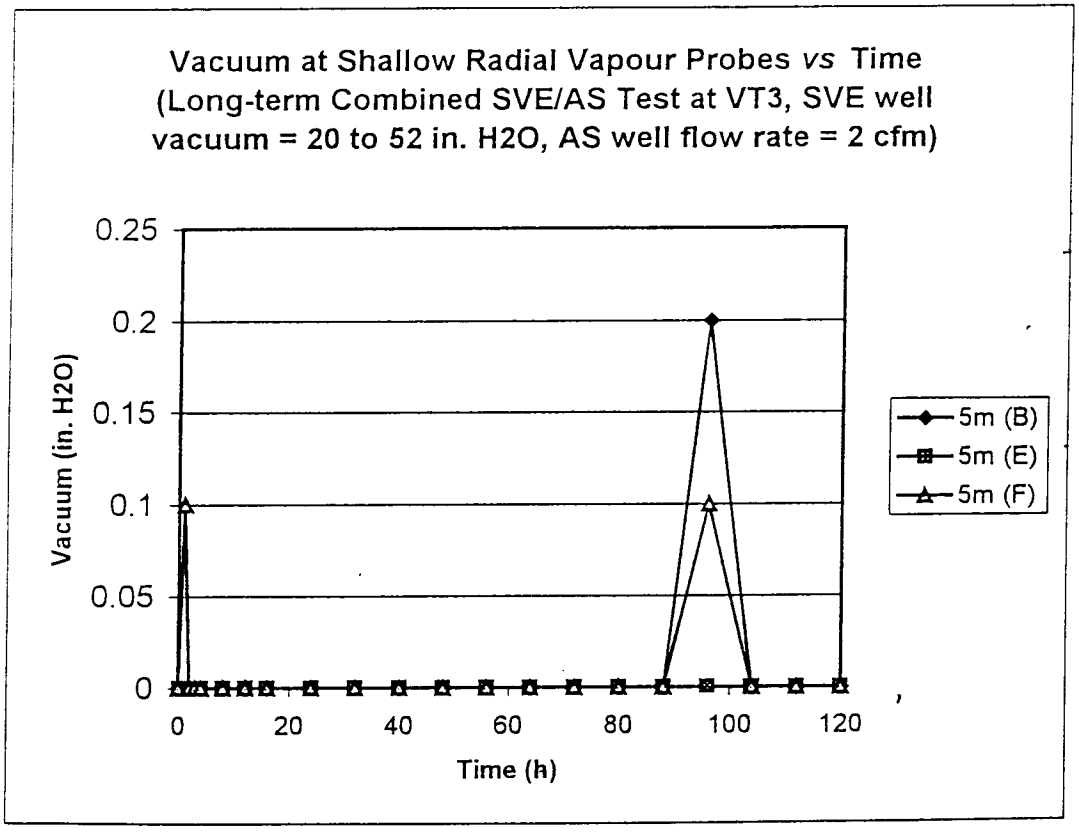
Sheet (3) of (3)

Time Elapsed (hr)	Groundwater Monitoring Wells																			
	Distance from Extraction Well																			
	2.5m					5.5m					2.5m					2.5m				
	Shallow W1			Deep W2		Shallow W3			Deep W4		Shallow W5		Deep W6			Deep W7		Shallow W8		
	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)	Free Product Thickness	DO (mg/L)	Depth to Water (m)	Free Product Thickness	DO (mg/L)
0	2.74	ND	0.20	ND	0.28	2.72	ND	0.22	ND	0.23	ND	0.30	2.73	ND	0.32	ND	0.27	2.73	ND	0.23
1	2.74	ND	0.28	ND	0.42	2.71	ND	0.25	ND	0.40	ND	0.30	2.73	ND	0.47	ND	0.28	2.70	ND	0.25
2	2.73	ND	0.22	ND	0.44	2.71	ND	0.24	ND	0.40	ND	0.31	2.71	ND	0.40	ND	0.30	2.71	ND	0.29
3	2.76	ND	0.24	ND	0.34	2.70	ND	0.24	ND	0.41	ND	0.32	2.70	ND	0.32	ND	0.30	2.70	ND	0.29
4	2.73	ND	0.21	ND	0.36	2.70	ND	0.22	ND	0.40	ND	0.30	2.71	ND	0.32	ND	0.29	2.70	ND	0.27
8	2.70	ND	0.25	ND	0.44	2.66	ND	0.35	ND	0.28	ND	0.49	2.67	ND	0.36	ND	0.27	2.66	ND	0.29
12	2.69	ND	0.27	ND	0.43	2.66	ND	0.37	ND	0.32	ND	0.30	2.72	ND	0.36	ND	0.27	2.69	ND	0.28
16	2.73	ND	0.26	ND	0.30	2.70	ND	0.23	ND	0.23	ND	0.31	2.72	ND	0.32	ND	0.30	2.71	ND	0.23
24	2.75	ND	0.55	ND	0.40	2.76	ND	0.35	ND	0.40	ND	0.40	2.77	ND	0.33	ND	0.32	2.80	ND	0.41
32	2.67	ND	0.48	ND	0.37	2.65	ND	0.36	ND	0.42	ND	0.39	2.66	ND	0.37	ND	0.37	2.65	ND	0.40
40	2.70	ND	0.41	ND	0.29	2.69	ND	0.34	ND	0.31	ND	0.42	2.71	ND	0.32	ND	0.30	2.70	ND	0.31
48	2.77	ND	0.27	ND	0.38	2.78	ND	0.34	ND	0.31	ND	0.33	2.77	ND	0.28	ND	0.32	2.81	ND	0.48
56	2.67	ND	0.30	ND	0.33	2.65	ND	0.32	ND	0.28	ND	0.34	2.75	ND	0.37	ND	0.27	2.67	ND	0.42
64	2.69	ND	0.38	ND	0.39	2.67	ND	0.29	ND	0.34	ND	0.32	2.69	ND	0.36	ND	0.40	2.71	ND	0.52
72	2.71	ND	0.38	ND	0.39	2.70	ND	0.33	ND	0.35	ND	0.32	2.70	ND	0.36	ND	0.39	2.71	ND	0.52
80	2.61	ND	0.36	ND	0.38	2.62	ND	0.34	ND	0.32	ND	0.32	2.61	ND	0.31	ND	0.36	2.64	ND	0.49
88	2.60	ND	0.37	ND	0.31	2.62	ND	0.32	ND	0.38	ND	0.33	2.66	ND	0.33	ND	0.37	2.65	ND	0.44
96	2.59	ND	0.35	ND	0.29	2.60	ND	0.38	ND	0.39	ND	0.35	2.66	ND	0.39	ND	0.41	2.63	ND	0.40
104	2.60	ND	0.39	ND	0.31	2.62	ND	0.31	ND	0.41	ND	0.32	2.65	ND	0.37	ND	0.40	2.63	ND	0.43
112	2.59	ND	0.36	ND	0.29	2.60	ND	0.34	ND	0.44	ND	0.37	2.64	ND	0.43	ND	0.38	2.63	ND	0.41

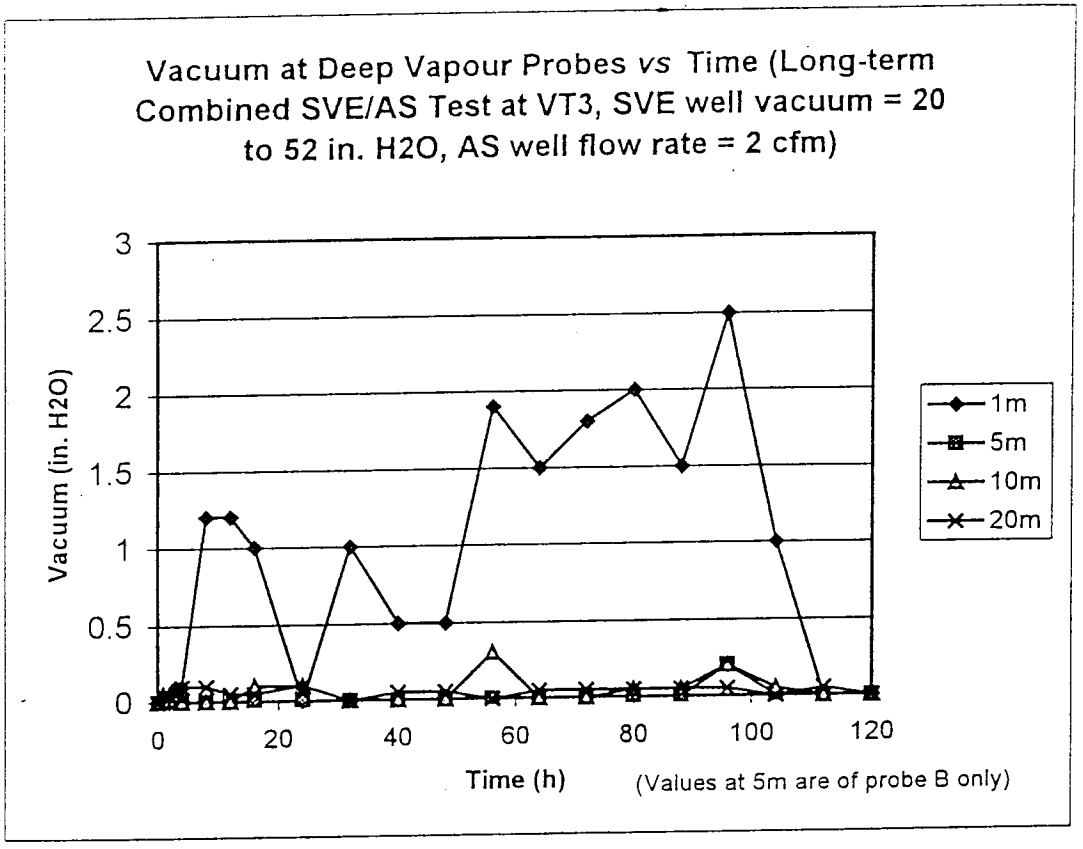
Remarks :

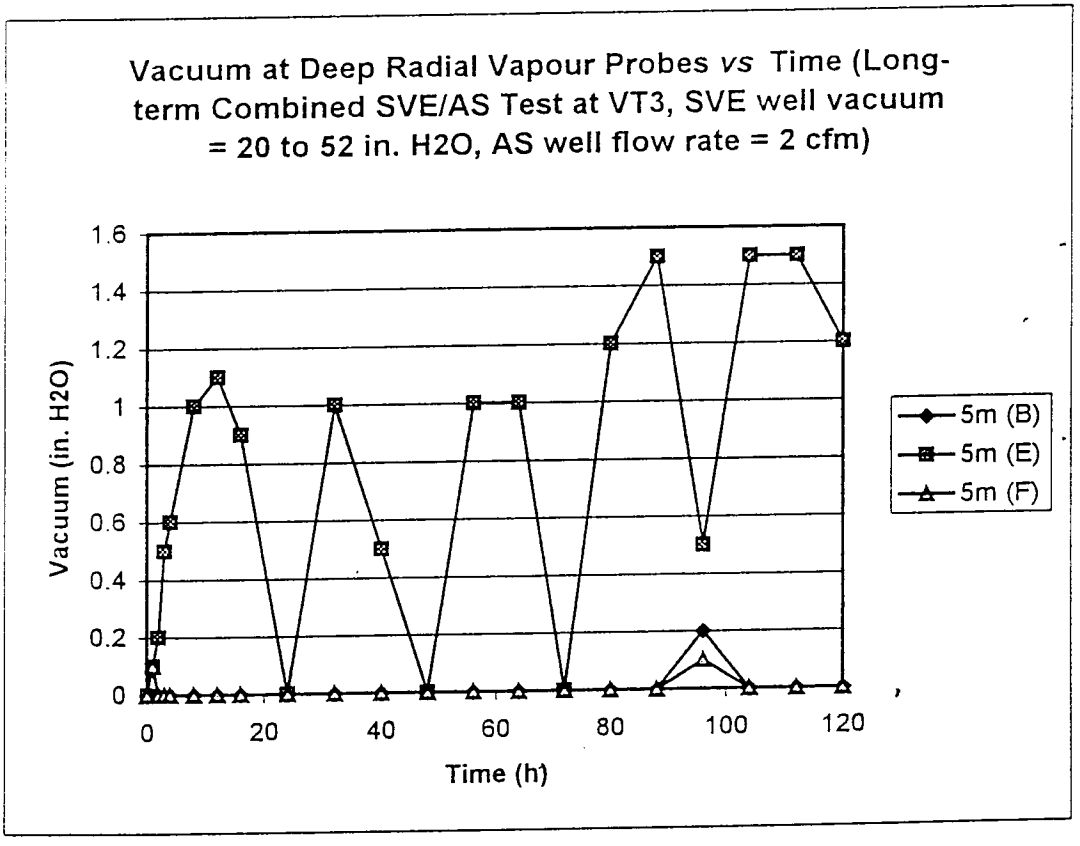
1. ND -- not detected (detection limit: CO_2, O_2, CH_4 < 0.01% VOC < 0.1ppm)
2. The combined test was terminated before the 120th hr because of the typhoon.



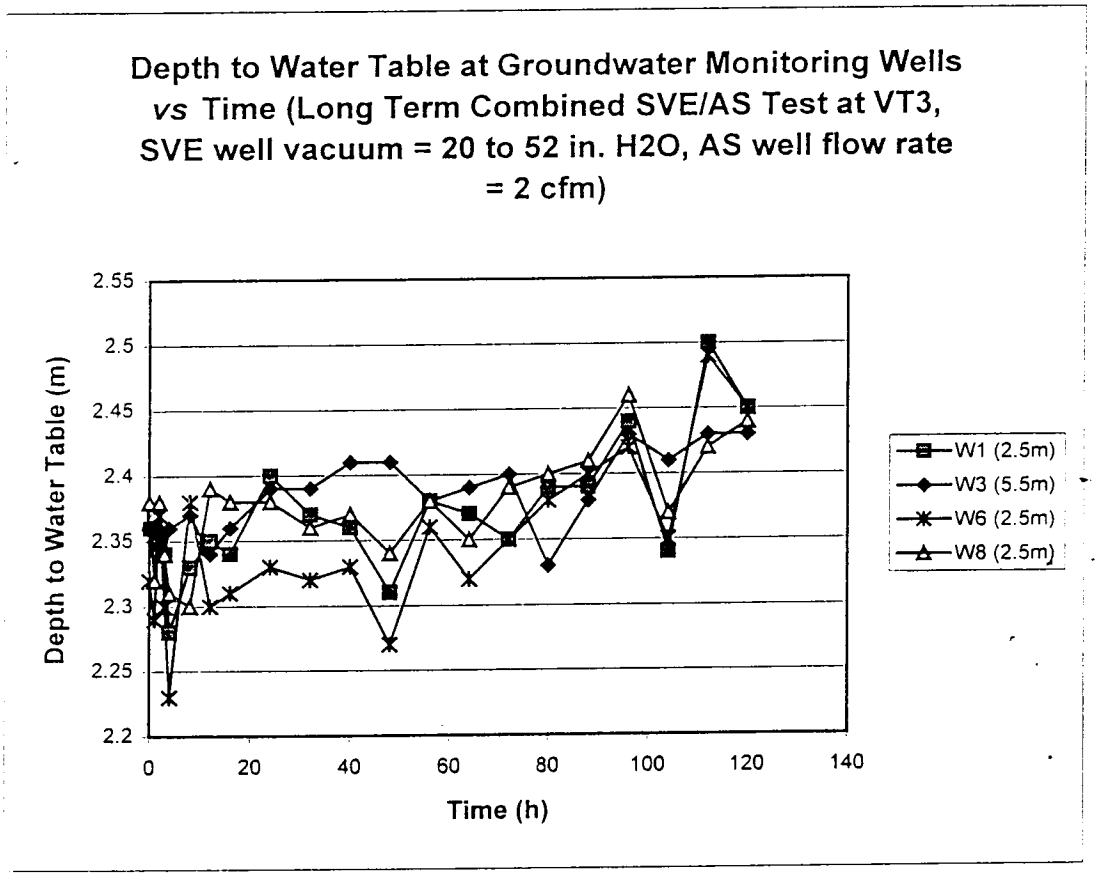


C418\xl\Comvt3-p2

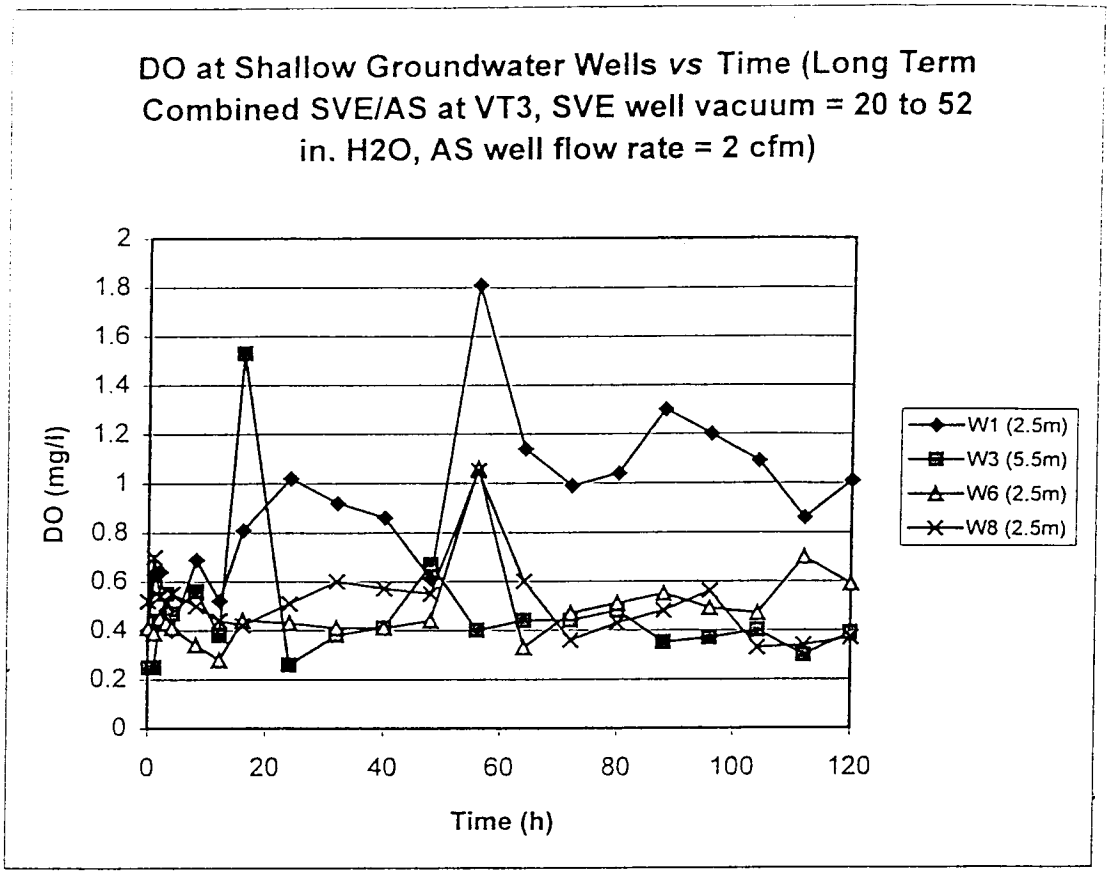


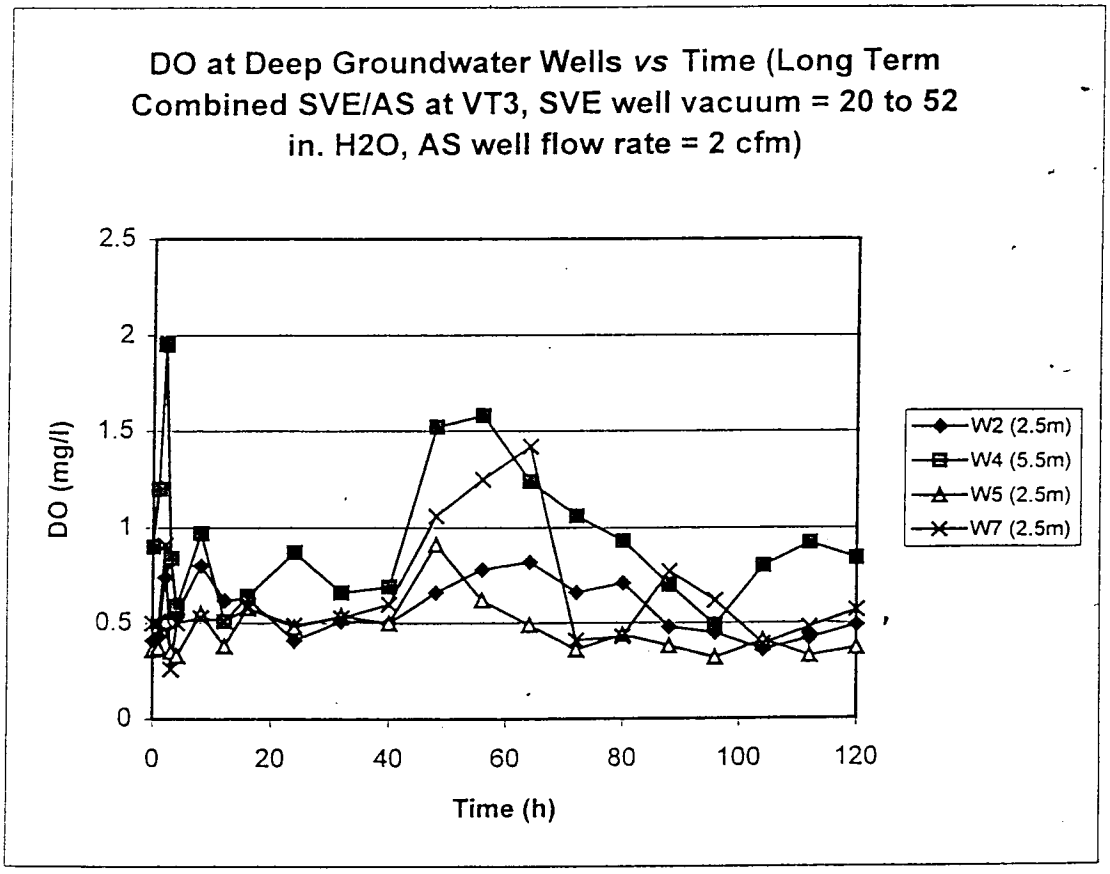


C418\xl\Comvt3-p2

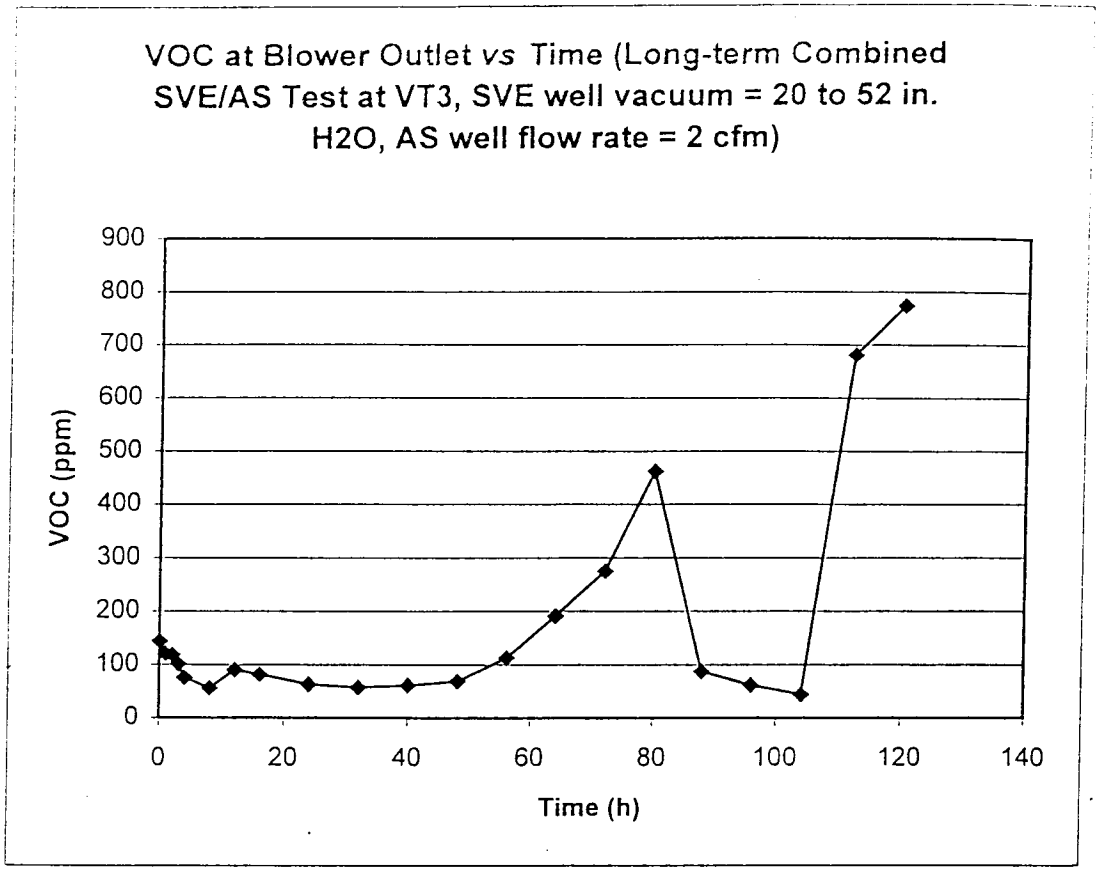


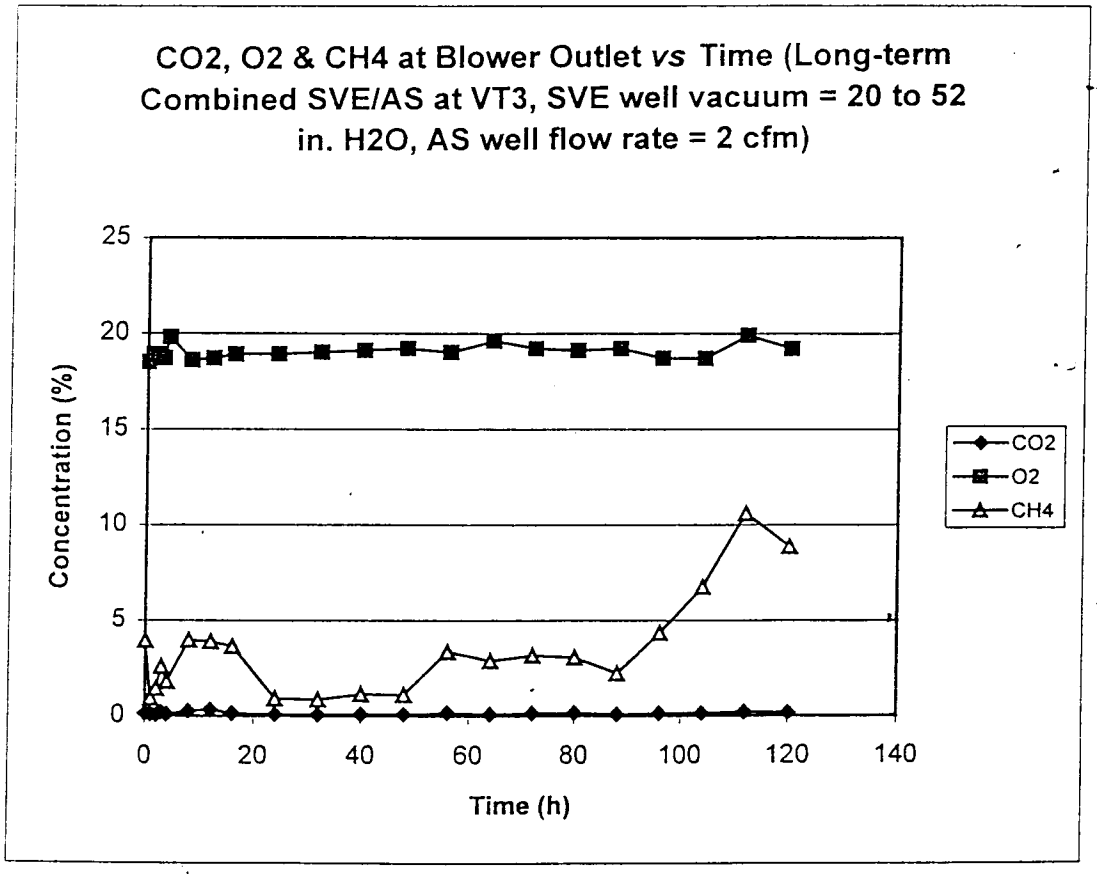
C418\xl\Comvt3-p1





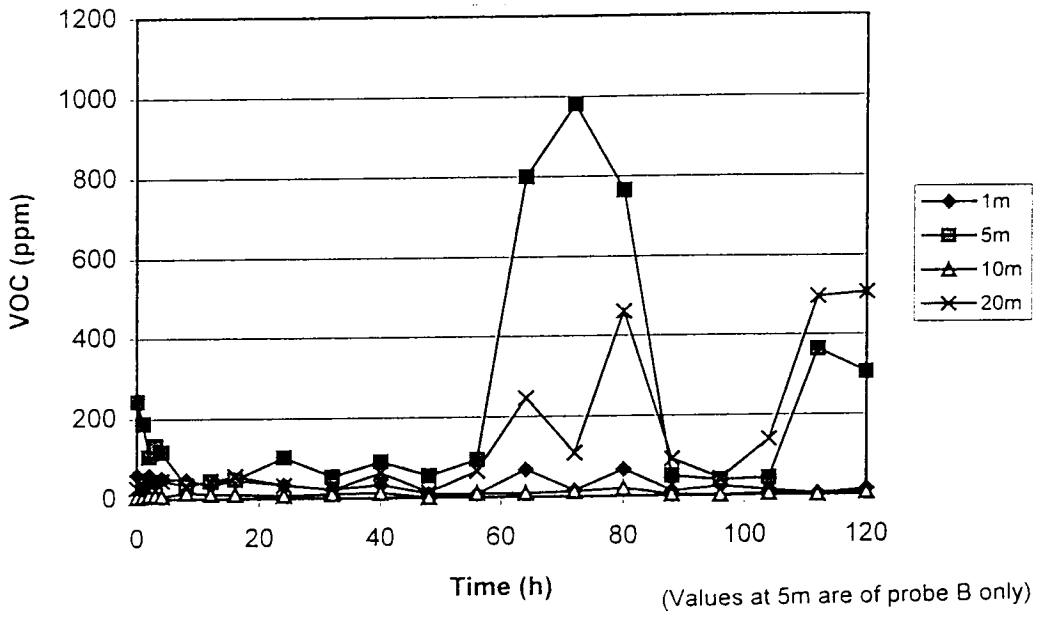
C418\xl\Comvt3-g





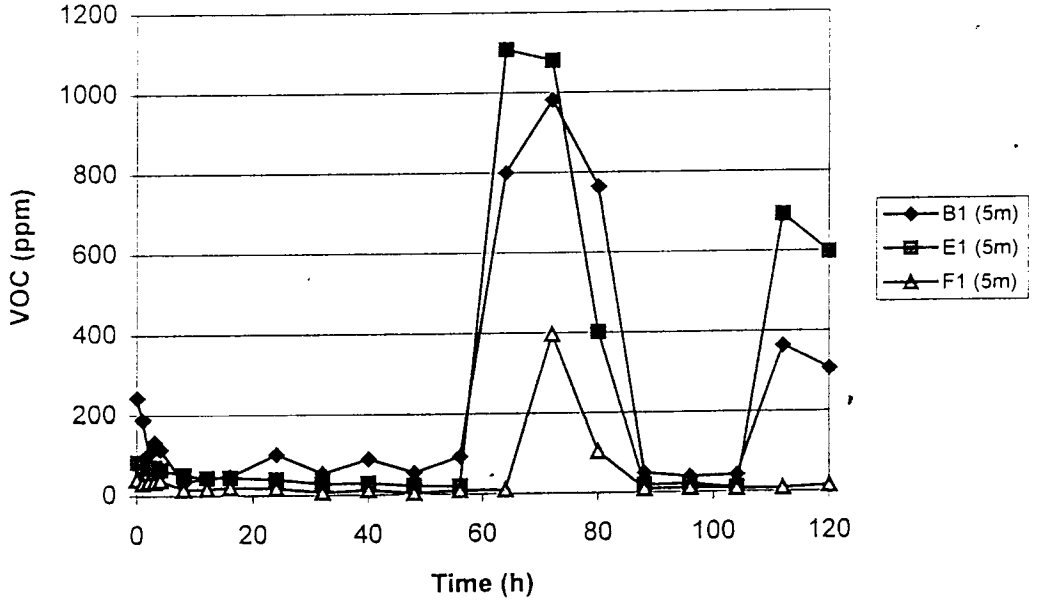
C418\xl\Comvt3-g

VOC at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



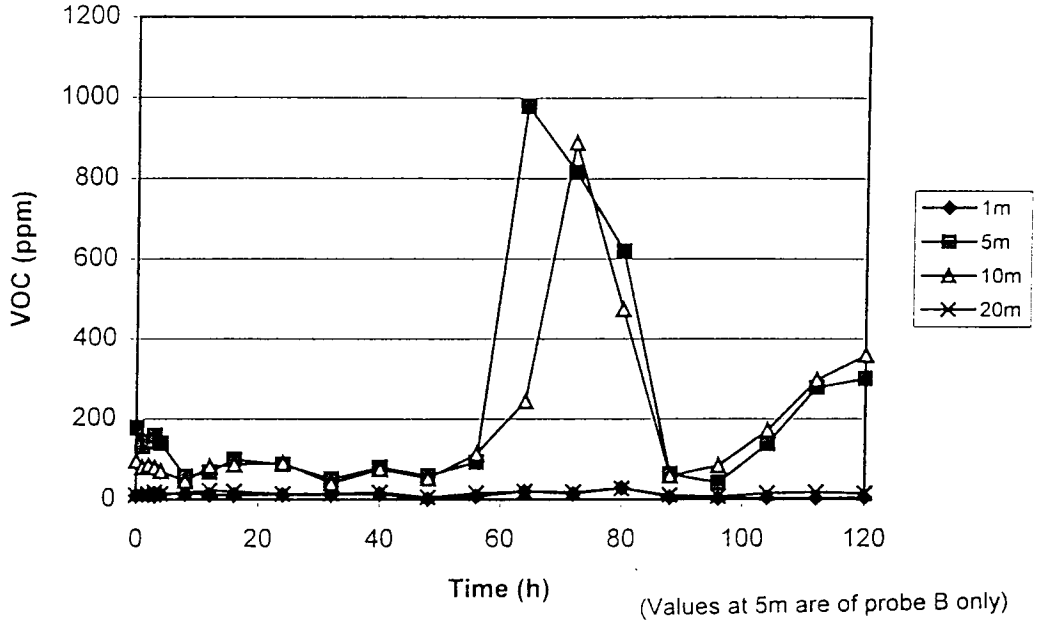
(Values at 5m are of probe B only)

VOC at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)

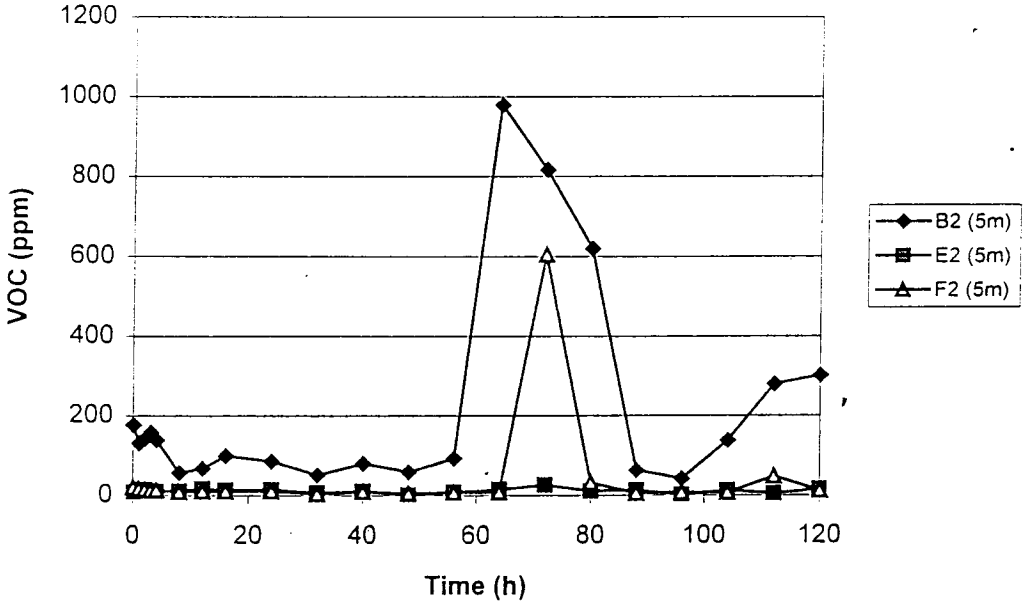


C418\xl\Comvt3-g

VOC at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)

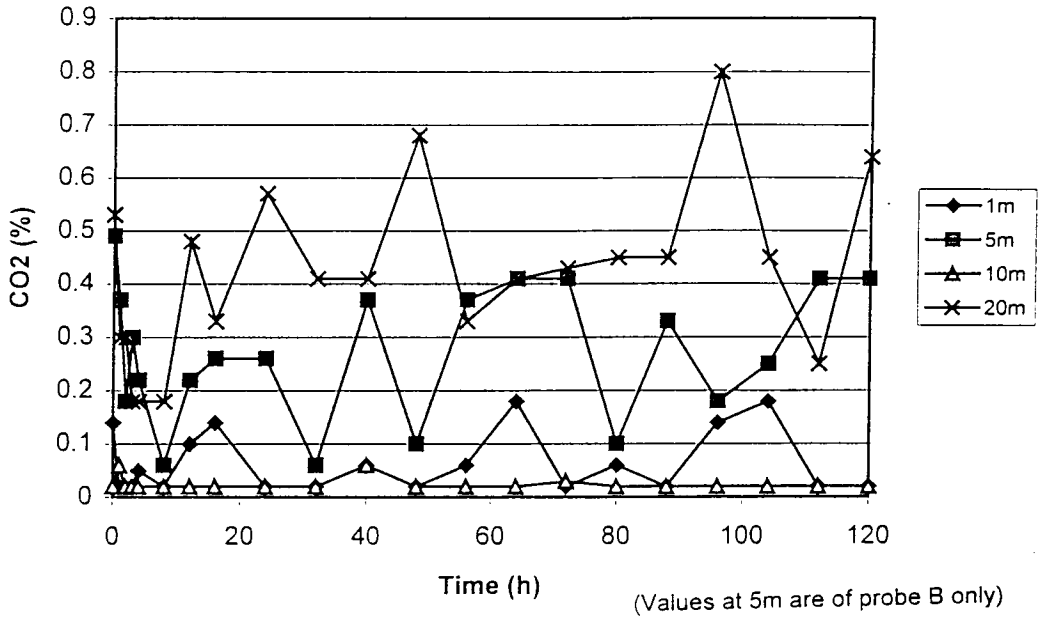


VOC at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)

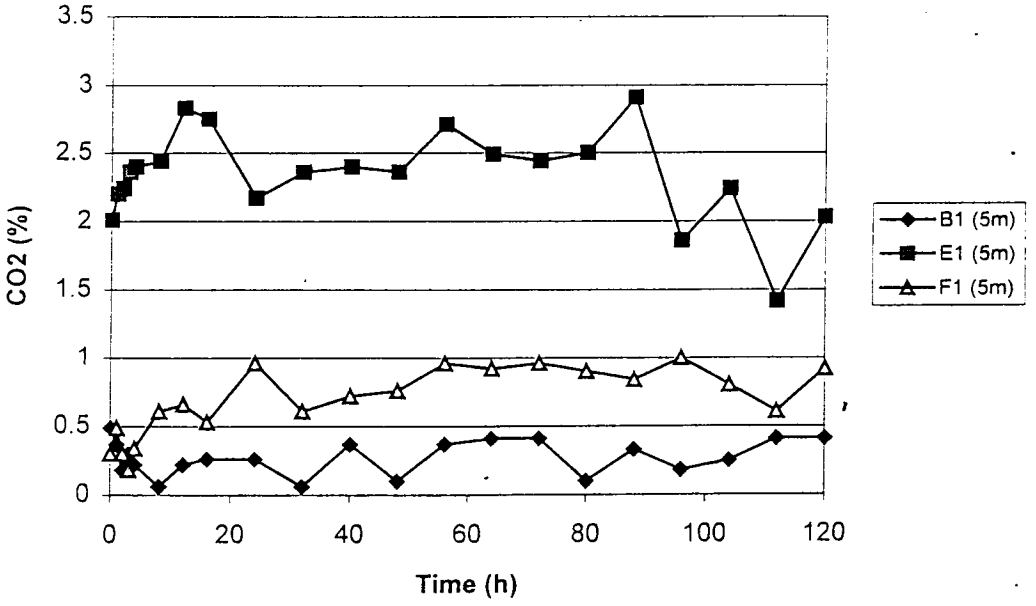


C418\xl\Comvt3-g

CO2 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)

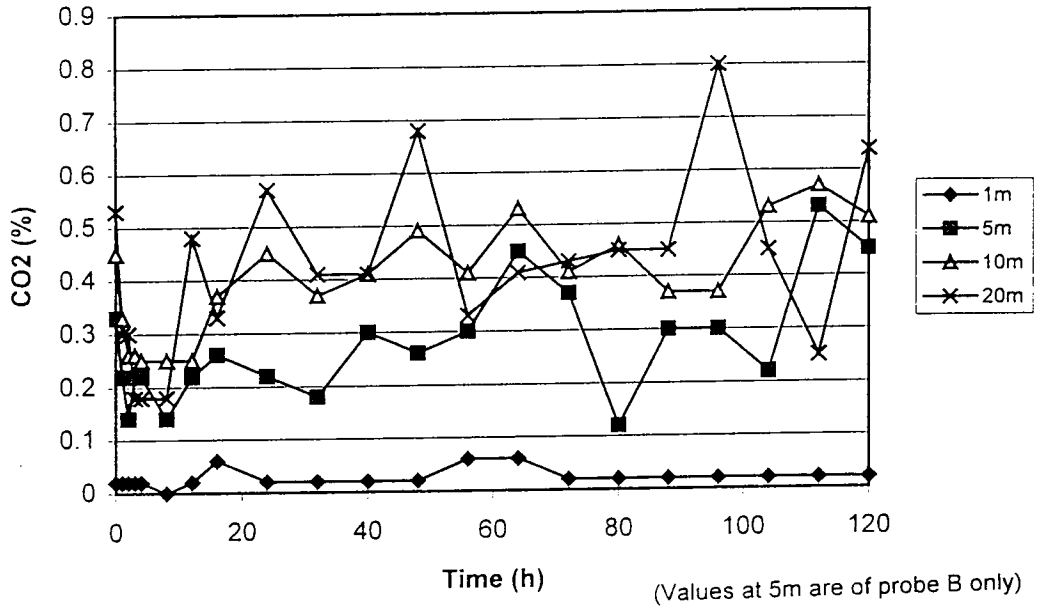


CO2 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



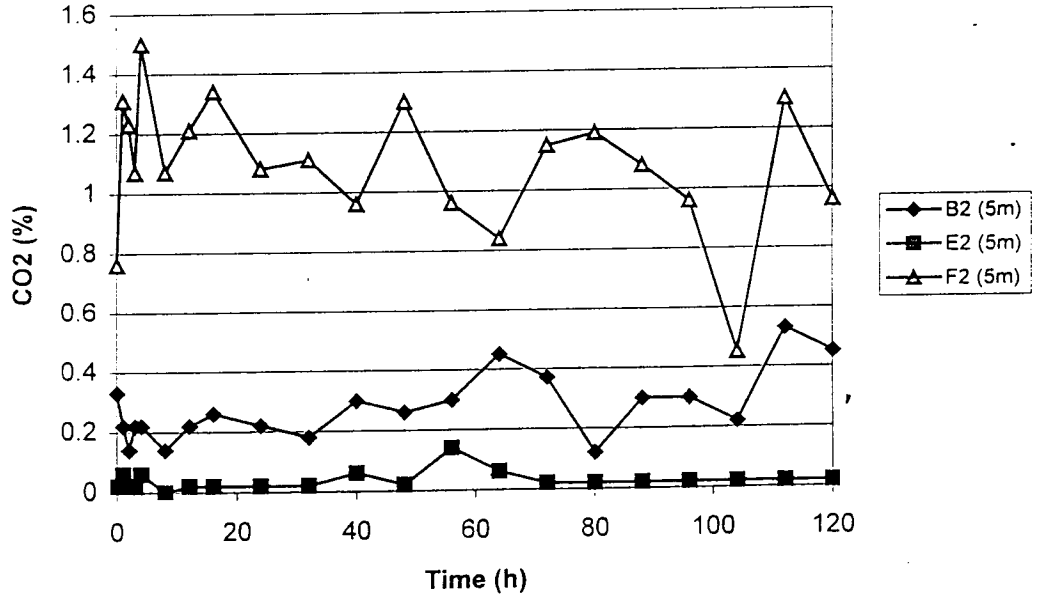
C418\xl\Comvt3-g

CO2 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



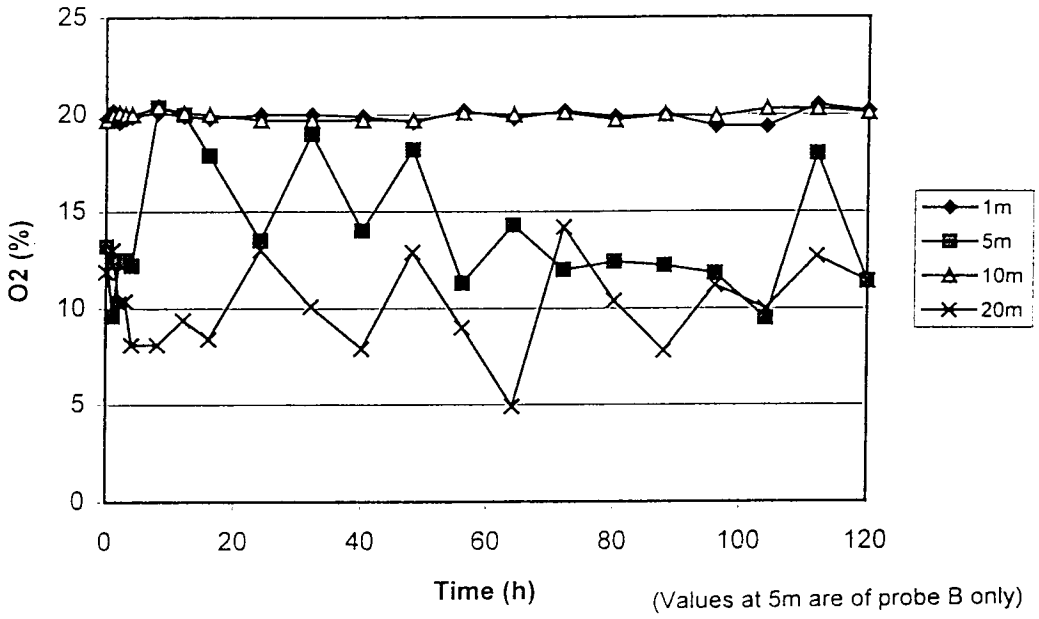
(Values at 5m are of probe B only)

CO2 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



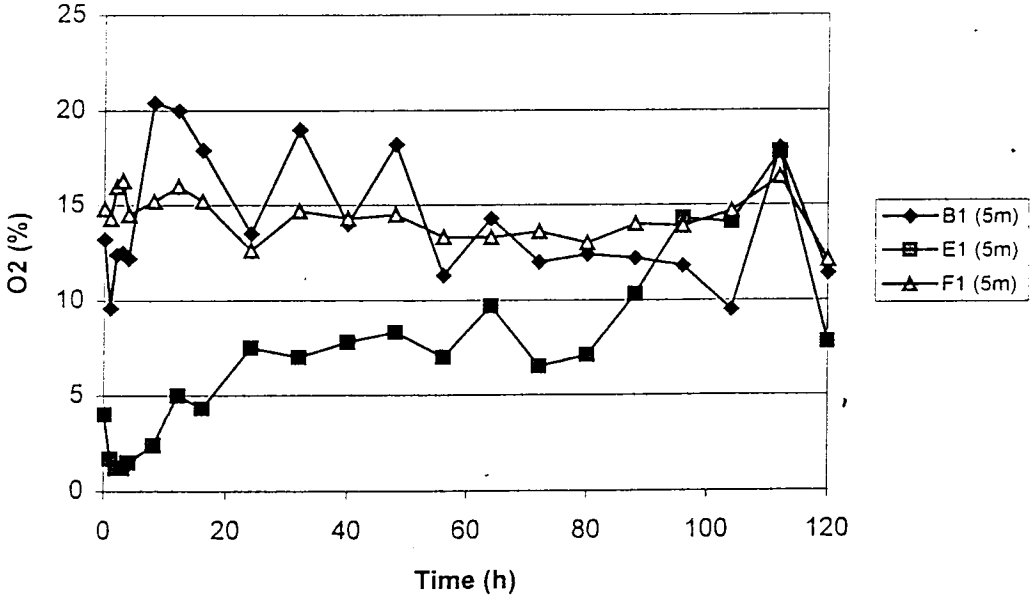
C418\xl\Comvt3-g

O2 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



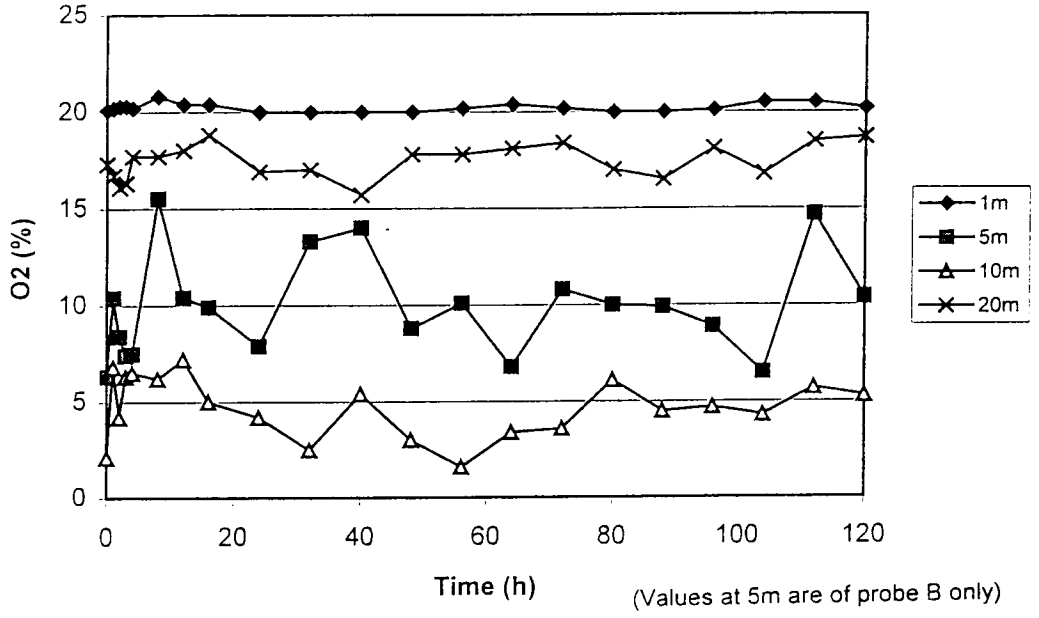
(Values at 5m are of probe B only)

O2 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



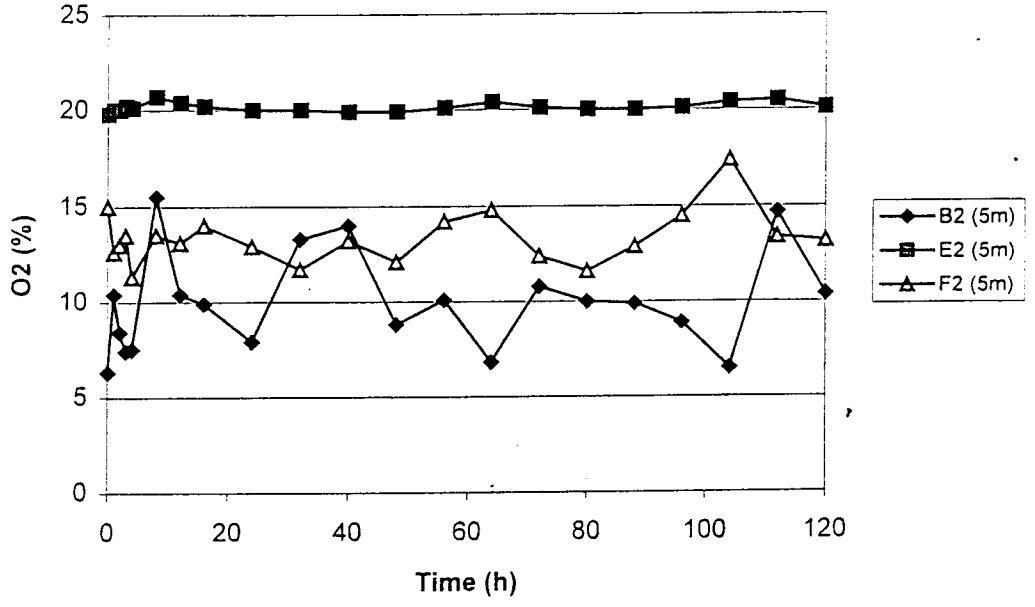
C418\xl\Comvt3-g

O2 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



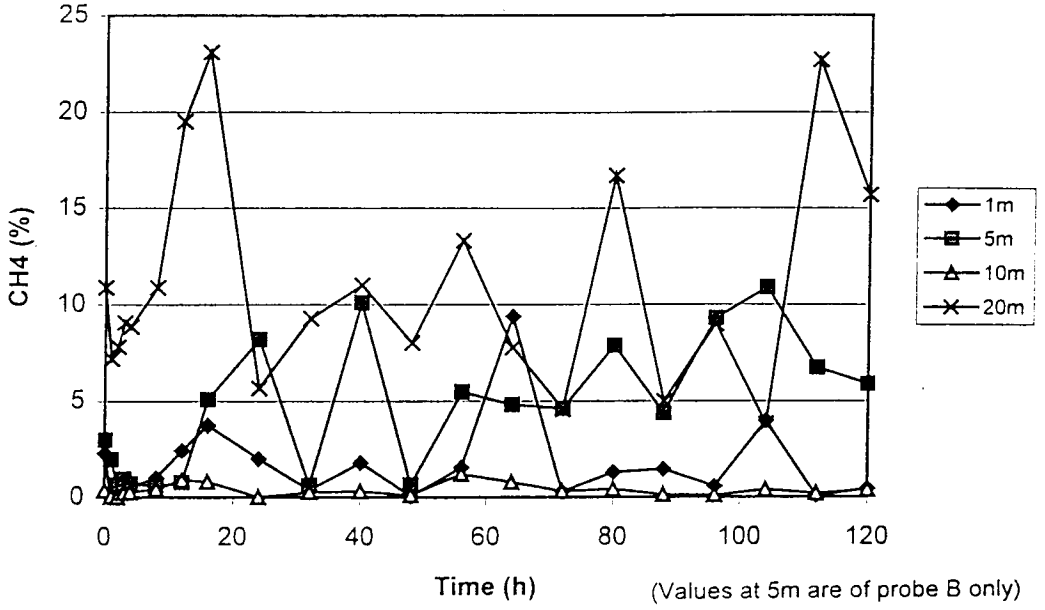
(Values at 5m are of probe B only)

O2 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



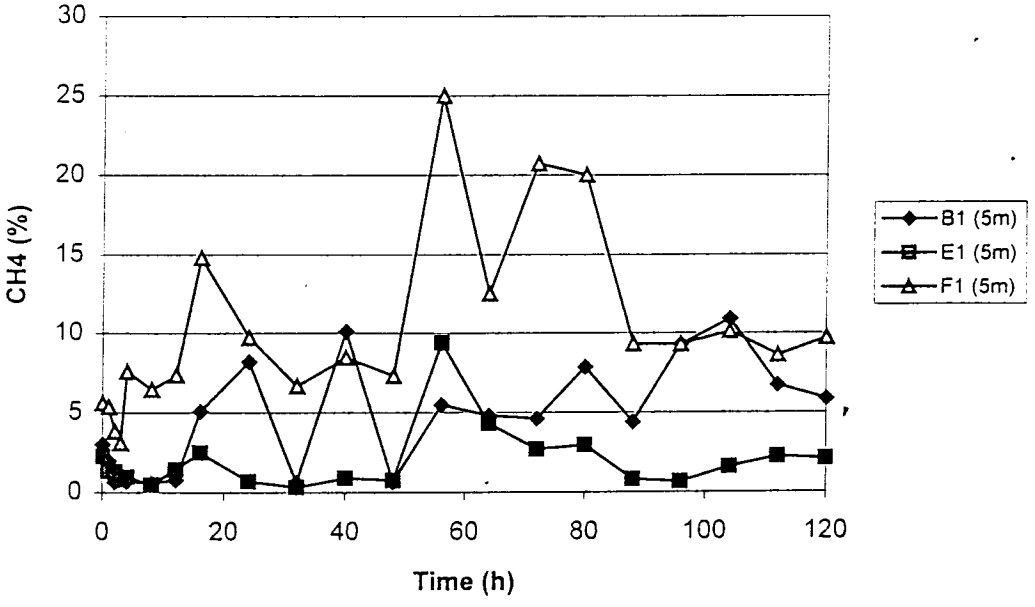
C418\xl\Comvt3-g

CH4 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



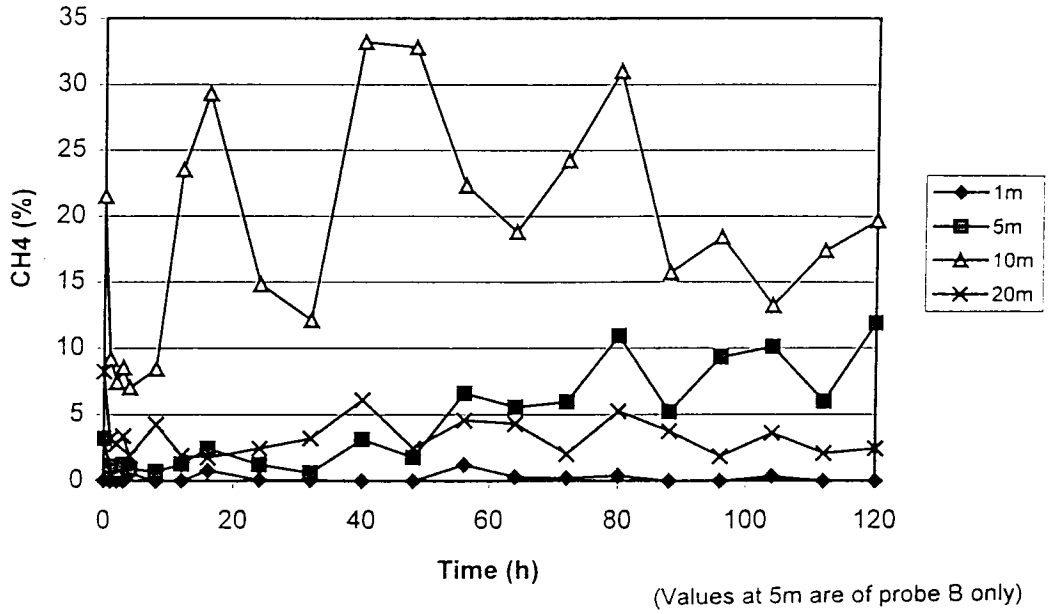
(Values at 5m are of probe B only)

CH4 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)



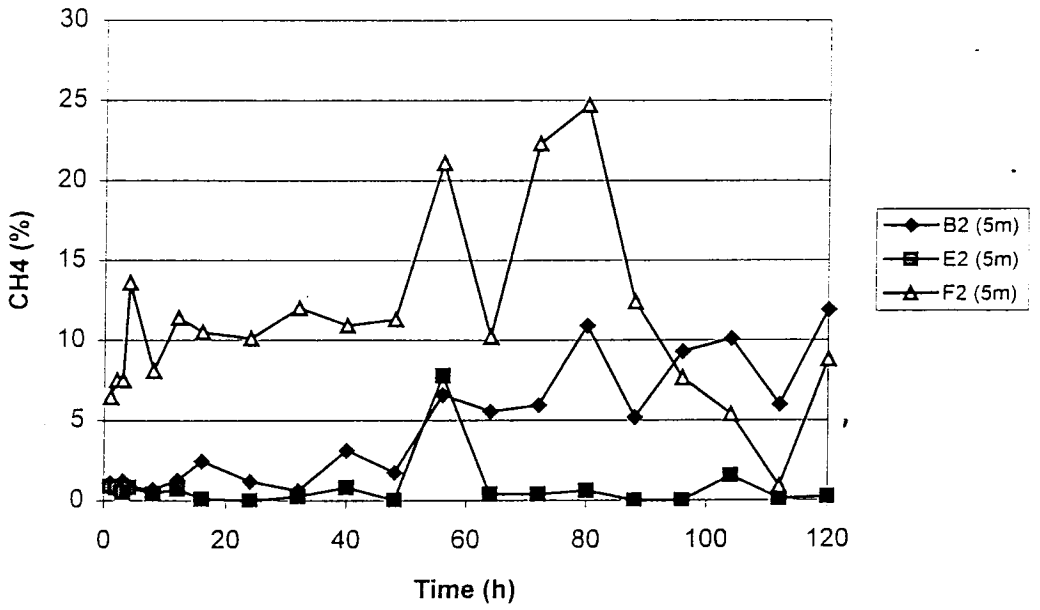
C418\xl\Comvt3-g

CH4 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 50 in. H2O, AS well flow rate = 2 cfm)

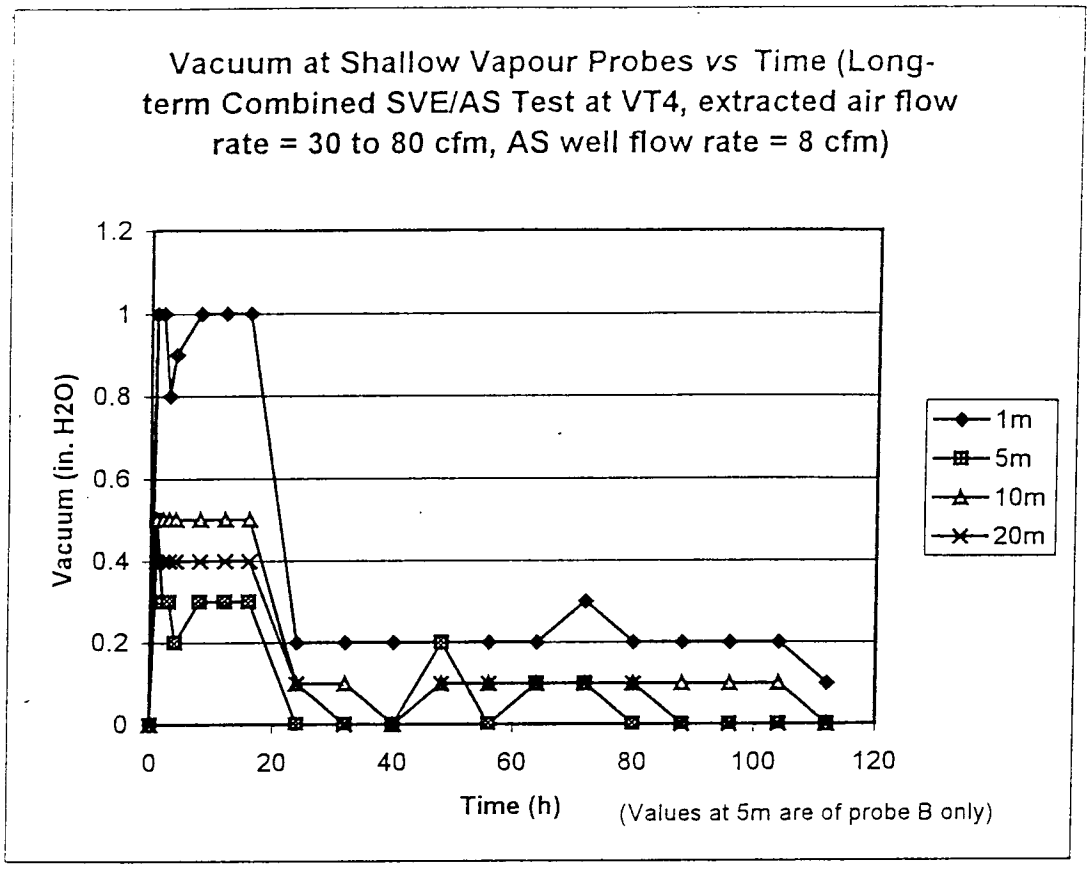


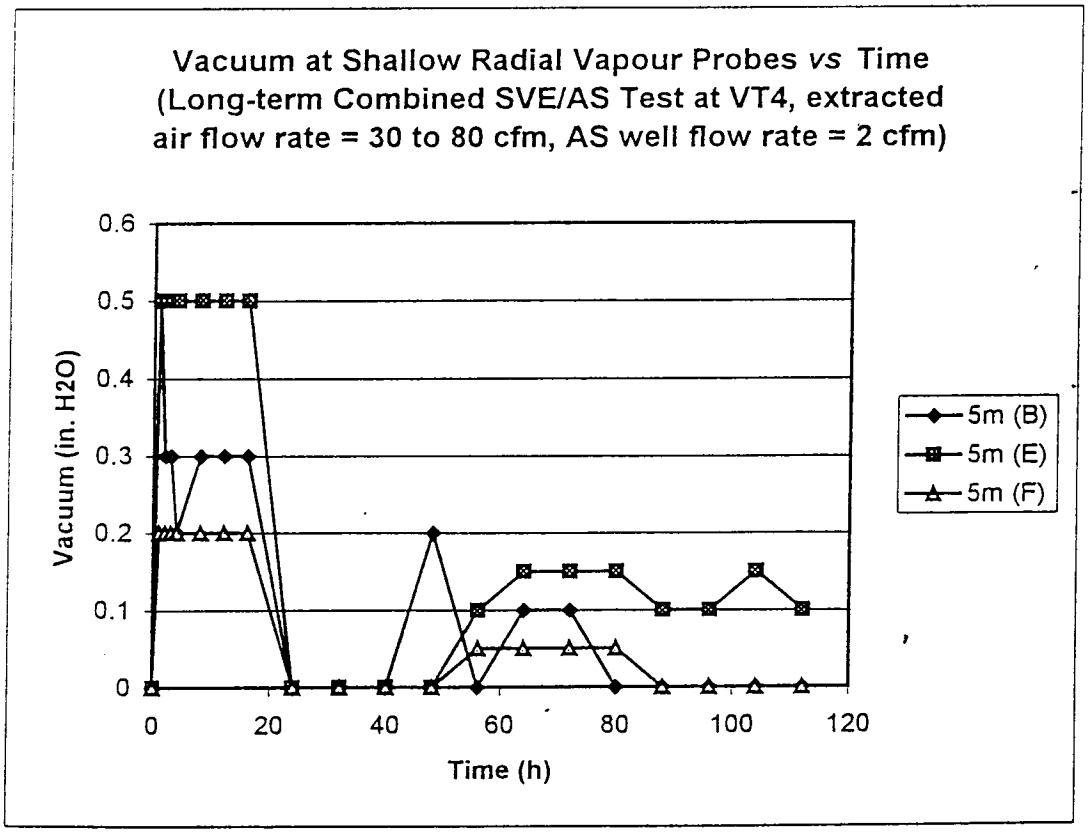
(Values at 5m are of probe B only)

CH4 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS at VT3, SVE well vacuum = 20 to 52 in. H2O, AS well flow rate = 2 cfm)

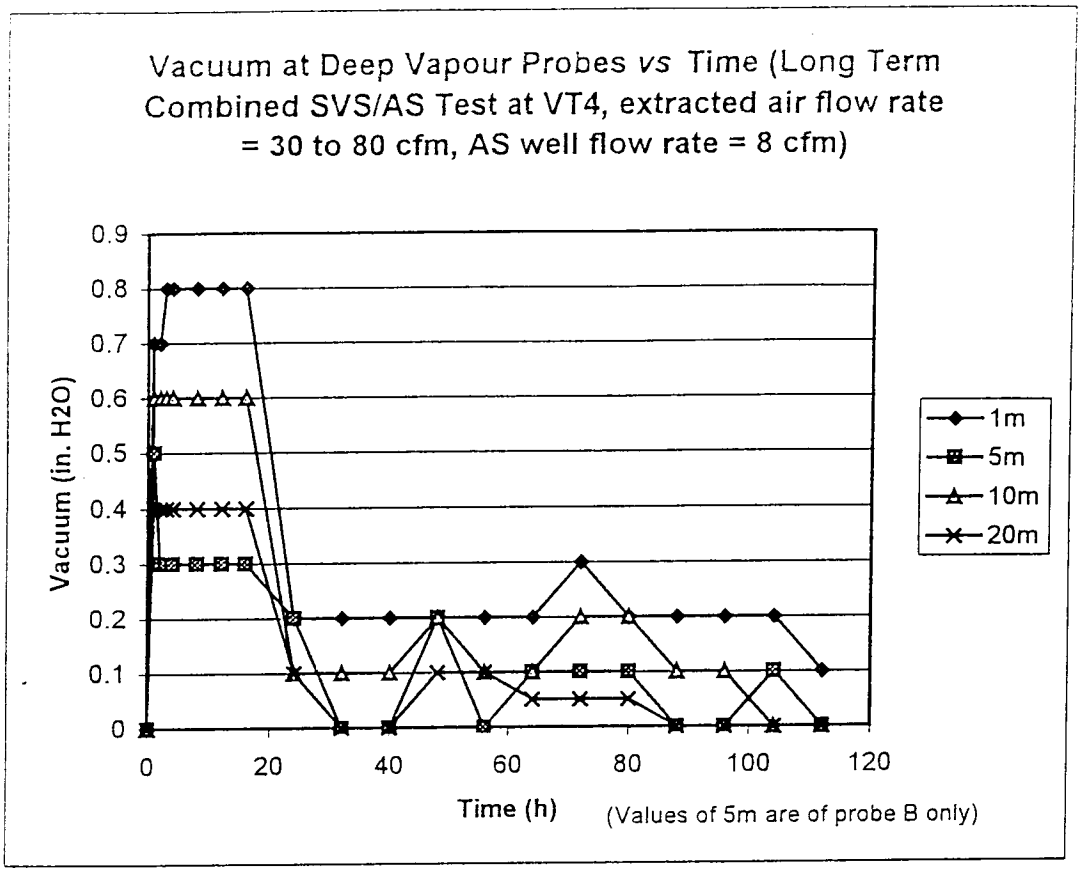


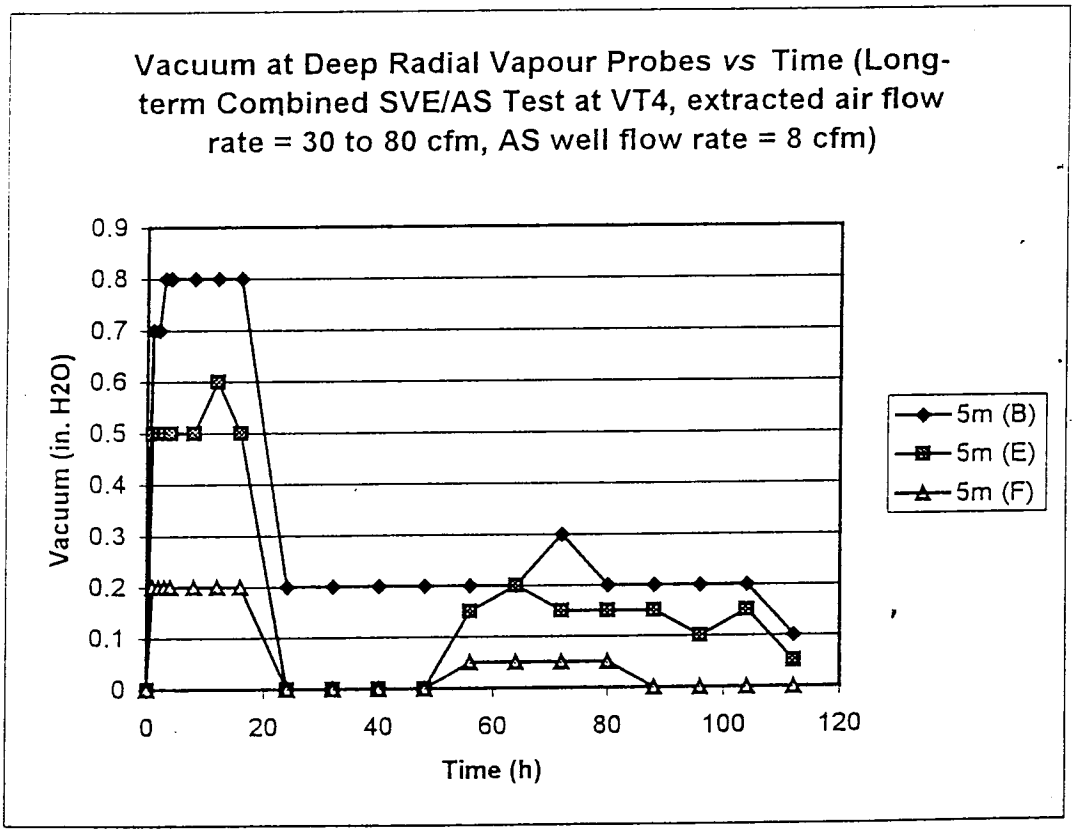
C418\xl\Comvt3-g



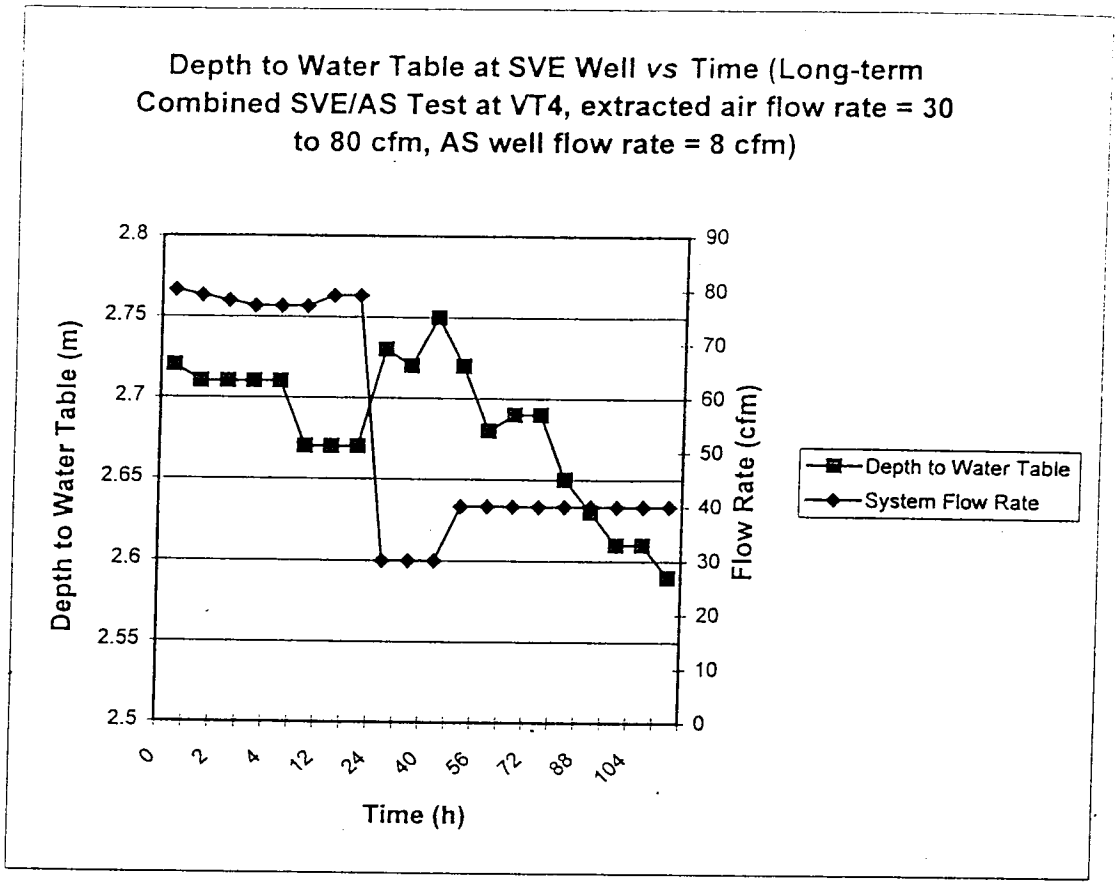


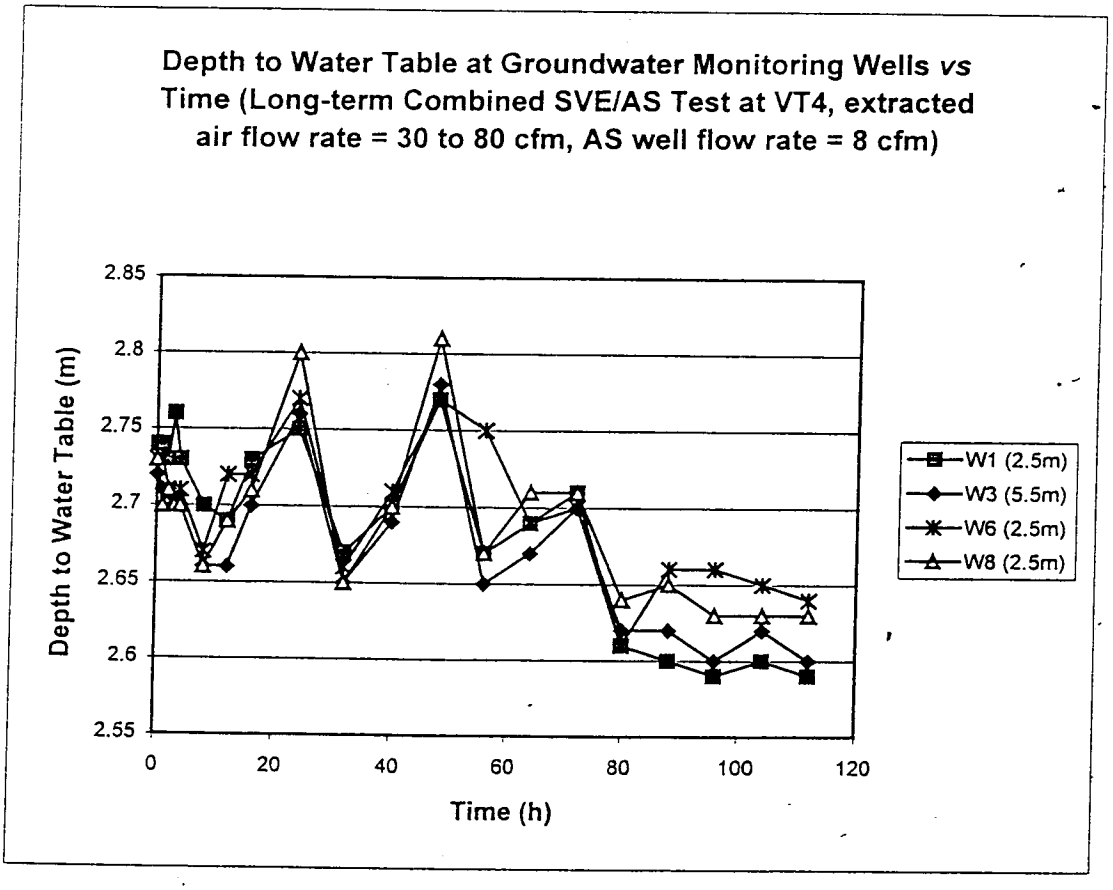
C418\xl\Comvt4-p2



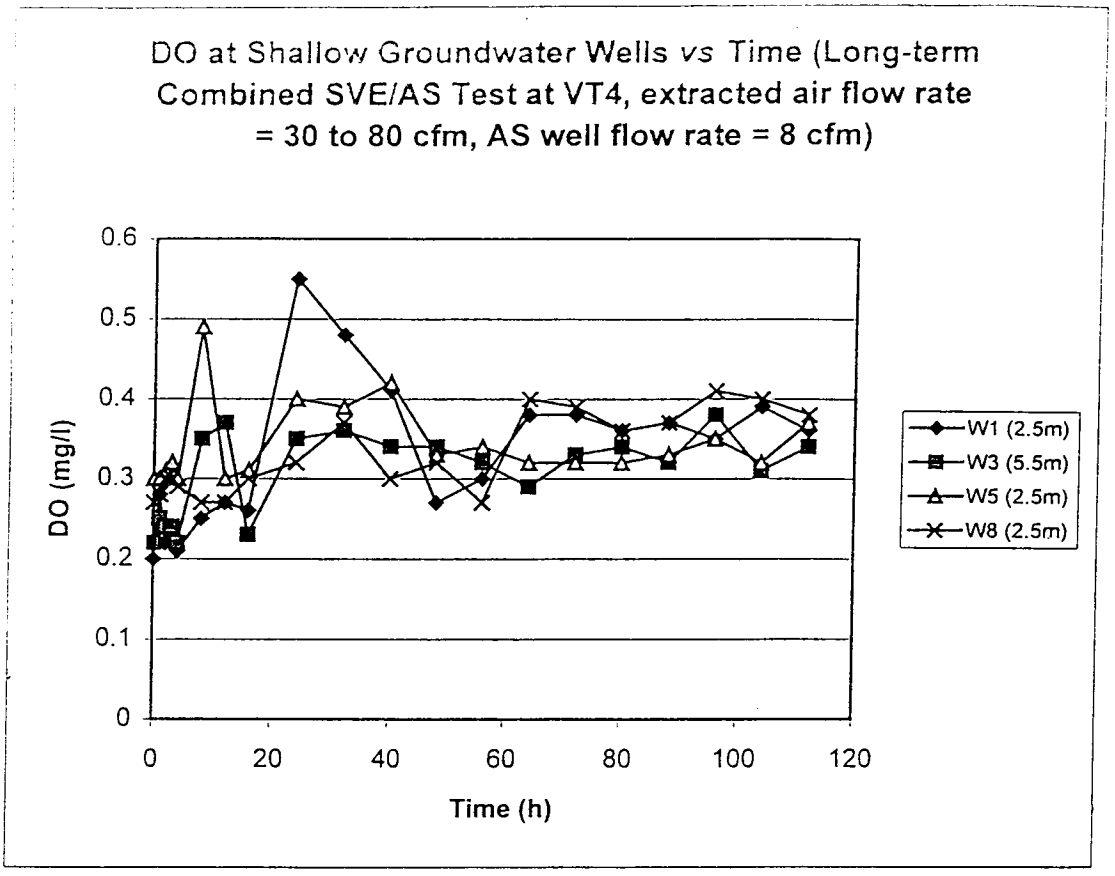


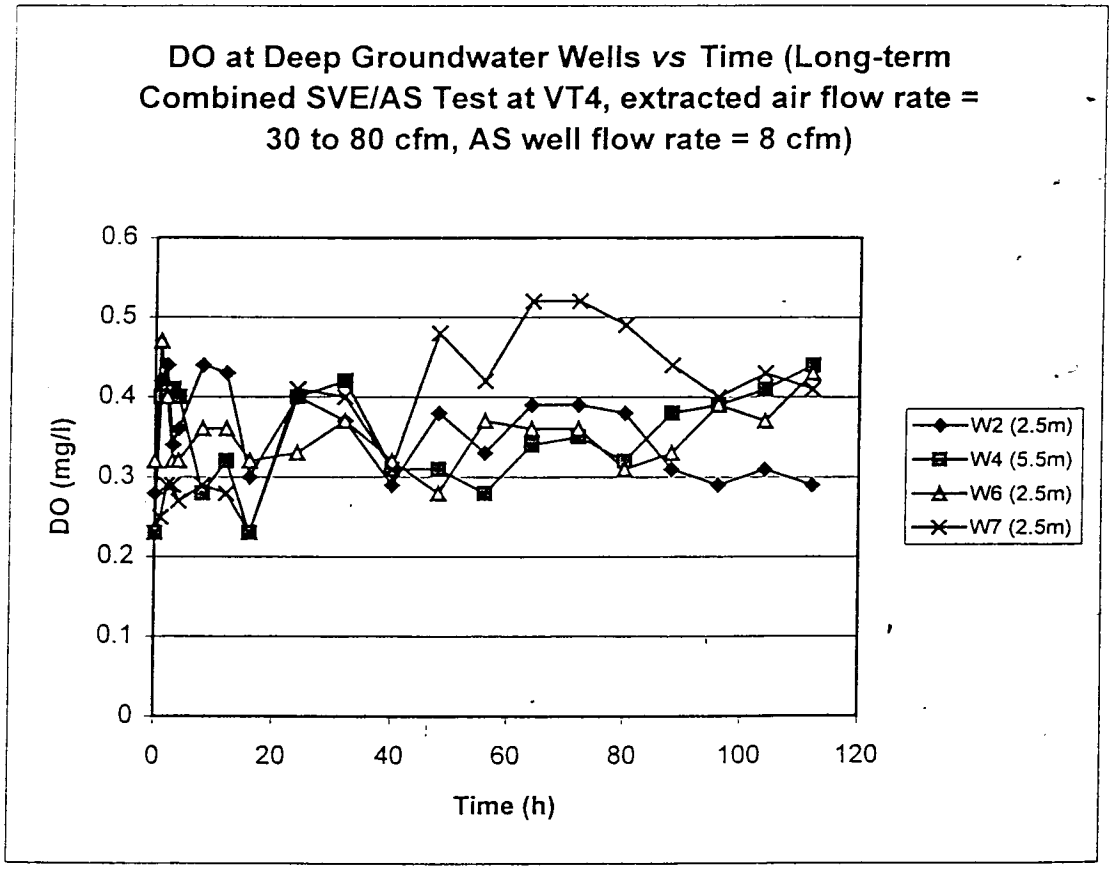
C418\xl\Comvt4-p2



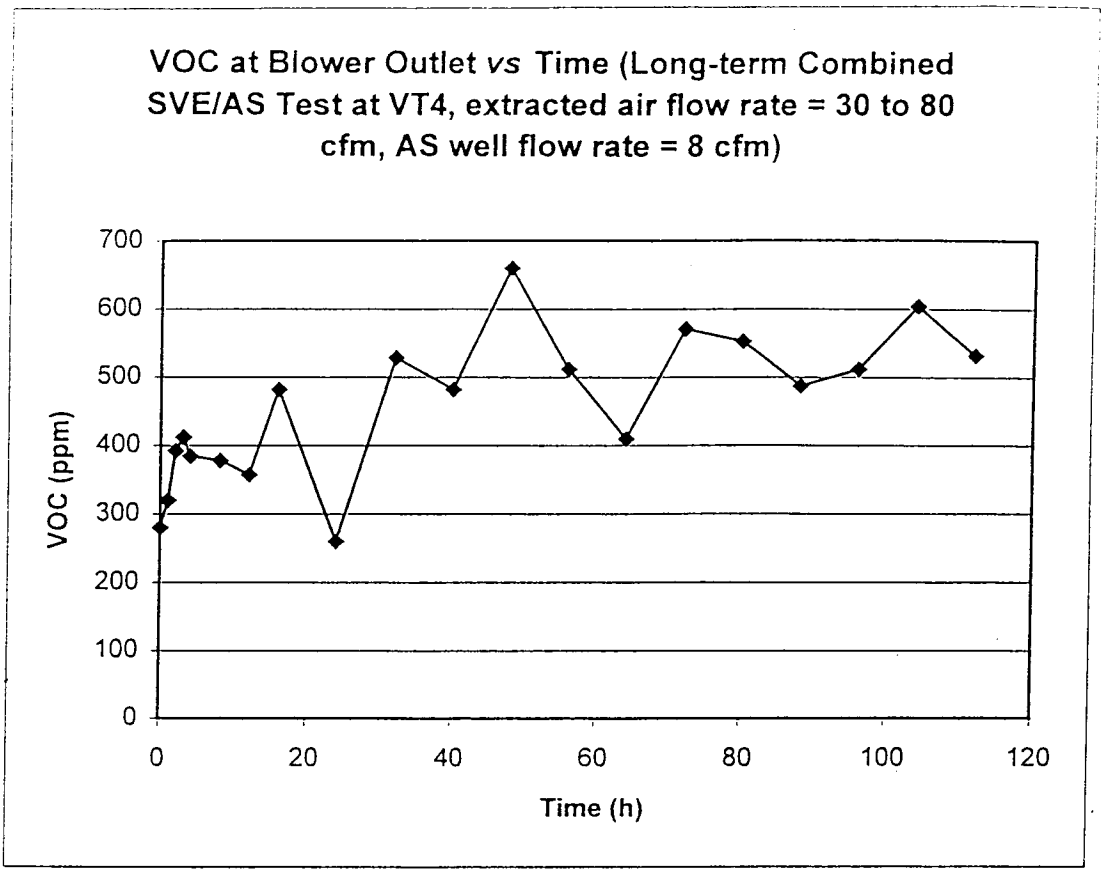


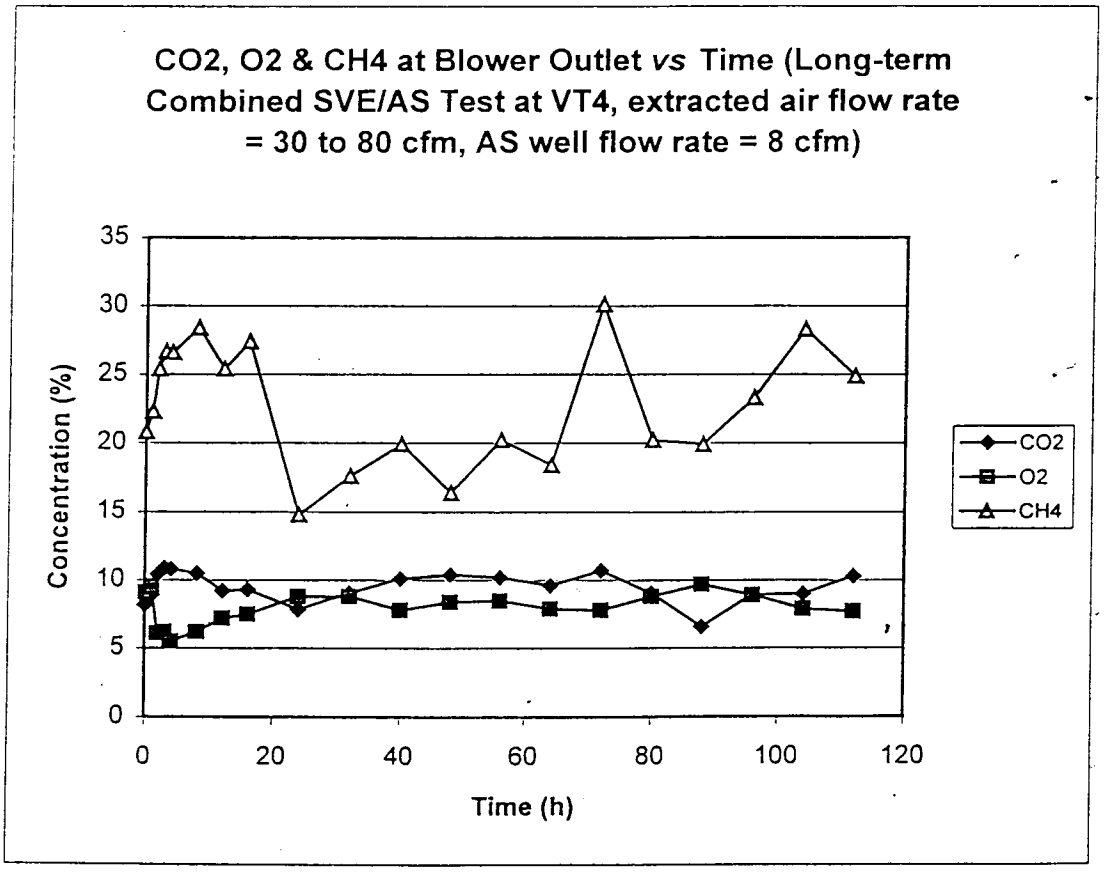
C418\xl\Comvt4-p1





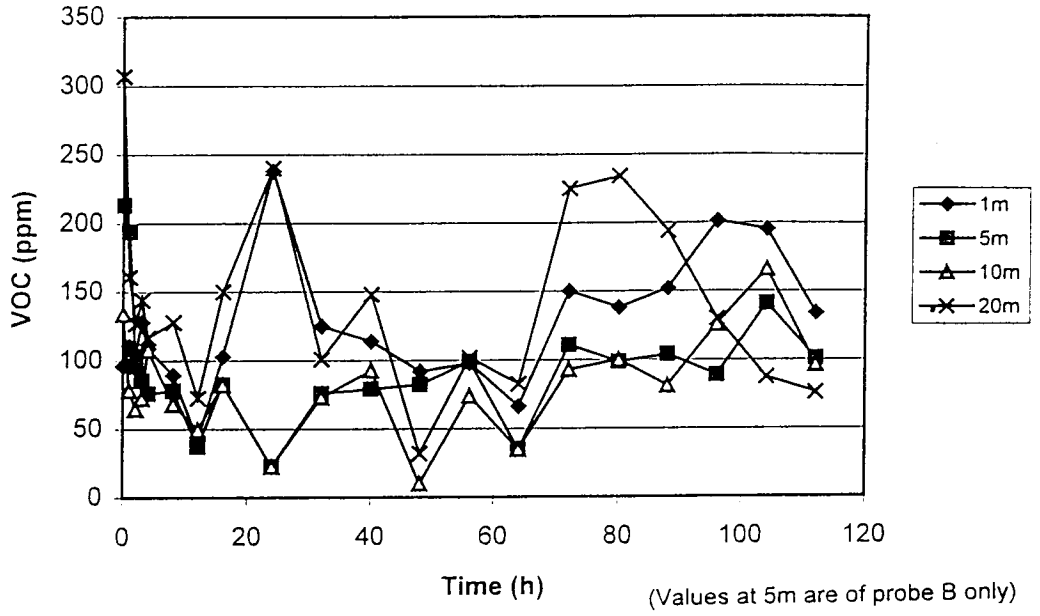
C418\xl\Comvt4-g





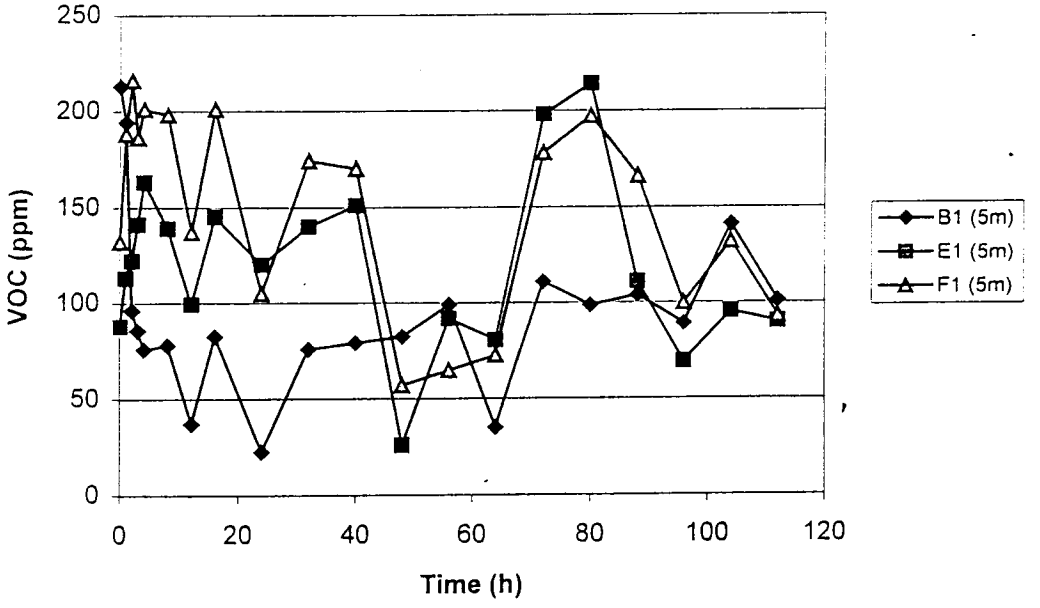
C418\xl\Comvt4-g

VOC at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



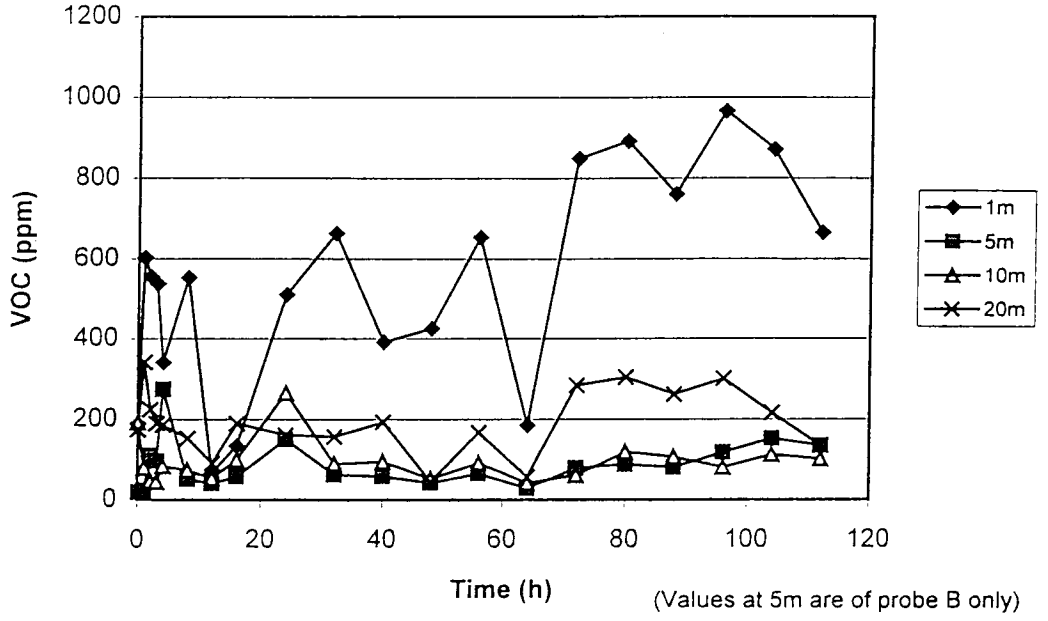
(Values at 5m are of probe B only)

VOC at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

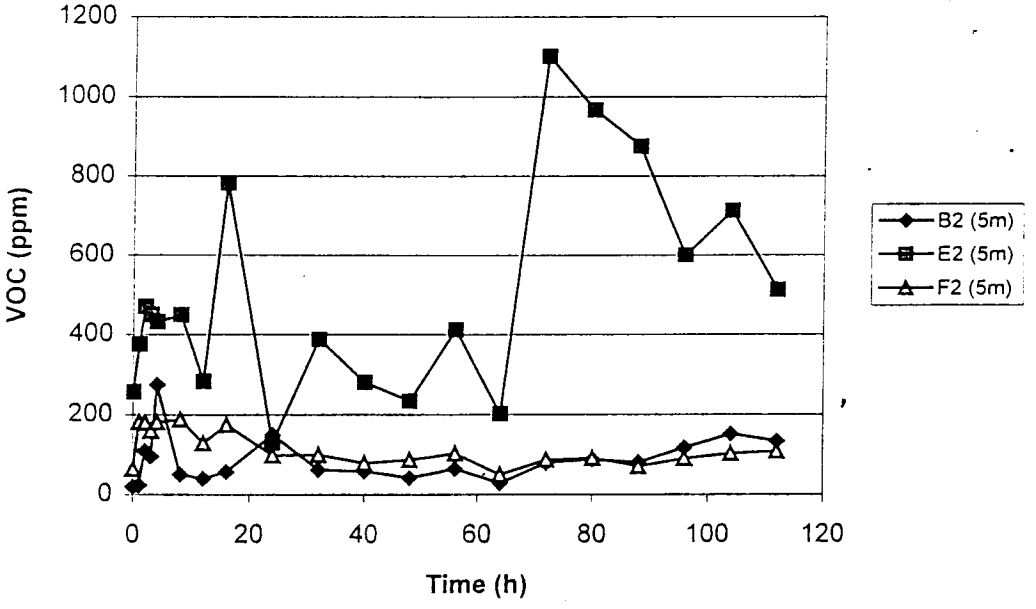


C418\xl\Comvt4-g

VOC at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

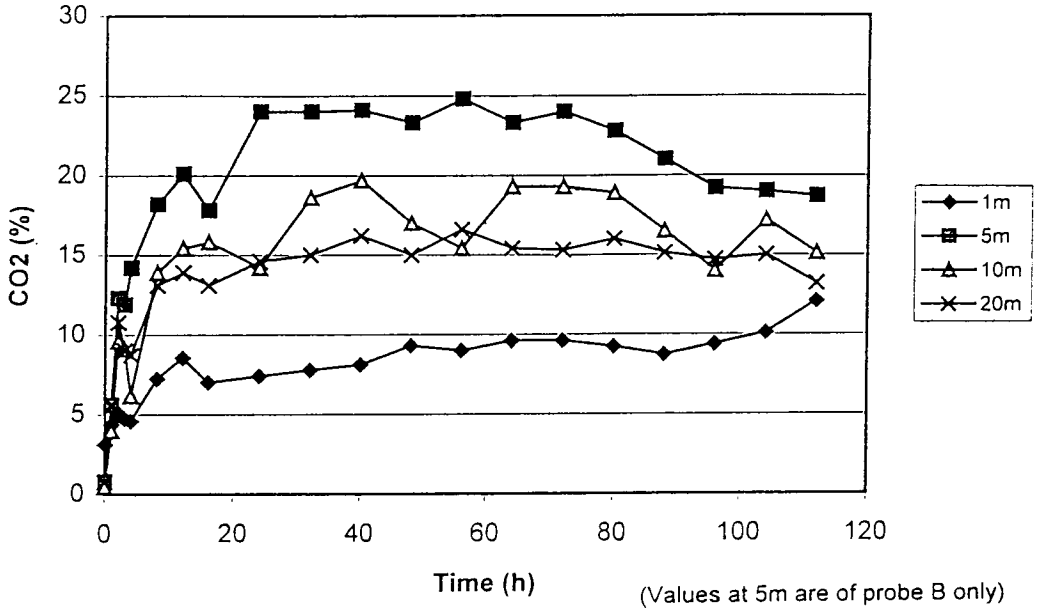


VOC at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



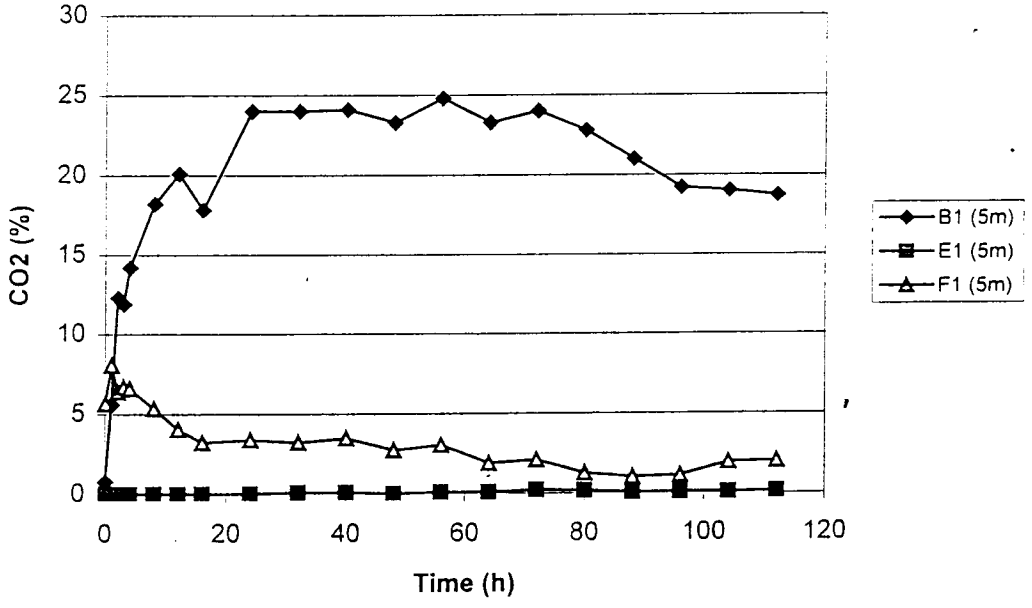
C418\xl\Comvt4-g

CO2 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



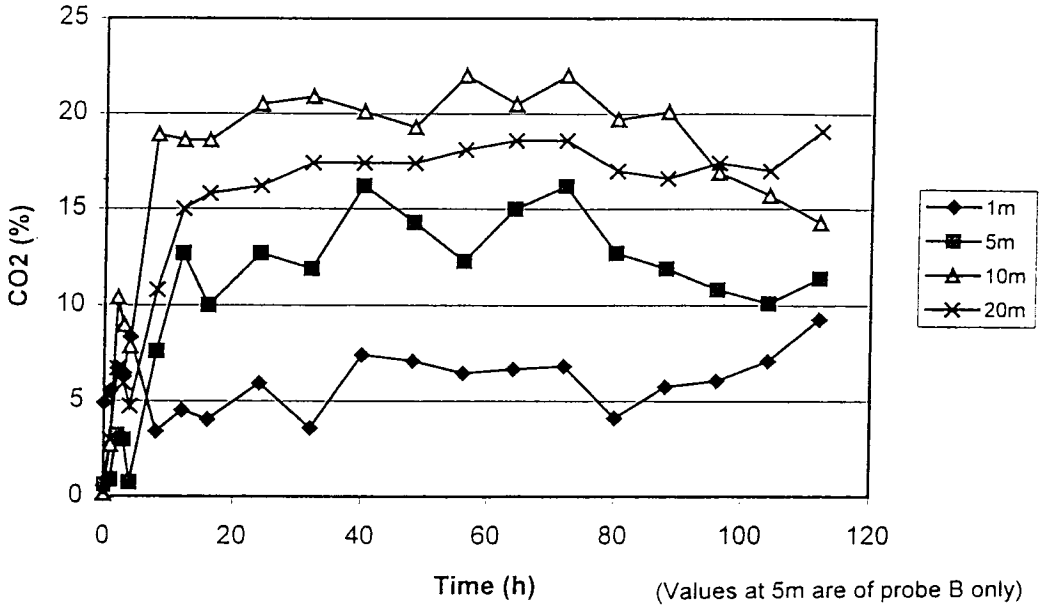
(Values at 5m are of probe B only)

CO2 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



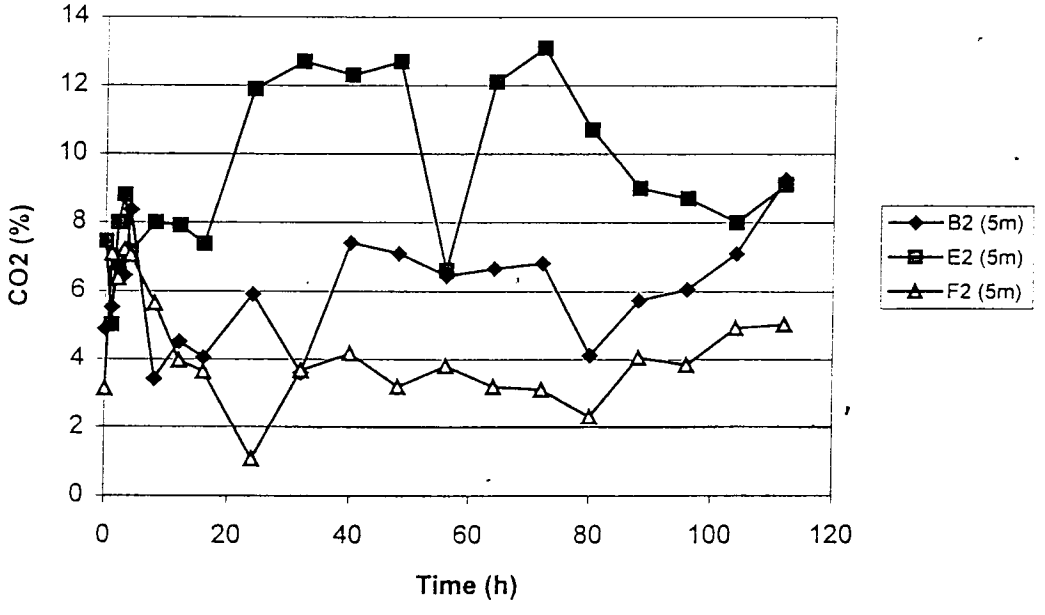
C418\xl\Comvt4-g

CO2 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



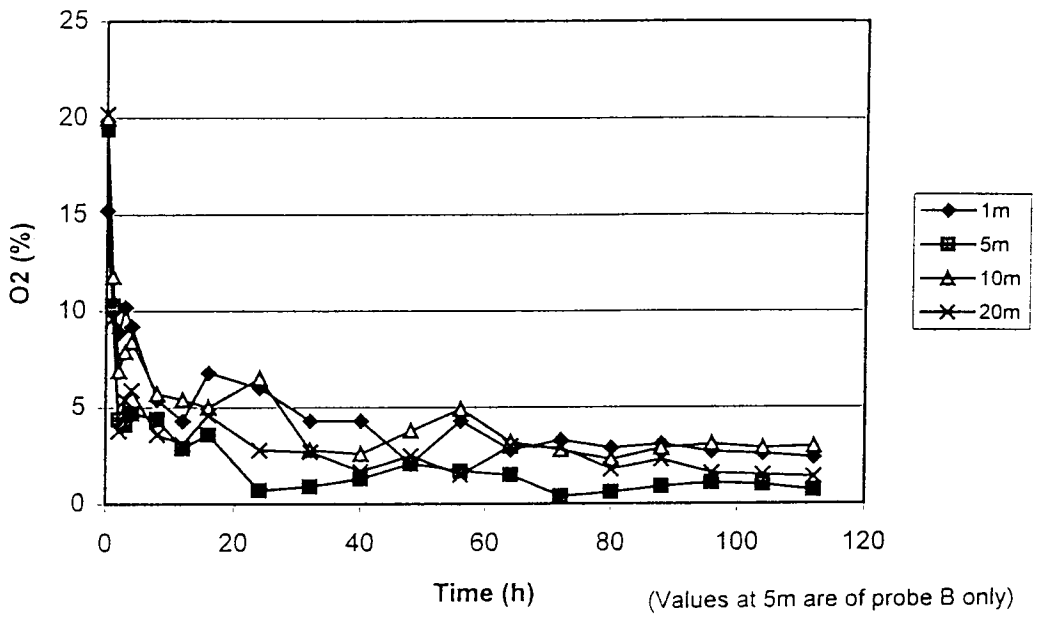
(Values at 5m are of probe B only)

CO2 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



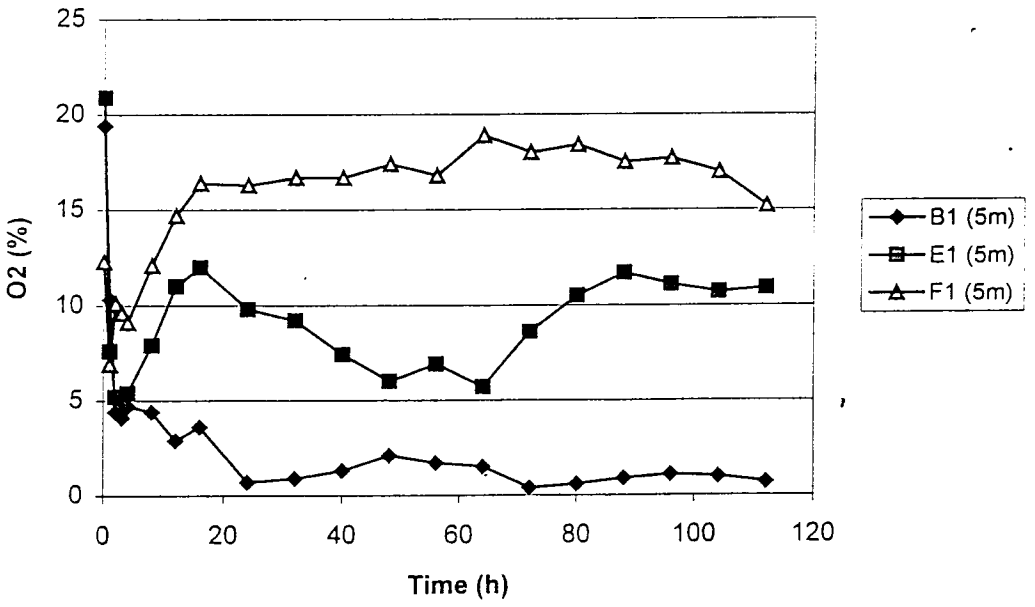
C418\xl\Comvt4-g

O2 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

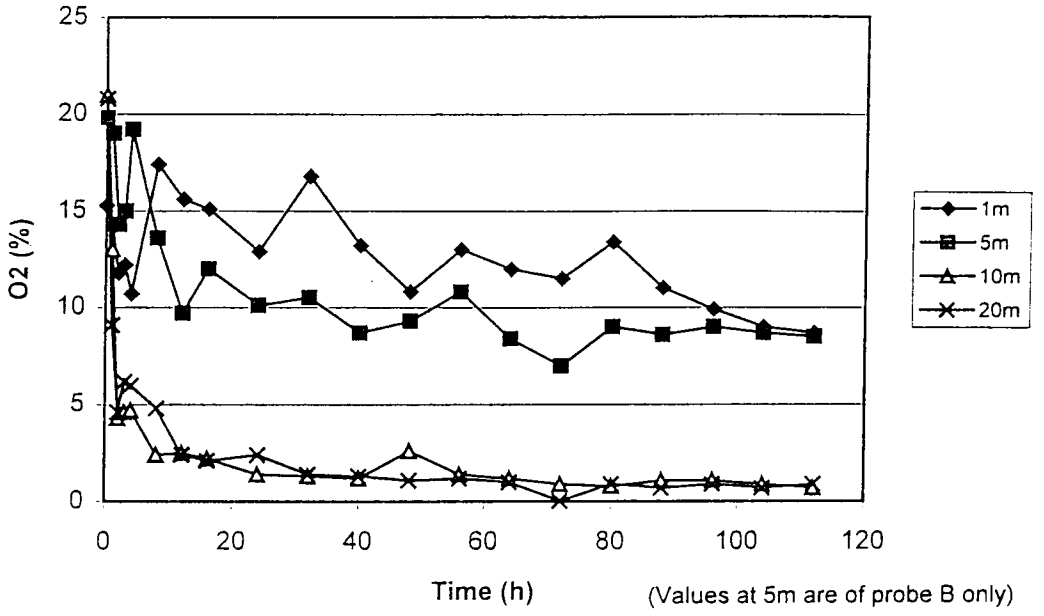


(Values at 5m are of probe B only)

O2 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

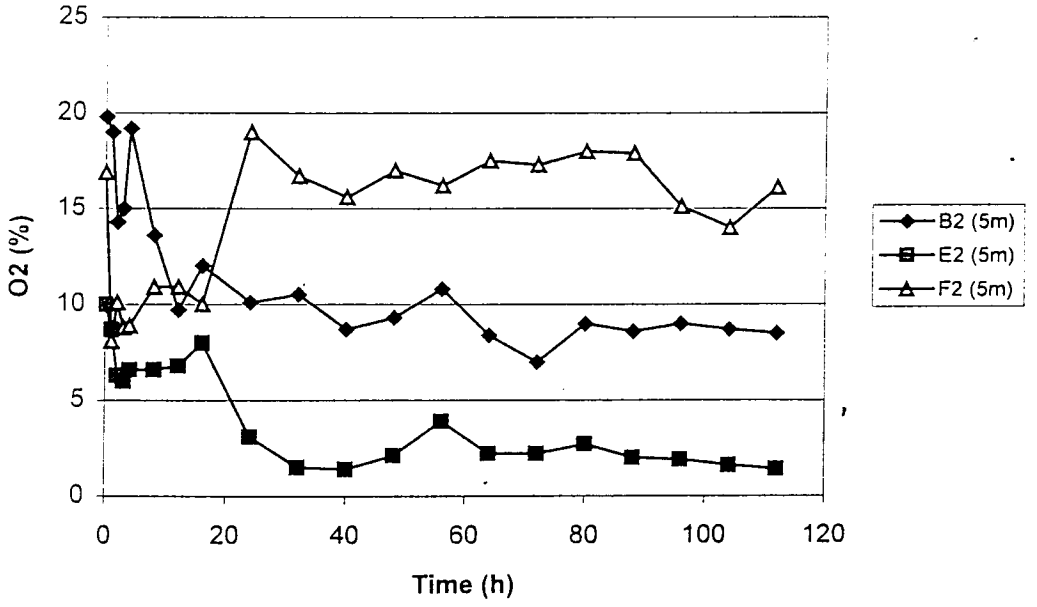


O2 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

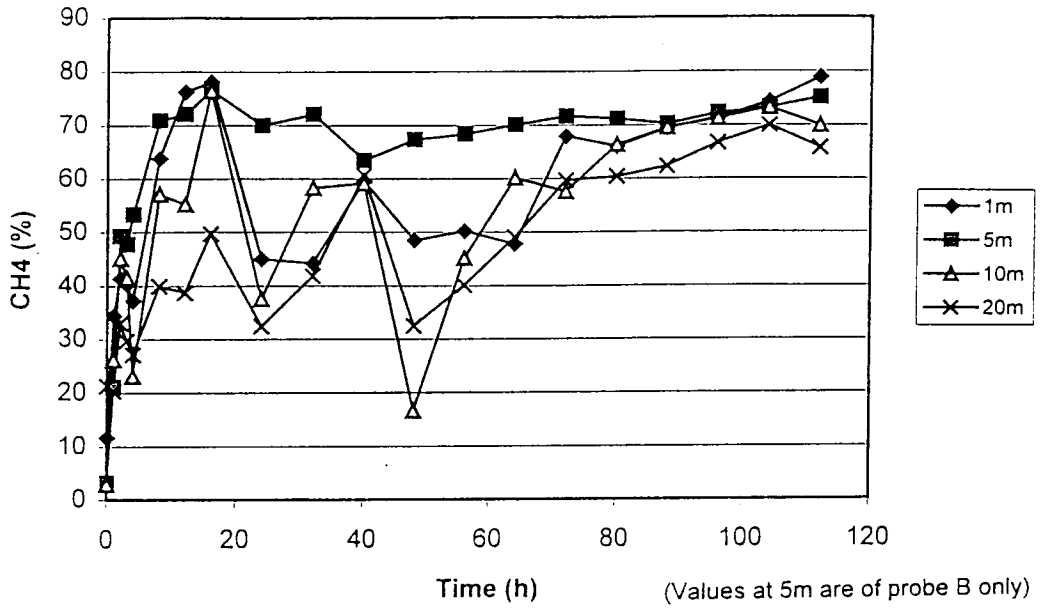


(Values at 5m are of probe B only)

O2 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS flow rate = 8 cfm)

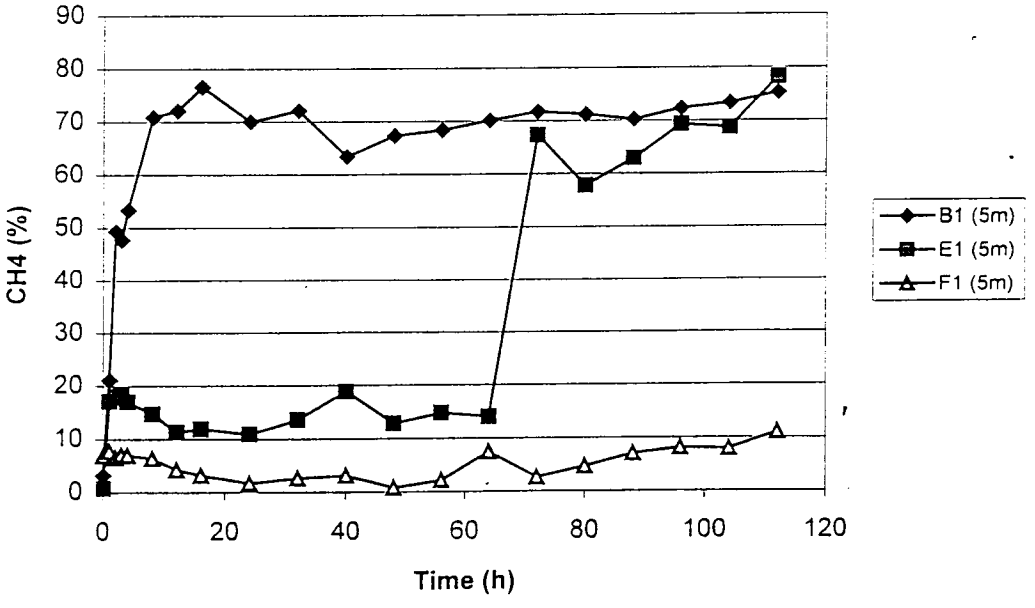


CH4 at Shallow Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)

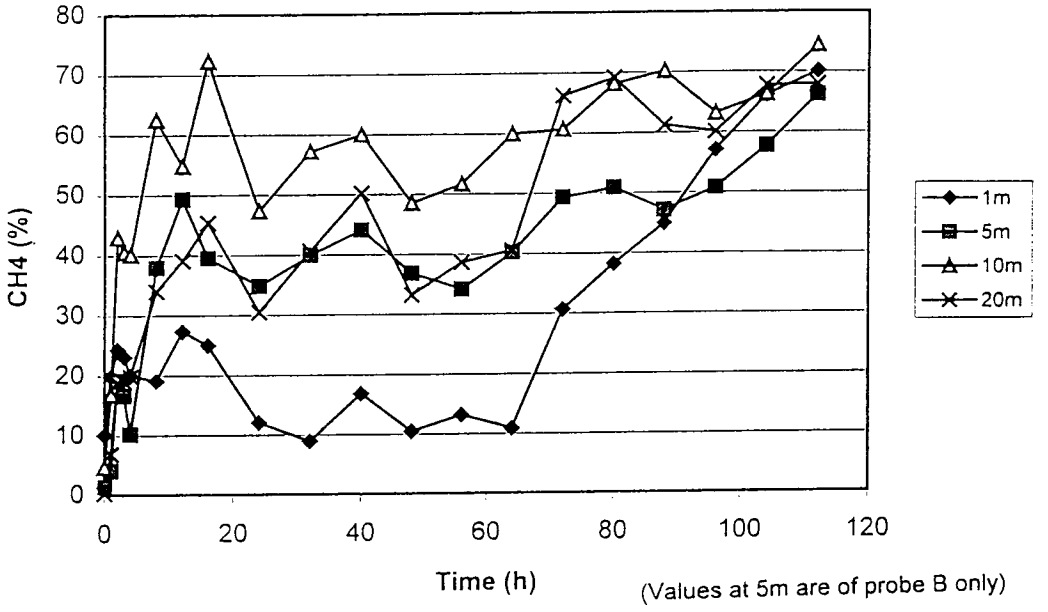
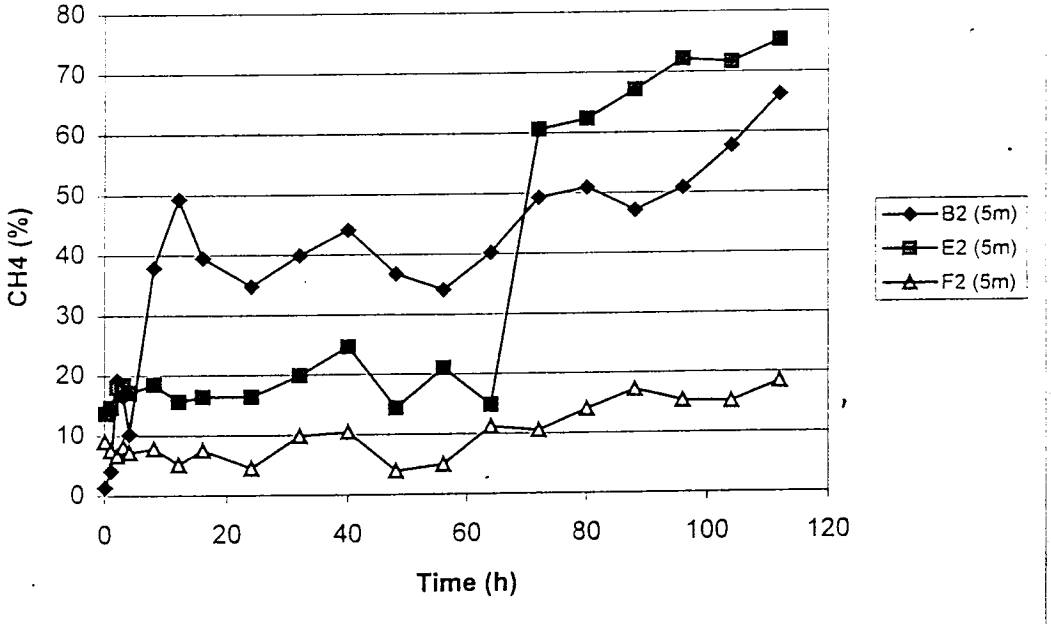


(Values at 5m are of probe B only)

CH4 at Shallow Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



CH4 at Deep Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)



CH4 at Deep Radial Vapour Probes *vs* Time (Long-term Combined SVE/AS Test at VT4, extracted air flow rate = 30 to 80 cfm, AS well flow rate = 8 cfm)