	A	B	C
1	**Data**	**Sample**	**Latitude**
2	**Source**	**Name**	
3	DEP (ISOTECH)	Ex. 6-PII	41.730917
4	DEP (ISOTECH)		41.730917
5	CABOT (GEOMARK)		41.730917
6	CEC (ISOTECH)		41.730917
7	DEP (ISOTECH)		41.730252
8	CABOT (GEOMARK)		41.730252
9	CEC (ISOTECH)		41.730252
10	CABOT (GEOMARK)		41.732188
11	CEC (ISOTECH)		41.732188
12	DEP (ISOTECH)		41.7325
13	CEC (ISOTECH)		41.72514
14	DEP (ISOTECH)		41.739438
15	DEP (ISOTECH)		41.739438
16	CABOT (GEOMARK)		41.739438
17	CEC (ISOTECH)		41.739438
18	DEP (ISOTECH)		41.747461
19	DEP (ISOTECH)		41.745527
20	CEC (ISOTECH)		41.745527
21	CEC (ISOTECH)		41.72897
22	CABOT (GEOMARK)		41.726167
23	CEC (ISOTECH)		41.726167
24	DEP (ISOTECH)		41.73688
25	DEP (ISOTECH)		41.73688
26	DEP (ISOTECH)		41.735943
27	DEP (ISOTECH)		41.737409
28	CABOT (GEOMARK)		41.737409
29	CEC (ISOTECH)		41.737409
30			
31		Ex. 6-	
32	DEP (ISOTECH)	PII 1 (4 1/2 in casing)	41.744645
33	DEP (ISOTECH)	Cabot Pipeline (collection line 2 in)	?
34	DEP (ISOTECH)	Lyman 2H (production)	41.682514
35	CABOT (WEATHERFORD)	LOPATOFSKY (purcell 7401.10)	41.653575
36	CABOT (WEATHERFORD)	LOPATOFSKY (purcell 7401.10)	41.653575
37	CABOT (WEATHERFORD)	LOPATOFSKY (top of lower marcellus 7441.5)	41.653575
38	CABOT (WEATHERFORD)	LOPATOFSKY (top of lower marcellus 7441.5)	41.653575
39	CABOT (WEATHERFORD)	LOPATOFSKY (lower marcellus above union springs 7471.5)	41.653575
40	CABOT (WEATHERFORD)	LOPATOFSKY (lower marcellus above union springs 7471.5)	41.653575
41	CABOT (WEATHERFORD)	LOPATOFSKY (top of union springs 7523.5)	41.653575
42	CABOT (WEATHERFORD)	LOPATOFSKY (top of union springs 7523.5)	41.653575
43	CABOT (WEATHERFORD)	LOPATOFSKY (middle of union springs 7553.5)	41.653575
44	CABOT (WEATHERFORD)	LOPATOFSKY (middle of union springs 7553.5)	41.653575
45	CABOT (WEATHERFORD)	LOPATOFSKY (middle of union springs 7559.5)	41.653575
46	CABOT (WEATHERFORD)	LOPATOFSKY (middle of union springs 7559.5)	41.653575
47	CABOT (WEATHERFORD)	LOPATOFSKY (base of union springs 7564.5)	41.653575
48	CABOT (WEATHERFORD)	LOPATOFSKY (base of union springs 7564.5)	41.653575

	D	E	F	G	H	I	J	K	L
1	**Longitude**	**Sample**	**Sample**	**GC Analysis**	**Mass Spectrometer**	**He**	**H_2**	**Ar**	**O_2**
2		**date**	**Time**	**date**	**Date**	**%**	**%**	**%**	**%**
3	-75.877441	1/21/2009	-	1/27/2009	1/28/2009	0.0017	-	0.945	20.83
4	-75.877441	10/6/2010	11:47	10/25/2010	10/26/2010	0.0081	-	0.326	2.4
5	-75.877441	11/13/2010	4:55	-	-	-	-	-	-
6	-75.877441	11/13/2010	-	-	-	0.0173	-	0.441	0.23
7	-75.878313	10/6/2010	11:51	10/25/2010	10/27/2010	-	-	0.725	12.5
8	-75.878313	11/9/2010	11:22	-	-	-	-	-	-
9	-75.878313	11/9/2010	-	-	-	0.018	-	0.345	0.16
10	-75.875646	11/2/2010	2:45	-	-	-	-	-	-
11	-75.875646	11/12/2010	-	-	-	0.0225	-	0.28	0.072
12	-75.87811	1/21/2009	-	1/27/2009	1/28/2009	0.0029	-	0.913	20.38
13	-75.87694	11/9/2010	-	-	-	-	-	1.31	0.93
14	-75.880332	1/21/2009	-	1/27/2009	1/28/2009	0.0186	-	0.572	11.53
15	-75.880332	10/6/2010	11:35	10/22/2010	10/27/2010	0.0058	-	0.897	19.88
16	-75.880332	11/7/2010	5:00	-	-	-	-	-	-
17	-75.880332	11/7/2010	-	-	-	-	-	0.554	1.16
18	-75.881937	1/8/2009	-	1/13/2009	1/13/2009	0.0265	-	0.317	6.28
19	-75.883131	1/12/2009	-	1/15/2009	1/15/2009	0.0245	0	0.404	8.26
20	-75.883131	11/21/2010	-	-	-	-	-	1.63	18.84
21	-75.87761	11/20/2010	-	-	-	-	-	0.626	0.46
22	-75.876278	11/5/2010	2:30	-	-	-	-	-	-
23	-75.876278	11/9/2010	-	-	-	-	-	0.98	2.38
24	-75.85845	10/6/2010	12:30	10/25/2010	10/26/2010	0.0023	-	0.538	5.32
25	-75.85845	6/16/2010	10:17	8/25/2010	8/25/2010	0.001	-	0.906	19.9
26	-75.859781	6/16/2010	11:25	8/25/2010	8/25/2010	0.006	-	0.919	20.4
27	-75.859662	8/18/2010	10:20	8/25/2010	8/26/2010	0.015	0.0207	0.892	20.1
28	-75.859662	11/10/2010	5:05	-	-	-	-	-	-
29	-75.859662	11/10/2010	-	-	-	-	-	0.202	0.53
30									
31									
32	-75.879534	1/7/2009	-	1/13/2009	1/13/2009	0.0186	0.021	0.043	0.95
33	?	1/13/2009	-	1/13/2009	1/13/2009	0.0190	0.0222	0.0378	0.830
34	-75.936428	-	-	-	-	-	-	-	-
35	-75.867589	8/3/2011	19:12	-	-	-	0	-	-
36	-75.867589	8/6/2011	17:00	-	-	-	0.0842	-	-
37	-75.867589	8/3/2011	20:45	-	-	-	0	-	-
38	-75.867589	8/6/2011	17:05	-	-	-	0	-	-
39	-75.867589	8/3/2011	22:24	-	-	-	0	-	-
40	-75.867589	8/6/2011	17:08	-	-	-	0	-	-
41	-75.867589	8/4/2011	17:36	-	-	-	0	-	-
42	-75.867589	8/6/2011	22:13	-	-	-	0	-	-
43	-75.867589	8/4/2011	19:07	-	-	-	0	-	-
44	-75.867589	8/6/2011	22:15	-	-	-	0	-	-
45	-75.867589	8/4/2011	20:13	-	-	-	0	-	-
46	-75.867589	8/6/2011	22:17	-	-	-	0	-	-
47	-75.867589	8/4/2011	21:20	-	-	-	0	-	-
48	-75.867589	8/8/2011	23:54	-	-	-	0	-	-

	M	N	O	P	Q	R	S	T	U
1	**CO_2**	**N_2**	**CO**	**C_1**	**C_2**	**C_1/C_2**	**C_1/**	**C_1/**	**C_2H_4**
2	**%**	**%**	**%**	**%**	**%**		**Higher Chain**	**C_2**	**%**
3	0.050	75.53	-	2.60	0.0410	63.4146	60.7477	63.4146	0
4	0.06	21.36	-	74.58	1.26	59.19048	59.10603899	59.19047619	0
5	0.075765	45.756413	-	53.279851	0.886909	60.07364	60.00179173	60.0736389	0
6	0.06	26.67	-	71.23	1.35	52.76296	52.76296296	52.76296296	0
7	0.17	42.87	-	42.77	0.968	44.18388	44.1291787	44.1838843	0
8	0.143291	22.038614	-	76.434626	1.382587	55.28377	55.24852816	55.2837731	0
9	0.13	17.76	-	79.98	1.6	49.9875	49.9875	49.9875	0
10	0.005143	16.456598	-	82.448278	1.079603	76.36907	75.64194055	76.36907085	0
11	0.01	14.99	-	83.46	1.15	72.57391	71.94827586	72.57391304	0
12	0.040	73.84	-	4.74	0.0828	57.24638	55.05226481	57.24637681	0
13	0.340	78.66	-	18.59	0.17	109.3529	109.3529412	109.3529412	0
14	0.32	45.69	-	41.07	0.767	53.54628	51.49197593	53.54628422	0
15	0.26	73.96	-	4.92	0.0796	61.80905	60.815822	61.80904523	0
16	1.148641	86.201376	-	12.428479	0.21938	56.65274	56.10950141	56.6527441	0
17	3.44	26.58	-	66.94	1.31	51.09924	50.71212121	51.09923664	0
18	0.28	25.32	-	66.51	1.22	54.51639	52.60202468	54.51639344	0
19	0.27	33.47	0	56.47	1.06	53.27358	51.45799162	53.27358491	0
20	1.77	77.43	-	0.32	0.01	32	32	32	0
21	0.22	34.41	-	63.01	1.27	49.61417	49.61417323	49.61417323	0
22	0.177492	92.351943	-	7.443546	0.026275	283.2939	275.4930234	283.2938535	0
23	0.33	57.37	-	38.8	0.14	277.1429	277.1428571	277.1428571	0
24	0.077	36.6	-	57.45	0.011	5222.727	5222.727273	5222.727273	0
25	0.05	75	-	4.27	0				0
26	0.04	76	-	2.13	0				0
27	0.04	74	-	4.66	0.1	46.6	46.6	46.6	0
28	0.070121	87.429089	-	12.281995	0.215525	56.98641	56.13471514	56.98640529	0
29	0.12	7.98	-	89.37	1.77	50.49153	49.65	50.49152542	0
30									
31									
32	0.04	3.67	-	93	2.03	45.81281	43.60260678	45.81280788	0
33	0.034	3.26	-	93.69	2.03	46.15271	44.54852361	46.15270936	0
34	-	-	-	-	-				-
35	2.66	-	-	89.45	3.48	25.70402	11.33713561	25.70402299	0
36	0.14	-	-	87.77	3.61	24.31302	23.85054348	24.31301939	0
37	0.51	-	-	94.76	4.48	21.15179	20.07627119	21.15178571	0
38	0.17	-	-	88.53	11.14	7.947038	7.841452613	7.947037702	0
39	0.43	-	-	95.81	3.71	25.8248	25.48138298	25.82479784	0
40	0.11	-	-	88.49	11.21	7.893845	7.762280702	7.893844781	0
41	0.2	-	-	96.55	3.19	30.26646	29.79938272	30.26645768	0
42	0.09	-	-	92.96	6.87	13.5313	13.33715925	13.53129549	0
43	0.18	-	-	96.19	3.52	27.3267	26.64542936	27.32670455	0
44	0.12	-	-	91.34	8.37	10.91278	10.72065728	10.91278375	0
45	0.3	-	-	96.14	3.51	27.39031	27.00561798	27.39031339	0
46	0.15	-	-	90.52	9.21	9.828447	9.691648822	9.82844734	0
47	0.62	-	-	93.33	5.95	15.68571	15.45198675	15.68571429	0
48	0.15	-	-	85.36	14.25	5.990175	5.890959282	5.990175439	0

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1	**C_3**	**iC_4**	**nC_4**	**iC_5**	**nC_5**	**C_6+**	**$\delta^{13}C_1$**	**δDC_1**	**$\delta^{13}C_2$**	**δDC_2**	**$\delta^{13}C_3$**
2	**%**	**%**	**%**	**%**	**%**	**%**	**‰**	**‰**	**‰**	**‰**	**‰**
3	0.0018	0	0	0	0	0	-32.04	-170.3	-	-	-
4	0.0018	0	0	0	0	0	-33.20	-186.9	-34.69	-	-
5	0.000779	0.000016	0.000033	0.000014	0.000019	0.000201	-33.46	-169.82	-35.42	-	-
6	0	0	0	0	0	0	-32.04	-178.7	-35.21	-	-
7	0.0012	0	0	0	0	0	-30.53	-176.8	-34.46	-	-
8	0.000784	0.000009	0.000011	0.000019	0.000021	3.8E-05	-33.1	-172	-34.30	-	-
9	0	0	0	0	0	0	-31.51	-182.3	-35.00	-	-
10	0.009532	0.000031	0.000175	0.0001	0.000033	0.000507	-32.7	-159.61	-35.38	-	-
11	0.01	0	0	0	0	0	-31.24	-174.4	-34.77	-	-
12	0.0033	0	0	0	0	0	-31.24	-174.1	-	-	-
13	0	0	0	0	0	0	-32.85	-175.4	-32.99	-	-
14	0.0263	0	0.0020	0	0.0023	0	-31.08	-172.7	-	-	-
15	0.0013	0	0	0	0	0	-36.83	-216.0	-38.21	-	-
16	0.001974	0.00001	0.000029	0.000032	0.000006	7.3E-05	-38.2	-193.0	-37.30	-	-
17	0.01	0	0	0	0	0	-36.51	-206.7	-37.70	-	-
18	0.0418	0	0.0026	0	0	0	-31.03	-173.1	-34.80	-	-
19	0.0355	0	0.0019	0	0	0	-30.66	-178.7	-34.82	-	-
20	0	0	0	0	0	0	-	-	-	-	-
21	0	0	0	0	0	0	-30.98	-173.6	-34.61	-	-
22	0.000661	0.00001	0.000002	0.000007	0.000001	6.3E-05	-39.2	-187	-30.20	-	-
23	0	0	0	0	0	0	-38.35	-199.8	-35.99	-	-
24	0	0	0	0	0	0	-34.71	-194.6	-	-	-
25	0	0	0	0	0	0	-35.5	-195	-	-	-
26	0	0	0	0	0	0	-45.83	-276.8	-	-	-
27	0	0	0	0	0	0	-46.83	-280.8	-	-	-
28	0.002745	0.000007	0.000127	0.000053	0.00002	0.000318	-46.44	-253.71	-41.90	-	-
29	0.03	0	0	0	0	0	-45.72	-274.3	-41.81	-	-
30											
31											
32	0.1	0	0.0029	0	0	0	-29.91	-161.1	-35.92	-	-
33	0.07	0	0.0031	0	0	0	-29.96	-161.1	-35.87	-	-
34	-	-	-	-	-	-	-27.62	-157.9	-	-	-
35	2.29	0.25	1.12	0.24	0.29	0.22	-29.8	-172	-36	-	-32.1
36	0.07	0	0	0	0	0	-22.5	-167	-33.3	-	-
37	0.16	0.01	0.04	0.01	0.01	0.01	-22.7	-166	-36.6	-	-34.2
38	0.15	0	0	0	0	0	-2.9	-163	-31.7	-	-34.1
39	0.05	0	0	0	0	0	-22.4	-162	-34.9	-	-35.3
40	0.19	0	0	0	0	0	-5.1	-162	-32.1	-	-34.1
41	0.05	0	0	0	0	0	-24.3	-171	-34.9	-	-
42	0.08	0	0	0	0	0.02	-2.8	-159	-31.6	-	-
43	0.09	0	0	0	0	0	-27.3	-163	-35.5	-	-35.4
44	0.15	0	0	0	0	0	-	-	-	-	-
45	0.05	0	0	0	0	0	-25.4	-168	-35.9	-	-35.8
46	0.13	0	0	0	0	0	-6.2	-162	-31.9	-	-
47	0.09	0	0	0	0	0	-21.6	-165	-34.7	-	-34.7
48	0.24	0	0	0	0	0	-8.1	-158	-31.6	-	-33.9

	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1	$\delta^{13}iC_4$	$\delta^{13}nC_4$	$\delta^{13}iC_5$	$\delta^{13}nC_5$	$\delta^{15}N$	$\delta^{13}CO2$	**Specific**	**BTU**	*** Helium**
2	‰	‰	‰	‰	‰	‰	**Gravity**		**Dilution Factor**
3	-	-	-	-	-	-	0.989	27	-
4	-	-	-	-	-	-	0.665	778	-
5	-	-	-	-	-	-	0.748	-	-
6	-	-	-	-	-	-	0.676	746	-
7	-	-	-	-	-	-	0.812	450	0.33
8	-	-	-	-	-	-	0.653	-	-
9	-	-	-	-	-	-	0.64	839	-
10	-	-	-	-	-	-	0.627	-	-
11	-	-	-	-	-	-	0.624	867	-
12	-	-	-	-	-	-	0.98	50	-
13	-	-	-	-	-	-	0.899	191	0.5
14	-	-	-	-	-	-	0.818	430	-
15	-	-	-	-	-	-	0.979	51	-
16	-	-	-	-	-	-	0.922	-	-
17	-	-	-	-	-	-	0.714	702	0.64
18	-	-	-	-	-0.10	-	0.705	697	-
19	-	-	-	-	-	-	0.749	592	-
20	-	-	-	-	-	-	1.008	3	0.76
21	-	-	-	-	-	-	0.712	661	-
22	-	-	-	-	-	-	0.937	-	-
23	-	-	-	-	-	-	0.816	396	0.38
24	-	-	-	-	-	-	0.74	582	-
25	-	-	-	-	-	-	0.981	43	-
26	-	-	-	-	-	-	0.99	22	-
27	-	-	-	-	-	-	0.979	48	-
28	-	-	-	-	-	-	0.917	-	-
29	-	-	-	-	-	-	0.602	938	0.52
30									
31									
32	-	-	-	-	-1.33	-	0.585	983	-
33	-	-	-	-	-	-	0.583	988	-
34	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	0.6542	1099.2	-
36	-	-	-	-	-	-	0.5326	979.3	-
37	-	-	-	-	-	-	0.5835	1043.4	-
38	-	-	-	-	-	-	0.6111	1095.3	-
39	-	-	-	-	-	-	0.5765	1034.7	-
40	-	-	-	-	-	-	0.6112	1097	-
41	-	-	-	-	-	-	0.5719	1033	-
42	-	-	-	-	-	-	0.5889	1062.5	-
43	-	-	-	-	-	-	0.574	1036.9	-
44	-	-	-	-	-	-	0.5972	1074.9	-
45	-	-	-	-	-	-	0.5743	1034.4	-
46	-	-	-	-	-	-	0.6012	1080.4	-
47	-	-	-	-	-	-	0.5897	1050.3	-
48	-	-	-	-	-	-	0.6267	1120.5	-