4 Field Data and Charts of Data of Tracer (Helium) Tests

FIELD DATA SHEET : HELIUM TEST

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

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

Pressure/AS Well Flowrate : ..... 149.6 - 161.4" H_2O / 4 cfm .....

Sheet (1) of (2)

Helium Flowrate : ..... 1 cfm .....

Time Elapsed (hh:mm:ss)	AS Well			Soil Vapour Monitoring Probe Helium Concentration (%)												Compressor Outlet		Helium Outlet	
				Distance from Extraction Well (m)															
				1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)					
	Pressure (in H_2O)	Flowrate (cfm)	Helium Concentration (%)	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	Air Flow (cfm)	Pressure (" H_2O)	Flowrate (cfm)	Pressure (" H_2O)
0:00:00	157.5	4	25	ND	ND	ND	ND	0.02	ND	0.04	ND	ND	0.03	ND	0.05	3	181.1	1	285.1
0:10:00	157.5	4	25	21	ND	0.02	0.02	0.02	0.01	ND	ND	ND	0.01	ND	0.02	3	177.2	1	285.1
0:20:00	153.5	4	25	19	0.02	ND	ND	ND	0.01	0.02	ND	0.02	ND	0.02	ND	3	173.2	1	285.1
0:30:00	153.5	4	25	22	0.03	ND	ND	0.02	ND	ND	ND	ND	ND	ND	ND	4	177.2	1	285.1
0:40:00	153.5	4	0	1.9	0.02	0.01	0.01	0.01	ND	0.03	ND	ND	ND	ND	ND	4	173.2	0	-
0:50:00	153.5	4	0	0.94	0.03	0.02	0.01	ND	0.01	ND	ND	ND	ND	0.12	ND	4	173.2	0	-
1:00:00	157.5	4	0	0.46	ND	0.18	ND	ND	0.01	0.01	ND	ND	ND	0.28	0.01	4	181.1	0	-
1:15:00	149.6	4	0	0.38	ND	0.79	ND	ND	0.02	0.01	ND	0.02	0.02	0.72	ND	4	165.4	0	-
1:30:00	149.6	4	0	0.17	ND	1.6	ND	ND	0.01	0.02	ND	ND	ND	1.1	0.01	4	165.4	0	-
1:50:00	161.4	4	0	0.19	0.01	2.1	0.01	0.01	0.01	ND	ND	0.03	0.03	1.4	ND	4	193	0	-
2:10:00	153.5	4	0	0.10	0.03	2.2	ND	ND	ND	0.02	ND	ND	ND	1.5	ND	4	173.2	0	-
2:40:00	157.5	4	0	0.05	0.02	1.9	0.15	ND	ND	ND	0.01	ND	ND	1.6	0.03	4	181.1	0	-

Remarks :

ND -- not detected (detection limit : He < 0.01%)

FIELD DATA SHEET : HELIUM TEST

Date : ..... 9 - 11 - 1998 .....

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

Pressure/AS Well Flowrate : .....145.7 - 193.0" H_2O / 6 cfm .....

Sheet (2) of (2)

Helium Flowrate : ..... 1 cfm .....

Time Elapsed (hh:mm:ss)	AS Well			Soil Vapour Monitoring Probe Helium Concentration (%)												Compressor Outlet		Helium Outlet	
				Distance from Extraction Well (m)															
				1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)					
	Pressure (in H_2O)	Flowrate (cfm)	Helium Concentration (%)	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	Air Flow (cfm)	Pressure (" H_2O)	Flowrate (cfm)	Pressure (" H_2O)
0:00:00	193.0	6	15	ND	ND	ND	0.01	ND	0.14	ND	0.03	ND	0.04	0.16	ND	5	177.2	1	282.3
0:10:00	153.5	6	-	11	0.08	0.02	0.01	0.02	ND	ND	ND	ND	ND	0.02	ND	5	169.2	1	282.3
0:20:00	153.5	6	-	16	0.06	0.01	0.03	ND	ND	ND	0.02	1.8	ND	0.02	ND	5	177.2	1	282.3
0:30:00	157.5	6	18	15	0.12	0.05	ND	ND	0.02	ND	ND	5.6	0.04	0.10	ND	5	185.2	1	282.3
0:40:00	157.5	6	0	7.1	0.05	ND	0.03	ND	ND	0.01	ND	8.1	0.01	0.19	0.04	6	189.2	0	-
0:50:00	157.5	6	0	0.94	ND	1.0	0.05	ND	ND	0.01	ND	9.4	0.05	0.60	0.03	6	181.2	0	-
1:00:00	157.5	6	0	0.36	ND	1.8	0.20	ND	0.01	ND	ND	6.5	ND	1.0	0.04	6	185.2	0	-
1:10:00	153.5	6	0	0.12	ND	2.4	0.39	ND	ND	ND	ND	4.9	ND	1.4	ND	6	177.2	0	-
1:20:00	153.5	6	0	0.12	ND	2.9	0.70	ND	ND	ND	ND	3.1	ND	1.7	ND	6	173.2	0	-
1:35:00	157.5	6	0	ND	ND	3.2	1.4	ND	ND	ND	ND	2.0	0.03	2.0	0.05	6	185.2	0	-
1:55:00	145.7	6	0	0.05	ND	3.5	2.2	ND	0.01	ND	ND	1.0	ND	2.0	0.03	6	161.2	0	-
2:25:00	157.5	6	0	0.02	ND	3.4	2.5	ND	0.02	ND	ND	0.76	ND	1.8	0.05	6	189.2	0	-
2:45:00	145.7	6	0	0.03	ND	3.0	2.4	ND	0.01	0.01	ND	0.54	ND	1.5	0.09	6	169.2	0	-
3:15:00	153.5	6	0	0.03	ND	2.3	2.4	ND	ND	ND	0.02	0.35	ND	1.1	0.10	6	173.2	0	-
4:00:00	157.5	6	0	ND	0.03	1.6	1.9	ND	0.03	ND	ND	0.18	ND	0.92	0.21	6	185.2	0	-

Remarks :

ND -- not detected (detection limit : He < 0.01%)

FIELD DATA SHEET : HELIUM TEST

Date : ..... 20 - 10 - 1998 .....

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

Pressure/AS Well Flowrate : ... 138.4 - 149.5" H_2O / 9.30 - 9.33 cfm ...

Sheet (1) of (3)

Helium Flowrate : ..... 0.83 cfm .....

Time Elapsed (hh:mm:ss)	AS Well			Soil Vapour Monitoring Probe Helium Concentration (%)												Compressor Outlet		Helium Outlet	
				Distance from Extraction Well (m)															
				1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)					
	Pressure (in H_2O)	Flowrate (cfm)	Helium Concentration (%)	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	Air Flow (cfm)	Pressure (in H_2O)	Flowrate (cfm)	Pressure (in H_2O)
0:00:00	149.5	9.33	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.5	567.5	0.83	193.8
0:05:00	-	-	9	0.04	0.03	ND	ND	-	-	-	-	0.19	0.03	0.05	0.04	-	-	0.83	-
0:07:30	-	-	9	-	2.70	-	-	-	-	-	-	-	-	-	3.20	-	-	0.83	-
0:08:30	-	-	9	-	-	-	-	-	-	-	-	-	-	0.14	-	-	-	0.83	-
0:09:50	-	-	9	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.83	-
0:10:00	149.5	9.33	9	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	0.10	0.34	8.5	567.5	0.83	193.8
0:10:50	-	-	9	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	0.83	-
0:12:30	-	-	9	-	-	-	-	-	-	-	-	-	0.15	-	-	-	-	0.83	-
0:13:50	-	-	9	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	0.83	-
0:15:00	149.5	9.33	9	-	-	ND	ND	-	-	-	-	0.04	0.04	0.11	0.33	8.5	567.5	0.83	193.8
0:20:00	138.4	9.30	0	0.13	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	9.3	567.5	0	-
0:30:00	138.4	9.30	0	0.29	0.25	ND	ND	ND	ND	ND	ND	0.03	0.23	0.05	0.17	9.3	567.5	0	-
0:45:00	138.4	9.30	0	0.64	0.55	ND	ND	ND	ND	ND	ND	0.07	0.25	ND	0.60	9.3	567.5	0	-
0:55:00	-	-	0	1.90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
0:57:00	-	-	0	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	0	-
0:53:30	-	-	0	-	-	-	-	-	-	-	-	0.06	-	-	-	-	-	0	-
1:00:00	-	-	0	-	-	-	-	-	-	-	-	-	0.59	-	-	-	-	0	-
1:00:00	138.4	9.30	0	0.92	0.76	ND	ND	ND	ND	ND	ND	0.07	0.29	0.14	0.10	9.3	567.5	0	-
1:01:30	-	-	0	-	-	-	-	-	-	-	-	-	-	0.39	-	-	-	0	-
1:02:30	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0.42	-	-	0	-
1:04:00	-	-	0	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	0	-
1:05:00	-	-	0	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0	-
1:06:30	-	-	0	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	0	-
1:08:00	-	-	0	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	0	-
1:10:00	-	-	0	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	0	-
1:11:30	-	-	0	-	-	-	-	-	-	-	ND	-	-	-	-	-	-	0	-
1:20:00	138.4	9.30	0	-	-	ND	ND	ND	ND	ND	ND	0.12	0.29	0.25	0.11	9.3	567.5	0	-
1:40:00	138.4	9.30	0	0.51	0.37	ND	ND	ND	ND	ND	ND	0.14	0.41	0.39	ND	9.3	567.5	0	-
2:00:00	138.4	9.30	0	0.53	0.22	ND	ND	ND	ND	ND	ND	0.20	0.17	0.55	0.72	9.3	567.5	0	-

FIELD DATA SHEET : HELIUM TEST

Date : ..... 20 - 10 - 1998 ..... Location/SVE ID : ..... VT4 .....

Pressure/AS Well Flowrate : ... 138.4 - 149.5" H_2O / 9.30 - 9.33 cfm ... Sheet (2) of (3)

Helium Flowrate : ..... 0.83 cfm .....

Remarks :

1. -- Helium monitored directly at wells. No sampling bag used.
2. ND -- not detected (detection limit : He < 0.01%)

FIELD DATA SHEET : HELIUM TEST

Date : ..... 27 - 10 - 1998 ..... Location/SVE ID : ..... VT4 .....

Pressure/AS Well Flowrate : ..... 149.6" H_2O / 11.5 - 12.0 cfm ..... Sheet (3) of (3)

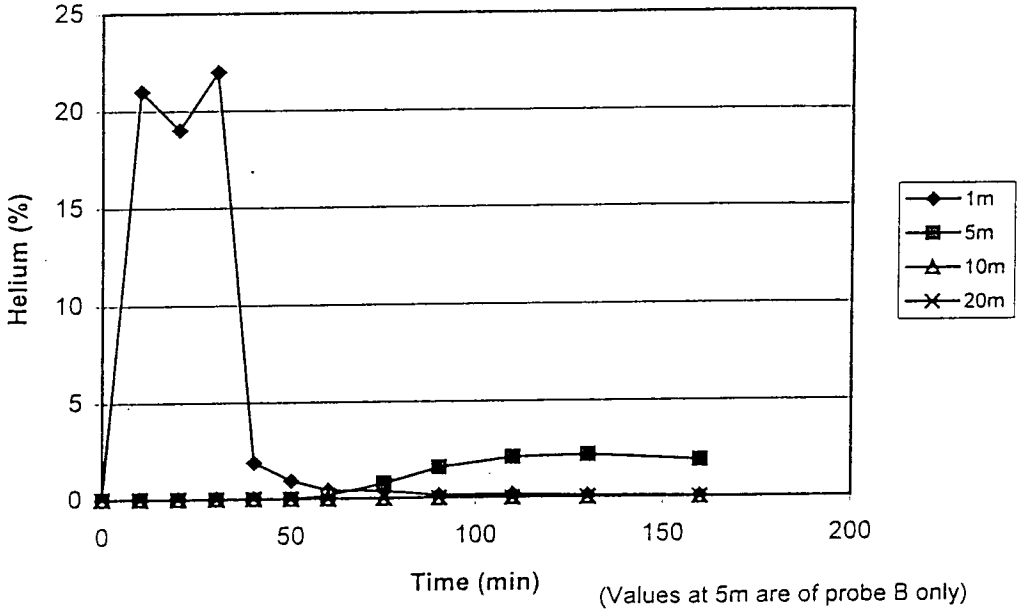
Helium Flowrate : ..... 1 cfm .....

Time Elapsed (hh:mm:ss)	AS Well			Soil Vapour Monitoring Probe Helium Concentration (%) — Distance from Extraction Well (m)												Compressor Outlet		Helium Outlet	
				1m (A)		5m (B)		10m (C)		20m (D)		5m (E)		5m (F)					
	Pressure (in H_2O)	Flowrate (cfm)	Helium Concentration (%)	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	Air Flow (cfm)	Pressure (in H_2O)	Flowrate (cfm)	Pressure (in H_2O)
0:00:00	149.6	12.0	8.33	ND	0.07	ND	ND	ND	ND	ND	ND	ND	0.03	0.04	0.09	11.0	165.4	1	217.3
0:10:00	149.6	11.5	8.70	0.07	ND	-	-	-	-	ND	ND	ND	-	ND	0.13	10.5	165.4	1	217.3
0:20:00	149.6	12.0	8.33	0.13	2.0	ND	ND	0.04	ND	0.01	ND	ND	ND	0.04	0.22	11.0	165.4	1	217.3
0:30:00	149.6	12.0	8.33	2.4	4.8	0.05	ND	0.03	ND	ND	ND	ND	0.14	ND	0.27	11.0	173.2	1	217.3
0:45:00	149.6	12.0	8.33	2.7	3.7	0.04	ND	ND	ND	ND	ND	ND	0.44	0.03	ND	11.0	173.2	1	217.3
1:00:00	149.6	12.0	0	2.9	4.3	ND	ND	ND	ND	ND	0.01	0.12	1.8	0.06	ND	12.0	173.2	0	-
1:30:00	149.6	12.0	0	2.5	3.6	ND	0.02	0.01	ND	ND	ND	0.38	1.3	0.20	ND	12.0	173.2	0	-

Remarks :

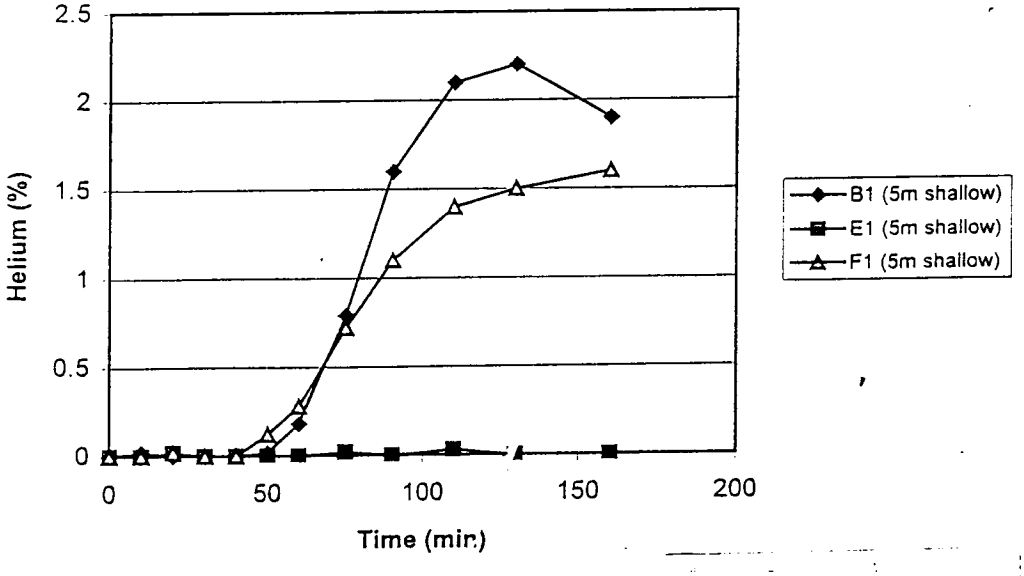
1. ND -- not detected (detection limit : He $\lesssim$ 0.01%)

Helium at Shallow Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure= 157.5 in. H2O, AS well flow rate = 4 cfm, He conc. = 25%, He flow rate = 1 cfm)



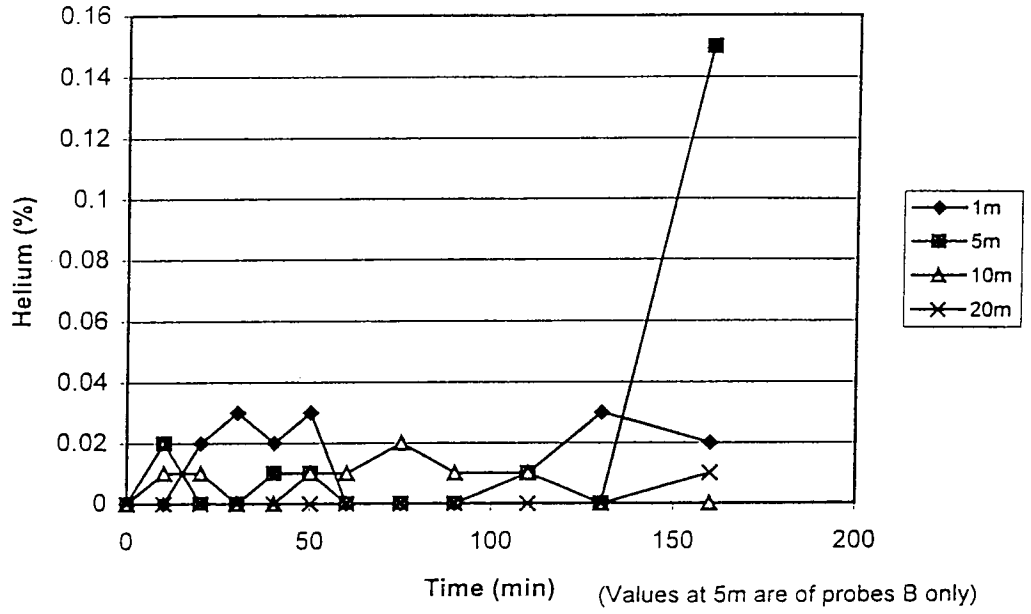
(Values at 5m are of probe B only)

Helium at Shallow Radial Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 4 cfm, He conc. = 25%, He flow rate = 1 cfm)



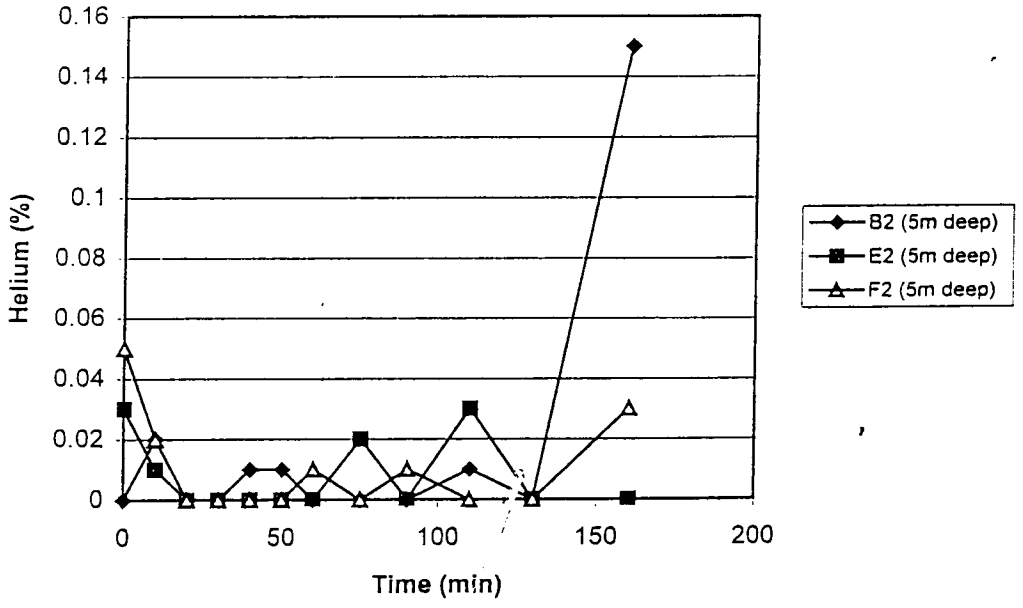
C418\xl\Asvt3-g4

Helium at Deep Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 4 cfm, He conc. = 25%, He flow rate = 1 cfm)



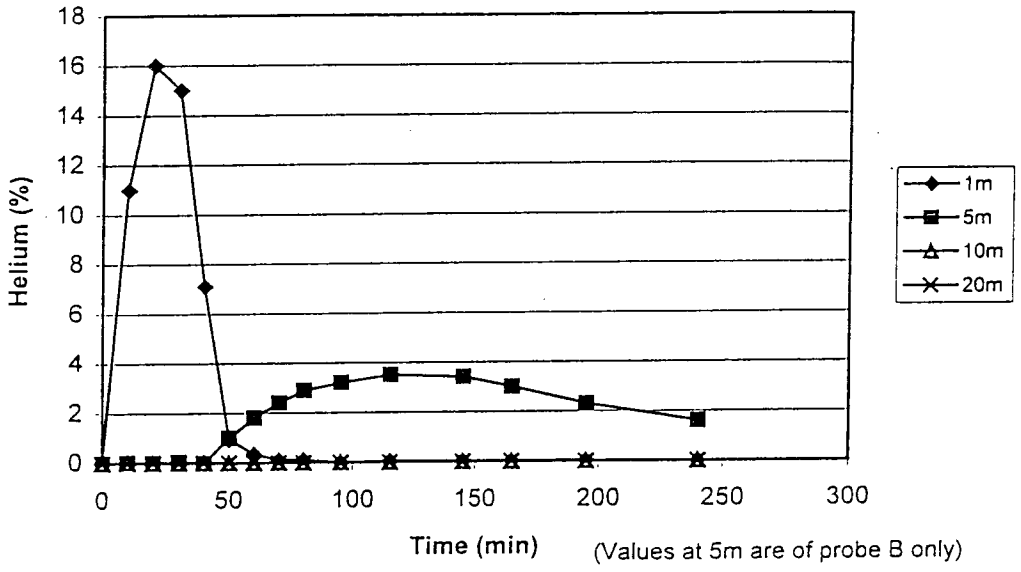
(Values at 5m are of probes B only)

Helium at Deep Radial Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 4 cfm, He conc. = 25%, He flow rate = 1 cfm)



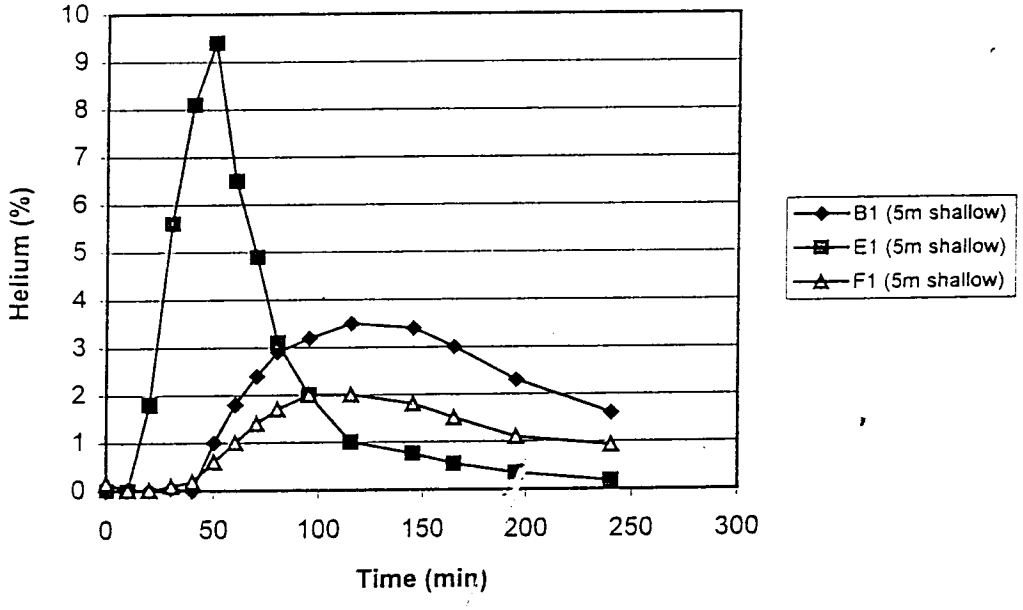
C418\xl\Asvt3-g4

Helium at Shallow Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 6 cfm, He conc. = 16.5%, He flow rate = 1 cfm)



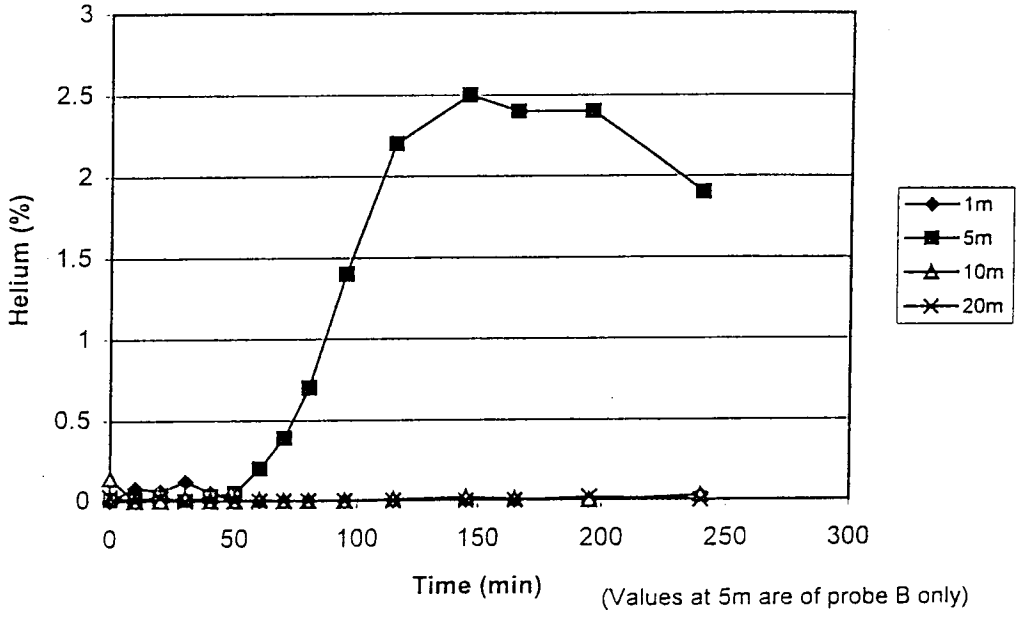
(Values at 5m are of probe B only)

Helium at Shallow Radial Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 6 cfm, He conc. = 16.5%, He flow rate = 1 cfm)



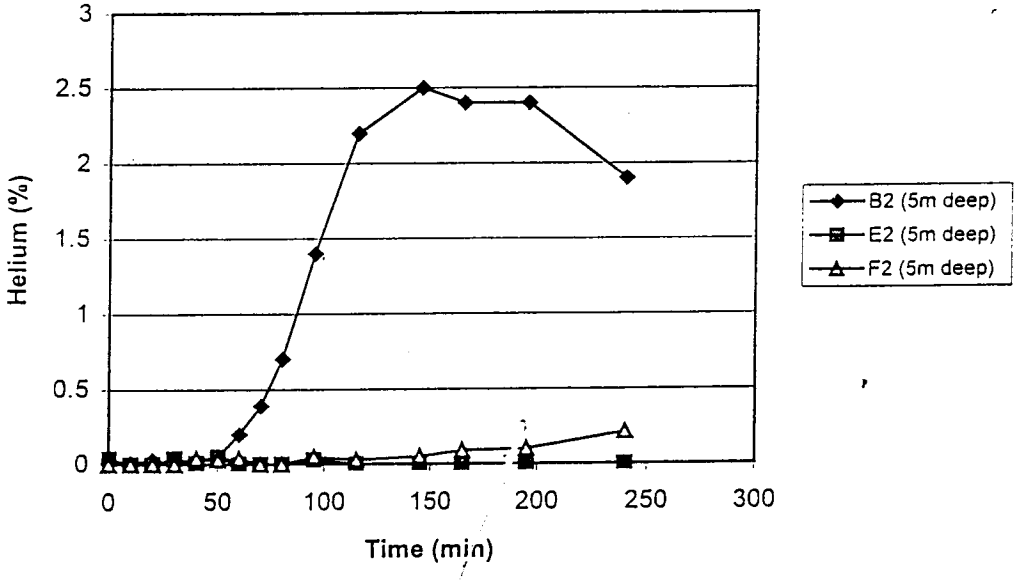
C418\xl\Asvt3-g4

Helium at Deep Vapour Probes *vs* Time (Helium Test at VT3, AS well pressure = 157.5 in. H2O, AS well flow rate = 6 cfm, He conc. = 16.5%, He flow rate = 1 cfm)



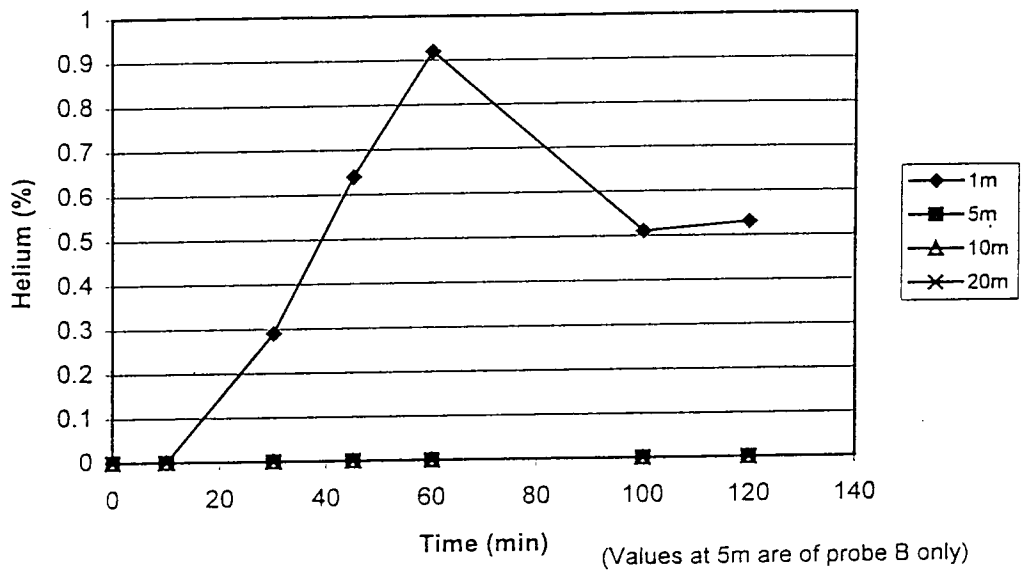
(Values at 5m are of probe B only)

Helium at Deep Radial Vapour Probes *vs* Time (Helium Test at VT3, AS well pressue = 157.5 in. H2O, AS well flow rate = 6 cfm, He conc. = 16.5%, He flow rate = 1 cfm)



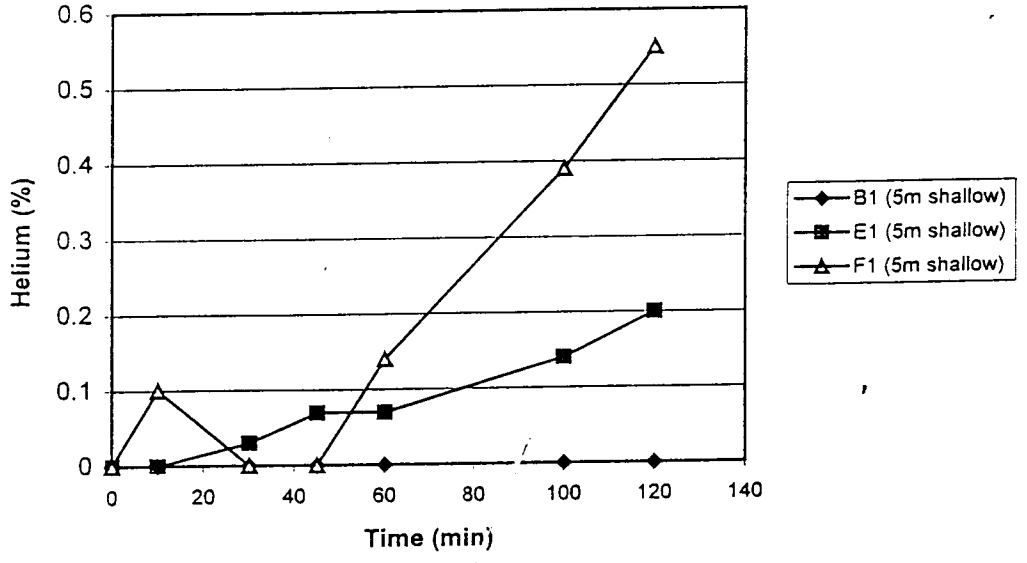
C418\xl\Asvt3-g4

Helium at Shallow Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure= 138.4 in. H2O, AS well flow rate = 9.3 cfm, He conc. = 9%, He flow rate = 0.83 cfm)



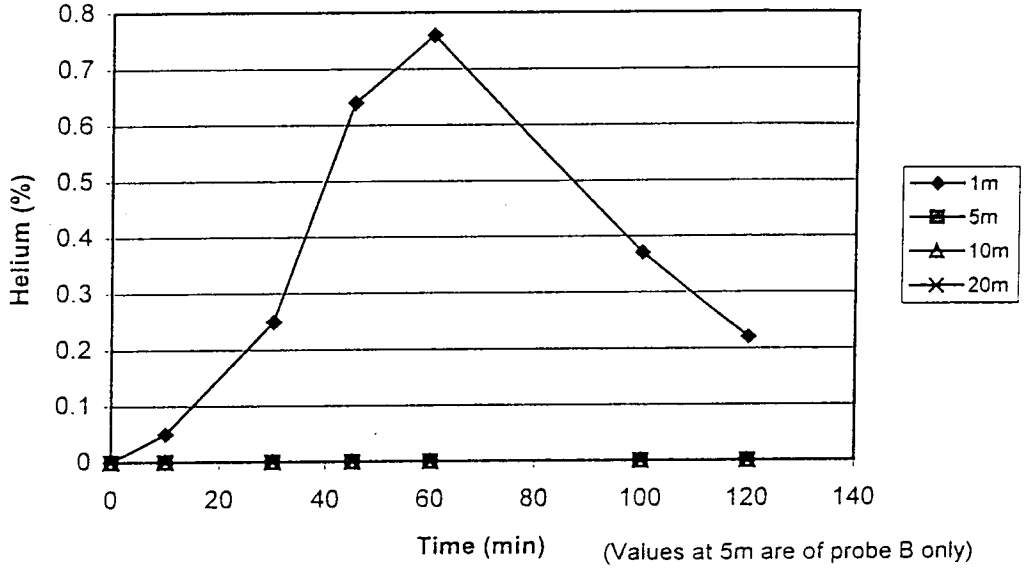
(Values at 5m are of probe B only)

Helium at Shallow Radial Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure = 138.4 in. H2O, AS well flow rate = 9.3 cfm, He conc. = 9%, He flow rate = 0.83 cfm)



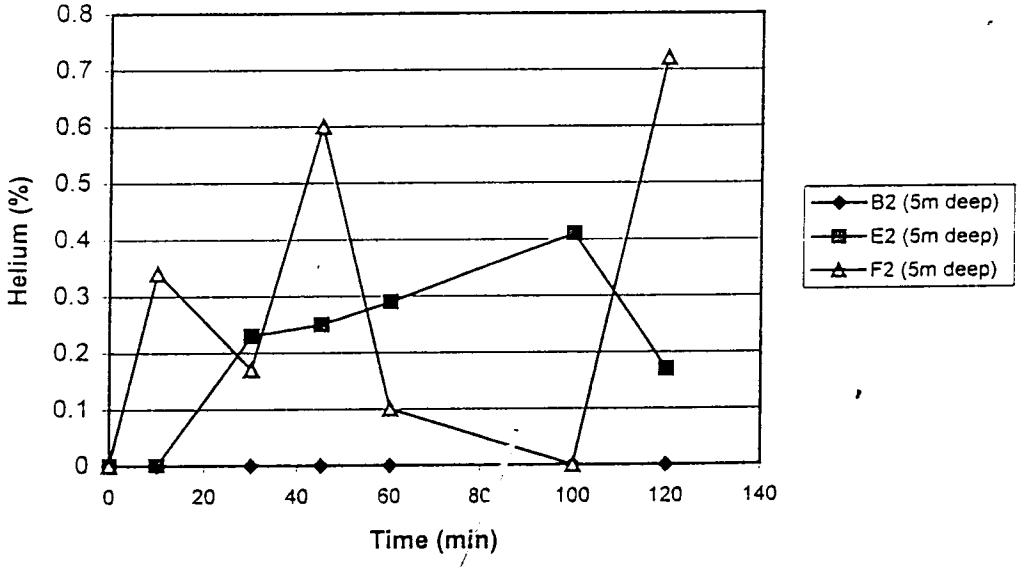
C418\xl\Asvt4-g4

Helium at Deep Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure = 138.4 in. H2O, AS well flow rate = 9.3 cfm, He conc. = 9%, He flow rate = 0.83 cfm)



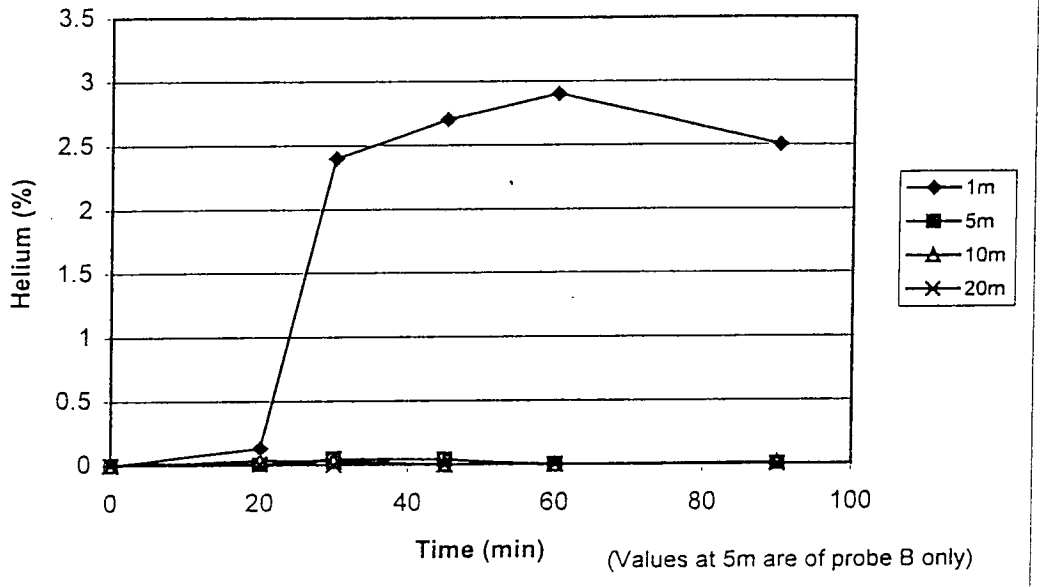
(Values at 5m are of probe B only)

Helium at Deep Radial Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure = 138.4 in. H2O, AS well flow rate = 9.3 cfm, He conc. = 9%, He flow rate = 0.83 cfm)



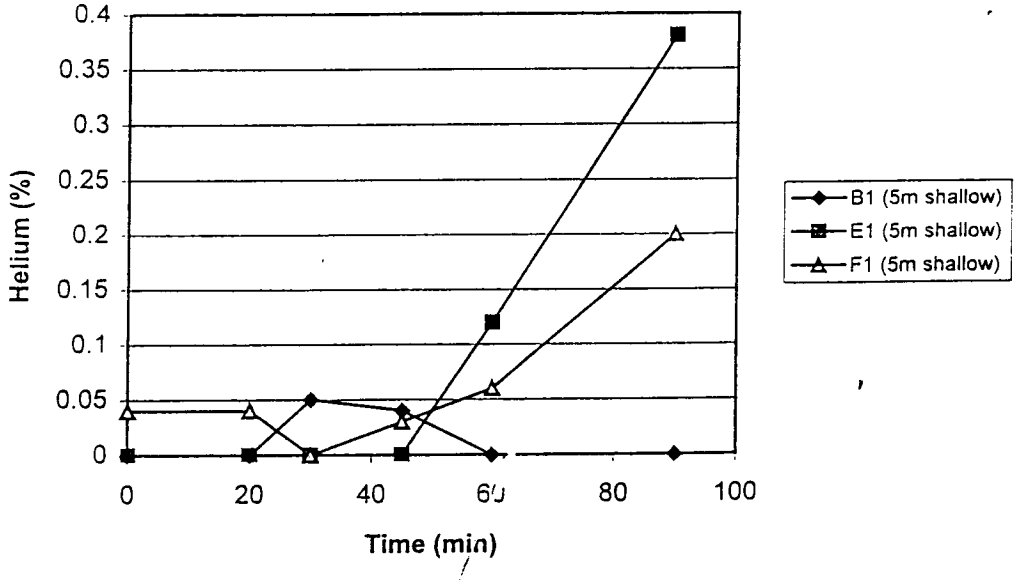
C418\xl\Asvt4-g4

Helium at Shallow Vapour Probes Vs Time (Short-term AS at VT4, AS well pressure = 149.6 in. H2O, AS well flow rate = 12 cfm, He conc. = 8.33%, He flow rate = 1 cfm)



(Values at 5m are of probe B only)

Helium at Shallow Radial Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure = 149.6 in. H2O, AS well flow rate = 12 cfm, He conc. = 8.33%, He flow rate = 1 cfm)



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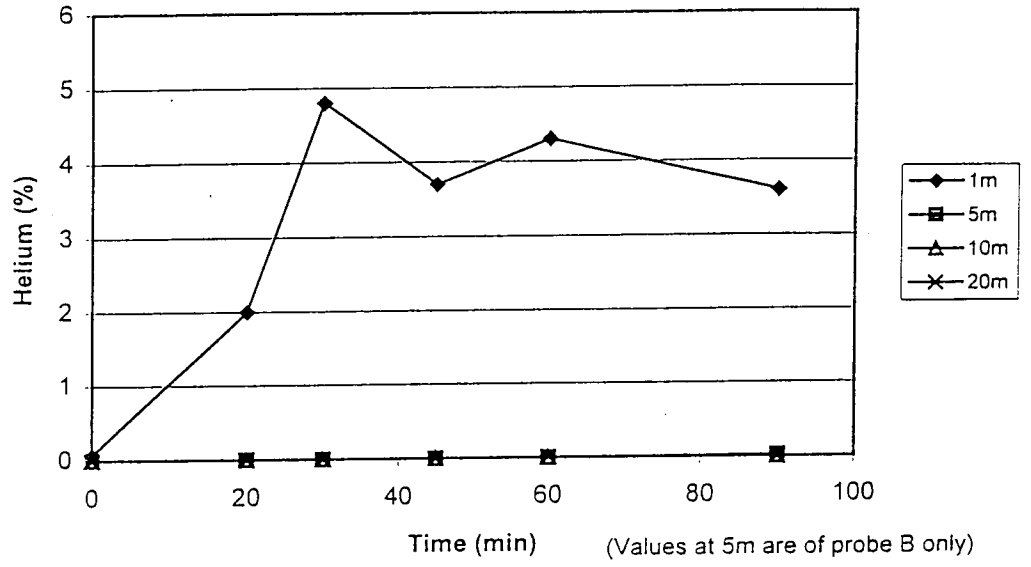
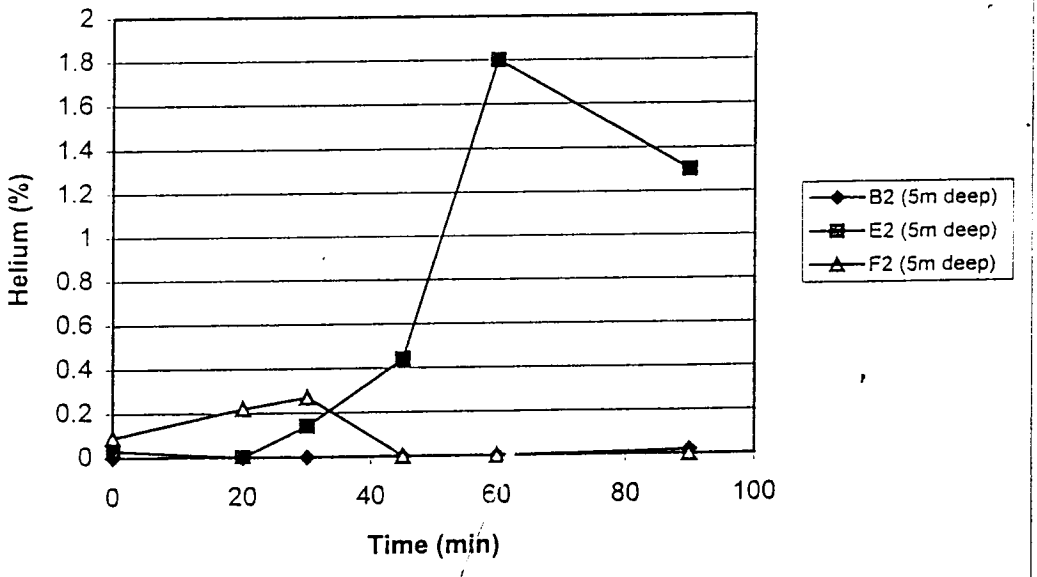
Helium at Deep Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressure = 149.6 in. H2O, AS well flow rate = 12 cfm, He conc. = 8.33%, He flow rate = 1 cfm)



(Values at 5m are of probe B only)

Helium at Deep Radial Vapour Probes *vs* Time (Short-term AS at VT4, AS well pressue = 149.6 in. H2O, AS well flow rate = 12 cfm, He conc. = 8.33%, He flow rate = 1 cfm)



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