

MOUNT KLAPPAN ANTHRACITE PROJECT

GEOLOGICAL REPORT

1988

APPENDIX IV

DIAMOND DRILL HOLE DATA

VOLUME I

KPNLRDDH 88001

TO

KPNLRDDH 88014



GULF CANADA RESOURCES LIMITED

COAL DIVISION

748

MOUNT KLAPPAN ANTHRACITE PROJECT

1988

APPENDIX IV

DIAMOND DRILL HOLE DATA

VOLUME I

CONFIDENTIAL

748

GULF CANADA CORPORATION - COAL DIVISION
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DATA SOURCE	LOCATION NORTHING	EASTING	ELEVATION	LENGTH	ANGLE	AZIMUTH	LOG TYPE
KPNLRDDH88001	6344958.73	506938.98	1622.4	126.7	90.0		COCC.UU*
KPNLRDDH88002	6342603.02	504523.89	1689.1	111.0	90.0		COCC.UU*
KPNLRDDH88003	6342751.59	505627.23	1672.1	170.0	90.0		COCC.UU*
KPNLRDDH88004	6342222.27	504450.18	1650.5	148.5	90.0		COCC.UU*
KPNLRDDH88005	6342794.52	505390.09	1682.7	141.0	90.0		COCC.UU* COCC.UU*
KPNLRDDH88006	6343788.69	506730.92	1697.4	254.6	90.0		COCC.UU*
KPNLRDDH88007	6342733.98	505143.30	1689.5	188.5	90.0		COCC.UU*
KPNLRDDH88008	6343610.52	506854.35	1671.9	157.4	90.0		COCC.UU*
KPNLRDDH88009	6342937.76	506557.40	1637.9	204.2	90.0		COCC.UU*
KPNLRDDH88010	6343278.35	507071.62	1614.8	204.0	90.0		COCC.UU*
KPNLRDDH88011	6344372.61	507948.54	1519.9	243.7	90.0		COCC.UU*
KPNLRDDH88012	6343219.55	506484.41	1655.0	175.0	90.0		COCC.UU*
KPNLRDDH88013	6344116.66	507700.10	1557.4	223.5	90.0		COCC.UU*
KPNLRDDH88014	6343257.67	506380.31	1670.3	130.6	90.0		COCC.UU*
KPNLRDDH88015	6344416.52	507651.83	1558.9	222.7	90.0		COCC.UU*
KPNLRDDH88016	6343552.34	506348.64	1700.8	103.4	90.0		COCC.UU*



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DATA SOURCE	LOCATION NORTHING	EASTING	ELEVATION	LENGTH	ANGLE	AZIMUTH	LOG TYPE
KPNLRDDH88017	6343811.32	506440.57	1716.4	169.9	90.0		COCC.UU*
KPNLRDDH88018	6344349.25	507385.50	1602.7	260.5	90.0		COCC.UU*
KPNLRDDH88019	6344022.04	505694.40	1814.3	155.1	90.0		COCC.UU*
KPNLRDDH88020	6344976.92	507600.29	1530.8	135.6	90.0		COCC.UU*
KPNLRDDH88021	6343411.21	506647.21	1654.2	99.6	90.0		COCC.UU*
KPNLRDDH88022	6342274.25	505620.28	1665.6	99.3	90.0		COCC.UU*
KPNLRDDH88023	6343395.95	507899.95	1573.6	98.9	90.0		COCC.UU*
KPNLRDDH88024	6342395.85	506335.17	1639.1	105.8	90.0		COCC.UU*
KPNLRDDH88025	6342487.06	507089.56	1640.2	102.1	90.0		COCC.UU*
KPNLRDDH88026	6344068.20	507973.77	1539.7	222.0	90.0		COCC.UU*
KPNLRDDH88027	6343131.90	506605.23	1631.4	176.4	90.0		COCC.UU*
KPNLRDDH88028	6346457.20	508436.32	1406.8	168.0	90.0		COCC.UU*
KPNLRDDH88029	6343983.57	507393.93	1615.9	158.1	90.0		COCC.UU*



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 SIMPLE SAMPLE SUMMARY
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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH88001		4367	24.63	24.65	100.00		0.018			0.000- 0.018
		4368	64.70	64.76	100.00		0.053			0.000- 0.053
	H ROOF	10404	116.15	116.85	100.00		0.621			0.000- 0.621
	H	10405	116.85	120.01	80.38	1.993	0.267	0.462	0.089	2.455- 0.356
	H FLOOR	10406	120.01	120.31	100.00		0.267			0.000- 0.267
	I	10411	66.57	70.81	87.26	3.081	0.272	0.489		3.570- 0.272
	I	10412	70.81	72.26	100.00	1.259	0.054			1.259- 0.054
	I FLOOR	10413	72.26	72.93	100.00		0.607			0.000- 0.607
	I ROOF	10442	65.93	66.57	100.00		0.580			0.000- 0.580
	J	99999	23.71	24.02	54.84	0.154		0.127		0.281- 0.000
DDH88002										
	I ROOF	10401	10.79	11.44	100.00		0.591			0.000- 0.591
	I	10402	11.44	16.05	50.98	1.976	0.183	2.042	0.046	4.018- 0.229
	I FLOOR	10403	16.05	16.08	100.00		0.028			0.000- 0.028
DDH88003										
	M? ROOF	10407	40.41	41.11	100.00		0.665			0.000- 0.665
	M?	10408	41.11	46.01	63.27	2.497	0.381	1.521	0.167	4.018- 0.548
	M?	10409	46.01	48.78	76.17	1.272	0.632	0.321	0.270	1.593- 0.902
	M? FLOOR	10410	48.78	49.00	100.00		0.193			0.000- 0.193
	L? ROOF	10414	53.81	54.54	100.00		0.632			0.000- 0.632
	L?	10415	54.54	57.17	77.95	1.467	0.376	0.516		1.983- 0.376
	L? FLOOR	10416	57.17	57.72	100.00		0.508			0.000- 0.508
	K/L ROOF	10417	94.15	94.54	100.00		0.369			0.000- 0.369
	K/L	10418	94.54	98.56	87.56	2.874	0.411	0.468		3.342- 0.411
	K/L	10419	98.56	101.15	75.29	1.374	0.401	0.432	0.155	1.806- 0.556
	K/L FLOOR	10420	101.15	101.53	100.00		0.343			0.000- 0.343
	K ROOF	10421	115.29	115.69	100.00		0.374			0.000- 0.374
	K	10422	115.69	117.42	100.00	1.441	0.168			1.441- 0.168

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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH88004	K	10423	117.42	119.01	100.00	1.490				1.490- 0.000
	K FLOOR	10424	119.01	119.31	100.00		0.281			0.000- 0.281
	J	99999	157.23	157.53	96.67	0.267		0.009		0.276- 0.000
	J2 ROOF	10425	28.22	28.80	100.00		0.525			0.000- 0.525
	J2	10426	28.80	29.55	54.67	0.375		0.312		0.687- 0.000
	J2 FLOOR	10427	29.55	31.13	100.00	0.009	1.423			0.009- 1.423
	I ROOF	10428	82.48	82.76	100.00		0.276			0.000- 0.276
	I	10429	82.76	86.06	62.42	1.816	0.195	1.211		3.027- 0.195
	I	10430	86.06	87.00	100.00	0.446	0.465			0.446- 0.465
	I	10431	87.00	90.34	85.03	2.690	0.038	0.477		3.167- 0.038
	I	10432	90.34	91.95	95.03	1.447		0.076		1.523- 0.000
	I FLOOR	10433	91.95	92.54	100.00		0.555			0.000- 0.555
	H ROOF	10434	137.72	138.00	100.00		0.225			0.000- 0.225
	H	10435	138.00	140.10	100.00	1.627	0.154			1.627- 0.154
	H	10436	140.10	141.27	82.05	0.567	0.270	0.185		0.567- 0.455
	H	10437	141.27	143.07	100.00	1.493	0.042			1.493- 0.042
	H FLOOR	10438	143.07	143.63	100.00		0.467			0.000- 0.467
? ROOF	10439	55.91	56.25	100.00		0.308			0.000- 0.308	
? FLOOR	10440	56.25	56.70	100.00	0.362	0.045			0.362- 0.045	
? FLOOR	10441	56.70	57.32	100.00		0.565			0.000- 0.565	
J	99998	22.29	23.45	27.59	0.217	0.041	0.633	0.049	0.850- 0.090	
?	99999	39.55	39.98	88.37	0.213		0.028		0.241- 0.000	
DDH88005		4367	36.19	36.32	100.00		0.115			0.000- 0.115
	K/L ROOF	4370	16.57	16.82	100.00		0.168			0.000- 0.168
	K/L	4371	16.82	18.17	60.00	0.450	0.134	0.383		0.833- 0.134
	K/L FLOOR	4372	18.17	18.57	100.00		0.307			0.000- 0.307
	K ROOF	4373	29.98	30.58	100.00		0.500			0.000- 0.500

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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL	ROCK
	K	4374	30.58	31.80	86.89	0.892		0.134		1.026	0.000
	K PARTING	4375	31.80	32.18	100.00		0.330			0.000	0.330
	J ROOF	4376	85.14	85.46	100.00		0.289			0.000	0.289
	J	4377	85.46	86.30	55.95	0.422		0.332		0.754	0.000
	J FLOOR	4378	86.30	86.46	100.00		0.143			0.000	0.143
	I ROOF	4379	119.27	119.62	100.00		0.325			0.000	0.325
	I	4380	119.62	120.20	70.69	0.380		0.157		0.537	0.000
	I	4381	120.20	121.07	100.00	0.120	0.683			0.120	0.683
	I	4382	121.07	122.05	79.59	0.718		0.184		0.902	0.000
	I	4383	122.05	124.11	100.00	1.575	0.311			1.575	0.311
	I	4384	124.11	126.66	99.61	2.309		0.009		2.318	0.000
DDH88006	I FLOOR	4385	126.66	127.41	100.00		0.678			0.000	0.678
		4398	53.23	53.30	100.00		0.015			0.000	0.015
		4399	72.45	72.47	100.00		0.004			0.000	0.004
	K OVT ROOF	8101	28.59	28.85	100.00		0.047			0.000	0.047
	K OVT	8102	28.85	33.18	38.11	0.393	0.013	0.592	0.024	0.985	0.037
	K OVT	8103	33.18	33.56	100.00		0.111			0.000	0.111
	K OVT	8104	33.56	36.52	52.36	0.502		0.477		0.979	0.000
	K OVT FLOOR	8105	36.52	36.82	100.00		0.110			0.000	0.110
	K/L? OVT RF	8106	217.50	219.00	100.00		0.330			0.000	0.330
	K/L? OVT	8107	219.00	221.02	83.66	0.398	0.018	0.077		0.475	0.018
	K/L? OVT FL	8108	221.02	221.38	100.00		0.093			0.000	0.093
DDH88007	? OVT	99999	126.75	128.00	40.80	0.230		0.335		0.565	0.000
	I? OVT FLOOR	4389	50.90	51.16	100.00		0.089			0.000	0.089
	I? OVT	4390	51.16	53.36	100.00	0.717	0.149			0.717	0.149
	I? OVT	4391	53.36	54.71	100.00		0.698			0.000	0.698
	I? OVT	4392	54.71	59.19	92.41	2.655	0.201	0.263		2.918	0.201

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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
	I? OVT ROOF	4393	59.19	59.45	100.00		0.214			0.000	0.214
	G? ROOF	4394	175.28	175.55	100.00		0.261			0.000	0.261
	G?	4395	175.55	176.97	92.25	1.263		0.106		1.369	0.000
	G? FLOOR	4396	176.97	178.24	100.00		1.216			0.000	1.216
	PH?	99998	75.72	147.87	71.74	0.515	1.525	0.225	0.582	0.740	2.107
	?	99999	85.79	86.12	60.61	0.181		0.119		0.300	0.000
DDH88008		4386	17.84	18.06	100.00		0.195			0.000	0.195
		4387	120.71	120.74	100.00		0.010			0.000	0.010
		4388	23.87	23.94	100.00		0.034			0.000	0.034
	J OVT	99999	117.68	117.86	100.00		0.062			0.000	0.062
DDH88009	L ROOF	8109	56.73	57.02	100.00		0.264			0.000	0.264
	L	8110	57.02	57.97	55.79	0.479		0.206	0.171	0.685	0.171
	L FLOOR	8111	57.97	58.61	100.00		0.569			0.000	0.569
	K/L ROOF	8112	79.00	79.80	100.00		0.777			0.000	0.777
	K/L	8113	79.80	84.09	68.76	2.381	0.353	1.244		3.625	0.353
	K/L FLOOR	8114	84.09	84.43	100.00	0.017	0.279			0.017	0.279
	K ROOF	8115	96.98	97.42	100.00		0.390			0.000	0.390
	K	8116	97.42	99.19	74.58	0.992	0.177	0.284	0.115	1.276	0.292
	K FLOOR	8117	99.19	99.97	100.00		0.691			0.000	0.691
	I ROOF	8118	146.26	146.53	100.00		0.254			0.000	0.254
	I	8119	146.53	147.84	80.15	0.991		0.104	0.141	1.095	0.141
	I	8120	147.84	148.14	100.00	0.113	0.170			0.113	0.170
	I	8121	148.14	151.18	100.00	2.800	0.085			2.800	0.085
	I FLOOR	8122	151.18	151.40	100.00		0.209			0.000	0.209
	H ROOF	8123	191.80	192.32	100.00		0.454			0.000	0.454
	H	8124	192.32	194.87	66.67	1.219	0.209	0.513	0.173	1.732	0.382
	H FLOOR	8125	194.87	195.05	100.00		0.142			0.000	0.142



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
DDH88010	M?	99998	18.65	19.05	87.50	0.302		0.043		0.345	0.000
	J	99999	125.95	127.88	91.19		1.510		0.145	0.000	1.655
	H ROOF	8126	190.55	191.60	100.00		1.013			0.000	1.013
	H	8127	191.60	196.14	78.19	2.943	0.375	0.924		3.867	0.375
	H FLOOR	8128	196.14	196.44	100.00		0.271			0.000	0.271
	M ROOF	8129	35.02	35.41	100.00		0.326			0.000	0.326
	M	8130	35.41	40.07	49.36	1.545	0.457	2.119		3.664	0.457
	M	8131	40.07	42.31	48.66	0.303	0.722	0.896	0.180	1.199	0.902
	M FLOOR	8132	42.31	42.80	100.00		0.468			0.000	0.468
	L ROOF	8133	59.73	60.81	100.00		1.074			0.000	1.074
	L	8134	60.81	63.69	47.57	0.789	0.562	1.496		2.285	0.562
	L FLOOR	8135	63.69	64.25	100.00		0.549			0.000	0.549
	K/L ROOF	8136	81.49	83.42	100.00		1.887			0.000	1.887
	K/L	8137	83.42	88.39	63.58	2.554	0.501	1.208	0.540	3.762	1.041
	K/L FLOOR	8138	88.39	90.19	97.22	0.067	1.602		0.048	0.067	1.650
	K ROOF	8139	108.37	108.72	100.00		0.326			0.000	0.326
	K	8140	108.72	111.00	72.37	1.409	0.130	0.178	0.411	1.587	0.541
	K FLOOR	8141	111.00	111.36	100.00		0.338			0.000	0.338
	I ROOF	8142	154.37	154.64	100.00		0.254			0.000	0.254
	I	8143	154.64	155.78	36.84	0.289	0.103	0.671		0.960	0.103
I	8144	155.78	156.19	85.37	0.028	0.296		0.056	0.028	0.352	
I	8145	156.19	159.12	76.79	2.060		0.615		2.675	0.000	
I FLOOR	8146	159.12	159.19	100.00		0.063			0.000	0.063	
	10388	153.19	153.40	100.00		0.199			0.000	0.199	
J	99999	138.57	139.19	72.58		0.366		0.138	0.000	0.504	
DDH88011	L ROOF	8167	30.10	31.45	100.00		0.755			0.000	0.755
	L	8168	31.45	32.72	86.61	0.605	0.072	0.109		0.714	0.072



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TD	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
	L FLOOR	8169	32.72	33.00	100.00		0.182			0.000- 0.182
	K/L ROOF	8170	76.80	77.75	100.00		0.860			0.000- 0.860
	K/L	8171	77.75	79.71	76.02	1.170	0.142	0.411		1.581- 0.142
	K/L	8172	79.71	82.79	39.94	0.373	0.652	0.843	0.679	1.216- 1.331
	K/L FLOOR	8173	82.79	83.45	100.00		0.517			0.000- 0.517
	K ROOF	8174	111.83	113.41	100.00		1.443			0.000- 1.443
	K	8175	113.41	119.93	39.88	2.218	0.127	3.501		5.719- 0.127
	K	8176	119.93	120.32	100.00		0.344			0.000- 0.344
	K	8177	120.32	120.70	44.74	0.141	0.009	0.185		0.326- 0.009
	K FLOOR	8178	120.70	121.02	100.00		0.281			0.000- 0.281
	I ROOF	8179	178.27	179.08	100.00		0.740			0.000- 0.740
	I	8180	179.08	180.81	79.77	1.047	0.234	0.323		1.370- 0.234
	I	8181	180.81	182.36	48.39	0.707		0.756		1.463- 0.000
	I	8182	182.36	184.26	100.00	1.821				1.821- 0.000
	I FLOOR	8183	184.26	185.67	100.00		1.368			0.000- 1.368
	H ROOF	8184	234.60	234.94	100.00		0.324			0.000- 0.324
	H	8185	234.94	236.90	60.20	0.950	0.171	0.541	0.199	1.491- 0.370
	H	8186	236.90	239.12	75.68	1.464	0.112	0.508		1.972- 0.112
	H FLOOR	8187	239.12	240.26	100.00		1.059			0.000- 1.059
	? ROOF	8347	64.88	65.00	83.33		0.079		0.016	0.000- 0.095
	?	8348	65.00	66.60	71.25	0.326	0.577	0.363		0.689- 0.577
	?	8349	66.60	73.32	54.61	1.771	1.156	2.422		4.193- 1.156
	? FLOOR	8350	73.32	73.89	100.00		0.455			0.000- 0.455
	? ROOF	8351	51.58	51.69	100.00		0.066			0.000- 0.066
	?	8352	51.69	53.40	68.42	0.595	0.108	0.326		0.921- 0.108
	?	8353	53.40	54.98	100.00	0.182	0.780			0.182- 0.780
	?	8354	54.98	56.53	100.00	0.785	0.164			0.785- 0.164
	? FLOOR	8355	56.53	56.80	100.00		0.167			0.000- 0.167
		10444	88.44	88.52	100.00		0.074			0.000- 0.074

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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
		10445	90.35	90.46	100.00		0.104			0.000-	0.104
		10446	95.30	95.39	100.00		0.085			0.000-	0.085
		10448	177.61	177.70	100.00		0.082			0.000-	0.082
	J	99999	137.83	138.56	69.86	0.108	0.351	0.198		0.306-	0.351
DDH88012											
	I ROOF	8147	4.51	4.62	100.00		0.098			0.000-	0.098
	I	8148	4.62	10.26	29.79	1.135	0.332	3.321	0.129	4.456-	0.461
	I FLOOR	8149	10.26	10.64	100.00		0.325			0.000-	0.325
	K/L ? ROOF	8151	22.63	22.91	100.00		0.233			0.000-	0.233
	K/L ?	8152	22.91	27.71	21.46	0.757	0.119	2.466	0.715	3.223-	0.834
	K ROOF	8153	27.71	30.10	92.47		1.912		0.157	0.000-	2.069
	K	8154	30.10	31.79	66.86	0.963	0.045	0.382	0.128	1.345-	0.173
	K	8155	31.79	32.12	100.00		0.303			0.000-	0.303
	K	8156	32.12	33.12	9.00	0.083		0.847		0.930-	0.000
	K FLOOR	8157	33.12	33.91	100.00		0.732			0.000-	0.732
	I ROOF	8158	95.32	95.70	68.42		0.241		0.111	0.000-	0.352
	I	8159	95.70	99.58	46.39	1.559	0.130	1.910		3.469-	0.130
	I FLOOR	8160	99.58	100.49	100.00		0.844			0.000-	0.844
	I OVT FLOOR	8161	160.97	161.73	100.00		0.552			0.000-	0.552
	I OVT	8162	161.73	164.18	39.59	0.719		1.081		1.800-	0.000
	I OVT	8163	164.18	166.09	100.00	1.395	0.053			1.395-	0.053
	I OVT	8164	166.09	166.59	100.00		0.387			0.000-	0.387
	I OVT	8165	166.59	168.80	61.09	1.022	0.048	0.691		1.713-	0.048
	I OVT ROOF	8166	168.80	169.36	100.00		0.454			0.000-	0.454
	J	99999	62.30	62.93	0.00			0.566		0.566-	0.000
DDH88013											
	L ROOF	8188	18.35	18.80	100.00		0.435			0.000-	0.435
	L	8189	18.80	21.45	72.45	1.750	0.137	0.710		2.460-	0.137
	L FLOOR	8190	21.45	22.57	89.29		0.996		0.119	0.000-	1.115



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
	K/L ROOF	8191	37.22	37.62	100.00		0.394			0.000- 0.394
	K/L	8192	37.62	38.68	82.08	0.806	0.049	0.187		0.993- 0.049
	K ROOF	8193	38.68	95.62	100.00		2.144			0.000- 2.144
	K	8194	95.62	99.16	76.84	2.410	0.191	0.651	0.134	3.061- 0.325
	K	8195	99.16	100.09	100.00	0.009	0.873			0.009- 0.873
	K	8196	100.09	101.00	87.91	0.669	0.085	0.103		0.772- 0.085
	K FLOOR	8197	101.00	101.52	100.00		0.489			0.000- 0.489
	J ROOF	8198	126.08	126.77	100.00		0.683			0.000- 0.683
	J	8199	126.77	127.28	100.00	0.503				0.503- 0.000
	J FLOOR	8200	127.28	127.66	100.00		0.373			0.000- 0.373
	I ROOF	8201	160.86	161.29	100.00		0.416			0.000- 0.416
	I	8202	161.29	164.47	83.96	2.491	0.107	0.500		2.991- 0.107
	I	8203	164.47	165.73	100.00	1.236				1.236- 0.000
	I FLOOR	8204	165.73	165.87	100.00		0.138			0.000- 0.138
	H ROOF	8205	207.38	208.40	100.00		1.016			0.000- 1.016
	H	8206	208.40	209.93	90.85	1.240	0.150	0.140		1.380- 0.150
	H	8207	209.93	211.48	100.00	1.137	0.376			1.137- 0.376
	H	8208	211.48	213.37	70.37	1.189	0.095	0.536		1.725- 0.095
	H FLOOR	8209	213.37	213.69	100.00		0.301			0.000- 0.301
		10352	159.35	159.45	100.00		0.099			0.000- 0.099
		10353	190.22	190.25	100.00		0.030			0.000- 0.030
DDH88014										
	I ROOF	8210	77.88	78.51	100.00		0.556			0.000- 0.556
	I	8211	78.51	80.04	80.39	1.167		0.284		1.451- 0.000
	I	8212	80.04	80.22	100.00		0.177			0.000- 0.177
	I	8213	80.22	81.82	84.37	1.307	0.020	0.245		1.552- 0.020
	I FLOOR	8214	81.82	81.93	100.00		0.108			0.000- 0.108
	H ROOF	8215	118.35	118.67	100.00		0.304			0.000- 0.304
	H	8216	118.67	119.07	85.00	0.085	0.237	0.057		0.142- 0.237



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL - ROCK	
DDH88015	H	8217	119.07	120.95	74.47	1.186	0.131	0.451		1.637- 0.131	
	H FLOOR	8218	120.95	122.78	100.00		1.697			0.000- 1.697	
			10351	70.17	70.25	100.00		0.074			0.000- 0.074
	J	99998	48.04	48.62	12.07	0.057		0.380	0.041		0.437- 0.041
	K?	99999	29.47	31.85	7.98	0.141	0.038	1.995	0.076		2.136- 0.114
	K ROOF	8219	60.57	61.08	100.00		0.446				0.000- 0.446
	K	8220	61.08	62.87	75.98	1.163	0.026	0.376			1.539- 0.026
	K	8221	62.87	64.80	86.53	1.434	0.026	0.227			1.661- 0.026
	K	8222	64.80	65.67	49.43	0.253	0.122	0.385			0.638- 0.122
	K FLOOR	8223	65.67	65.87	100.00		0.175				0.000- 0.175
	J ROOF	8224	97.23	97.52	100.00		0.285				0.000- 0.285
	J	8225	97.52	98.61	85.32	0.829	0.078	0.157			0.986- 0.078
	J	8226	98.61	99.26	69.23	0.134	0.298	0.192			0.326- 0.298
	J FLOOR	8227	99.26	100.08	100.00	0.019	0.753				0.019- 0.753
	I ROOF	8228	125.68	126.73	100.00		0.907				0.000- 0.907
	I	8229	126.73	130.04	76.13	1.665	0.209	0.379	0.170		2.044- 0.379
	I	8230	130.04	133.96	70.41	1.195	0.076	0.477			1.672- 0.076
	I	8231	133.96	134.65	100.00	0.161					0.161- 0.000
	I FLOOR	8232	134.65	134.89	100.00		0.045				0.000- 0.045
	H/I ROOF	8233	203.49	203.59	100.00		0.080				0.000- 0.080
	H/I	8234	203.59	204.11	67.31	0.288		0.138			0.426- 0.000
	H/I FLOOR	8235	204.11	204.58	100.00		0.396				0.000- 0.396
	H ROOF	8236	209.41	209.60	100.00		0.171				0.000- 0.171
	H	8237	209.60	210.62	69.61	0.597	0.045	0.281			0.878- 0.045
	H	8238	210.62	212.11	71.81	0.594	0.384	0.387			0.981- 0.384
	H	8239	212.11	213.55	83.33	1.065	0.047	0.223			1.288- 0.047
	H FLOOR	8240	213.55	214.05	100.00		0.467				0.000- 0.467
L?	8325	24.37	26.65	25.00	0.455	0.109	1.688			2.143- 0.109	



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DDH88016	L? ROOF	8326	23.47	24.37	11.11		0.098		0.790	0.000- 0.888
	L? FLOOR	8327	26.65	26.93	100.00		0.277			0.000- 0.277
		10354	97.21	97.23	100.00		0.020			0.000- 0.020
		10369	125.63	125.68	100.00		0.041			0.000- 0.041
	K/L?	99998	35.57	37.88	59.31	0.212	1.039		0.862	0.212- 1.901
	I ROOF	8241	34.72	35.01	100.00		0.283			0.000- 0.283
	I	8242	35.01	37.02	37.81	0.450	0.294	1.222		1.672- 0.294
	I	8243	37.02	40.29	38.84	1.214	0.040	1.815	0.157	3.029- 0.197
	I FLOOR	8244	40.29	41.12	100.00		0.822			0.000- 0.822
	H ROOF	8245	77.49	77.91	100.00		0.406			0.000- 0.406
	H	8246	77.91	81.23	83.43	1.673	0.990	0.527		2.200- 0.990
	H	8247	81.23	83.17	70.10	1.223	0.077	0.555		1.778- 0.077
	H FLOOR	8248	83.17	84.31	100.00		1.090			0.000- 1.090
		10360	28.77	29.23	100.00		0.448			0.000- 0.448
	10361	23.06	23.09	100.00		0.030			0.000- 0.030	
DDH88017	I OVT FLOOR	8251	57.61	58.80	24.37		0.050		0.148	0.000- 0.198
	I OVT	8252	58.80	59.65	69.41	0.062	0.022	0.038		0.100- 0.022
	I OVT ROOF	8253	59.65	60.58	100.00		0.112			0.000- 0.112
	I ROOF	8254	78.74	79.55	100.00		0.529			0.000- 0.529
	I	8255	79.55	85.01	34.43	1.423	0.218	3.120		4.543- 0.218
	I	8256	85.01	89.03	44.03	1.553		1.978		3.531- 0.000
	I FLOOR	8257	89.03	89.51	100.00		0.423			0.000- 0.423
		8299	60.58	62.38	100.00		0.157			0.000- 0.157
		10355	74.46	74.55	100.00		0.083			0.000- 0.083
	G	99998	24.08	25.68	9.38	0.134		0.640	0.608	0.774- 0.608
DDH88018	M ROOF	8288	46.26	47.08	100.00		0.790			0.000- 0.790

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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
	M	8289	47.08	49.02	73.20	0.479	0.855	0.489		0.968	0.855
	M	8290	49.02	51.80	54.32	1.233	0.165	1.178		2.411	0.165
	M FLOOR	8291	51.80	52.20	65.00		0.238		0.128	0.000	0.366
	L ROOF	8292	72.21	72.54	100.00		0.326			0.000	0.326
	L	8293	72.54	73.92	57.97	0.786		0.570		1.356	0.000
	L	8294	73.92	74.85	34.41	0.176	0.136	0.594		0.770	0.136
	L FLOOR	8295	74.85	75.28	100.00		0.417			0.000	0.417
	K/L ROOF	8296	84.08	85.53	100.00		1.292			0.000	1.292
	K/L	8297	85.53	86.25	97.22	0.624	0.028	0.019		0.643	0.028
	K/L FLOOR	8298	86.25	87.09	100.00		0.763			0.000	0.763
	K ROOF	8301	142.53	143.57	100.00		1.018			0.000	1.018
	K	8302	143.57	146.57	77.00	2.195	0.049	0.667		2.862	0.049
	K	8303	146.57	147.66	92.66	0.394	0.576	0.077		0.471	0.576
	K	8304	147.66	148.85	83.19	0.841	0.105	0.191		1.032	0.105
	K FLOOR	8305	148.85	149.13	100.00		0.266			0.000	0.266
	I ROOF	8306	196.09	196.77	100.00		0.456			0.000	0.456
	I	8307	196.77	199.72	83.05	2.017	0.053	0.307	0.112	2.324	0.165
	I	8308	199.72	201.50	85.96	1.381		0.227		1.608	0.000
	I FLOOR	8309	201.50	201.82	100.00		0.292			0.000	0.292
	H/I ROOF	8310	237.65	238.00	100.00		0.344			0.000	0.344
	H/I	8311	238.00	240.49	81.53	1.637	0.134	0.404		2.041	0.134
	H/I FLOOR	8312	240.49	240.76	100.00		0.193			0.000	0.193
	H ROOF	8313	249.69	250.50	56.79		0.444		0.338	0.000	0.782
	H	8314	250.50	251.95	95.86	0.222	1.120	0.058		0.280	1.120
	H	8315	251.95	253.87	83.85	1.200	0.357	0.299		1.499	0.357
	H FLOOR	8316	253.87	254.35	100.00		0.464			0.000	0.464
		10357	139.57	139.58	100.00		0.010			0.000	0.010
		10358	195.61	195.64	100.00		0.024			0.000	0.024
		10447	32.40	32.57	100.00		0.048			0.000	0.048



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DDH88019	J	99999	170.96	171.58	33.87	0.190		0.374		0.564- 0.000	
	G ROOF	8258	17.96	18.72	73.68		0.502		0.179	0.000- 0.681	
	G & G LO	8259	18.72	21.28	46.88	0.965	0.076	0.998	0.193	1.963- 0.269	
	G & G LO	8260	21.28	23.69	24.90	0.183	0.302	1.314	0.137	1.497- 0.439	
	G LO FLR	8261	23.69	24.18	100.00		0.377			0.000- 0.377	
	G LO OVT FLR	8262	52.36	53.04	100.00		0.630			0.000- 0.630	
	G LO & G OVT	8263	53.04	55.50	14.23	0.318		1.930		2.248- 0.000	
	G LO & G OVT	8264	55.50	57.51	77.11	0.169	1.196		0.404	0.169- 1.600	
	G LO & G OVT	8265	57.51	64.81	28.90	1.289	0.276	3.448	0.219	4.737- 0.495	
	G OVT RF	8266	64.81	65.26	100.00		0.153			0.000- 0.153	
	G ROOF	8267	116.97	117.84	100.00		0.737			0.000- 0.737	
	G & G LO	8268	117.84	123.36	46.38	1.853	0.148	2.064	0.308	3.917- 0.456	
	G LO FLOOR	8269	123.36	124.49	29.20		0.225		0.546	0.000- 0.771	
		10356	68.96	69.07	100.00		0.055			0.000- 0.055	
DDH88020	I ROOF	8270	80.01	80.65	100.00		0.558			0.000- 0.558	
	I	8271	80.65	81.60	53.68	0.401	0.053	0.391		0.792- 0.053	
	I FLOOR	8272	81.60	82.28	100.00		0.613			0.000- 0.613	
	H ROOF	8273	114.36	114.66	100.00		0.299			0.000- 0.299	
	H	8274	114.66	115.46	46.25	0.288	0.080	0.428		0.716- 0.080	
	H	8275	115.46	116.75	86.05	0.119	0.981	0.178		0.297- 0.981	
	H	8276	116.75	118.03	67.19	0.755	0.088	0.410		1.165- 0.088	
	H FLOOR	8277	118.03	118.63	100.00		0.580			0.000- 0.580	
			10362	71.25	71.29	100.00		0.030			0.000- 0.030
			10363	73.39	73.40	100.00		0.008			0.000- 0.008
		10364	73.56	73.57	100.00		0.008			0.000- 0.008	
DDH88021	J	99999	27.16	27.81	10.77	0.056		0.469		0.525- 0.000	

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						COAL	ROCK	COAL	ROCK	COAL	ROCK
	I ROOF	8278	29.37	29.77	100.00		0.395			0.000	0.395
	I	8279	29.77	31.15	55.80	0.728	0.030	0.597		1.325	0.030
	I	8280	31.15	32.73	65.19	0.549	0.442	0.529		1.078	0.442
	I	8281	32.73	34.46	78.03	1.242	0.019	0.356		1.598	0.019
	I FLOOR	8282	34.46	34.96	100.00		0.457			0.000	0.457
	H ROOF	8283	72.43	73.16	100.00		0.713			0.000	0.713
	H	8284	73.16	74.67	62.91	0.893	0.040	0.549		1.442	0.040
	H	8285	74.67	75.14	100.00	0.168	0.296			0.168	0.296
	H	8286	75.14	76.07	80.65	0.741		0.178		0.919	0.000
	H FLOOR	8287	76.07	76.31	100.00		0.238			0.000	0.238
		10359	25.57	25.60	100.00		0.030			0.000	0.030
DDH88022	O? ROOF	8317	52.19	52.44	100.00		0.241			0.000	0.241
	O?	8318	52.44	53.39	65.26	0.597		0.318		0.915	0.000
	O? FLOOR	8319	53.39	53.70	100.00		0.298			0.000	0.298
		10365	47.22	47.60	100.00		0.361			0.000	0.361
		10366	51.16	51.29	100.00		0.103			0.000	0.103
DDH88023	P? ROOF	8331	39.03	39.39	100.00		0.354			0.000	0.354
	P?	8332	39.39	41.26	32.09	0.551	0.039	1.249		1.800	0.039
	P? FLOOR	8333	41.26	41.67	100.00		0.404			0.000	0.404
	?	99998	11.35	12.98	0.00			1.614		1.614	0.000
	O?	99999	59.35	61.32	11.17	0.038	0.133	0.995	0.387	1.033	0.520
DDH88024	? ROOF	8320	73.14	73.63	100.00		0.466			0.000	0.466
	?	8321	73.63	74.37	52.70	0.304	0.067	0.181	0.153	0.485	0.220
	?	8322	74.37	74.93	53.57		0.287	0.115	0.134	0.115	0.421
	?	8323	74.93	75.96	67.96	0.624	0.048	0.317		0.941	0.048
	? FLOOR	8324	75.96	76.22	100.00		0.250			0.000	0.250



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
DDH88025	P ROOF	8328	95.55	95.82	100.00		0.265			0.000	0.265
	P	8329	95.82	97.67	64.86	1.061	0.118	0.640		1.701	0.118
	P FLOOR	8330	97.67	98.20	100.00		0.522			0.000	0.522
DDH88026	? ROOF	8334	29.58	30.11	100.00		0.478			0.000	0.478
	?	8335	30.11	31.74	19.63	0.142	0.163	1.237		1.379	0.163
	? FLOOR	8336	31.74	32.02	100.00		0.276			0.000	0.276
DDH88027	K/L ROOF	8337	35.34	35.61	100.00		0.247			0.000	0.247
	K/L	8338	35.61	37.22	59.01	0.653	0.233	0.624		1.277	0.233
	K/L FLOOR	8339	37.22	37.80	100.00		0.567			0.000	0.567
	K ROOF	8340	86.84	87.50	100.00		0.640			0.000	0.640
	K	8341	87.50	88.64	60.53	0.315	0.286	0.396		0.711	0.286
	K FLOOR	8342	88.64	89.03	100.00		0.294			0.000	0.294
	I ROOF	8343	126.91	127.33	100.00		0.388			0.000	0.388
	I	8344	127.33	130.69	65.48	2.021	0.037	1.084		3.105	0.037
	I	8345	130.69	132.44	86.86	1.438		0.217		1.655	0.000
	I FLOOR	8346	132.44	133.11	100.00		0.637			0.000	0.637
		10367	67.38	67.49	100.00		0.106			0.000	0.106
J	99998	104.18	105.85	37.13	0.224	0.355	0.683	0.299	0.907	0.654	
L?	99999	23.08	23.28	0.00			0.196		0.196	0.000	
DDH88027	K/L ROOF	8356	27.34	27.52	100.00		0.156			0.000	0.156
	K/L	8357	27.52	29.61	93.78	1.666	0.061	0.114		1.780	0.061
	K/L	8358	29.61	33.97	45.87	1.051	0.782	2.146		3.197	0.782
	K/L FLOOR	8359	33.97	34.91	100.00		0.883			0.000	0.883
	I ROOF	8360	109.80	109.98	100.00		0.169			0.000	0.169
	I	8361	109.98	111.06	28.70	0.189	0.104	0.724		0.913	0.104
	I	8362	111.06	112.13	57.94	0.585		0.425		1.010	0.000



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
	I	8363	112.13	112.73	100.00	0.567				0.567	0.000
	I FLOOR	8364	112.73	114.30	100.00		1.484			0.000	1.484
	I OVT FLOOR	8365	158.97	160.30	100.00		0.725			0.000	0.725
	I OVT	8366	160.30	166.01	73.91	2.367	0.091	0.858		3.225	0.091
	I OVT	8367	166.01	166.34	100.00		0.203			0.000	0.203
	I OVT	8368	166.34	169.63	90.58	1.730	0.150	0.196		1.926	0.150
	I OVT ROOF	8369	169.63	170.47	100.00		0.329			0.000	0.329
	K ROOF	8370	47.74	47.97	100.00		0.225			0.000	0.225
	K	8371	47.97	49.87	80.00	1.166	0.322	0.373		1.539	0.322
		10368	102.34	102.61	100.00		0.260			0.000	0.260
	L?	99998	12.24	13.05	0.00			0.756		0.756	0.000
	J	99999	78.16	78.99	100.00		0.817			0.000	0.817
DDH88028											
	N OVT FLOOR	8373	66.28	66.73	100.00		0.129			0.000	0.129
	N OVT	8374	66.73	68.96	70.40	0.486	0.061	0.245		0.731	0.061
	N OVT ROOF	8375	68.96	70.11	100.00		0.504			0.000	0.504
	N ROOF	8376	91.32	93.07	100.00		1.740			0.000	1.740
	N	8377	93.07	94.19	69.64	0.568	0.209	0.337		0.905	0.209
	N FLOOR	8378	94.19	95.01	100.00		0.812			0.000	0.812
	M UPPER ROOF	8379	138.94	139.64	100.00		0.685			0.000	0.685
	M UPPER	8380	139.64	140.91	92.13	0.185	0.953	0.098		0.283	0.953
	M UPPER	8381	140.91	141.54	80.95	0.407	0.087	0.116		0.523	0.087
	M UPPER FLR	8382	141.54	141.88	100.00		0.328			0.000	0.328
	M ROOF	8383	143.14	143.98	100.00		0.772			0.000	0.772
	M	8384	143.98	146.24	68.14	1.059	0.252	0.556	0.033	1.615	0.285
	M FLOOR	8385	146.24	147.02	80.77		0.451		0.110	0.000	0.561
		10370	55.80	55.83	100.00		0.005			0.000	0.005
	O ?	99994	19.70	19.83	30.77		0.039	0.089		0.089	0.039
	N?	99995	33.09	33.94	0.00			0.153	0.029	0.153	0.029



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DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
	O	99996	87.29	87.98	0.00			0.466	0.218	0.466	0.218
	M/N	99997	113.38	113.91	60.38	0.318		0.209		0.527	0.000
	?	99998	121.43	121.82	43.59	0.162		0.209		0.371	0.000
	L	99999	159.78	160.11	84.85	0.272		0.049		0.321	0.000
DDH88029											
	N ROOF	8386	42.56	43.16	100.00		0.328			0.000	0.328
	N	8387	43.16	45.90	75.55	0.801	0.445	0.403		1.204	0.445
	N FLOOR	8388	45.90	46.47	100.00		0.382			0.000	0.382
	L ROOF	8389	110.42	110.71	100.00		0.252			0.000	0.252
	L	8390	110.71	111.76	89.52	0.790	0.035	0.096		0.886	0.035
	L	8391	111.76	113.72	84.69	1.185	0.315	0.216	0.054	1.401	0.369
	L FLOOR	8392	113.72	113.99	100.00		0.248			0.000	0.248
	K/L ROOF	8393	143.59	143.84	100.00	0.144	0.096			0.144	0.096
	K/L	8394	143.84	145.30	100.00	0.958	0.427			0.958	0.427
	K/L PARTING	8395	146.84	147.45	100.00	0.027	0.528			0.027	0.528
	K/L PARTING	8396	149.52	149.84	100.00		0.284			0.000	0.284
	K/L	8397	149.84	152.85	52.49	0.971	0.333	1.070	0.086	2.041	0.419
	K/L FLOOR	8398	152.85	153.17	100.00		0.235			0.000	0.235
	M ROOF	8399	69.56	70.84	92.19		1.112		0.094	0.000	1.206
	M	8400	70.84	79.07	64.03	3.010	0.950	1.996	0.258	5.006	1.208
	M	8401	79.07	79.66	100.00		0.517			0.000	0.517
	M	8402	79.66	82.82	100.00	2.218	0.631			2.218	0.631
	M	8403	82.82	84.53	85.38	0.622	0.698	0.233		0.855	0.698
	M FLOOR	8404	84.53	85.08	100.00		0.520			0.000	0.520
	K/L	8405	145.30	146.84	100.00	0.646	0.775			0.646	0.775
	O	99999	15.48	16.31	63.86		0.274		0.155	0.000	0.429



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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH88001												
I		1	10411	10411	66.57	70.81	87.26	3.40	0.30	0.54	0.00	3.94- 0.30
I		2	10412	10412	70.81	72.26	100.00	1.39	0.06	0.00	0.00	1.39- 0.06
H		3	10405	10405	116.85	120.01	80.37	2.24	0.30	0.52	0.10	2.76- 0.40
I		201	10411	10411	66.57	70.81	87.26	3.40	0.30	0.54	0.00	3.94- 0.30
I		202	10412	10412	70.81	72.26	100.00	1.39	0.06	0.00	0.00	1.39- 0.06
H		203	10405	10405	116.85	120.01	80.37	2.24	0.30	0.52	0.10	2.76- 0.40
I		300	10411	10412	66.57	72.26	90.50	4.79	0.36	0.54	0.00	5.33- 0.36
H		301	10405	10405	116.85	120.01	80.37	2.24	0.30	0.52	0.10	2.76- 0.40
DDH88002												
I		4	10402	10402	11.44	16.05	50.97	2.15	0.20	2.21	0.05	4.36- 0.25
DDH88003												
M ?		5	10408	10408	41.11	46.01	63.26	2.69	0.41	1.62	0.18	4.31- 0.59
M ?		6	10409	10409	46.01	48.78	76.17	1.41	0.70	0.36	0.30	1.77- 1.00
L ?		7	10415	10415	54.54	57.17	77.94	1.63	0.42	0.58	0.00	2.21- 0.42
K/L		8	10418	10418	94.54	98.56	87.56	3.08	0.44	0.50	0.00	3.58- 0.44
K/L		9	10419	10419	98.56	101.15	75.28	1.51	0.44	0.47	0.17	1.98- 0.61
K		10	10422	10422	115.69	117.42	100.00	1.55	0.18	0.00	0.00	1.55- 0.18
K		11	10423	10423	117.42	119.01	100.00	1.59	0.00	0.00	0.00	1.59- 0.00
M ?		204	10408	10408	41.11	46.01	63.26	2.69	0.41	1.62	0.18	4.31- 0.59
L ?		205	10415	10415	54.54	57.17	77.94	1.63	0.42	0.58	0.00	2.21- 0.42
K/L		206	10418	10419	94.54	101.15	82.75	4.59	0.88	0.97	0.17	5.56- 1.05
K		207	10422	10423	115.69	119.01	100.00	3.14	0.18	0.00	0.00	3.14- 0.18
M ?		302	10408	10409	41.11	48.78	67.92	4.10	1.11	1.98	0.48	6.08- 1.59
L ?		303	10415	10415	54.54	57.17	77.94	1.63	0.42	0.58	0.00	2.21- 0.42
K/L		304	10418	10419	94.54	101.15	82.75	4.59	0.88	0.97	0.17	5.56- 1.05
K		305	10422	10423	115.69	119.01	100.00	3.14	0.18	0.00	0.00	3.14- 0.18
DDH88004												
J2		12	10426	10426	28.80	29.55	54.66	0.41	0.00	0.34	0.00	0.75- 0.00



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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	?	13	10440	10440	56.25	56.70	100.00	0.40	0.05	0.00	0.00	0.40- 0.05
	I	14	10429	10429	82.76	86.06	62.42	1.86	0.20	1.24	0.00	3.10- 0.20
	I	15	10430	10430	86.06	87.00	100.00	0.46	0.48	0.00	0.00	0.46- 0.48
	I	16	10431	10432	87.00	91.95	88.28	4.33	0.04	0.58	0.00	4.91- 0.04
	H	17	10435	10435	138.00	140.10	100.00	1.92	0.18	0.00	0.00	1.92- 0.18
	H	18	10436	10436	140.10	141.27	82.05	0.65	0.31	0.00	0.21	0.65- 0.52
	H	19	10437	10437	141.27	143.07	100.00	1.75	0.05	0.00	0.00	1.75- 0.05
	I	208	10429	10430	82.76	87.00	70.75	2.32	0.68	1.24	0.00	3.56- 0.68
	I	209	10431	10432	87.00	91.95	88.28	4.33	0.04	0.58	0.00	4.91- 0.04
	H	210	10435	10435	138.00	140.10	100.00	1.92	0.18	0.00	0.00	1.92- 0.18
	H	211	10437	10437	141.27	143.07	100.00	1.75	0.05	0.00	0.00	1.75- 0.05
	I	306	10429	10432	82.76	91.95	80.19	6.65	0.72	1.82	0.00	8.47- 0.72
	H	307	10435	10437	138.00	143.07	94.89	3.67	0.23	0.00	0.21	3.67- 0.44
DDH88005												
	K/L	20	4371	4371	16.82	18.17	60.00	0.62	0.19	0.54	0.00	1.16- 0.19
	K	21	4374	4374	30.58	31.80	86.88	1.06	0.00	0.16	0.00	1.22- 0.00
	J	22	4377	4377	85.46	86.30	55.95	0.47	0.00	0.37	0.00	0.84- 0.00
	I	23	4380	4380	119.62	120.20	70.68	0.41	0.00	0.17	0.00	0.58- 0.00
	I	24	4381	4381	120.20	121.07	100.00	0.13	0.74	0.00	0.00	0.13- 0.74
	I	25	4382	4383	121.07	124.11	93.42	2.50	0.34	0.20	0.00	2.70- 0.34
	I	26	4384	4384	124.11	126.66	99.60	2.54	0.00	0.01	0.00	2.55- 0.00
	K/L	212	4371	4371	16.82	18.17	60.00	0.62	0.19	0.54	0.00	1.16- 0.19
	K	213	4374	4374	30.58	31.80	86.88	1.06	0.00	0.16	0.00	1.22- 0.00
	J	214	4377	4377	85.46	86.30	55.95	0.47	0.00	0.37	0.00	0.84- 0.00
	I	215	4380	4383	119.62	124.11	89.77	2.91	0.34	0.37	0.00	3.28- 0.34
	I	216	4384	4384	124.11	126.66	99.60	2.54	0.00	0.01	0.00	2.55- 0.00
	K/L	308	4371	4371	16.82	18.17	60.00	0.62	0.19	0.54	0.00	1.16- 0.19
	K	309	4374	4374	30.58	31.80	86.88	1.06	0.00	0.16	0.00	1.22- 0.00
	J	310	4377	4377	85.46	86.30	55.95	0.47	0.00	0.37	0.00	0.84- 0.00



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DDH88006	I	311	4380	4384	119.62	126.66	93.84	5.45	0.34	0.38	0.00	5.83- 0.34
	K OVT	27	8102	8102	28.85	33.18	38.10	1.59	0.06	2.57	0.11	4.16- 0.17
	K OVT	28	8103	8103	33.18	33.56	100.00	0.00	0.38	0.00	0.00	0.00- 0.38
	K OVT	29	8104	8104	33.56	36.52	52.36	1.55	0.00	1.41	0.00	2.96- 0.00
	K/L? OVT	30	8107	8107	219.00	221.02	83.66	1.62	0.07	0.33	0.00	1.95- 0.07
	K/L? OVT	312	8107	8107	219.00	221.02	83.66	1.62	0.07	0.33	0.00	1.95- 0.07
DDH88007	I? OVT	31	4390	4390	51.16	53.36	100.00	1.80	0.40	0.00	0.00	1.80- 0.40
	I? OVT	32	4391	4391	53.36	54.71	100.00	0.00	1.35	0.00	0.00	0.00- 1.35
	I? OVT	33	4392	4392	54.71	59.19	92.41	3.87	0.27	0.34	0.00	4.21- 0.27
	G?	34	4395	4395	175.55	176.97	92.25	1.31	0.00	0.11	0.00	1.42- 0.00
	I? OVT	217	4392	4392	54.71	59.19	92.41	3.87	0.27	0.34	0.00	4.21- 0.27
	G?	218	4395	4395	175.55	176.97	92.25	1.31	0.00	0.11	0.00	1.42- 0.00
	I? OVT	313	4390	4392	51.16	59.19	94.91	5.67	0.67	0.34	0.00	6.01- 0.67
	G?	314	4395	4395	175.55	176.97	92.25	1.31	0.00	0.11	0.00	1.42- 0.00
DDH88008												
DDH88009	L	35	8110	8110	57.02	57.97	55.78	0.53	0.00	0.23	0.19	0.76- 0.19
	K/L	36	8113	8113	79.80	84.09	68.76	2.57	0.38	1.34	0.00	3.91- 0.38
	K	37	8116	8116	97.42	99.19	74.57	1.12	0.20	0.32	0.13	1.44- 0.33
	I	38	8119	8120	146.53	148.14	83.85	1.17	0.18	0.11	0.15	1.28- 0.33
	I	39	8121	8121	148.14	151.18	100.00	2.95	0.09	0.00	0.00	2.95- 0.09
	H	40	8124	8124	192.32	194.87	66.66	1.45	0.25	0.64	0.21	2.09- 0.46
	K/L	219	8113	8113	79.80	84.09	68.76	2.57	0.38	1.34	0.00	3.91- 0.38
	K	220	8116	8116	97.42	99.19	74.57	1.12	0.20	0.32	0.13	1.44- 0.33
	I	221	8119	8120	146.53	148.14	83.85	1.17	0.18	0.11	0.15	1.28- 0.33
	I	222	8121	8121	148.14	151.18	100.00	2.95	0.09	0.00	0.00	2.95- 0.09
	H	223	8124	8124	192.32	194.87	66.66	1.45	0.25	0.64	0.21	2.09- 0.46



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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	K/L	315	8113	8113	79.80	84.09	68.76	2.57	0.38	1.34	0.00	3.91- 0.38
	K	316	8116	8116	97.42	99.19	74.57	1.12	0.20	0.32	0.13	1.44- 0.33
	I	317	8119	8121	146.53	151.18	94.40	4.12	0.27	0.11	0.15	4.23- 0.42
	H	318	8124	8124	192.32	194.87	66.66	1.45	0.25	0.64	0.21	2.09- 0.46
DDH88010												
	M	41	8130	8130	35.41	40.07	49.35	1.77	0.53	2.36	0.00	4.13- 0.53
	M	42	8131	8131	40.07	42.31	48.66	0.32	0.77	0.96	0.19	1.28- 0.96
	L	43	8134	8134	60.81	63.69	47.56	0.80	0.57	1.51	0.00	2.31- 0.57
	K/L	44	8137	8137	83.42	88.39	63.58	2.64	0.52	1.25	0.56	3.89- 1.08
	K	45	8140	8140	108.72	111.00	72.36	1.51	0.14	0.19	0.44	1.70- 0.58
	I	46	8143	8144	154.64	156.19	49.67	0.34	0.43	0.72	0.06	1.06- 0.49
	I	47	8145	8145	156.19	159.12	76.79	2.25	0.00	0.68	0.00	2.93- 0.00
	H	48	8127	8127	191.60	196.14	78.19	3.15	0.40	0.99	0.00	4.14- 0.40
	M	224	8130	8130	35.41	40.07	49.35	1.77	0.53	2.36	0.00	4.13- 0.53
	K/L	225	8137	8137	83.42	88.39	63.58	2.64	0.52	1.25	0.56	3.89- 1.08
	K	226	8140	8140	108.72	111.00	72.36	1.51	0.14	0.19	0.44	1.70- 0.58
	I	227	8143	8144	154.64	156.19	49.67	0.34	0.43	0.72	0.06	1.06- 0.49
	I	228	8145	8145	156.19	159.12	76.79	2.25	0.00	0.68	0.00	2.93- 0.00
	H	229	8127	8127	191.60	196.14	78.19	3.15	0.40	0.99	0.00	4.14- 0.40
	M	319	8130	8130	35.41	40.07	49.35	1.77	0.53	2.36	0.00	4.13- 0.53
	L	320	8134	8134	60.81	63.69	47.56	0.80	0.57	1.51	0.00	2.31- 0.57
	K/L	321	8137	8137	83.42	88.39	63.58	2.64	0.52	1.25	0.56	3.89- 1.08
	K	322	8140	8140	108.72	111.00	72.36	1.51	0.14	0.19	0.44	1.70- 0.58
	I	323	8143	8145	154.64	159.12	67.41	2.59	0.43	1.40	0.06	3.99- 0.49
	H	324	8127	8127	191.60	196.14	78.19	3.15	0.40	0.99	0.00	4.14- 0.40
DDH88011												
	?	49	8352	8352	51.69	53.40	68.42	0.99	0.18	0.54	0.00	1.53- 0.18
	?	50	8353	8353	53.40	54.98	100.00	0.30	1.28	0.00	0.00	0.30- 1.28
	?	51	8354	8354	54.98	56.53	100.00	1.28	0.27	0.00	0.00	1.28- 0.27

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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
	?	52	8348	8348	65.00	66.60	71.25	0.41	0.73	0.46	0.00	0.87- 0.73
	?	53	8349	8349	66.60	73.32	54.61	2.22	1.45	3.05	0.00	5.27- 1.45
	K/L	54	8171	8171	77.75	79.71	76.02	1.33	0.16	0.47	0.00	1.80- 0.16
	k/l	55	8172	8172	79.71	82.79	39.93	0.45	0.78	1.03	0.82	1.48- 1.60
	K	56	8175	8177	113.41	120.70	43.34	2.62	0.54	4.13	0.00	6.75- 0.54
	I	57	8180	8180	179.08	180.81	79.76	1.13	0.25	0.35	0.00	1.48- 0.25
	I	58	8181	8182	180.81	184.26	76.81	2.65	0.00	0.80	0.00	3.45- 0.00
	H	59	8185	8185	234.94	236.90	60.20	1.00	0.18	0.57	0.21	1.57- 0.39
	H	60	8186	8186	236.90	239.12	75.67	1.56	0.12	0.54	0.00	2.10- 0.12
	L	61	8168	8168	31.45	32.72	86.61	0.98	0.12	0.17	0.00	1.15- 0.12
	?	230	8348	8349	65.00	73.32	57.81	2.63	2.18	3.51	0.00	6.14- 2.18
	K/L	231	8171	8172	77.75	82.79	53.96	1.78	0.94	1.50	0.82	3.28- 1.76
	I	232	8180	8180	179.08	180.81	79.76	1.13	0.25	0.35	0.00	1.48- 0.25
	I	233	8181	8182	180.81	184.26	76.81	2.65	0.00	0.80	0.00	3.45- 0.00
	H	234	8186	8186	236.90	239.12	75.67	1.56	0.12	0.54	0.00	2.10- 0.12
	?	325	8352	8354	51.69	56.53	88.84	2.57	1.73	0.54	0.00	3.11- 1.73
	?	326	8348	8349	65.00	73.32	57.81	2.63	2.18	3.51	0.00	6.14- 2.18
	K/L	327	8171	8172	77.75	82.79	53.96	1.78	0.94	1.50	0.82	3.28- 1.76
	K	328	8175	8177	113.41	120.70	43.34	2.62	0.54	4.13	0.00	6.75- 0.54
	I	329	8180	8182	179.08	184.26	77.79	3.78	0.25	1.15	0.00	4.93- 0.25
	H	330	8186	8186	236.90	239.12	75.67	1.56	0.12	0.54	0.00	2.10- 0.12
DDH88012												
	I	62	8148	8148	4.62	10.26	29.78	1.30	0.38	3.81	0.15	5.11- 0.53
	K/L ?	63	8152	8152	22.91	27.71	21.45	0.89	0.14	2.92	0.85	3.81- 0.99
	K	64	8154	8154	30.10	31.79	66.86	1.08	0.05	0.42	0.14	1.50- 0.19
	K	65	8155	8155	31.79	32.12	100.00	0.00	0.33	0.00	0.00	0.00- 0.33
	K	66	8156	8156	32.12	33.12	9.00	0.09	0.00	0.91	0.00	1.00- 0.00
	I	67	8159	8159	95.70	99.58	46.39	1.66	0.14	2.08	0.00	3.74- 0.14
	I OVT	68	8162	8163	161.73	166.09	66.05	2.81	0.07	1.48	0.00	4.29- 0.07



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	I OVT	69	8164	8164	166.09	166.59	100.00	0.00	0.50	0.00	0.00	0.00- 0.50
	I OVT	70	8165	8165	166.59	168.80	61.08	1.29	0.06	0.86	0.00	2.15- 0.06
	I	235	8148	8148	4.62	10.26	29.78	1.30	0.38	3.81	0.15	5.11- 0.53
	K	236	8154	8154	30.10	31.79	66.86	1.08	0.05	0.42	0.14	1.50- 0.19
	I ovt	237	8162	8163	161.73	166.09	66.05	2.81	0.07	1.48	0.00	4.29- 0.07
	I ovt	238	8165	8165	166.59	168.80	61.08	1.29	0.06	0.86	0.00	2.15- 0.06
	I	331	8148	8148	4.62	10.26	29.78	1.30	0.38	3.81	0.15	5.11- 0.53
	K	332	8154	8154	30.10	31.79	66.86	1.08	0.05	0.42	0.14	1.50- 0.19
	I ovt	333	8162	8165	161.73	168.80	64.38	4.10	0.13	2.34	0.00	6.44- 0.13
DDH88013	L	71	8189	8189	18.80	21.45	72.45	1.78	0.14	0.73	0.00	2.51- 0.14
	K/L	72	8192	8192	37.62	38.68	82.07	0.82	0.05	0.19	0.00	1.01- 0.05
	K	73	8194	8194	95.62	99.16	76.83	2.52	0.20	0.68	0.14	3.20- 0.34
	K	74	8195	8195	99.16	100.09	100.00	0.01	0.92	0.00	0.00	0.01- 0.92
	K	75	8196	8196	100.09	101.00	87.91	0.71	0.09	0.11	0.00	0.82- 0.09
	J	76	8199	8199	126.77	127.28	100.00	0.51	0.00	0.00	0.00	0.51- 0.00
	I	77	8202	8202	161.29	164.47	83.96	2.56	0.11	0.51	0.00	3.07- 0.11
	I	78	8203	8203	164.47	165.73	100.00	1.26	0.00	0.00	0.00	1.26- 0.00
	H	79	8206	8207	208.40	211.48	95.45	2.41	0.53	0.14	0.00	2.55- 0.53
	H	80	8208	8208	211.48	213.37	70.37	1.23	0.10	0.56	0.00	1.79- 0.10
	L	239	8189	8189	18.80	21.45	72.45	1.78	0.14	0.73	0.00	2.51- 0.14
	K/L	240	8192	8192	37.62	38.68	82.07	0.82	0.05	0.19	0.00	1.01- 0.05
	K	241	8194	8194	95.62	99.16	76.83	2.52	0.20	0.68	0.14	3.20- 0.34
	K	242	8196	8196	100.09	101.00	87.91	0.71	0.09	0.11	0.00	0.82- 0.09
	J	243	8199	8199	126.77	127.28	100.00	0.51	0.00	0.00	0.00	0.51- 0.00
	I	244	8202	8202	161.29	164.47	83.96	2.56	0.11	0.51	0.00	3.07- 0.11
	I	245	8203	8203	164.47	165.73	100.00	1.26	0.00	0.00	0.00	1.26- 0.00
	H	246	8206	8207	208.40	211.48	95.45	2.41	0.53	0.14	0.00	2.55- 0.53
	H	247	8208	8208	211.48	213.37	70.37	1.23	0.10	0.56	0.00	1.79- 0.10

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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	L	334	8189	8189	18.80	21.45	72.45	1.78	0.14	0.73	0.00	2.51- 0.14
	K/L	335	8192	8192	37.62	38.68	82.07	0.82	0.05	0.19	0.00	1.01- 0.05
	K	336	8194	8196	95.62	101.00	79.10	3.23	0.29	0.79	0.14	4.02- 0.43
	J	337	8199	8199	126.77	127.28	100.00	0.51	0.00	0.00	0.00	0.51- 0.00
	I	338	8202	8203	161.29	165.73	88.51	3.82	0.11	0.51	0.00	4.33- 0.11
	H	339	8206	8208	208.40	213.37	85.91	3.64	0.63	0.70	0.00	4.34- 0.63
DDH88014												
	I	81	8211	8212	78.51	80.22	82.45	1.23	0.18	0.30	0.00	1.53- 0.18
	I	82	8213	8213	80.22	81.82	84.37	1.33	0.02	0.25	0.00	1.58- 0.02
	H	83	8216	8216	118.67	119.07	85.00	0.09	0.25	0.06	0.00	0.15- 0.25
	H	84	8217	8217	119.07	120.95	74.46	1.26	0.14	0.48	0.00	1.74- 0.14
	I	248	8211	8212	78.51	80.22	82.45	1.23	0.18	0.30	0.00	1.53- 0.18
	I	249	8213	8213	80.22	81.82	84.37	1.33	0.02	0.25	0.00	1.58- 0.02
	H	250	8217	8217	119.07	120.95	74.46	1.26	0.14	0.48	0.00	1.74- 0.14
	I	340	8211	8213	78.51	81.82	83.38	2.56	0.20	0.55	0.00	3.11- 0.20
	H	341	8217	8217	119.07	120.95	74.46	1.26	0.14	0.48	0.00	1.74- 0.14
DDH88015												
	L ?	85	8325	8325	24.37	26.65	25.00	0.46	0.11	1.71	0.00	2.17- 0.11
	K	86	8220	8221	61.08	64.80	81.45	2.97	0.06	0.69	0.00	3.66- 0.06
	K	87	8222	8222	64.80	65.67	49.42	0.29	0.14	0.44	0.00	0.73- 0.14
	J	88	8225	8225	97.52	98.61	85.32	0.85	0.08	0.16	0.00	1.01- 0.08
	J	89	8226	8226	98.61	99.26	69.23	0.14	0.31	0.20	0.00	0.34- 0.31
	I	90	8229	8229	126.73	130.04	76.13	2.22	0.30	0.54	0.25	2.76- 0.55
	I	91	8230	8230	130.04	133.96	70.40	2.59	0.17	1.16	0.00	3.75- 0.17
	I	92	8231	8231	133.96	134.65	100.00	0.69	0.00	0.00	0.00	0.69- 0.00
	H/I	93	8234	8234	203.59	204.11	67.30	0.35	0.00	0.17	0.00	0.52- 0.00
	H	94	8237	8238	209.60	212.11	70.91	1.31	0.47	0.73	0.00	2.04- 0.47
	H	95	8239	8239	212.11	213.55	83.33	1.15	0.05	0.24	0.00	1.39- 0.05
	L ?	251	8325	8325	24.37	26.65	25.00	0.46	0.11	1.71	0.00	2.17- 0.11



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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	K	252	8220	8222	61.08	65.67	75.38	3.26	0.20	1.13	0.00	4.39- 0.20
	I	253	8229	8229	126.73	130.04	76.13	2.22	0.30	0.54	0.25	2.76- 0.55
	I	254	8230	8231	130.04	134.65	74.83	3.28	0.17	1.16	0.00	4.44- 0.17
	H	255	8239	8239	212.11	213.55	83.33	1.15	0.05	0.24	0.00	1.39- 0.05
	L ?	342	8325	8325	24.37	26.65	25.00	0.46	0.11	1.71	0.00	2.17- 0.11
	K	343	8220	8222	61.08	65.67	75.38	3.26	0.20	1.13	0.00	4.39- 0.20
	J	344	8225	8226	97.52	99.26	79.31	0.99	0.39	0.36	0.00	1.35- 0.39
	I	345	8229	8231	126.73	134.65	75.37	5.50	0.47	1.70	0.25	7.20- 0.72
	H/I	346	8234	8234	203.59	204.11	67.30	0.35	0.00	0.17	0.00	0.52- 0.00
	H	347	8237	8239	209.60	213.55	75.44	2.46	0.52	0.97	0.00	3.43- 0.52
DDH88016												
	I	96	8242	8242	35.01	37.02	37.81	0.46	0.30	1.25	0.00	1.71- 0.30
	I	97	8243	8243	37.02	40.29	38.83	1.23	0.04	1.84	0.16	3.07- 0.20
	H	98	8246	8246	77.91	81.23	83.43	1.74	1.03	0.55	0.00	2.29- 1.03
	H	99	8247	8247	81.23	83.17	70.10	1.28	0.08	0.58	0.00	1.86- 0.08
	H	256	8247	8247	81.23	83.17	70.10	1.28	0.08	0.58	0.00	1.86- 0.08
	H	348	8246	8247	77.91	83.17	78.51	3.02	1.11	1.13	0.00	4.15- 1.11
DDH88017												
	I OVT	100	8252	8252	58.80	59.65	69.41	0.44	0.15	0.26	0.00	0.70- 0.15
	I	101	8255	8255	79.55	85.01	34.43	1.63	0.25	3.58	0.00	5.21- 0.25
	I	102	8256	8256	85.01	89.03	44.02	1.77	0.00	2.25	0.00	4.02- 0.00
	I	257	8255	8255	79.55	85.01	34.43	1.63	0.25	3.58	0.00	5.21- 0.25
	I	258	8256	8256	85.01	89.03	44.02	1.77	0.00	2.25	0.00	4.02- 0.00
	I ovt	349	8252	8252	58.80	59.65	69.41	0.44	0.15	0.26	0.00	0.70- 0.15
	I	350	8255	8256	79.55	89.03	38.50	3.40	0.25	5.83	0.00	9.23- 0.25
DDH88018												
	M	103	8289	8289	47.08	49.02	73.19	0.51	0.91	0.52	0.00	1.03- 0.91
	M	104	8290	8290	49.02	51.80	54.31	1.33	0.18	1.27	0.00	2.60- 0.18
	L	105	8293	8293	72.54	73.92	57.97	0.80	0.00	0.58	0.00	1.38- 0.00



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	L	106	8294	8294	73.92	74.85	34.40	0.18	0.14	0.61	0.00	0.79- 0.14
	K/L	107	8297	8297	85.53	86.25	97.22	0.67	0.03	0.02	0.00	0.69- 0.03
	K	108	8302	8302	143.57	146.57	77.00	2.26	0.05	0.69	0.00	2.95- 0.05
	K	109	8303	8303	146.57	147.66	92.66	0.41	0.60	0.08	0.00	0.49- 0.60
	K	110	8304	8304	147.66	148.85	83.19	0.88	0.11	0.20	0.00	1.08- 0.11
	I	111	8307	8307	196.77	199.72	83.05	2.38	0.07	0.37	0.13	2.75- 0.20
	I	112	8308	8308	199.72	201.50	85.95	1.53	0.00	0.25	0.00	1.78- 0.00
	H/I	113	8311	8311	238.00	240.49	81.52	1.88	0.15	0.46	0.00	2.34- 0.15
	H	114	8314	8314	250.50	251.95	95.86	0.23	1.16	0.06	0.00	0.29- 1.16
	H	115	8315	8315	251.95	253.87	83.85	1.24	0.37	0.31	0.00	1.55- 0.37
	K/L	259	8297	8297	85.52	86.24	97.22	0.67	0.03	0.02	0.00	0.69- 0.03
	K	260	8302	8302	143.57	146.57	77.00	2.26	0.05	0.69	0.00	2.95- 0.05
	K	261	8303	8304	146.56	148.85	87.71	1.29	0.71	0.28	0.00	1.57- 0.71
	I	262	8307	8307	196.76	199.71	83.05	2.38	0.07	0.37	0.13	2.75- 0.20
	I	263	8308	8308	199.71	201.49	85.95	1.53	0.00	0.25	0.00	1.78- 0.00
	H/I	264	8311	8311	238.00	240.49	81.52	1.88	0.15	0.46	0.00	2.34- 0.15
	H	265	8315	8315	251.95	253.87	83.85	1.24	0.37	0.31	0.00	1.55- 0.37
	M	351	8289	8290	47.08	51.80	62.07	1.84	1.09	1.79	0.00	3.63- 1.09
	K/L	352	8297	8297	85.52	86.24	97.22	0.67	0.03	0.02	0.00	0.69- 0.03
	K	353	8302	8304	143.57	148.85	81.62	3.55	0.76	0.97	0.00	4.52- 0.76
	I	354	8307	8308	196.76	201.49	84.14	3.91	0.07	0.62	0.13	4.53- 0.20
	H/I	355	8311	8311	238.00	240.49	81.52	1.88	0.15	0.46	0.00	2.34- 0.15
	H	356	8314	8315	250.50	253.87	89.02	1.47	1.53	0.37	0.00	1.84- 1.53
DDH88019												
	G & G LO	116	8259	8259	18.72	21.28	46.87	1.11	0.09	1.14	0.22	2.25- 0.31
	G & G LO	117	8260	8260	21.28	23.69	24.89	0.23	0.37	1.64	0.17	1.87- 0.54
	G LO & G OVT	118	8263	8263	53.04	55.50	14.22	0.35	0.00	2.11	0.00	2.46- 0.00
	G LO & G OVT	119	8264	8264	55.50	57.51	77.11	0.19	1.36	0.00	0.46	0.19- 1.82
	G LO & G OVT	120	8265	8265	57.51	64.81	28.90	1.76	0.35	4.78	0.41	6.54- 0.76



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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

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DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH88020	G & G LD	121	8268	8268	117.84	123.36	46.37	2.37	0.19	2.57	0.39	4.94- 0.58
	G & G LD	357	8268	8268	117.84	123.36	46.37	2.37	0.19	2.57	0.39	4.94- 0.58
DDH88021	I	122	8271	8271	80.65	81.60	53.68	0.45	0.06	0.44	0.00	0.89- 0.06
	H	123	8274	8274	114.66	115.46	46.25	0.29	0.08	0.43	0.00	0.72- 0.08
	H	124	8275	8275	115.46	116.75	86.04	0.12	0.99	0.18	0.00	0.30- 0.99
	H	125	8276	8276	116.75	118.03	67.18	0.77	0.09	0.42	0.00	1.19- 0.09
	H	266	8276	8276	116.75	118.03	67.18	0.77	0.09	0.42	0.00	1.19- 0.09
	H	358	8276	8276	116.75	118.03	67.18	0.77	0.09	0.42	0.00	1.19- 0.09
DDH88022	I	126	8279	8279	29.77	31.15	55.79	0.74	0.03	0.61	0.00	1.35- 0.03
	I	127	8280	8280	31.15	32.73	65.18	0.57	0.46	0.55	0.00	1.12- 0.46
	I	128	8281	8281	32.73	34.46	78.03	1.33	0.02	0.38	0.00	1.71- 0.02
	H	129	8284	8286	73.16	76.07	74.57	1.83	0.34	0.74	0.00	2.57- 0.34
	I	267	8279	8280	29.77	32.73	60.81	1.31	0.49	1.16	0.00	2.47- 0.49
	I	268	8281	8281	32.73	34.46	78.03	1.33	0.02	0.38	0.00	1.71- 0.02
	H	269	8284	8286	73.16	76.07	74.57	1.83	0.34	0.74	0.00	2.57- 0.34
	I	359	8279	8281	29.77	34.46	67.16	2.64	0.51	1.54	0.00	4.18- 0.51
	H	360	8284	8286	73.16	76.07	74.57	1.83	0.34	0.74	0.00	2.57- 0.34
DDH88023	O ?	130	8318	8318	52.44	53.39	65.26	0.62	0.00	0.33	0.00	0.95- 0.00
	O ?	361	8318	8318	52.44	53.39	65.26	0.62	0.00	0.33	0.00	0.95- 0.00
DDH88024	P?	131	8332	8332	39.39	41.26	32.08	0.56	0.04	1.27	0.00	1.83- 0.04
DDH88024	?	132	8321	8321	73.63	74.37	52.70	0.32	0.07	0.19	0.16	0.51- 0.23
	?	133	8322	8322	74.37	74.93	53.57	0.00	0.30	0.12	0.14	0.12- 0.44
	?	134	8323	8323	74.93	75.96	67.96	0.65	0.05	0.33	0.00	0.98- 0.05
	P	135	8329	8329	95.82	97.67	64.86	1.08	0.12	0.65	0.00	1.73- 0.12



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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 11

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	?	270	8321	8323	73.63	75.96	61.58	0.97	0.12	0.52	0.16	1.49- 0.28
	P	271	8329	8329	95.82	97.67	64.86	1.08	0.12	0.65	0.00	1.73- 0.12
	?	362	8321	8323	73.63	75.96	61.58	0.97	0.12	0.52	0.16	1.49- 0.28
	P	363	8329	8329	95.82	97.67	64.86	1.08	0.12	0.65	0.00	1.73- 0.12
DDH88025	?	136	8335	8335	30.11	31.74	19.63	0.15	0.17	1.31	0.00	1.46- 0.17
DDH88026	K/L	137	8338	8338	35.61	37.22	59.00	0.70	0.25	0.66	0.00	1.36- 0.25
	K	138	8341	8341	87.50	88.64	60.52	0.36	0.33	0.45	0.00	0.81- 0.33
	I	139	8344	8344	127.33	130.69	65.47	2.16	0.04	1.16	0.00	3.32- 0.04
	I	140	8345	8345	130.69	132.44	86.85	1.52	0.00	0.23	0.00	1.75- 0.00
	K/L	272	8338	8338	35.61	37.22	59.00	0.70	0.25	0.66	0.00	1.36- 0.25
	I	273	8344	8344	127.33	130.69	65.47	2.16	0.04	1.16	0.00	3.32- 0.04
	K/L	364	8338	8338	35.61	37.22	59.00	0.70	0.25	0.66	0.00	1.36- 0.25
	K	365	8341	8341	87.50	88.64	60.52	0.36	0.33	0.45	0.00	0.81- 0.33
	I	366	8344	8345	127.33	132.44	72.79	3.68	0.04	1.39	0.00	5.07- 0.04
DDH88027	K/L	141	8357	8357	27.52	29.61	93.77	1.89	0.07	0.13	0.00	2.02- 0.07
	K/L	142	8358	8358	29.61	33.97	45.87	1.15	0.85	2.36	0.00	3.51- 0.85
	K	143	8371	8371	47.97	49.87	80.00	1.19	0.33	0.38	0.00	1.57- 0.33
	I	144	8361	8361	109.98	111.06	28.70	0.20	0.11	0.77	0.00	0.97- 0.11
	I	145	8362	8363	111.06	112.73	73.05	1.22	0.00	0.45	0.00	1.67- 0.00
	I OVT	146	8366	8366	160.30	166.01	73.90	4.07	0.15	1.49	0.00	5.56- 0.15
	I OVT	147	8367	8368	166.01	169.63	91.43	2.75	0.56	0.31	0.00	3.06- 0.56
	K/L	274	8357	8357	27.52	29.61	93.77	1.89	0.07	0.13	0.00	2.02- 0.07
	K	275	8371	8371	47.97	49.87	80.00	1.19	0.33	0.38	0.00	1.57- 0.33
	I	276	8362	8363	111.06	112.73	73.05	1.22	0.00	0.45	0.00	1.67- 0.00
	I ovt	277	8366	8366	160.30	166.01	73.90	4.07	0.15	1.49	0.00	5.56- 0.15
	I ovt	278	8367	8368	166.01	169.63	91.43	2.75	0.56	0.31	0.00	3.06- 0.56

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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 12

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
	K/L	367	8357	8357	27.52	29.61	93.77	1.89	0.07	0.13	0.00	2.02- 0.07
	K	368	8371	8371	47.97	49.87	80.00	1.19	0.33	0.38	0.00	1.57- 0.33
	I	369	8362	8363	111.06	112.73	73.05	1.22	0.00	0.45	0.00	1.67- 0.00
	I ovt	370	8366	8368	160.30	169.63	80.70	6.82	0.71	1.80	0.00	8.62- 0.71
DDH88028	N OVT	148	8374	8374	66.73	68.96	70.40	1.41	0.16	0.66	0.00	2.07- 0.16
	N	149	8377	8377	93.07	94.19	69.64	0.57	0.21	0.34	0.00	0.91- 0.21
	M UPPER	150	8380	8380	139.64	140.91	92.12	0.19	0.98	0.10	0.00	0.29- 0.98
	M UPPER	151	8381	8381	140.91	141.54	80.95	0.42	0.09	0.12	0.00	0.54- 0.09
	M	152	8384	8384	143.98	146.24	68.14	1.24	0.30	0.68	0.04	1.92- 0.34
	N	279	8377	8377	93.07	94.19	69.64	0.57	0.21	0.34	0.00	0.91- 0.21
	M UPPER	280	8381	8381	140.91	141.54	80.95	0.42	0.09	0.12	0.00	0.54- 0.09
	M	281	8384	8384	143.98	146.24	68.14	1.24	0.30	0.68	0.04	1.92- 0.34
	N ovt	371	8374	8374	66.73	68.96	70.40	1.41	0.16	0.66	0.00	2.07- 0.16
	N	372	8377	8377	93.07	94.19	69.64	0.57	0.21	0.34	0.00	0.91- 0.21
	M UPPER	373	8381	8381	140.91	141.54	80.95	0.42	0.09	0.12	0.00	0.54- 0.09
	M	375	8384	8384	143.98	146.24	68.14	1.24	0.30	0.68	0.04	1.92- 0.34
DDH88029	N	153	8387	8387	43.16	45.90	75.54	1.34	0.73	0.67	0.00	2.01- 0.73
	L	154	8390	8391	110.71	113.72	86.37	2.21	0.39	0.35	0.06	2.56- 0.45
	K/L	155	8394	8394	143.84	145.30	100.00	1.01	0.45	0.00	0.00	1.01- 0.45
	K/L	156	8405	8405	145.30	146.84	100.00	0.70	0.84	0.00	0.00	0.70- 0.84
	K/L	157	8395	8396	146.84	149.84	100.00	0.03	0.90	0.00	0.00	0.03- 0.90
	K/L	158	8397	8397	149.84	152.85	52.49	1.18	0.40	1.32	0.11	2.50- 0.51
	M	159	8400	8400	70.84	79.07	64.03	4.02	1.25	2.66	0.30	6.68- 1.55
	M	160	8401	8401	79.07	79.66	100.00	0.00	0.59	0.00	0.00	0.00- 0.59
	M	161	8402	8403	79.66	84.53	94.86	3.14	1.48	0.25	0.00	3.39- 1.48
	L	282	8390	8391	110.71	113.72	86.37	2.21	0.39	0.35	0.06	2.56- 0.45
	K/L	283	8397	8397	149.84	152.85	52.49	1.18	0.40	1.32	0.11	2.50- 0.51

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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 13

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
M		284	8402	8403	79.66	84.53	94.86	3.14	1.48	0.25	0.00	3.39- 1.48
N		376	8387	8387	43.16	45.90	75.54	1.34	0.73	0.67	0.00	2.01- 0.73
L		377	8390	8391	110.71	113.72	86.37	2.21	0.39	0.35	0.06	2.56- 0.45
K/L		378	8394	8397	143.84	152.85	68.00	2.19	0.85	1.32	0.11	3.51- 0.96
M		379	8400	8403	70.84	84.53	75.49	7.16	2.73	2.91	0.30	10.07- 3.03



KPNLRDDH88001

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88001

DATE - 02/15/89

- HISTORY -

START DATE - 06/11/88
END DATE - 06/12/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - SITE 1: INTERSECTED SEAMS J, I AND H RESPECTIVELY D
RILLED NEAR EASTERN HOGBACK.

- LOCATION -

PROVINCE - BC
ELEVATION - 1622.37

ZONE - 9
NORTHING - 6344958.73
EASTING - 506938.98

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571458
LONGITUDE - 1285306

- ORIENTATION -

LENGTH - 126.67
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.05
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

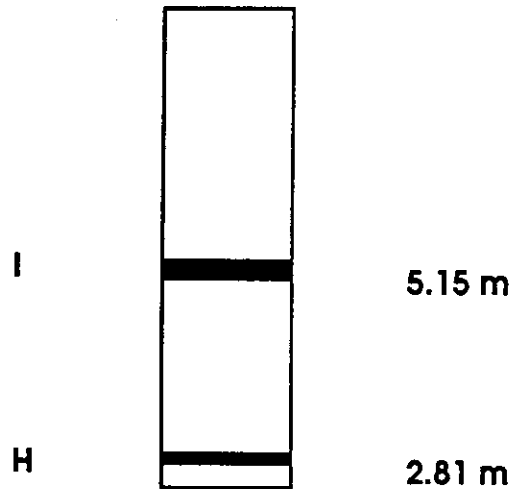
MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-001

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	62			OVERBURDEN	CASING DEPTH
1	3.05	4.70	1.65	62			SANDSTONE	CLYY.MG.WEL.M.GY.MB.SLD RUST COLOURED CLAY FLAKES UP TO 0.5M. Q QUARTZ FRACTURE FILL APPROX 1.0MM WIDE.
1	4.70	5.25	0.55	62			ROCK LOSS	
1	5.25	5.68	0.43	62			SANDSTONE	CLYY.MG.WEL.M.GY.MB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
1	5.68	5.88	0.20	62			ROCK LOSS	
2	5.88	6.73	0.85	62			SANDSTONE	CLYY.MG.WEL.M.GY.MB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
2	6.73	6.93	0.20	62			ROCK LOSS	
2	6.93	7.49	0.56	62			SANDSTONE	CLYY.MG.WEL.M.GY.MB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
2	7.49	7.65	0.16	62			SANDSTONE	CLYY.MG.WEL.M.GY.MB.BRKN AS ABOVE WITH QTZ FRACTURE INFILL.
3	7.65	8.22	0.57	62			SANDSTONE	CLYY.MG.WEL.M.GY.BRKN AS ABOVE. MINOR QTZ FRACTURE INFILL. SH ARP CONTACT AT BOTTOM OF SAND WITH AN I NTERBEDDED SAND AND SILT UNIT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	8.22	9.52	1.30	*62			SILTSTONE	SSY.DK.GY.LAM.XBDG.BRKN INTERBEDDED FG SS AND SILT TRUNCATIONS AND SAND INFILL INDICATE TOPS UP.
4	9.52	10.14	0.62	62			SILTSTONE	CLYY.DK.GY.LAM.XBDG.BRKN AS ABOVE. SANDY INTERBEDS BECOMING LESS FREQUENT.
4	10.14	10.19	0.05	62			ROCK LOSS	
4	10.19	10.37	0.18	62			SILTSTONE	CLYY.DK.GY.LAM.VBRKN POSSIBLE CORE LOSS. AS ABOVE.
4	10.37	11.39	1.02	*62			MUDSTONE	SLTY.DK.GY.LAM.SLD INTERBEDDED SILTSTONE THROUGHOUT.
5	11.39	11.63	0.24	*62			MUDSTONE	SLTY.DK.GY.LAM.SLD AS ABOVE.
5	11.63	13.06	1.43	63			SILTSTONE	CLYY.M.GY.LAM.SSD.SLD SILTSTONE WITH INTERBEDDED MUDSTONE LOA DCASTS INDICATE TOPS UP. POSSIBLE COAST ER LITHOLOGY.
5	13.06	13.19	0.13	63			SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	13.19	15.21	2.02	*64		SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE.
7	15.21	16.79	1.58	*65		SILTSTONE	CLYY.M.GY.LAM.XBDG.BRKN AS ABOVE. TRUNCATIONS INDICATE TOPS UP.
7	16.79	17.02	0.23	66		SILTSTONE	CLYY.M.GY.LAM.XBDG.SLD AS ABOVE.
8	17.02	17.89	0.87	*67		SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE WITH SOME COALIFIED FRACTURE INFILL.
8	17.89	18.00	0.11	67		SILTSTONE	CLYY.M.GY.LAM.VBRKN AS ABOVE. POSSIBLE COAL LOSS.
8	18.00	18.87	0.87	*67		SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE.
9	18.87	20.88	2.01	67		SILTSTONE	CLYY.M.GY.LAM.SLD AS ABOVE.
10	20.88	21.15	0.27	*67		SILTSTONE	CLYY.M.GY.LAM.BRKN AS ABOVE.
10	21.15	21.80	0.65	66		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	21.80	22.79	0.99	*65		SILTSTONE	CLYY.M.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS. SHARP CONTACT AT BASE WITH CARB MUDSTONE.
10	22.79	23.19	0.40	65		ROCK LOSS	
10	23.19	23.26	0.07	65		MUDSTONE	CARB.M.BLK.SHRD
11	23.26	23.71	0.45	65		MUDSTONE	CARB.M.BLK.LAM.VBRKN CARBONACEOUS IN PARTS WITH SILTY INTERBEDS. LENTIC SURFACES ARE COMMON. QTZ INFILL ALONG BEDDING PLANES. J SEAM ROOF
11	23.71	23.88	0.17	65 99999	J	COAL	C-5.BLK.SHRD SOME QTZ VEINING ALSO PRESENT. J SEAM.
11	23.88	24.02	0.14	65 99999	J	COAL LOSS	
11	24.02	24.03	0.01	65		BENTONITE	M.BN UNCONSOLIDATED WITH WAXY TEXTURE.
11	24.03	24.08	0.05	65		MUDSTONE	CARB.BLK.BRKN QTZ INFILL ALONG BEDDING PLANE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	24.08	24.13	0.05	65			MUDSTONE	M. GY VERY SOFT MAY BE BENTONITE.
11	24.13	24.23	0.10	65			MUDSTONE	CARB. M. BLK. LAM. BRKN INTERBEDDED WITH ASH AND GY MUDSTONE <1 .0CM.
11	24.23	24.31	0.08	65			SANDSTONE	FG. LT-M. GY. SLD FINING UPWARD SEQUENCE FROM FG SS AT BA SE. TO SLTST AT TOP.
11	24.31	24.33	0.02	65			BENTONITE	M. GY. SHRD UNCONSOLIDATED, WAXY TEXTURE.
11	24.33	24.63	0.30	65			MUDSTONE	PYR. DK. GY. BIOTR. BRKN 3CM THICK PYRITE ZONE NEAR TOP. MINOR P LANT HASH INCREASES TOWARDS BOTTOM SOME MINOR COALY PARTINGS.
11	24.63	24.65	0.02	65	04367		BENTONITE	M. GY. SHRD UNCONSOLIDATED, WAXY.
11	24.65	25.09	0.44	65			MUDSTONE	CARB. BLK. LAM. SLD PLANT FOSSILS AND HASH THROUGHOUT COALY LAMS. AT TOP DECREASE AT BASE. CTENIS. BO REALIS.
12	25.09	25.18	0.09	65			MUDSTONE	DK. GY. SLD FOSSILIFEROUS. CTENIS BOREALIS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	25.18	26.99	1.81	*65			MUDSTONE	PYR. DK. GY. LAM. BIOTR. SLD AS ABOVE WITH INCREASING SILT LAMS. PYR ITE BLEBS AND BIOTURBATION NEAR BASE.
13	26.99	27.97	0.98	*61			SILTSTONE	SSY. LT-M. GY. LAM. XBDG. BRKN FUS. WITH SILT AND LAMINATED MUD AT TOP FG SANDSTONE AND SLTST LAMINAE AT BAS E. TRUNCATIONS INDICATE TOPS UP.
13	27.97	28.62	0.65	*65			SILTSTONE	SSY. M. GY. LAM. XBDG. SLD INTERBEDDED SILT AND FG SS.
14	28.62	30.57	1.95	*64			SILTSTONE	SSY. M. GY. LAM. BIOTR. SLD AS ABOVE. LOADCASTS INDICATE TOPS UP. M INOR COALY QUARTZ LENSES. PLANT HASH TH ROUGHOUT.
15	30.57	30.90	0.33	65			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.
15	30.90	32.66	1.76	*65			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.
16	32.66	33.61	0.95	65			SILTSTONE	SSY. M. GY. LAM. BIOTR. SLD AS ABOVE. BURROW INDICATES TOPS UP.
16	33.61	33.81	0.20	65			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	33.81	34.07	0.26	*65		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. HRMBU. BRKN CUS. INTERBEDDED SANDSTONE AND SILTSTON E, POSSIBLE CORE LOSS.
16	34.07	36.21	2.14	64		ROCK LOSS	
16	36.21	36.93	0.72	64		SANDSTONE	SLTY. FG. LT-M. GY. LAM. SSD. SLD INTERBEDDED FG SS AND M GY SLTST. SOME TWIST. OFFS. AT TOP.
17	36.93	38.44	1.51	*63		SANDSTONE	SLTY. FG. LT. GY. LAM. SSD. SLD INTERBEDDED SAND AND SILT. BECOMING LESS SILTY NEAR BASE.
17	38.44	38.95	0.51	63		SANDSTONE	FG. LT. GY. MAS. BRKN HIGH ANGLE QTZ INFILLED FRACTURES.
18	38.95	39.21	0.26	63		SANDSTONE	FG. LT. GY. MAS. SLD AS ABOVE.
18	39.21	40.99	1.78	63		SANDSTONE	FG. LT. GY. MAS. SLD AS ABOVE.
19	40.99	41.65	0.66	63		SANDSTONE	FG. LT. GY. MAS. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	41.65	41.98	0.33	*63		SANDSTONE	SLTY. FG. LT-M. GY. LAM. SSD. BRKN INTERBEDDED SAND AND SILT. TOPS UP.
19	41.98	42.85	0.87	*65		SANDSTONE	SLTY. FG. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
20	42.85	44.73	1.88	*64		SANDSTONE	SLTY. FG. LT-M. GY. LAM. XBDG. BRKN AS ABOVE. NUMEROUS TRUNCATIONS INDICATE TOPS UP.
21	44.73	46.76	2.03	*65		SANDSTONE	SLTY. FG. LT-M. GY. LAM. SSD. SLD AS ABOVE. NUMEROUS THIN QTZ VEINS, COAL INFILLED PARTS.
22	46.76	47.69	0.93	*61		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. XBDG. SLD AS ABOVE.
22	47.69	48.81	1.12	*62		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
23	48.81	50.67	1.86	*64		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
23	50.67	50.82	0.15	*61		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
24	50.82	52.74	1.92	*61		SANDSTONE	SLTY. FG. WEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	52.74	53.54	0.80	*64			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE. TOPS UP.
25	53.54	54.74	1.20	*62			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
26	54.74	56.55	1.81	*61			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE, TOPS UP.
26	56.55	56.77	0.22	*63			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
27	56.77	57.49	0.72	*62			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. BRKN AS ABOVE.
27	57.49	58.65	1.16	*62			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. BRKN AS ABOVE. MINOR QTZ FRACTURE INFILLING. UNIT IS BECOMING LESS SILTY.
28	58.65	60.40	1.75	*63			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN MINOR SILTY BANDS APPROX 0.5CM.
28	60.40	60.81	0.41	62			ROCK LOSS	
28	60.81	60.93	0.12	62			SANDSTONE	SLTY. FG. MEL. M. GY. LAM. VBRKN AS ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	60.93	62.87	1.94	*61			SANDSTONE	SLTY. FG. MEL. M. GY. LAM. XBDG. BRKN MINOR QTZ FRACTURE FILL AS ABOVE.
30	62.87	63.45	0.58	*63			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE. SOME QTZ FRACTURE FILL. VERY SILTY IN PARTS.
30	63.45	63.85	0.40	63			ROCK LOSS	
30	63.85	64.70	0.85	*62			SILTSTONE	LT-M. GY. LAM. VBRKN LAMINATED WITH THIN BANDS OF MUD AND VF G. SS.
30	64.70	64.76	0.06	62 04368			BENTONITE	LT. GY. LAM. SHRD SHARP LOWER CONTACT WITH SLTST. SAMPLE TAKEN.
30	64.76	65.01	0.25	*62			SILTSTONE	M. GY. LAM. SLD
31	65.01	65.10	0.09	63			SILTSTONE	M. GY. LAM. BRKN LAMINATED FINING UP SEQUENCES (SLT TO M UD).
31	65.10	65.30	0.20	63			MUDSTONE	SLTY. DK. GY. LAM. VBRKN RUBBLE. FINING UP SEQUENCES (SLT TO MUD).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	65.30	65.51	0.21	64			ROCK LOSS	
31	65.51	65.93	0.42	*65			MUDSTONE	SLTY, DK. GY. LAM. BRKN PYRITIZED PLANT FOSSILS OCCUR IN LOWER HALF OF UNIT (SPHENOPTERIS). PLANT FOSS ILS ARE ALSO COALIFIED SLIGHTLY, FINING UP LAMS (SLT TO MUD).
31	65.93	66.57	0.64	65	10442	I. ROOF	MUDSTONE	CARB. DK. GY. BRKN LAMINATED WITH SLYST AT STRATIGRAPHIC T OP. BECOMES LESS SLTY AND MORE CARB TOM ARDS. BASE. COALIFIED PLANT FOSSILS PRES ENT (VERY ABUNDANT NEAR BASE). SMALL TA LC FILLED FRACTURES (<1MM). SAMPLED BOT TOM 25.0CH. I. SEAM. ROOF. ROCK.
31	66.57	66.83	0.26	65	10411	I	COAL	C-2. BLK. BRKN VERY WELL CLEATED. C-1 & C-3 BANDS.
31	66.83	66.88	0.05	65	10411	I	MUDSTONE	CARB. BLK. BRKN VERY CARB.
31	66.88	66.90	0.02	65	10411	I	COAL	C-4. BLK. BRKN VERY HARD.
31	66.90	66.92	0.02	65	10411	I	COAL	C-1. BLK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	66.92	66.94	0.02	65	10411	I	COAL	C-3. BLK. SLD
31	66.94	67.07	0.13	65	10411	I	COAL	C-2. BLK. BRKN VERY HARD. MOD - WELL CLEATED.
32	67.07	67.24	0.17	65	10411	I	COAL	C-1. BLK. BRKN VERY WELL CLEATED.
32	67.24	67.27	0.03	65	10411	I	COAL	C-6. BLK. BRKN C-6 & CARB MUDST.
32	67.27	67.81	0.54	65	10411	I	COAL LOSS	
32	67.81	67.88	0.07	65	10411	I	COAL	C-2. BLK. VBRKN VERY SOFT. SOME SHEARING.
32	67.88	67.92	0.04	65	10411	I	COAL	C-1. BLK. BRKN VERY HARD. SOME SHEARING.
32	67.92	68.01	0.09	65	10411	I	COAL	C-2. BLK. VBRKN SOME SHEARING.
32	68.01	68.14	0.13	65	10411	I	COAL	C-3. BLK. VSHRD
32	68.14	68.26	0.12	65	10411	I	COAL	C-6. BLK. VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	68.26	68.31	0.05	65 10411	I	COAL	C-3.BLK.VSHRD
32	68.31	68.42	0.11	65 10411	I	MUDSTONE	CARB.BLK.VSHRD
32	68.42	68.45	0.03	65 10411	I	COAL	C-3.BLK.VSHRD
32	68.45	68.58	0.13	65 10411	I	COAL	C-1.BLK.BRKN
32	68.58	68.62	0.04	65 10411	I	COAL	C-6.BLK.SLD
32	68.62	69.52	0.90	65 10411	I	COAL	C-1.BLK.BRKN SOME C BANDING, VERY WELL CLEATED.
33	69.52	69.89	0.37	65 10411	I	COAL	C-2.BLK.BRKN AS ABOVE.
33	69.89	69.97	0.08	65 10411	I	COAL	C-6.BLK.SLD VERY HARD.
33	69.97	70.64	0.67	65 10411	I	COAL	C-2.BLK.BRKN WELL CLEATED. BANDED WITH C-1.
33	70.64	70.67	0.03	65 10411	I	COAL	C-5.BLK.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	70.67	70.81	0.14	65 10411	I	MUDSTONE	BN.BRKN
33	70.81	70.83	0.02	65 10412	I	COAL	C-1.BLK.BRKN
33	70.83	70.85	0.02	65 10412	I	COAL	C-4.BLK.BRKN
33	70.85	70.97	0.12	65 10412	I	COAL	C-1.BLK.BRKN VERY WELL CLEATED.
33	70.97	71.04	0.07	65 10412	I	COAL	C-6.BLK.BRKN
33	71.04	71.23	0.19	65 10412	I	COAL	C-1.BLK.BRKN VERY WELL CLEATED.
33	71.23	71.43	0.20	65 10412	I	COAL	C-1.BLK.BRKN
34	71.43	71.67	0.24	65 10412	I	COAL	C-1.BLK.BRKN VERY WELL CLEATED.
34	71.67	72.12	0.45	65 10412	I	COAL	C-1.BLK.BRKN
34	72.12	72.18	0.06	65 10412	I	MUDSTONE	CARB.BLK.BRKN VERY SOFT, PUDDY LIKE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	72.18	72.24	0.06		65	10412 I	COAL	C-1. BLK. BRKN VERY WELL CLEATED.
34	72.24	72.26	0.02		65	10412 I	COAL	C-3. BLK. BRKN INTERLAM C-1 COAL & MUD.
34	72.26	72.93	0.67	*65	10413	I FLOOR	MUDSTONE	CARB. DK. GY. BRKN VERY CARB. ABUNDANT COALIFIED PLANT FRAGMENTS. SAMPLED TOP 0.25M. FLOOR ROCK I SEAM.
34	72.93	73.28	0.35		64		SILTSTONE	FG. M-DK. GY. BRKN ABUNDANT PLANT FRAGS.
35	73.28	74.62	1.34		63		SANDSTONE	SLTY. VFG. MEL. M. GY. LAM. SSD. SLD INTERBEDDED SAND AND SILT. MINOR SSD. FUS.
35	74.62	75.24	0.62	*62			SANDSTONE	SLTY. VFG. MEL. M. GY. LAM. SSD. SLD AS ABOVE.
36	75.24	77.19	1.95	*62			SANDSTONE	FG. MEL. LT-M. GY. THMR. SLD MINOR QTZ VEINING. AN APPARENT FUS WITH MG SS AT BASE AND AN INTERBEDDED VFG S S. AND SLTST. AT TOP. MINOR PLANT. HASH AND PEBBLES (0.5CM) NEAR BASE.
37	77.19	77.24	0.05		62		SANDSTONE	MG. MOD. LT. GY. SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	77.24	77.55	0.31		62		SANDSTONE	MG. MOD. LT-M. GY. VTHNB. SLD INTERBEDDED MG SS AND M GY VFG SS. SCOUR AND FILL INDICATE TOPS UP. RIP-UP CLASTS.
37	77.55	78.93	1.38	*62			SANDSTONE	SLTY. FG. MOD. LT-M. GY. LAM. BIOTR. BRKN AS ABOVE WITH INCREASING SILT CONTENT TOWARDS BASE. CUS NUMEROUS BURROWS AND SAND AND INFILL STRUCTURES.
38	78.93	80.53	1.60	*62			SANDSTONE	SLTY. VFG. MEL. M. GY. LAM. WRMBU. SLD AS ABOVE BECOMING INCREASINGLY SILTY AT BASE. CUS. NUMEROUS SCOUR AND FILL BURROWS AND TRUNCATIONS. MARKER DEPTH REPEATED.
38	80.53	80.90	0.37		62		SILTSTONE	DK. GY. LAM. SLD MINOR VFG SS.
39	80.90	81.77	0.87		63		SILTSTONE	DK. GY. SLD MINOR VFG SS LENSES. MINOR PYRITE BLEBS
39	81.77	82.84	1.07	*63			SANDSTONE	SLTY. FG. MOD. M. GY. LAM. BIOTR. BRKN INTERBEDDED WITH SLTST. BIOTURBATION THROUGHOUT. MINOR COALIFIED PLANT FRAGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	82.84	83.95	1.11	*63		SANDSTONE	SLTY. FG. MOD. M. GY. LAM. BRKN AS ABOVE BECOMING INCREASINGLY SILTY AT BASE. MINOR PLANT HASH.
40	83.95	84.52	0.57	63		SILTSTONE	SSY. M-DK. GY. LAM. RYPMK. SLD SANDY AT TOP FINING TO SILT AT BASE PLANT FRAGS. ABUNDANT NEAR TOP. RIP-UP CLASTS.
41	84.52	85.63	1.11	*64		SILTSTONE	SSY. M. GY. LAM. BRKN FG SAND BECOMING DOMINATE NEAR BASE, BIOTURBATION NEAR BASE.
41	85.63	86.38	0.75	*62		SANDSTONE	FG. MEL. M. GY. LAM. RYPMK. SLD INTERBEDDED FG SS AND SLTST. BIOTURBATION AND PLANT FRAGMENTS THROUGHOUT. RIP-UP CLASTS.
42	86.38	86.40	0.02	62		SANDSTONE	FG. MEL. M. GY. LAM. VBRKN TWIST OFF POSSIBLE CORE LOSS.
42	86.40	86.76	0.36	63		SANDSTONE	MG. MEL. LT. GY. VTHNB. SLD FUS WITH FG SS AT TOP AND CG SS AT BASE. SHARP BASAL CONTACT.
42	86.76	88.33	1.57	*64		SANDSTONE	SLTY. FG. MEL. LT. GY. LAM. WRMBU. SLD SILT LAMINATIONS THROUGHOUT. EXTENSIVE BIOTURBATION.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	88.33	88.75	0.42	63		SANDSTONE	MG. MEL. LT. GY. VTHNB. SSD. VBRKN FUS. RIPUPS AND MUD CLASTS UP TO 3.0CM. CG SS AT BASE, FG AT TOP.
43	88.75	88.91	0.16	63		SANDSTONE	CG. MOD. LT. GY. VTHNB. RYPMK. SLD MUD CLASTS UP TO 4.0CM YCG AT BASE. SHARP BASAL CONTACT WITH SLTST. RIP-UP CLASTS.
43	88.91	89.96	1.05	*63		SANDSTONE	SLTY. FG. LT. GY. LAM. BIOTR. SLD PREDOMINATELY FG SS WITH THE OCCASIONAL MG SCOUR BIOTURBATION THROUGHOUT.
44	89.96	91.96	2.00	*62		SANDSTONE	FG. MOD. LT-M. GY. LAM. BIOTR. BRKN AS ABOVE. EXTENSIVE BIOTURBATION, MINOR PLANT HASH NEAR BASE. MUD RIPUPS UP TO 5.0CM, SSD THROUGHOUT.
45	91.96	92.26	0.30	61		SANDSTONE	FG. MEL. LT-M. GY. LAM. WRMBU. BRKN AS ABOVE.
45	92.26	93.95	1.69	61		SANDSTONE	FG. MEL. LT. GY. LAM. WRMBU. SLD BURROWS AND BIOTURBATION THROUGHOUT, BI VALVES PRESENT. TALC ALONG FRACTURE PLANE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	93.95	95.30	1.35	*60			SANDSTONE	SLTY. FG. MEL. LT. GY. LAM. WRMBU. BRKN FREQUENT BURROWS AND RIPUP CLASTS. MINOR PLANT FRAGS. THIN SILTSTONE BANDS ARE OFTEN WISPY AND SCURED.
46	95.30	95.91	0.61	61			SANDSTONE	SLTY. FG. MEL. LT. GY. VTHNB. RIPMK. SLD AS ABOVE. RIP-UP CLASTS.
47	95.91	97.80	1.89	*62			SANDSTONE	FG. MEL. LT. GY. LAM. WRMBU AS ABOVE. LISTRIC SURFACES ON BEDDING P LANES.
48	97.80	98.08	0.28	61			SANDSTONE	FG. MEL. LT. GY. LAM. SLD MINOR ELONGATED WISPY MUD BANDS.
48	98.08	99.88	1.80	*61			SANDSTONE	FG. MEL. LT. GY. VTHNB. WRMBU. SLD AS ABOVE. NUMEROUS BURROWS AND PLANT HA SH. LISTRIC SURFACES ON BEDDING PLANES. PLANT FRAGMENTS.
49	99.88	100.90	1.02	*62			SANDSTONE	FG. MEL. LT. GY. LAM. BIOTR. SLD AS ABOVE. MINOR QTZ VEINS. SSD. AND PLA NT FRAGS.
49	100.90	101.91	1.01	61			SANDSTONE	SLTY. FG. MEL. LT. GY. LAM. BIOTR. SLD AS ABOVE. BECOMING SILTY NEAR BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	101.91	102.67	0.76	61			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. SSD. SLD AS ABOVE. NUMEROUS PYRITE NODULES UP TO 6.0CM IN DIAMETER.
50	102.67	103.29	0.62	*60			SILTSTONE	PYR. M-DK. GY. SLD PYRITE AND PLANT FRAGS THROUGHOUT.
50	103.29	103.86	0.57	60			SILTSTONE	PYR. M-DK. GY. SLD AS ABOVE.
51	103.86	105.76	1.90	60			SILTSTONE	PYR. M-DK. GY. BRKN AS ABOVE WITH MINOR QTZ VEINING AND LIS TRIC SURFACES THROUGHOUT. SOME COALIFIE D PLANT FRAGS.
52	105.76	106.72	0.96	61			SILTSTONE	PYR. M-DK. GY. BRKN AS ABOVE. MINOR QTZ VEINING.
52	106.72	106.77	0.05	61			ROCK LOSS	
52	106.77	106.93	0.16	61			SILTSTONE	PYR. M-DK. GY. VBRKN AS ABOVE. POSSIBLE CORE LOSS.
52	106.93	107.54	0.61	61			SILTSTONE	PYR. M-DK. GY. SLD AS ABOVE.
53	107.54	109.51	1.97	61			SILTSTONE	PYR. M-DK. GY. BRKN NUMEROUS CTENIS BOREALIS. SOME COALIFIE D PLANT MATTER.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	109.51	110.83	1.32	61			SILTSTONE	PYR. M-DK. GY. BRKN AS ABOVE. NILSSONIA TENUCAULIS.
54	110.83	111.45	0.62	62			SILTSTONE	PYR. M-DK. GY. BRKN AS ABOVE. SAME LISTRIC SURFACES. NUMEROUS PLANT FRAGS. N. CANADENSIS, N TENUCAULIS.
55	111.45	113.96	2.51	62			ROCK LOSS	
55	113.96	115.13	1.17	62			SILTSTONE	PYR. M-DK. GY. BRKN AS ABOVE. SOME TWIST OFFS, DRILLERS MARK SAME DEPTH AS LAST ONE.
55	115.13	115.68	0.55	62			MUDSTONE	PYR. M-DK. GY. VBRKN NUMEROUS PLANT FRAGS. LISTRIC SURFACES AND PYRITE NODULES SOME COALIFIED PLANT FRAGS.
56	115.68	116.12	0.44	62			MUDSTONE	DK. GY. BRKN PLANT FOSSILS PRESENT (PITYOPHYLLUM NOR DENSKIOLDI, PTEROPHYLLUM Plicatum, SPHEOPTERIS). BECOMES SLIGHTLY CARB TOWARD S BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	116.12	116.15	0.03	62			COAL	C-1. BLK. SLD
56	116.15	116.85	0.70	62	10404	H ROOF	MUDSTONE	CARB. DK. GY. BRKN DARK GREY TO BLK CARB MUDST. PLANT FOSSILS COMMON. SLIGHTLY SHEARED. SAMPLED 2 5' OCH OF UNIT. ROOF ROCK H. SEAM.
56	116.85	117.11	0.26	63	10405	H	COAL	C-5. BLK. SHRD ABUNDANT LISTRIC SURFACES.
56	117.11	117.20	0.09	63	10405	H	COAL	C-3. BLK. SHRD GREY LUSTER. HEAVILY CLEATED.
56	117.20	117.42	0.22	63	10405	H	COAL	C-1. BLK. BRKN VERY CRUMBLY. WELL CLEATED.
56	117.42	117.59	0.17	63	10405	H	COAL	C-2. BLK. VBRKN CRUMBLY.
56	117.59	117.64	0.05	63	10405	H	COAL	C-1. BLK. BRKN CRUMBLY. VERY WELL CLEATED.
57	117.64	117.94	0.30	63	10405	H	COAL	C-3. BLK. BRKN WELL CLEATED. VERY CLOSE TO C-2.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	117.94	118.18	0.24	63	10405	H	COAL LOSS	
57	118.18	118.34	0.16	63	10405	H	MUDSTONE	LT. BN. BRKN SLIGHTLY SHEARED.
57	118.34	118.35	0.01	63	10405	H	COAL	C-3. BLK. SLD
57	118.35	118.57	0.22	63	10405	H	COAL	C-2. BLK. BRKN WELL CLEATED.
57	118.57	118.60	0.03	63	10405	H	COAL	C-5. BLK. BRKN
57	118.60	118.72	0.12	63	10405	H	COAL	C-2. BLK. BRKN
57	118.72	118.75	0.03	63	10405	H	COAL LOSS	
57	118.75	118.85	0.10	63	10405	H	ROCK LOSS	
57	118.85	118.87	0.02	63	10405	H	MUDSTONE	BLK. BRKN SLIGHTLY CARB.
57	118.87	118.91	0.04	63	10405	H	COAL	C-3. BLK. BRKN WELL CLEATED.
57	118.91	118.97	0.06	63	10405	H	COAL	C-5. BLK. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	118.97	119.04	0.07	63	10405	H	MUDSTONE	M. GY. BRKN GREYISH - BROWN MUDST.
57	119.04	119.21	0.17	63	10405	H	COAL LOSS	
57	119.21	119.43	0.22	63	10405	H	COAL	C-3. BLK. VBRKN VERY SOFT & CRUMBLY.
57	119.43	119.49	0.06	63	10405	H	COAL	C-2. BLK. VBRKN
57	119.49	119.63	0.14	63	10405	H	COAL	C-3. BLK. VBRKN MODERATELY CLEATED.
57	119.63	119.67	0.04	63	10405	H	COAL	C-3. BLK. PHRD
57	119.67	119.74	0.07	63	10405	H	COAL	C-6. BLK. VBRKN
57	119.74	119.79	0.05	63	10405	H	MUDSTONE	DK. GY. VSHRD
57	119.79	119.91	0.12	63	10405	H	COAL	C-3. BLK. PHRD
57	119.91	119.93	0.02	63	10405	H	COAL	C-4. BLK. PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	119.93	120.01	0.08		63	10405 H	COAL LOSS	
57	120.01	120.08	0.07		63	10406 H FLOOR	MUDSTONE	SLTY. DK. GY. SHRD SAMPLED. H SEAM FLOOR ROCK.
58	120.08	120.31	0.23		63	10406 H FLOOR	SILTSTONE	M. GY. BRKN INTERBEDDED VFG SS. LISTRIC SURFACES THROUGHTOUT. PYRITE NODULES. UPPER 18.0CM SAMPLED.
58	120.31	121.27	0.96		63		SANDSTONE	FG. MEL. LT-M. GY. LAM. XBDG. BRKN INTERBEDDED SLTST. LISTRIC SURFACES THROUGHTOUT. QTZ INFILL NEAR BASE AS WELL AS MUD RIPUPS.
58	121.27	121.98	0.71		63		SANDSTONE	FG. MEL. LT-M. GY. LAM. XBDG. BRKN AS ABOVE.
59	121.98	123.56	1.58		64		SANDSTONE	MG. MEL. LT. GY. MAS. RIPMK. BRKN AS ABOVE. RIPUPS COMMON NEAR BASE. POSSIBLE CORE LOSS.
59	123.56	123.60	0.04		64		MUDSTONE	SLTY. DK. GY. LAM. BRKN MINOR QTZ AND SILTY BANDS. SHARP TOP CONTACT.
59	123.60	123.70	0.10		64		MUDSTONE	SLTY. DK. GY. LAM. BRKN AS ABOVE. MINOR PLANT FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	123.70	125.75	2.05	*64			SILTSTONE	SSY. M-DK. GY. BIOTR. SLD INTERBEDDED SLTST AND VFG SS. HELMINTHOZOUS PSIS PRESENT.
61	125.75	126.67	0.92	*64			SANDSTONE	FG. MEL. LT-M. GY. MAS. SLD FUS. END OF DRILL HOLE. DRILLER'S MARK = 126.67.

* DENOTES MEASURED BCA
NEWPAGE

748

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88001

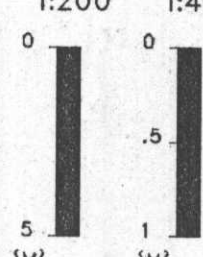
GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40



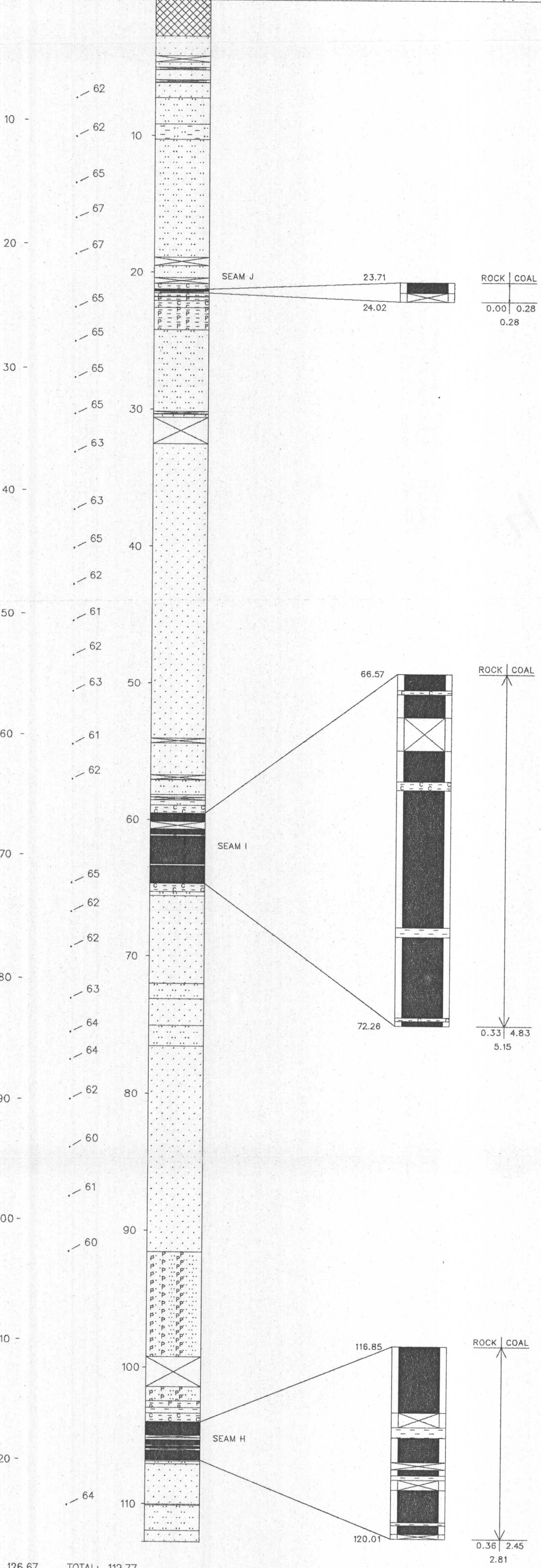
NORTHING: 6344958.0 N
 EASTING: 506938.9 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL

DRILLED DEPTH 1:200 TRUE DEPTH 1:40 TRUE THICKNESS



TOTAL: 126.67 TOTAL: 112.77

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Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88001

Province: BC Northing: 6344960.00 Lat: 571458

Log Date: 88-06-10

Zone: 9 Easting: 506939.00 Long: 1285306

Company: CENTURY

Measuring Point: GROUND LEVEL Elevation: 1622.3

Geologist: MURRAY

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 128.0

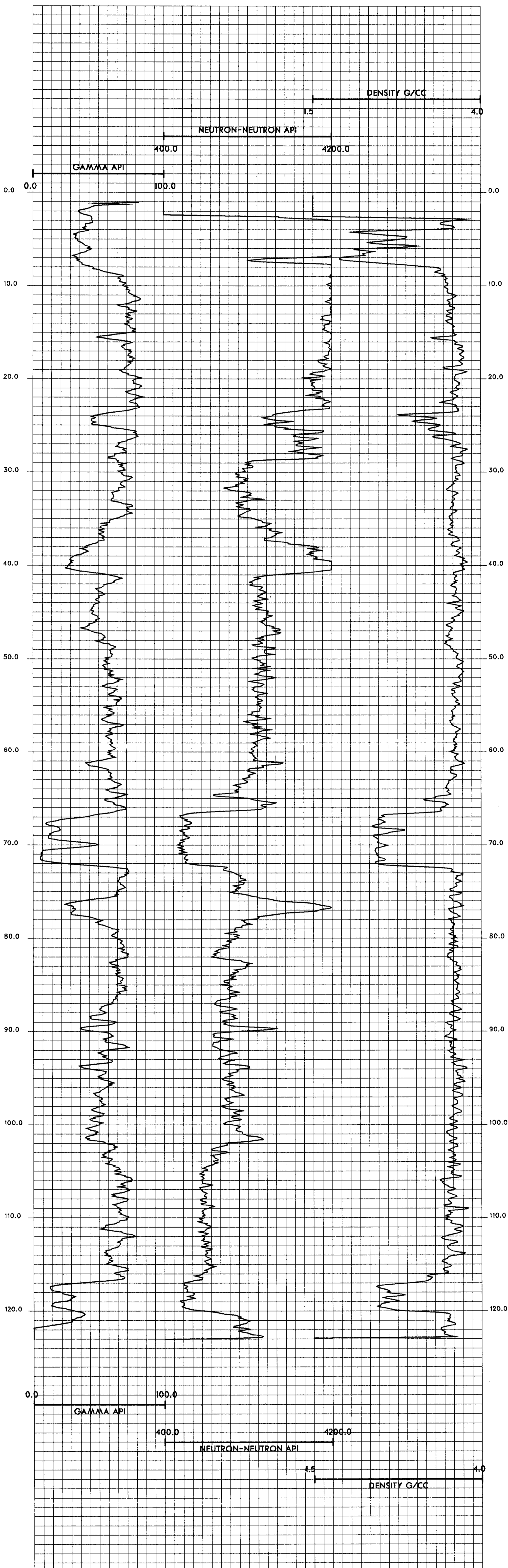
1. LOGGED THROUGH RODS

True Thickness: NO

2.

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88002

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88002

DATE - 02/15/89

- HISTORY -

START DATE - 06/11/88
END DATE - 06/13/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEE

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - "1" SEAM INTERSECTED. OVERTURN AND START OF SEQUEN
CE REPEAT AT BOTTOM OF HOLE. SITE C.

- LOCATION -

PROVINCE - BC
ELEVATION - 1689.11

ZONE - 9
NORTHING - 6342603.02
EASTING - 504523.89

LICENCE/LEASE NUMBER - 7149

LATITUDE - 571342
LONGITUDE - 1285530

- ORIENTATION -

LENGTH - 111.04
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-002

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

1



4.25 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	65			OVERBURDEN	CASING DEPTH
1	4.57	4.87	0.30	65			ROCK LOSS	
1	4.87	4.96	0.09	65			SILTSTONE	M-DK.GY.VBRKN SOME SHEARING, PROBABLE CORE LOSS.
1	4.96	5.32	0.36	*65			SILTSTONE	M.GY.LAM.BRKN VFG SSS BANDS. MINOR SSD. SOME SHEARED SURFACES.
1	5.32	5.36	0.04	66			SILTSTONE	M.GY.LAM.VBRKN AS ABOVE.
1	5.36	6.59	1.23	69			SILTSTONE	M.GY.LAM.BRKN OCC MUDST LAM AND SSS LAM. QTZ FILLED FRACTURE AT BASE.
2	6.59	6.66	0.07	71			SILTSTONE	SSY.M.GY.LAM.VBRKN AS ABOVE. QTZ FILLED FRACTURES.
2	6.66	7.76	1.10	*74			SILTSTONE	SSY.M.GY.LAM.BRKN 4.0CM BANDS OF SANDIER SLTST 1.0 TO 2.0 CM APART.
2	7.76	7.78	0.02	74			MUDSTONE	M-DK.GY.VBRKN CLAYEY, FRACTURED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	7.78	7.84	0.06	74			SILTSTONE	M.GY.LAM.VBRKN
2	7.84	8.09	0.25	73			ROCK LOSS	
2	8.09	8.21	0.12	73			SILTSTONE	M.GY.VBRKN TWIST OFF AT TOP. OCCASIONALLY < IMM MU DST LAM.
2	8.21	8.60	0.39	73			SILTSTONE	M.GY.LAM.BRKN SSY AND MUDDY LAM WITH FAIRLY SHARP CONTACTS, MINOR SSD.
3	8.60	9.28	0.68	73			SILTSTONE	M.GY.LAM.BRKN AS ABOVE WITH OCCASIONAL QTZ FILLED FRACTURE. OCCASIONAL LISTRIC SURFACE.
3	9.28	10.44	1.16	*72			SILTSTONE	M.GY.LAM.BRKN INTERLAM WITH SSS BANDS OCCASIONAL SSD. 1.5CM QTZ BAND (WITH BRECCIA) AT TOP. OCCASIONAL PLANT FRAGMENTS AT BASE.
4	10.44	10.79	0.35	*65			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN FINING UP LAMS (SLTST TO MUDST). ABUNDANT PLANT FOSSILS (NILSSONIA TENICAULIS, PITYOPHYLLUM NORDENSKIOLDI). SOME PYRITIZED PLANTS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	10.79	11.44	0.65	65	10401	I ROOF	MUDSTONE	CARB. BLK. BRKN BECOMES MORE CARB DOWN SECTION (VERY CARB NEAR BASE). ABUNDANT PLANT FOSSILS. LOWER 25CM SAMPLED. I SEAM ROOF ROCK.
4	11.44	11.46	0.02	66	10402	I	COAL	C-5. BLK. SLD SOME C-1 LAMS.
4	11.46	11.49	0.03	66	10402	I	COAL	C-4. BLK. BRKN
4	11.49	11.52	0.03	66	10402	I	COAL	C-2. BLK. SLD MODERATE CLEATED.
4	11.52	11.56	0.04	66	10402	I	COAL	C-4. BLK. VBRKN WEAKLY CLEATED.
4	11.56	11.60	0.04	66	10402	I	COAL	C-1. BLK. BRKN
4	11.60	11.67	0.07	66	10402	I	COAL	C-6. BLK. BRKN
4	11.67	12.07	0.40	66	10402	I	COAL	C-3. BLK. BRKN MOD. CLEATED.
4	12.07	12.17	0.10	66	10402	I	COAL	C-2. BLK. BRKN WELL CLEATED. VERY BRITTLE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	12.17	12.22	0.05	66	10402	I	COAL	C-3. BLK. BRKN VERY BRITTLE. SOME C-2 BANDS. WELL CLEATED.
5	12.22	12.41	0.19	66	10402	I	COAL LOSS	
5	12.41	12.46	0.05	66	10402	I	ROCK LOSS	
5	12.46	12.54	0.08	66	10402	I	MUDSTONE	CLYY. H. BN. SLD POSSIBLE BENTONITE.
5	12.54	12.57	0.03	66	10402	I	COAL	C-5. BLK. BRKN
5	12.57	12.68	0.11	66	10402	I	COAL	C-3. BLK. SLD
5	12.68	12.72	0.04	66	10402	I	MUDSTONE	CARB. BLK. BRKN
5	12.72	12.99	0.27	67	10402	I	COAL	C-3. BLK. PHRD SOME SHEARED SURFACES.
5	12.99	13.14	0.15	67	10402	I	COAL	C-3. BLK. VBRKN
5	13.14	14.08	0.94	67	10402	I	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	14.08	14.18	0.10	67	10402	I	COAL	C-4.BLK.BRKN
5	14.18	14.26	0.08	68	10402	I	COAL	C-1.BLK.BRKN VERY WELL CLEATED. SOME C-2.
5	14.26	14.28	0.02	68	10402	I	SILTSTONE	CARB.BLK.SLD VERY HARD.
5	14.28	14.33	0.05	68	10402	I	COAL	C-2.BLK.BRKN WELL CLEATED.
5	14.33	14.40	0.07	68	10402	I	COAL	C-3.BLK.BRKN
5	14.40	14.45	0.05	68	10402	I	MUDSTONE	CARB.BLK.BRKN VERY SOFT (PUDDY LIKE).
5	14.45	14.48	0.03	68	10402	I	COAL	C-4.BLK.YBRKN
5	14.48	14.49	0.01	68	10402	I	MUDSTONE	SLTY.DK.GY.SLD
5	14.49	14.54	0.05	68	10402	I	COAL	C-3
5	14.54	15.62	1.08	68	10402	I	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 6

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	15.62	15.69	0.07	69	10402	I	COAL	C-2.YBRKN VERY SOFT & POWDERY.
5	15.69	15.75	0.06	69	10402	I	COAL	C-3.YBRKN AS ABOVE.
5	15.75	15.82	0.07	69	10402	I	COAL	C-2.YBRKN AS ABOVE.
5	15.82	15.97	0.15	69	10402	I	COAL	C-4.YBRKN VERY SOFT & CRUMBLY. INTERMIXED C-3, C-4 & C-2.
5	15.97	16.05	0.08	69	10402	I	COAL	C-5.VSHRD INTERMIXED COAL & MUD.
5	16.05	16.08	0.03	69	10403	I FLOOR	MUDSTONE	VSHRD FLOOR ROCK I SEAM.
5	16.08	16.16	0.08	69			SANDSTONE	CLYY.FG.PR.M.GY.SLD VERY ARGILLACEOUS SS. MUD CLASTS AND MI SPS. PRESENT.
6	16.16	16.36	0.20	69			ROCK LOSS	
6	16.36	16.52	0.16	69			SANDSTONE	FG.LT-M.GY.YBRKN OCCASIONAL GRANULES, HIGHLY FRACTURED.

* DENOTES MEASURED BCA

FORM
4001

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	16.52	17.04	0.52	69			SANDSTONE	FG.LT-M.GY.BRKN OCC GRANULE SOME IN BANDS, QTZ FRACTURE FILL (0.5CM THICK).
6	17.04	17.11	0.07	69			ROCK LOSS	
6	17.11	17.18	0.07	70			SANDSTONE	FG.LT-M.GY.VBRKN AS ABOVE BUT MORE FRACTURED.
6	17.18	17.32	0.14	70			SANDSTONE	FG.LT-M.GY.BRKN AS ABOVE.
6	17.32	17.36	0.04	70			ROCK LOSS	
6	17.36	17.39	0.03	70			SANDSTONE	FG.LT-M.GY.VBRKN AS ABOVE.
6	17.39	17.42	0.03	70			ROCK LOSS	
6	17.42	17.50	0.08	70			SANDSTONE	FG.LT-M.GY.VBRKN AS ABOVE.
6	17.50	17.53	0.03	70			ROCK LOSS	
6	17.53	18.06	0.53	*70			SANDSTONE	VFG.LT-M.GY.THNB.BRKN SLTST INTERBEDS. QTZ FRACTURE FILL, FAU LT. OF 0.5CM DISPLACEMENT NEAR TOP.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	18.06	18.56	0.50	70			SANDSTONE	PBLY.F-MG.LT.GY.THNB.VBRKN WITH (.5 TO 2CM) CHERT PEBBLE BANDS, HI GHLY FRACTURED WITH SOME QTZ FILL.
7	18.56	19.63	1.07	69			SANDSTONE	PBLY.F-MG.LT.GY.THNB AS ABOVE BECOMING MORE PEBBLEY, 2CM QTZ VEIN AT TOP. PEBBLES GREY & WHITE.
7	19.63	19.93	0.30	69			SANDSTONE	PBLY.LT.GY.THNB.VBRKN AS ABOVE.
8	19.93	20.08	0.15	69			CONGLOMERATE	LT.GY.THNB.VBRKN FINE TO MED.GRAINSS MATRIX, CHERT PEBBL ES VARY FROM <1 TO 2CM, MATRIX TO CLAST SUPPORTED OCC QTZ FILLED FRACTURE. POS SIBLE CORE LOSS.
8	20.08	20.26	0.18	69			CONGLOMERATE	MOD.LT-M.GY.THNB.VBRKN AS ABOVE.
8	20.26	21.50	1.24	68			CONGLOMERATE	MOD.LT-M.GY.THNB.BRKN AS ABOVE, SOME BANDS HAVE LESS PEBBLES. FRACTURED.
9	21.50	22.75	1.25	68			CONGLOMERATE	MOD.LT-M.GY.THNB.BRKN AS ABOVE, 30CM BANDS OF DENSE PEBBLES G RADES TO 20CM BANDS OF SS WITH 3CM PEBB LE BANDS.

* DENOTES MEASURED BCA

MROU
4
1

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 9

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	22.75	23.34	0.59	67			CONGLOMERATE	MOD. LT-M.GY. THNB. BRKN AS ABOVE.
10	23.34	24.93	1.59	67			CONGLOMERATE	MOD. LT-M.GY. THNB. BRKN AS ABOVE, FRACTURED AT 18 DEGREE TO CORE, BANDS OF DENSE PEBBLE GRADED TO OCC PEBBLE.
10	24.93	25.16	0.23	66			CONGLOMERATE	MOD. LT-M.GY. THNB. BRKN AS ABOVE, VERY FRACTURED AT TOP.
11	25.16	26.26	1.10	66			CONGLOMERATE	MOD. LT-M.GY. THNB. BRKN AS ABOVE, 31CM SANDST BAND AT TOP GRADING TO DENSE PEBBLES. SOME FRACTURE ARE QTZ FILLED.
11	26.26	26.80	0.54	65			CONGLOMERATE	MOD. LT-M.GY. THNB. VBRKN AS ABOVE, HIGHLY FRACTURED SOME QTZ FILLED, POSSIBLE CORE LOSS.
11	26.80	26.92	0.12	65			ROCK LOSS	
12	26.92	27.30	0.38	65			SANDSTONE	PBLY. F-MG. LT-M.GY. THNB. BRKN FRACTURED WITH CLAY FILL, MOD CONSOLIDATED, SOME LISTRIC SURFACES.
12	27.30	27.47	0.17	65			SILTSTONE	M.GY. VBRKN SHEARED, CLAYEY, CRUMBLD IN PLACES.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	27.47	28.11	0.64	65			ROCK LOSS	
12	28.11	28.77	0.66	64			SANDSTONE	VFG. M.GY. THNB. BRKN WITH SILTST. LAMS, OCCASIONAL QTZ FILLED FRACTURE, SOME LISTRIC SURFACES ALMOST PARALLEL TO BEDDING.
12	28.77	29.10	0.33	*64			SILTSTONE	SSY. M.GY. LAM. SSD. BRKN WITH MUDDY LAM, OCC QTZ FILLED FRACTURE
12	29.10	29.94	0.84	64			ROCK LOSS	
12	29.94	30.08	0.14	65			SILTSTONE	SSY. M.GY. LAM. VBRKN AS ABOVE, TWIST OFF AT TOP, POSSIBLE CORE LOSS.
12	30.08	30.17	0.09	65			SILTSTONE	M.GY. LAM. SSD. SLD AS ABOVE. LOAD CAST SHOWS TOPS UP.
13	30.17	30.36	0.19	65			ROCK LOSS	
13	30.36	30.78	0.42	65			SILTSTONE	M-OK. GY. LAM. BRKN VERY FRACTURED WITH CLAY FILL, HELMINTH OPSIS. LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	30.78	31.00	0.22	65			SILTSTONE	M-DK.GY.LAM.BRKN A LITTLE LESS FRACTURED, NO HELMINTHOPS IS.
13	31.00	31.34	0.34	65			SANDSTONE	VFG.M.GY.BRKN CLAY AND QTZ FILLED FRACTURES IN ABUNDANCE AT BASE, OCCASIONAL DISCONTINUOUS SLTY LAMINAE.
13	31.34	31.71	0.37	66			SANDSTONE	VFG.M.GY.VTHNB.BRKN REGULAR 1.5CM SS BEDS GRADED FROM VFG TO FG (FINING UPWARDS) SLTST LAM B/N BEDS. OCCASIONAL FRACTURE.
13	31.71	32.12	0.41	66			SANDSTONE	FG.M.GY.VTHNB.BRKN OCCASIONAL DISCONTINUOUS SLTY LAM. QTZ FILLED FRACTURE.
13	32.12	32.30	0.18	*66			SANDSTONE	FG.M.GY.VTHNB.BRKN MUCH MORE SLTST LAM THAN ABOVE QTZ FRACTURE FILL.
14	32.30	32.68	0.38	66			SANDSTONE	FG.M.GY.VTHNB.BRKN OCC SLTY LAM, SOME GRADED BDG TOWARDS TOP.
14	32.68	33.75	1.07	67			SANDSTONE	FG.M.GY.VTHNB.BRKN SLTST LAM @ 4CM (AVG) APART SOME ARE DISCONT, QTZ FILLED FRACTURES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	33.75	34.15	0.40	*68			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN AS ABOVE BUT SLTST LAM ONLY PRESENT AT BASE.
15	34.15	34.66	0.51	68			SANDSTONE	FG.M.GY.VTHNB.BRKN QTZ FRACTURE FILLS, MORE FRACTURED @ BASE.
15	34.66	35.04	0.38	*68			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN WITH REGULAR SLTST LAM, LOAD CASTS SHOW TOPS UP.
15	35.04	35.06	0.02	68			MUDSTONE	DK.GY.SHRD CLAYEY, POORLY CONSOLIDATED.
15	35.06	35.51	0.45	68			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. LAM IN SOME BANDS & VTHNB IN OTHER SANDIER BANDS, LOAD CASTS AND HRMBUR SHOW TOPS UP.
15	35.51	35.95	0.44	69			SANDSTONE	FG.M.GY.VTHNB.HRMBU.BRKN AS ABOVE, HRMBUR SHOWS TOPS UP, SLTST LAM AND VTHNB IN 12.0CM BAND.
16	35.95	36.03	0.08	69			SANDSTONE	FG.M.GY.VBRKN FRACTURED.
16	36.03	36.08	0.05	69			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	36.08	37.29	1.21	70		SANDSTONE	FG. M. GY. VTHNB. BRKN BANDS 8-23CM THICK OF INTERLAM VFG TO F G SS AND SLTST BCM APART, OCC QTZ FRACTURE FILL.
16	37.29	37.37	0.08	70		SANDSTONE	VFG. LT-M. GY. VBRKN BROKEN TO ANGULAR PEBBLES WITH CLAY FIL L.
16	37.37	37.49	0.12	71		SANDSTONE	VFG. LT-M. GY. SLD BRECCIA IN QTZ.
16	37.49	37.62	0.13	71		SANDSTONE	VFG. LT-M. GY. SLD QTZ FILLED FRACTURES.
16	37.62	37.88	0.26	71		SANDSTONE	VFG. LT-M. GY. BRKN CLAY FRACTURE FILL @ TOP.
17	37.88	38.28	0.40	71		SANDSTONE	FG. M. GY. LAM. SSD. VBRKN WITH VFG SS LAM.
17	38.28	38.46	0.18	71		ROCK LOSS	
17	38.46	39.26	0.80	72		SANDSTONE	FG. M. GY. VTHNB. BRKN WITH BANDS OF VFG SS AND SLTST LAM. FRACTURED.
17	39.26	39.43	0.17	72		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	39.43	39.56	0.13	73		SANDSTONE	FG. LT-M. GY. VBRKN QTZ FRACTURE FILL.
17	39.56	40.36	0.80	73		SANDSTONE	VFG. LT-M. GY. LAM. BRKN BDG BECOMES VTHNB TOWARDS BASE WITH SLT ST INTERLAM. MINOR SSD. QTZ FRACTURE FILL WITH 5CM DISPLACEMENT. LISTRIC SUR FACES PARALLEL TO BDG PLANE.
18	40.36	40.44	0.08	73		SANDSTONE	VFG. M. GY. SLD QTZ VEIN 6.5CM THICK WITH BRECCIA AND VFG SS & SLTST LAM.
18	40.44	41.44	1.00	*74		SANDSTONE	VFG. M. GY. BRKN WITH SLTST LAM (MORE NUMEROUS IN 17 BANDS). FRACTURED QTZ FILLED AND MUD FILLED AT 37.0CM DOWN.
18	41.44	41.66	0.22	*72		SANDSTONE	VFG. M. GY. SLD AS ABOVE.
18	41.66	41.70	0.04	69		SANDSTONE	VFG. M. GY. VBRKN QTZ FRACTURE FILLED, POSSIBLE CORE LOSS
18	41.70	41.91	0.21	67		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	41.91	41.99	0.08	64			SILTSTONE	BRKN QTZ VEIN WITH MINOR SLTST BRECCIA.
18	41.99	42.11	0.12	62			SANDSTONE	VFG.M.GY.VTHNB.SLD WITH SLTST LAM AT TOP AND RARE AT BASE, MUCH QTZ FRACTURE FILL.
18	42.11	42.30	0.19	59			SANDSTONE	VFG.M.GY.VTHNB.BRKN SLTST LAM QTZ FRACTURE FILL.
19	42.30	42.37	0.07	57			SANDSTONE	VFG.M.GY.VBRKN
19	42.37	42.38	0.01	56			ROCK LOSS	
19	42.38	42.66	0.28	53			SANDSTONE	VFG.M.GY.VTHNB.SLD VFG TO FG SS, QTZ FRACTURE FILL.
19	42.66	42.80	0.14	49			SANDSTONE	VFG.M.GY.VBRKN AS ABOVE.
19	42.80	42.81	0.01	48			ROCK LOSS	
19	42.81	43.90	1.09	*37			SANDSTONE	VFG.M.GY.VTHNB.BRKN NUMEROUS LISTRIC SURFACES, SEDIMENT DEF. ORMATION NEAR BASE LOOKS LIKE SOME LOAD CASTS AND RIP UPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	43.90	45.00	1.10	*54			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN WITH SLTST LAM WHICH GRADE TO MUDST QTZ FRACTURE FILL.
20	45.00	45.15	0.15	58			SILTSTONE	M-DK.GY.VBRKN WITH SSY BANDS, BANDS OF IMM BLK BLEBS (POSSIBLE HELMINTHOPSIS).
20	45.15	45.45	0.30	60			SILTSTONE	M-DK.GY.BRKN WITH BLK GRAINS AS ABOVE, ABUNDANT CARB. ONACEOUS, PLANT FRAGMENTS.
20	45.45	45.48	0.03	61			SILTSTONE	CLAYEY, POORLY CONSOLIDATED.
20	45.48	45.70	0.22	62			SILTSTONE	M.GY.LAM.BRKN 2CM QTZ VEIN AT TOP AND FRACTURE FILL, DISCONTINUOUS SSY LAM.
21	45.70	46.45	0.75	66			SILTSTONE	M-DK.GY.SSD.BRKN SSD SHOWS TOPS UP SOME SANDY BEDS, BDG IS IRREGULAR.
21	46.45	46.95	0.50	70			SILTSTONE	M-DK.GY.SHRD AS ABOVE, VERY FRACTURED SOME CLAY FILL
21	46.95	47.75	0.80	75			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	47.75	48.10	0.35	*79			SILTSTONE	M-DK.GY.BRKN SOME BEDS OF CARB PLANT FRAGS, HELMINTH OPISIS NEAR TOP, SOME LISTRIC SURFACES, WITH DISCONT SSY LAM.
21	48.10	48.33	0.23	78			SILTSTONE	M-DK.GY.LAM.SLD LAM TO VTHNB, WITH SSY LAM.
22	48.33	49.34	1.01	*75			SILTSTONE	M.GY.LAM.SSD.BRKN SSY LAMS WITH IRREGULAR CONTACTS, QTZ V EIN WITH SLTST BRECCIA & LAM, HALF WAY DOWN.
22	49.34	49.49	0.15	73			ROCK LOSS	
22	49.49	49.77	0.28	73			SILTSTONE	M.GY.SHRD VERY FRACTURED, ESPECIALLY AT TOP WITH C LAY FILL.
22	49.77	49.87	0.10	72			ROCK LOSS	
22	49.87	49.94	0.07	72			SILTSTONE	M.GY.YBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	49.94	50.58	0.64	71			SILTSTONE	M.GY.BRKN NUMEROUS SHEAR SURFACES, NUMEROUS FRACTURE URE WITH <1CM DISPLACEMENT.
23	50.58	50.91	0.33	70			MUDSTONE	M-DK.GY.VSHRD BRKN BECOMING CRUMBLD TOWARDS BASE.
23	50.91	50.99	0.08	69			ROCK LOSS	
23	50.99	51.28	0.29	69			MUDSTONE	M-DK.GY.BRKN SOME SHEARED SURFACES, PYRTIE BLEBS, FR ACTURED.
23	51.28	51.48	0.20	68			MUDSTONE	M-DK.GY.VBRKN
23	51.48	52.52	1.04	67			MUDSTONE	DK.GY.BRKN FRACTURED SOME QTZ FILLED, PYRITE BLEBS
24	52.52	53.16	0.64	65			ROCK LOSS	
24	53.16	53.67	0.51	63			MUDSTONE	DK.GY.SHRD SLTY, HIGHLY FRACTURED, SOME QTZ FILL.
24	53.67	53.92	0.25	62			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	53.92	54.36	0.44	61			MUDSTONE	DK.GY.SHRD HIGHLY FRACTURED WITH CLAY FILL, POORLY CONSOLIDATED.
24	54.36	55.29	0.93	59			MUDSTONE	DK.GY.BRKN SLTY. FRACTURED. FAIR CONSOLIDATION. SO ME.PYRITE.
25	55.29	56.46	1.17	57			MUDSTONE	SLTY.DK.GY.BRKN FRACTURED SOME QTZ FILLED. LISTRIC SURFACES. CLAY FRACTURE FILL NEAR BASE. BDG NOT SEEN.
25	56.46	57.15	0.69	54			MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE WITH SOME PYRITE BLEBS.
26	57.15	58.12	0.97	52			MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE.
26	58.12	59.05	0.93	49			MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE.
27	59.05	60.08	1.03	47			MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE, QUITE REGULAR FRACTURING, PYRITE BLEBS (1.0MM).
27	60.08	60.25	0.17	45			MUDSTONE	CLYD.DK.GY.SHRD POOR - MOD CONSOLIDATION, QTZ & CLAY FILLED FRACTURES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	60.25	60.34	0.09	45			ROCK LOSS	
27	60.34	60.94	0.60	44			MUDSTONE	SLTY.DK.GY.BRKN SAME AS SLTY MUDST ABOVE, PYRITE BLEBS (ONE 1.5CM LONG).
28	60.94	61.09	0.15	43			MUDSTONE	SLTY.DK.GY.BRKN FRACTURED WITH SOME QTZ FILL, MINOR DISSEMINATED PYRITE, LISTRIC SURFACES.
28	61.09	62.39	1.30	41			SILTSTONE	DK.GY.BRKN MUDDY, COARSER GRAINED TOWARDS BASE OF UNIT, PYRITE DISSEMINATED AND SMALL BLEBS, OCC QTZ FILLED FRACTURE.
28	62.39	62.79	0.40	*39			SILTSTONE	M-DK.GY.LAM INTERLAM WITH MUDST OCC QTZ FILLED FRACTURE.
29	62.79	63.97	1.18	43			SILTSTONE	DK.GY.BRKN MUDDY, DISSEMINATED PYRITE, FRACTURED QTZ FILL.
29	63.97	64.68	0.71	47			SILTSTONE	DK.GY.BRKN MUDDY, AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	64.68	66.65	1.97	*53			SILTSTONE	DK.GY.BRKN MUDDY AS ABOVE, WITH DISCONTINUOUS MUDS T LAM.
31	66.65	67.41	0.76	*24			SILTSTONE	M-DK.GY.LAM.SSD.SLD WITH SSSY INTERLAMs, MINOR SSD.
31	67.41	68.58	1.17	29			SILTSTONE	M-DK.GY.LAM.BRKN AS ABOVE WITH TALC FILLED FRACTURES, DI SSEMINATED PYRITE IN TOWARDS BASE.
32	68.58	68.89	0.31	32			SILTSTONE	WITH NUMEROUS FINE TALC AND QTZ FILLED FRACTURES.
32	68.89	69.59	0.70	*35			SILTSTONE	SSY.M.GY.LAM.BRKN NUMEROUS FINE CLAY FILLED FRACTURES.
32	69.59	70.32	0.73	38			SILTSTONE	M.GY.LAM.BRKN WITH OCC QTZ FILLED FRACTURE.
33	70.32	72.42	2.10	44			SILTSTONE	DK.GY.BRKN MUDDY, REGULAR FRACTURING @ 39 DEGREE, OCC DISSEMINATED PYRITE, BECOMING SSSY T OWARDS BASE.
34	72.42	72.55	0.13	49			SILTSTONE	SSY.M.GY.SLD DISSEMINATED PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	72.55	72.75	0.20	49			SILTSTONE	SSY.LT-M.GY.SLD MINOR QTZ FILLED FRACTURES.
34	72.75	73.07	0.32	51			SILTSTONE	SSY.M.GY.LAM.BRKN WITH SSSY LAM, DISSEMINATED PYRITE BLEBS
34	73.07	74.36	1.29	*54			SILTSTONE	M-DK.GY.LAM.BRKN WITH MUDST LAMS, DISSEMINATED PYRITE & OCC BLEBS.
35	74.36	75.32	0.96	50			SILTSTONE	DK.GY.BRKN MUDDY, CLAY FRACTURE FILL NEAR BASE, BR EAKS EASILY, QUITE FRACTURED NEAR BASE. ALMOST FEATURELESS.
35	75.32	75.47	0.15	49			ROCK LOSS	
35	75.47	75.80	0.33	*48			SILTSTONE	M-DK.GY.LAM.BRKN WITH SSSY LAM, DISCONTINUOUS MUDST MISPS
35	75.80	76.14	0.34	50			SILTSTONE	M.GY.LAM.BRKN WITH SSSY LAM, ABUNDANT QTZ VEINING.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	76.14	76.27	0.13	*52		SANDSTONE	VFG.LT-M.GY.LAM.BRKN INTERLAM WITH SLTST, FINE QTZ FILLED FRACTURES WITH <1MM DISPLACEMENT, LISTRIC SURFACES PARALLEL TO BDG.
36	76.27	76.89	0.62	52		SILTSTONE	M-DK.GY.LAM.BRKN ABUNDANT LISTRIC SURFACES. DISCONTINUOUS SSSY LAM.
36	76.89	78.06	1.17	53		SILTSTONE	M-DK.GY.BRKN 4CM QTZ VEIN @ TOP, ZONES OF DISCONTINUOUS PYRITE WISPS. FAIRLY UNDISTINGUISHED.
37	78.06	78.39	0.33	54		SANDSTONE	VFG.LT-M.GY.BRKN WITH 1CM BAND OF ABUNDANT DISSEMINATED PYRITE NEAR TOP. QTZ FRACTURE FILL AND 1CM VEIN.
37	78.39	78.56	0.17	54		SANDSTONE	VFG.LT-M.GY.BRKN DISSEMINATED PYRITE BAND AND DISCONTINUOUS SLTY WISPS.
37	78.56	79.87	1.31	54		SILTSTONE	MUDDY, DISSEMINATED PYRITE, ALMOST FEATURELESS, OCC LISTRIC SURFACE.
38	79.87	80.92	1.05	55		SILTSTONE	M.GY.BRKN PYRITE BLEBS, LISTRIC SURFACES. FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	80.92	81.12	0.20	56		ROCK LOSS	
38	81.12	81.21	0.09	56		SILTSTONE	M.GY.BRKN HIGH CLAY CONTENT, VERY FRACTURED.
38	81.21	81.26	0.05	56		SILTSTONE	M.GY.BRKN
38	81.26	81.96	0.70	56		SILTSTONE	DK.GY.BRKN BECOMING SANDIER TOWARDS BASE, SOME DISSEMINATED PYRITE BANDS, QTZ FRACTURE FILL NEAR BASE, SOME LISTRIC SURFACES.
39	81.96	82.58	0.62	57		SILTSTONE	SSY.M.GY.BRKN NUMEROUS QTZ FILLED FRACTURES, OCC PYRITE BLEB, SOME LISTRIC SURFACES.
39	82.58	82.89	0.31	*57		SILTSTONE	M-DK.GY.BRKN WITH DISCONTINUOUS MUDST WISPS, LISTRIC SURFACES.
39	82.89	83.17	0.28	55		SILTSTONE	SSY.LT-M.GY.BRKN MUDDY BAND (5.0CM) IN MIDDLE, QTZ FRACTURE FILL.
39	83.17	83.23	0.06	54		SILTSTONE	M.GY.VBRKN SSSY WISPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	83.23	83.30	0.07		53		ROCK LOSS	
39	83.30	83.74	0.44		51		SILTSTONE	M-DK.GY HIGHLY FRACTURED WITH QTZ & CLAY FILL. LISTRIC SURFACES, BREAKS EASILY.
39	83.74	83.94	0.20		49		SILTSTONE	M-DK.GY.SLD WITH DISCONTINUOUS PYRITE WISPS.
40	83.94	84.36	0.42		*47		SILTSTONE	M-DK.GY.BRKN MUDDY, HIGHLY FRACTURED WITH QTZ FILL.
40	84.36	85.79	1.43		45		SILTSTONE	M-DK.GY.BRKN OCC DISSEMINATED PYRITE, SOME QTZ FRACTURE FILL, FAIRLY FEATURELESS.
41	85.79	86.07	0.28		43		SILTSTONE	M.GY.BRKN FRACTURED, LISTRIC SURFACES.
41	86.07	86.22	0.15		43		SILTSTONE	M.GY.BRKN HIGHLY CLAY FILLED FRACTURES.
41	86.22	86.86	0.64		42		SILTSTONE	DK.GY.BRKN MUDDY, SOME DISSEMINATED PYRITE, OCC QTZ FILLED FRACTURE.
41	86.86	87.31	0.45		41		SILTSTONE	DK.GY.BRKN OCC QTZ FILLED FRACTURE, AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	87.31	87.89	0.58		39		SILTSTONE	M.GY.BRKN QTZ FRACTURE FILL, AS ABOVE.
42	87.89	88.02	0.13		39		SILTSTONE	SSY.LT-M.GY.SLD SOME SSD, MUCH FRACTURING.
42	88.02	88.22	0.20		38		SILTSTONE	SSY.LT-M.GY.VBRKN AS ABOVE.
42	88.22	88.30	0.08		38		ROCK LOSS	
42	88.30	89.13	0.83		*37		SANDSTONE	VFG.LT-M.GY.VTHNB.SSD.BRKN WITH BANDS OF INTERLAM SLTST, VFG.SS AND MUDST, HELMINTHOPSIS, QTZ FRACTURE FILL, OCC DISSEMINATED PYRITE BAND.
42	89.13	89.39	0.26		38		SANDSTONE	VFG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST & MUDST LAMS, ONE FG SS BED, LOAD CASTS SHOW TOPS UP, QTZ FRACTURE FILL.
43	89.39	89.48	0.09		38		SANDSTONE	VFG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE.
43	89.48	89.88	0.40		39		SILTSTONE	M.GY.VTHNB.BRKN WITH DISCONTINUOUS MUDST WISPS, SSY LAMS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	89.88	91.02	1.14	*40			SILTSTONE	MUDDY, DISCONTINUOUS MUDST WHISPS, AND BANDS OF SSY LAMS, FINE QTZ FILLED FRACTURES, SOME LISTRIC SURFACES, OCC PYRITE BLEBS.
44	91.02	91.38	0.36	35			SILTSTONE	M.GY.BRKN DISCONTINUOUS MUDST WHISPS, QTZ FRACTURE FILL, PYRITE BLEBS.
44	91.38	91.43	0.05	34			SILTSTONE	M.GY.VBRKN AS ABOVE.
44	91.43	91.75	0.32	*33			SILTSTONE	M.GY.SSD.BRKN WITH SSY LAM.
44	91.75	92.05	0.30	32			SILTSTONE	M.GY.VBRKN AS ABOVE. NUMEROUS LISTRIC SURFACES.
44	92.05	92.51	0.46	30			SILTSTONE	SSY.LT-M.GY.BRKN WITH VFG SS DISCONTINUOUS LAM, QTZ FILLED FRACTURES, MINOR SSD.
44	92.51	92.61	0.10	29			SILTSTONE	SSY.LT-M.GY.VBRKN AS ABOVE.
45	92.61	92.63	0.02	29			SILTSTONE	SSY.LT-M.GY.VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	92.63	93.05	0.42	28			SILTSTONE	SSY.LT-M.GY.VTHNB.BRKN FINE QTZ FRACTURE FILL AT TOP, BEDS OF SANDIER SLTST.
45	93.05	93.20	0.15	*27			SILTSTONE	SSY.LT-M.GY.LAM.SLD INTERLAM WITH VFG SS AND MUDST WHISPS.
45	93.20	94.51	1.31	*25			SILTSTONE	SSY.LT-M.GY.VTHNB.BRKN LAM TO VTHNB, AS ABOVE, VFG SS LAM ARE DISCONTINUOUS MUDST WHISPS, OCC QTZ FRACTURE FILL, FINER GRAINED NEAR BASE.
46	94.51	94.76	0.25	*74			SANDSTONE	VFG.M.GY.VTHNB.BRKN LAM TO VTHNB WITH SSY SLTST INTERLAM, QTZ FRACTURE FILL, LISTRIC SURFACE.
46	94.76	95.31	0.55	69			SILTSTONE	M-DK.GY.LAM.BRKN DISCONTINUOUS MUDST WHISPS PYRITE BLEBS, DISCONTINUOUS SSY LAM.
46	95.31	95.45	0.14	64			SILTSTONE	SSY.M.GY.LAM.BRKN AS ABOVE BUT WITH VFG SS LAM.
46	95.45	96.11	0.66	59			SILTSTONE	M.GY.LAM.BRKN AS ABOVE BUT OCC VFG SS LAM.
46	96.11	96.41	0.30	53			ROCK LOSS	

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	96.41	96.74	0.33	*49			SANDSTONE	YFG.M.GY.LAM.BRKN WITH SLTST LAM. MUCH FRACTURING WITH <1 MM DISPLACEMENT, QTZ & CLAY FILL, MINOR SSD.
46	96.74	97.04	0.30	61			ROCK LOSS	
46	97.04	97.16	0.12	69			SANDSTONE	FG.M.GY.BRKN YFG TO FG SS, HIGHLY FRACTURED, SOME BR ECCIATION.
46	97.16	97.77	0.61	*83			SANDSTONE	YFG.LT-M.GY.VTHNB.BRKN WITH OCC SLTST WHISPS, QTZ FRACTURE FIL L & VEINS. SOME LISTRIC SURFACES.
46	97.77	98.43	0.66	66			SANDSTONE	YFG.LT-M.GY.VBRKN AS ABOVE. MORE FRACTURED, POSSIBLE CORE LOSS.
47	98.43	98.66	0.23	54			SANDSTONE	YFG.LT-M.GY.BRKN AS ABOVE. WITH MORE CLAY THAN QTZ FILL.
47	98.66	99.52	0.86	*39			SANDSTONE	FG.LT-M.GY.BRKN QTZ FILLED FRACTURES, OCC FINER GRAINED WHISP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	99.52	99.77	0.25	31			SANDSTONE	FG.LT-M.GY.BRKN MUCH QTZ VEINS CREATING BRECCIA.
47	99.77	100.12	0.35	*26			SANDSTONE	YFG.M.GY.VTHNB.SSD.BRKN WITH SLTST LAM & WHISPS, OVERTURNED. SOME FRACTURING WITH QTZ FILL. LISTRIC SURFACES.
47	100.12	100.19	0.07	29			SANDSTONE	FG.LT-M.GY.BRKN QTZ FRACTURE FILL AND RARE FINER GRAINED WHISPS.
48	100.19	100.63	0.44	32			SANDSTONE	FG.LT-M.GY.BRKN FRACTURED WITH CLAY AND QTZ FILL.
48	100.63	101.21	0.58	*39			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN NOT AS FRACTURED, OCC FINER GRAINED WHISP, 4CM QTZ VEIN IN MIDDLE OF UNIT.
48	101.21	101.44	0.23	32			SANDSTONE	FG.LT-M.GY MUCH QTZ VEINING FORMING BRECCIA.
48	101.44	101.86	0.42	*26			SANDSTONE	YFG.LT-M.GY.LAM.WRMBU.BRKN WITH SLTST INTERLAM. WRMBUR SHOWS TOPS DOWN. SSD. FRACTURED WITH QTZ FILL.
49	101.86	101.94	0.08	26			SANDSTONE	MG.LT.GY.VBRKN THICK QTZ VEIN WITH BRECCIA.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	101.94	102.32	0.38	27		SANDSTONE	MG.LT.GY.VBRKN AS ABOVE.
49	102.32	103.55	1.23	28		SANDSTONE	MG.LT.GY.BRKN AS ABOVE, OCC VFG CLAST.
49	103.55	104.00	0.45	30		ROCK LOSS	
50	104.00	104.40	0.40	31		SANDSTONE	MG.LT.GY.VBRKN AS ABOVE, ROUNDED RUBBLE PROBABLE CORE LOSS.
50	104.40	105.08	0.68	32		SANDSTONE	FG.LT.GY.BRKN GRAIN SIZE GRADES FROM MG TO FG DOWNWARD, SLTY WHISPS SEEN TOWARDS BASE.
50	105.08	105.68	0.60	*33		SANDSTONE	SLTY.M.GY.LAM.BRKN INTERBEDDED WITH SLTST AND DISCONTINUOUS MUDST WHISPS.
51	105.68	106.30	0.62	*30		SILTSTONE	M.GY.VTHNB.BRKN WITH VFG & FG SS INTERBEDS, DISCONTINUOUS MUDST WHISPS, MINOR SSD.
51	106.30	107.64	1.34	*13		SILTSTONE	M.GY.VTHNB.BRKN AS ABOVE, BDG IS LAM TOWARDS BASE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	107.64	109.06	1.42	*16		SILTSTONE	M.GY.VTHNB.BRKN AS ABOVE INTERBEDDED WITH VFG SS. LOAD CAST SHOWS OVERTURNED. MORE SS THAN SLTST TOWARDS BASE.
52	109.06	109.24	0.18	16		SANDSTONE	VFG.M.GY.VTHNB.BRKN AS ABOVE.
53	109.24	110.15	0.91	17		SANDSTONE	VFG.M.GY.VTHNB.BRKN AS ABOVE, SS IS VFG TO FG. SOME SSD.
53	110.15	110.43	0.28	17		SANDSTONE	VFG.M.GY.VTHNB.VBRKN AS ABOVE, MOST BREAKS ALONG BDG. LISTRIC SURFACES.
53	110.43	110.77	0.34	*17		SANDSTONE	FG.M.GY.VTHNB.BRKN WITH SLTST LAM.
54	110.77	111.04	0.27	17		SANDSTONE	FG.M.GY.VTHNB.VBRKN AS ABOVE BUT SLTST IS WHISPS. END OF HOLE. DRILLER'S MARKER. TD = 111.04.

* DENOTES MEASURED BCA
NEWPAGE

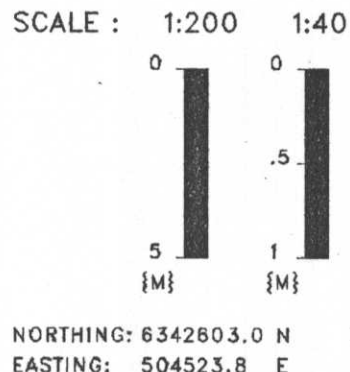
748

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88002

GEOLOGIST : LEE

DATE : FEB 21/89

DRAWING NO. :



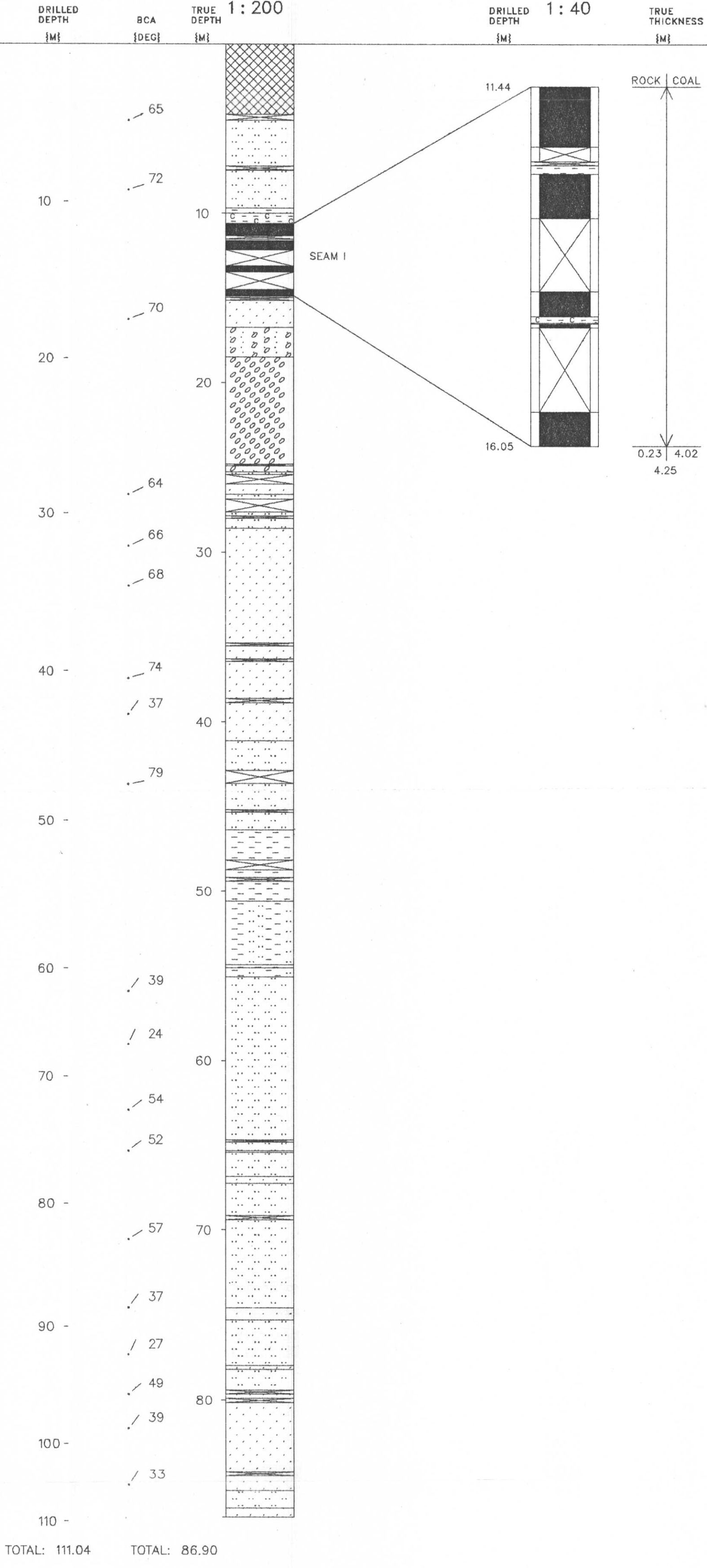
NORTHING: 6342603.0 N
 EASTING: 504523.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



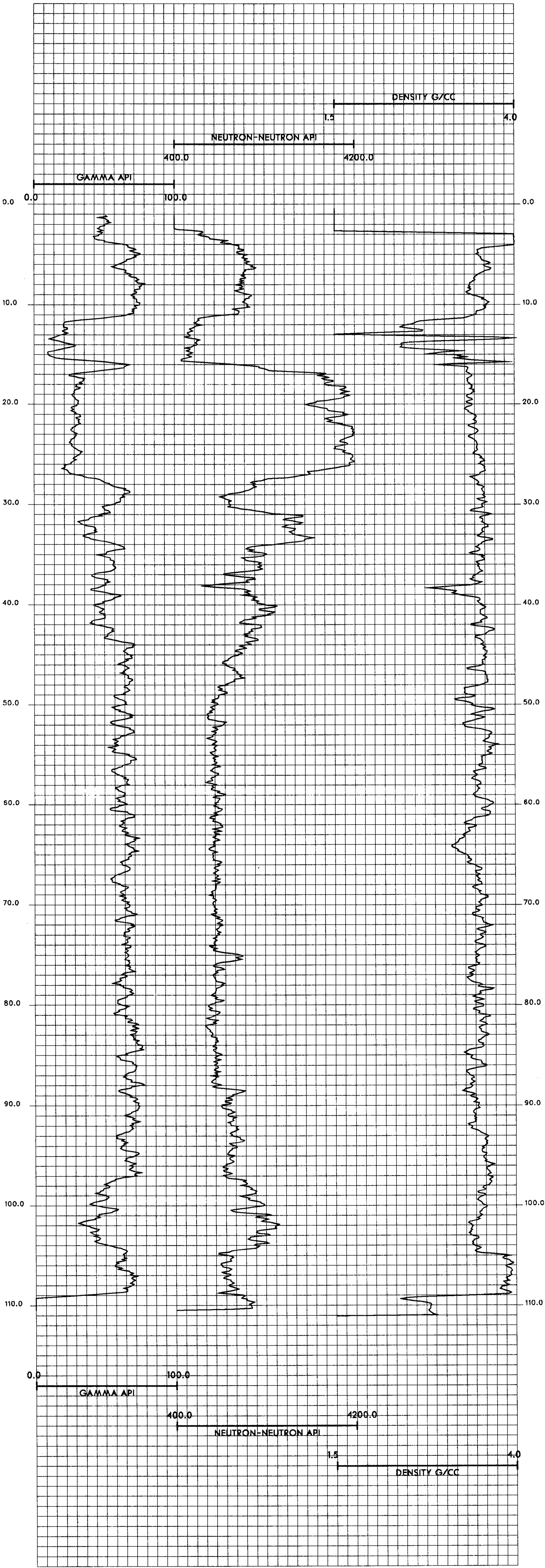
748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88002	Province: BC	Northing: 6342600.00	Lat: 571342
Log Date: 88-06-11	Zone: 9	Easting: 504524.00	Long: 1285530
Company: CENTURY	Measuring Point: GROUND LEVEL	Elevation: 1689.1	
Geologist: LEE			
Scale: 1 to 200.0	Comments:		
Depth Range: 0.0 to 116.0	1. LOGGED THROUGH RODS		
True Thickness: NO	2.		

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88003

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88003

DATE - 02/15/89

- HISTORY -

START DATE - 06/12/88
END DATE - 06/14/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED 5 SEAMS: J,K,K/L,L?,M?. AQUIFER =164.
14M.

- LOCATION -

PROVINCE - BC
ELEVATION - 1672.11

ZONE - 9
NORTHING - 6342751.59
EASTING - 505627.23

LICENCE/LEASE NUMBER - 7148

LATITUDE - 571347
LONGITUDE - 1285424

- ORIENTATION -

LENGTH - 170.00
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-003

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

M ?
L ?



4.57 m

2.36 m

K/L

6.11 m

K

3.10 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



Gulf Canada Resources Limited

GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88003 SEAM : K INTERVAL(M) : 115.69 - 119.01 ELEVATION(M) : 1672.1
 GEOLOGIST : KRAUS SCALE: 1:40 DATE : JAN 25/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG	
	115.69			0.52												
				0.99	100.0	10422	10	1.44 / 0.17	0.95	37.18	7.39	54.48	1.19	19.78		
	117.42			0.18												
				0.43												
	119.01			1.54	100.0	10423	11	1.48 / 0.00	0.81	28.88	7.19	65.34	0.57	24.40		

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	70			OVERBURDEN	CASING DEPTH
1	4.57	5.22	0.65	70			CONGLOMERATE	PBL. MOD. LT. GY. MAS. YBRKN DISSEMINATED PYRITE. POLYMIC TIC - CHERT SST PEBBLES. MEDIUM GRAINED SANDY MATR IX. PPL ALTERATION TO PYRITE. MATRIX SM OOTH SHEARING. LARGEST PEBBLE - 15MM. A VERAGE PBLE - 9MM. QUARTZ FRACTURE FILL
1	5.22	5.33	0.11	70			CONGLOMERATE	MOD. LT. GY. MAS. SLD AS ABOVE. POSSIBLE CORE LOSS.
1	5.33	5.41	0.08	70			ROCK LOSS	
1	5.41	5.93	0.52	70			SANDSTONE	MG. WEL. S-P. GY. MAS. YBRKN QTZ FRACTURE FILL. RANDOM PEBBLE BAND. SMOOTH SHEARING.
2	5.93	6.30	0.37	70			SANDSTONE	MG. WEL. S-P. GY. MAS. SLD HIGHLY FRACTURED. QTZ INFILL. SHEARED. LISTRIC SURFACES.
2	6.30	7.53	1.23	70			SANDSTONE	MG. WEL. S-P. GY. MAS. YBRKN POSSIBLE CORE LOSS. QTZ FRACTURE INFILL HIGHLY SHEARED LISTRIC SURFACES. SOME PYRITE DISSEMINATION.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	7.53	7.79	0.26	70			ROCK LOSS	
3	7.79	9.32	1.53	70			SILTSTONE	CLYY. VFG. VWEL. DK. GY. MAS. BRKN CLAY FRACTURE FILL - VERY SOFT. HEAVILY FRACTURED - MAJORITY OF CORE IS CLAY.
3	9.32	9.66	0.34	*70			SANDSTONE	SLTY. VFG. VWEL. M. GY. VTHNB. SSD. BRKN QTZ FRACTURE FILL. FLAME STRUCTURE INDI CATES TOPS UP. SANDY LAYERS ALTERNATE W ITH SILTY.
4	9.66	9.92	0.26	*72			SANDSTONE	SLTY. VFG. VWEL. M. GY. VTHNB. SLD CLAY FRACTURE FILL (SECONDARY FRACTURE) . SMALL QTZ FILL FRACTURES.
4	9.92	10.77	0.85	*73			SANDSTONE	SLTY. VFG. VWEL. LT-M. GY. VTHNB. SSD. SLD SAND & SILTY LAYERS ALTERNATE. LOAD STR UCTURES INDICATE TOPS. QTZ FRACTURE FIL L.
4	10.77	11.69	0.92	*75			SANDSTONE	SLTY. VFG. VWEL. LY-M. GY. VTHNB. SSD. SLD LOAD STRUCTURES - TOPS UP. AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	11.69	12.47	0.78	*70			SANDSTONE	SLTY.VFG.VMEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. GETTING FENER SAND BEDS. QTZ FRACTURE FILL. FENER SS LAYERS AS MOVE DOWN.
5	12.47	13.35	0.88	*71			SILTSTONE	VFG.VMEL.M-DK.GY.THNB.SSD.SLD FEM.SST.INTERBEDS.VTHNB.LOAD.STRUCTURE - TOPS UP. QTZ INFILL FRACTURE.
5	13.35	13.70	0.35	73			SILTSTONE	CLYY.VFG.VMEL.DK.GY.VBRKN QTZ FRACTURE FILL. CLAY FRACTURE (SECONDARY). SOFT CORE - MAJORITY CLAY.
5	13.70	13.76	0.06	74			ROCK LOSS	
6	13.76	13.88	0.12	74			SILTSTONE	CLYY.VFG.VMEL.DK.GY.SLD AS ABOVE.
6	13.88	14.73	0.85	75			SILTSTONE	CLYY.VFG.VMEL.DK.GY.SLD AS ABOVE.
6	14.73	15.50	0.77	*78			SANDSTONE	SLTY.VFG.VMEL.M.GY.VTHNB.SSD.SLD LISTRIC SHEARED SURFACES WITH SMEARED P YRITE. QTZ FRACTURE FILL. LOAD CAST - TOPS UP. SLTST & SST INTERBEDS.
6	15.50	15.71	0.21	74			SANDSTONE	VMEL.S-P.GY.MAS.SLD QTZ VEIN. FEW SMALL SLTY INTERBEDS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	15.71	15.87	0.16	*72			SILTSTONE	SSY.VFG.VMEL.M.GY.VTHNB.SLD SLIGHTLY SHEARED. SST & SLTST INTERBEDS. QTZ FRACTURE FILL.
7	15.87	16.11	0.24	*72			SILTSTONE	SSY.VFG.VMEL.M.GY.LAM.SLD AS ABOVE - LESS SHEARED.
7	16.11	16.72	0.61	72			SANDSTONE	VFG.VMEL.S-P.GY.MAS.SLD QTZ FRACTURE FILL.
7	16.72	16.75	0.03	72			SILTSTONE	SSY.VFG.VMEL.M.GY.LAM.SLD QTZ FRACTURE FILL. SLIGHTLY SHEARED.
7	16.75	17.16	0.41	72			SILTSTONE	SSY.VFG.VMEL.M.GY.LAM.SLD AS ABOVE.
7	17.16	17.63	0.47	*72			SANDSTONE	SLTY.VFG.VMEL.LT-M.GY.VTHNB.BIOTR INTERBEDDED. LOAD CASTS - TOPS UP.
8	17.63	18.09	0.46	72			SANDSTONE	SLTY.VFG.VMEL.LT-M.GY.VTHNB.BIOTR BRKN AS ABOVE WITH QTZ FRACTURE FILL. POSSIBLE CORE LOSS.
8	18.09	18.16	0.07	72			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	18.16	19.64	1.48	*73			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SS. SOME SLIGHT BIOTURB B (HORN BURROW?). QTZ FRACTURE FILL. L OAD CASTS - TOPS UP.
9	19.64	21.60	1.96	*65			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. BRKN AS ABOVE. HORN BURROW & FECAL PELLETS.
10	21.60	22.72	1.12	*73			SILTSTONE	SSY. SSD. SLD FEW SS BEDS. LOAD CASTS - TOPS UP. FECA L PELLETS THROUGHOUT. QTZ FRACTURE FILL
10	22.72	23.66	0.94	*72			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD FEW INTERBEDS SS. FECAL PELLETS ASSOC W ITH. SOME SLIGHT BIOTURB. TOPS UP. FRAC TURE WITH QTZ INFILL.
11	23.66	25.63	1.97	*72			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. PYRITE DISSEMINATION.
12	25.63	25.75	0.12	*70			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. NO PYRITE.
12	25.75	27.58	1.83	*70			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. 10CM BANDS OF BIOTURB.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	27.58	28.75	1.17	*69			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. BIOTURB. FECAL PELLETS AT TOP
13	28.75	29.56	0.81	*69			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. SSD. SLD AS ABOVE. NO VISIBLE BEDDING. QTZ VEIN. TOPS UP. NO BIOTURB.
14	29.56	31.53	1.97	*65			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. SSD. SLD AS ABOVE. FEWER SS BANDS. 1 LARGE SS BL EB APPROX 9CM CUTS ACROSS BEDDING. POSS IBLE SLUMP FEATURE.
15	31.53	31.65	0.12	*67			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. SSD. SLD AS ABOVE. TOPS UP. NO BIOTURB. NO BEDDI NG. QTZ VEIN.
15	31.65	33.59	1.94	*65			SILTSTONE	SSY. VFG. VMEL. LT-M. GY. SSD. SLD AS ABOVE. FECAL PELLETS. POSSIBLE BIOTU RB.
16	33.59	34.73	1.14	*66			SILTSTONE	SSY. VFG. SSD. BRKN AS ABOVE. NO BIOTURB. QTZ VEINS. LOAD C ASTS TOPS UP. POSSIBLE CORE LOSS.
16	34.73	35.04	0.31	64			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.04	35.82	0.78	*63			SILTSTONE	SSY.VFG.VHCL.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE. BEDDING NOT VISIBLE IN SLTST. BEDDING VISIBLE IN COARSER SS.
17	35.82	37.67	1.85	*76			SILTSTONE	SSY.VFG.VHCL.LT-M.GY.VTHNB.SSD VBRKN CORE LOSS. BEDDING NOT ALWAYS SEEN. LOA D CASTS - TOPS UP. FECAL PELLETS.
18	37.67	38.12	0.45	75			ROCK LOSS	
18	38.12	38.26	0.14	74			SILTSTONE	SSY.VFG.VHCL.LT-M.GY.VBRKN POSSIBLE CORE LOSS. BEDDING NOT SEEN. S SD IS FAINT.
18	38.26	38.28	0.02	74			ROCK LOSS	
18	38.28	39.98	1.70	74			SILTSTONE	SSY.VFG.VHCL.M.GY.VTHNB.VBRKN HEAVILY FRACTURED. SHEARING - LISTRIC S URFACES. FRACTURED - CLAY FILL. SOME QT Z VEINS. CORE LOSS POSSIBLE.
18	39.98	40.41	0.43	72			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	40.41	41.11	0.70	72	10407	M? ROOF	MUDSTONE	SLTY.M.GY.SHRD BRECCIATED SLIGHTLY. BECOMES CARB TOWAR DS BASE. VERY SLTY. LOWER 25CM SAMPLED. O? ROOF ROCK.
19	41.11	41.73	0.62	71	10408	M?	COAL LOSS	
19	41.73	41.84	0.11	71	10408	M?	COAL	C-2.BLK.VBRKN POWDERY WHEN BROKEN.
19	41.84	41.88	0.04	71	10408	M?	MUDSTONE	DK.GY.BRKN
19	41.88	42.05	0.17	71	10408	M?	COAL	C-3.BLK.VBRKN SOME C-2 BANDS, BRITTLE & CRUMBLY.
19	42.05	42.11	0.06	70	10408	M?	COAL	C-4.BLK.PHRD
19	42.11	42.56	0.45	70	10408	M?	COAL LOSS	
19	42.56	42.61	0.05	70	10408	M?	MUDSTONE	CARB.BLK.VSHRD
19	42.61	42.91	0.30	70	10408	M?	COAL	C-4.BLK.PHRD INTERMIXED MUD & COAL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	42.91	42.94	0.03	70	10408	M?	MUDSTONE	CARB. BLK. VSHRD
19	42.94	43.14	0.20	69	10408	M?	COAL LOSS	
19	43.14	43.23	0.09	69	10408	M?	ROCK LOSS	
19	43.23	43.34	0.11	69	10408	M?	COAL LOSS	
19	43.34	43.38	0.04	69	10408	M?	COAL	C-3. BLK. PHRD
19	43.38	43.41	0.03	69	10408	M?	COAL	C-3. BLK. VBRKN
19	43.41	43.45	0.04	69	10408	M?	COAL	C-4. BLK. PHRD
19	43.45	43.47	0.02	69	10408	M?	MUDSTONE	CARB. BLK. BRKN
19	43.47	43.52	0.05	69	10408	M?	COAL	C-4. BLK. VBRKN
20	43.52	43.56	0.04	69	10408	M?	COAL	C-4. BLK. VBRKN
20	43.56	43.59	0.03	69	10408	M?	COAL	C-2. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	43.59	43.62	0.03	69	10408	M?	COAL	C-3. BLK. VBRKN
20	43.62	43.66	0.04	69	10408	M?	COAL	C-5. BLK. VBRKN
20	43.66	43.70	0.04	69	10408	M?	COAL	C-3. BLK. VBRKN
20	43.70	43.73	0.03	69	10408	M?	COAL	C-4. BLK. VBRKN INTERBANDED MUD & C-3.
20	43.73	43.83	0.10	69	10408	M?	COAL	C-3. BLK. PHRD
20	43.83	44.23	0.40	68	10408	M?	COAL	C-3. BLK. PHRD INTERMIXED COAL (C-2, C-3, C-4) AND MUD
20	44.23	44.33	0.10	68	10408	M?	MUDSTONE	CARB. BLK. VSHRD
20	44.33	44.48	0.15	68	10408	M?	COAL	C-3. BLK. PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	44.48	44.52	0.04	68	10408	M?	COAL	C-4. BLK. VBRKN
20	44.52	44.62	0.10	68	10408	M?	COAL	C-2. BLK. VBRKN WELL CLEATED.
20	44.62	44.66	0.04	68	10408	M?	COAL	C-4. BLK. SHRD
20	44.66	44.71	0.05	68	10408	M?	COAL	C-2. BLK. SHRD
20	44.71	44.82	0.11	68	10408	M?	COAL LOSS	
20	44.82	44.91	0.09	67	10408	M?	ROCK LOSS	
20	44.91	44.97	0.06	67	10408	M?	MUDSTONE	BLK. SHRD CARB. NEAR. BASE.
21	44.97	45.12	0.15	67	10408	M?	COAL	C-1. BLK. BRKN WELL CLEATED. SOME C-1 BANDS CLOSE TO C 1.
21	45.12	45.14	0.02	67	10408	M?	COAL	C-2. BLK. SLD WELL CLEATED.
21	45.14	45.21	0.07	67	10408	M?	COAL	C-2. BLK. BRKN WELL CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	45.21	45.30	0.09	67	10408	M?	MUDSTONE	DK. BN. BRKN
21	45.30	45.52	0.22	67	10408	M?	COAL	C-1. BLK. BRKN VERY WELL CLEATED.
21	45.52	45.55	0.03	67	10408	M?	COAL	C-2. BLK. BRKN WELL CLEATED.
21	45.55	45.57	0.02	67	10408	M?	COAL	C-4. BLK. BRKN
21	45.57	45.59	0.02	67	10408	M?	MUDSTONE	BLK. SLD PASTY.
21	45.59	45.60	0.01	67	10408	M?	COAL	C-1. BLK. SLD
21	45.60	45.62	0.02	67	10408	M?	COAL	C-2. BLK. VBRKN
21	45.62	45.64	0.02	67	10408	M?	COAL	C-6. BLK. SLD HARD.
21	45.64	45.78	0.14	67	10408	M?	COAL	C-2. BLK. BRKN WELL CLEATED.
21	45.78	45.88	0.10	66	10408	M?	COAL	C-1. BLK. BRKN VERY WELL CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	45.88	46.01	0.13	66	10408	M?	COAL LOSS	
21	46.01	46.11	0.10	66	10409	M?	ROCK LOSS	
21	46.11	46.18	0.07	66	10409	M?	MUDSTONE	CARB. BLK. BRKN SLIGHTY SHEARED.
21	46.18	46.21	0.03	66	10409	M?	COAL	C-4. BLK. VBRKN INTERLAM C-1 & C-6.
21	46.21	46.26	0.05	66	10409	M?	MUDSTONE	CARB. BLK. SLD
21	46.26	46.40	0.14	66	10409	M?	COAL	C-5. BLK. BRKN
21	46.40	46.43	0.03	66	10409	M?	COAL	C-6. BLK. SLD
21	46.43	46.46	0.03	66	10409	M?	COAL	C-4. BLK. SLD
21	46.46	46.48	0.02	66	10409	M?	COAL	C-1. BLK. SLD
21	46.48	46.50	0.02	66	10409	M?	COAL	C-6. BLK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	46.50	46.51	0.01	66	10409	M?	COAL	C-1. BLK. SLD
21	46.51	46.59	0.08	66	10409	M?	COAL	C-4. BLK. VBRKN
21	46.59	46.61	0.02	66	10409	M?	COAL	C-6. BLK. BRKN
21	46.61	46.65	0.04	66	10409	M?	COAL	C-2. BLK. BRKN
21	46.65	46.79	0.14	66	10409	M?	COAL	C-3. BLK. BRKN ABUNDANT C-1 WITH 0.5 - 1 CM C-6 BANDS.
21	46.79	46.85	0.06	65	10409	M?	MUDSTONE	CARB. BLK. BRKN
22	46.85	46.87	0.02	65	10409	M?	COAL	C-1. BLK. SLD
22	46.87	46.99	0.12	65	10409	M?	COAL	C-4. BLK. BRKN
22	46.99	47.07	0.08	65	10409	M?	MUDSTONE	CARB. BLK. BRKN
22	47.07	47.12	0.05	65	10409	M?	COAL	C-3. BLK. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	47.12	47.15	0.03	65	10409 M?	COAL	C-2.BLK.SLD
22	47.15	47.22	0.07	65	10409 M?	COAL	C-6.BLK.BRKN
22	47.22	47.27	0.05	*65	10409 M?	MUDSTONE	CARB.DK.GY.SLD VERY HARD.
22	47.27	47.29	0.02	65	10409 M?	COAL	C-4.BLK.BRKN
22	47.29	47.32	0.03	65	10409 M?	COAL	C-3.BLK.SLD
22	47.32	47.41	0.09	65	10409 M?	COAL	C-4.BLK.BRKN C-1 SLIVERS IN C-6.
22	47.41	47.48	0.07	65	10409 M?	MUDSTONE	CARB.BLK.SLD
22	47.48	47.55	0.07	64	10409 M?	COAL	C-3.BLK.SLD
22	47.55	47.59	0.04	64	10409 M?	COAL	C-4.BLK.BRKN
22	47.59	47.69	0.10	64	10409 M?	MUDSTONE	CARB.BLK.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	47.69	47.80	0.11	64	10409 M?	COAL	C-3.BLK.BRKN
22	47.80	47.89	0.09	64	10409 M?	MUDSTONE	CARB.BLK.BRKN
22	47.89	47.96	0.07	64	10409 M?	COAL	C-5.BLK.BRKN
22	47.96	48.00	0.04	63	10409 M?	COAL	C-3.BLK.BRKN
22	48.00	48.26	0.26	63	10409 M?	COAL LOSS	
22	48.26	48.36	0.10	63	10409 M?	ROCK LOSS	
22	48.36	48.46	0.10	63	10409 M?	COAL LOSS	
22	48.46	48.56	0.10	62	10409 M?	ROCK LOSS	
22	48.56	48.69	0.13	62	10409 M?	MUDSTONE	CARB.BLK.BRKN
22	48.69	48.72	0.03	62	10409 M?	COAL	C-2.BLK.BRKN
22	48.72	48.78	0.06	62	10409 M?	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	48.78	49.00	0.22	62	10410 M? FLOOR	MUDSTONE	CARB. BLK. BRKN VERY HARD. VERY CARB AT BASE. SAMPLED A LL. O? SEAM FLOOR ROCK.
23	49.00	50.50	1.50	60		MUDSTONE	CARB. BLK. SHRD VERY CARB. BECOMES C-6 LOCALLY.
23	50.50	50.58	0.08	58		ROCK LOSS	
23	50.58	50.61	0.03	58		COAL	C-4. BLK. PHRD
23	50.61	50.64	0.03	58		ROCK LOSS	
23	50.64	51.01	0.37	57		MUDSTONE	CARB. BLK. BRKN ABUNDANT HAIRLINE FRACTURES (CARBONATE FILLED). 5CM CALCAREOUS SLTST BAND HALF WAY INTO UNIT.
24	51.01	52.91	1.90	*55		MUDSTONE	CARB. VFG. VVEL. BLK. VTHNB. BRKN THIN C-1 LAMINAE (<1CM. PLANT IMPRESSION S LAYERED, INTERBEDDED (NOT IDENTIFIABL E). QUARTZ STRINGERS. BEDDING NOT ALWAY S VISIBLE. POSSIBLE CORE LOSS.
24	52.91	53.00	0.09	57		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	53.00	53.81	0.81	58		MUDSTONE	M. GY. BRKN PLANT FOSSILS PRESENT (MILSSONIA CANADE NSIS). SLIGHTLY SHEARED. BRECCIATED MU D CLASTS. EMBEDDED IN MUD MATRIX.
25	53.81	54.54	0.73	60	10414 L? ROOF	MUDSTONE	M-DK. GY. BRKN CARB NEAR BASE. LOWER 25CM SAMPLED. N? SEAM ROOF ROCK.
25	54.54	54.94	0.40	61	10415 L?	COAL LOSS	
25	54.94	55.04	0.10	62	10415 L?	COAL	C-6. BLK. BRKN QTZ VEINING.
25	55.04	55.07	0.03	62	10415 L?	COAL	C-3. BLK. BRKN
25	55.07	55.26	0.19	62	10415 L?	MUDSTONE	CARB. BLK. BRKN ABUNDANT HAIRLINE QTZ FILLED FRACTURES.
25	55.26	55.29	0.03	63	10415 L?	COAL	C-3. BLK. SLD
26	55.29	55.31	0.02	63	10415 L?	COAL	C-1. BLK. BRKN MODERATELY CLEATED.
26	55.31	55.37	0.06	63	10415 L?	COAL	C-3. BLK. SHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	55.37	55.42	0.05	63	10415 L?	COAL	C-5.BLK.VSHRD SHRD COAL & MUD. VERY HARD. NUMEROUS QTY VEINS.
26	55.42	55.46	0.04	63	10415 L?	MUDSTONE	CARB.BLK.SLD
26	55.46	55.51	0.05	63	10415 L?	COAL	C-3.BLK.BRKN
26	55.51	55.54	0.03	63	10415 L?	COAL	C-4.BLK.BRKN
26	55.54	55.68	0.14	63	10415 L?	COAL	C-3.BLK.SLD WELL CLEATED.
26	55.68	55.71	0.03	64	10415 L?	COAL	C-2.BLK.BRKN
26	55.71	55.78	0.07	64	10415 L?	COAL	C-3.BLK.VBRKN
26	55.78	55.87	0.09	64	10415 L?	COAL	C-3.BLK.SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	55.87	56.08	0.21	64	10415 L?	COAL	C-3.BLK.VBRKN BOARDER LINE C-2 TO C-3.
26	56.08	56.15	0.07	64	10415 L?	MUDSTONE	CARB.DK.BN.BRKN
26	56.15	56.19	0.04	65	10415 L?	COAL	C-3.BLK.SLD INTERBEDDED C-6 & C-1.
26	56.19	56.23	0.04	65	10415 L?	MUDSTONE	CARB.BLK.SLD
26	56.23	56.33	0.10	65	10415 L?	COAL	C-4.BLK.BRKN INTERBEDDED CARB MUD & C-1.
26	56.33	56.36	0.03	65	10415 L?	COAL	C-3.BLK.BRKN
26	56.36	56.37	0.01	65	10415 L?	COAL	C-6
26	56.37	56.39	0.02	65	10415 L?	COAL	C-2.BLK.BRKN
26	56.39	56.42	0.03	65	10415 L?	COAL	C-4.BLK.BRKN
26	56.42	56.51	0.09	65	10415 L?	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	56.51	56.55	0.04	65	10415	L?	MUDSTONE	DK.GY.BRKN
26	56.55	56.56	0.01	65	10415	L?	COAL LOSS	
26	56.56	56.65	0.09	66	10415	L?	COAL	C-2.BLK.BRKN
26	56.65	56.68	0.03	66	10415	L?	COAL	C-1.BLK.BRKN
26	56.68	56.70	0.02	66	10415	L?	COAL	C-3.BLK.BRKN WELL CLEATED.
26	56.70	56.84	0.14	66	10415	L?	COAL	C-2.BLK.BRKN WELL CLEATED.
26	56.84	56.88	0.04	66	10415	L?	MUDSTONE	CARB.BLK.VBRKN SHEARED MUD.
26	56.88	56.91	0.03	66	10415	L?	COAL	C-3.BLK.VBRKN
26	56.91	56.96	0.05	66	10415	L?	COAL	C-3.BLK.VBRKN MOD. CLEATED.
26	56.96	56.98	0.02	66	10415	L?	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	56.98	56.99	0.01	66	10415	L?	COAL	C-6.BLK.BRKN
26	56.99	57.00	0.01	66	10415	L?	COAL	C-3.BLK.BRKN
26	57.00	57.17	0.17	67	10415	L?	COAL LOSS	
27	57.17	57.72	0.55	67	10416	L? FLOOR	MUDSTONE	CARB.VFG.VWEL.DK.GY.SSD.BRKN COAL & QTZ STRINGERS. BEDDING NOT VISIB LE. SHEARED - LISTRIC SURFACES. UPPER 2 5CM SAMPLED. N? SEAM FLOOR ROCK.
27	57.72	57.98	0.26	68			SILTSTONE	SSY.VFG.VWEL.M.GY.SSD PYRITE DISSEMINATED. SS INTERBEDDED - T OPS UP.
27	57.98	59.12	1.14	*70			SANDSTONE	SLTY.VFG.VWEL.LT-M.GY.VTHNB.SSD BRKN LOAD CASTS - TOPS UP. PYRITE NODULES. P OSSIBLE CORE LOSS.
28	59.12	59.44	0.32	*69			SANDSTONE	SLTY.VFG.VWEL.LT-M.GY.VTHNB.BRKN FINING UPWARD. SLST INTERBEDS. RANDOM M UDST LAYERS. QTZ FRACTURE FILL. POSSIBL E CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	59.44	59.67	0.23	68			MUDSTONE	CARB. VFG. VMEL. BLK. VTHNB. SSD. BRKN CARBONACEOUS STRINGERS. POSSIBLE CORE LOSS. QTZ FRACTURE FILL. FORMAL IMPRESSIONS. LARGE SILTST CLAST - 5CM (RIPUP).
28	59.67	59.79	0.12	68			MUDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. BIOTR. SLD
28	59.79	60.94	1.15	*66			MUDSTONE	SLTY. VFG. VMEL. BLK. VTHNB. SSD. VBRKN LARGE SILT CLAST PRESENT. POSSIBLE CORE LOSS. QTZ STRINGERS & FRACTURE FILL. FEW COAL LAMS. CALCAREOUS REPLACEMENT OF SILT.
29	60.94	60.96	0.02	66			ROCK LOSS	
29	60.96	62.78	1.82	*65			MUDSTONE	CARB. VFG. MEL. M-DK. GY. VTHNB. SSD. BRKN STONE SIZE CLASTS FOUND. POSSIBLE BRECCIATED ZONE. SHEARING - LISTRIC SURFACES. COAL LAMS <1CM. SILT INTERBEDS. QTZ FRACTURE FILL. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	62.78	62.93	0.15	66			ROCK LOSS	
29	62.93	63.10	0.17	66			MUDSTONE	CARB. VFG. MEL. M-DK. GY. VTHNB. SSD. BRKN AS ABOVE.
30	63.10	65.02	1.92	67			MUDSTONE	CARB. VFG. MEL. M-DK. GY. VTHNB. SSD. BRKN POSSIBLE CORE LOSS. AS ABOVE. SILT INTERBEDS HAVE CALCAREOUS REPLACEMENT. COAL BAND 4CM THICK.
30	65.02	65.18	0.16	68			ROCK LOSS	
31	65.18	65.61	0.43	68			MUDSTONE	CARB. VFG. MEL. M. GY. SSD. BRKN QTZ STRINGERS. AS ABOVE. POSSIBLE CORE LOSS.
31	65.61	66.46	0.85	69			ROCK LOSS	
31	66.46	66.55	0.09	*69			BENTONITE	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	66.55	67.18	0.63	67		SANDSTONE	SLTY. VFG. WEL. LT. GY. VTHNB. SSD. SLD HRMBUR, FECAL PELLETS. BAIERA FURCATA. MUDDY LAMS.
31	67.18	68.48	1.30	*65		SANDSTONE	CLYY. VFG. VMEL. LT. GY. VTHNB. XBDG. SLD VERY SOFT; PITTED SURFACE.
32	68.48	70.16	1.68	*67		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN INCOMPLETE CALCAREOUS REXTALIZATION. Q TZ STRINGERS. INTERBEDDED WITH MUDDY SS OF VARYING THICKNESS <1CM TO 5CM. POSSIBLE CORE LOSS.
32	70.16	70.28	0.12	64		ROCK LOSS	
32	70.28	70.61	0.33	*63		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. INCREASING AMOUNT OF MUDDY SS
33	70.61	72.64	2.03	*67		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. TOPS INDICATED BY LOAD CASTS. DECREASING AMOUNT OF MG SS WITH DEPTH.
34	72.64	73.19	0.55	*71		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN POSSIBLE CORE LOSS. AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.19	73.21	0.02	71		ROCK LOSS	
34	73.21	74.65	1.44	*70		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. INCREASING MG SS. SMALL AMOUNT OF BIOTURB.
35	74.65	76.09	1.44	*65		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN BEDDING NOT ALWAYS VISIBLE. POSSIBLE CORE LOSS. SOME BIOTURB.
35	76.09	76.13	0.04	68		ROCK LOSS	
35	76.13	76.73	0.60	*70		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. TOPS INDICATED.
36	76.73	78.86	2.13	*63		SILTSTONE	SSY. VFG. VMEL. M. GY. LAM. SSD. SLD AS ABOVE. THINNER (<1CM) BEDS OF MUD SS. TOPS INDICATED.
37	78.86	79.18	0.32	66		SILTSTONE	SSY. VFG. VMEL. M. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
37	79.18	79.19	0.01	66		ROCK LOSS	
37	79.19	80.85	1.66	*68		SILTSTONE	SSY. VFG. VMEL. M. GY. LAM. SSD. SLD AS ABOVE. LOAD CASTS - TOPS UP. HRMBUR' S.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	80.85	81.97	1.12	67			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BIOTR AS ABOVE, QTZ FRACTURE FILL, WRMBUR'S, FECAL PELLETS.
38	81.97	82.77	0.80	*67			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BRKN AS ABOVE, NO BIOTURB. POSSIBLE CORE LOSS.
39	82.77	82.78	0.01	68			ROCK LOSS	
39	82.78	84.83	2.05	*70			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,SLD AS ABOVE, TOPS UP - LOAD CASTS.
40	84.83	86.94	2.11	*73			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,SLD AS ABOVE, WRMBUR POSSIBLE, NO SED STRUX VISIBLE.
41	86.94	87.71	0.77	*74			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,SSD,SLD SLIGHT SSD, INTERBEDDED WITH MUDDY SS AND MUDSTONE. CONTEMPORANEOUS FRACTURING.
41	87.71	88.14	0.43	73			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,SSD,BRKN PROBABLE CORE LOSS, AS ABOVE A 5CM BAND OF MUDDY.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	88.14	89.06	0.92	*72			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BIOTR,SLD AS ABOVE WITH LESS SS SOME MUDST LAYERS. ATHROTAXITE BERRYI PRESENT, WRMBUR AND FECAL PELLETS, RIP UP CLASTS.
42	89.06	90.65	1.59	*61			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BIOTR,BRKN AS ABOVE, WITHOUT FOSSILS, A BAND OF YBRKN MUDST, POSSIBLE CORE LOSS, QTZ FRACTURE FILL, SMALL COAL BAND <1CM.
42	90.65	90.72	0.07	61			ROCK LOSS	
42	90.72	90.95	0.23	61			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BIOTR,SLD MUDST LAYERS WITH COAL BANDS, VERY LITTLE SS.
43	90.95	93.05	2.10	*60			SILTSTONE	SSY,VFG,VHEL,M.GY,LAM,BIOTR,SLD AS ABOVE WITH BIOTURB MUDST/SLTST ALTERNATING WITH LAM SS/SLTST, POSSIBLE BIVALVE FOUND, CONTEMPORANEOUS FRACTURING, U SHAPED WRMBUR.
44	93.05	93.88	0.83	*72			SANDSTONE	SLTY,VFG,PR,M-DK,GY,LAM,SSD,BRKN LOAD CAST (RIGHT WAY UP), SOME VERY THIN BEDS, INTERLAM & BEDDED SLTST AND VFG SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	93.88	94.15	0.27	71			SILTSTONE	DK.GY.LAM.SLD
44	94.15	94.54	0.39	71	10417	K/L ROOF	MUDSTONE	DK.GY.BRKN CARB. NEAR BASE. LOWER 25CM SAMPLED. K/L SEAM ROOF ROCK.
44	94.54	94.62	0.08	71	10418	K/L	COAL	C-5.BLK.BRKN QTZ FRACTURE FILL. PYRITE STRINGERS.
44	94.62	94.66	0.04	71	10418	K/L	COAL	C-2.BLK.SLD QTZ FRACTURE FILL.
44	94.66	94.74	0.08	71	10418	K/L	MUDSTONE	CARB.BLK
44	94.74	94.77	0.03	71	10418	K/L	BENTONITE	TAN.SLD
44	94.77	94.94	0.17	71	10418	K/L	COAL LOSS	
44	94.94	95.05	0.11	71	10418	K/L	COAL	C-2.BLK.SLD
44	95.05	95.09	0.04	70	10418	K/L	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	95.09	95.13	0.04	70	10418	K/L	COAL	C-2.BLK.BRKN
44	95.13	95.15	0.02	70	10418	K/L	MUDSTONE	CARB.BLK.SHRD
44	95.15	95.20	0.05	70	10418	K/L	COAL	C-3.BLK.BRKN
44	95.20	95.25	0.05	70	10418	K/L	COAL	C-1.BLK.BRKN POORLY CLEATED.
45	95.25	95.28	0.03	70	10418	K/L	COAL	C-1.BLK.BRKN
45	95.28	95.68	0.40	70	10418	K/L	COAL	C-3.BLK.BRKN SOME SHEARING.
45	95.68	95.73	0.05	70	10418	K/L	COAL	C-2.BLK.BRKN SOME SHEARING.
45	95.73	95.76	0.03	70	10418	K/L	COAL	C-3.BLK.VSHRD
45	95.76	95.79	0.03	70	10418	K/L	MUDSTONE	CARB.BLK.SLD HARD.
45	95.79	96.23	0.44	70	10418	K/L	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	96.23	96.26	0.03	69	10418	K/L	MUDSTONE	CARB. BLK. BRKN
45	96.26	96.30	0.04	69	10418	K/L	COAL	C-1. BLK. BRKN
45	96.30	96.50	0.20	69	10418	K/L	COAL	C-3. BLK. VBRKN
45	96.50	96.59	0.09	69	10418	K/L	COAL	C-3. BLK. VBRKN
45	96.59	96.86	0.27	69	10418	K/L	COAL LOSS	
45	96.86	96.89	0.03	69	10418	K/L	MUDSTONE	CARB. BLK. SLD
45	96.89	96.93	0.04	69	10418	K/L	COAL	C-1. BLK. SHRD
45	96.93	97.00	0.07	69	10418	K/L	MUDSTONE	CARB. BLK. SLD ABUNDANT QTZ STRINGERS.
45	97.00	97.02	0.02	69	10418	K/L	COAL	C-1. BLK. SLD
45	97.02	97.09	0.07	69	10418	K/L	COAL	C-4. BLK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	97.09	97.21	0.12	68	10418	K/L	COAL	C-5. BLK. SLD
45	97.21	97.27	0.06	68	10418	K/L	COAL LOSS	
45	97.27	97.32	0.05	68	10418	K/L	COAL	C-1. BLK. SLD
45	97.32	97.46	0.14	68	10418	K/L	COAL	C-3. BLK. BRKN
46	97.46	97.51	0.05	68	10418	K/L	COAL	C-4. BLK. VBRKN
46	97.51	97.61	0.10	68	10418	K/L	MUDSTONE	CARB. BLK. BRKN
46	97.61	97.66	0.05	68	10418	K/L	COAL	C-2. BLK. SLD
46	97.66	97.71	0.05	68	10418	K/L	COAL	C-5. BLK. BRKN
46	97.71	97.81	0.10	68	10418	K/L	COAL	C-2. BLK. BRKN
46	97.81	97.86	0.05	68	10418	K/L	MUDSTONE	CARB. BLK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	97.86	98.08	0.22	68	10418	K/L	COAL	C-2. BLK. BRKN WELL CLEATED.
46	98.08	98.10	0.02	68	10418	K/L	COAL	C-5. BLK. SLD
46	98.10	98.56	0.46	67	10418	K/L	COAL	C-2. BLK. BRKN ABUNDANT C-1 BANDS.
46	98.56	98.63	0.07	67	10419	K/L	MUDSTONE	CARB. BLK. BRKN
46	98.63	98.72	0.09	67	10419	K/L	ROCK LOSS	
46	98.72	99.02	0.30	67	10419	K/L	COAL LOSS	
46	99.02	99.15	0.13	67	10419	K/L	COAL	C-2. BLK. BRKN
46	99.15	99.18	0.03	67	10419	K/L	COAL	C-1. BLK. BRKN
46	99.18	99.24	0.06	67	10419	K/L	COAL	C-6. BLK. SLD
46	99.24	99.28	0.04	66	10419	K/L	MUDSTONE	CARB. BLK. SLD
46	99.28	99.35	0.07	66	10419	K/L	COAL	C-2

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	99.35	99.52	0.17	66	10419	K/L	COAL LOSS	
46	99.52	99.54	0.02	66	10419	K/L	COAL	C-5. BLK. BRKN
46	99.54	99.64	0.10	66	10419	K/L	COAL	C-3. BLK. VBRKN
46	99.64	99.70	0.06	66	10419	K/L	MUDSTONE	CARB. BLK. SLD VERY HARD. QTZ FILLED VOIDS AND CRACKS.
46	99.70	99.75	0.05	66	10419	K/L	COAL	C-2. BLK. BRKN
46	99.75	99.83	0.08	66	10419	K/L	COAL	C-4. BLK. BRKN
46	99.83	99.92	0.09	66	10419	K/L	COAL	C-2. BLK. SLD WELL CLEATED.
47	99.92	100.11	0.19	66	10419	K/L	COAL	C-3. BLK. VBRKN SLIGHTLY SHEARED, RUBBLE.
47	100.11	100.13	0.02	66	10419	K/L	COAL	C-5. BLK. SLD
47	100.13	100.16	0.03	66	10419	K/L	MUDSTONE	CARB. BLK. SLD VERY HARD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	100.16	100.19	0.03	66	10419	K/L	COAL	C-2.BLK.VBRKN
47	100.19	100.29	0.10	66	10419	K/L	MUDSTONE	CARB.BLK.BRKN
47	100.29	100.39	0.10	65	10419	K/L	COAL	C-4.BLK.BRKN
47	100.39	100.45	0.06	65	10419	K/L	MUDSTONE	CARB.BLK.BRKN
47	100.45	100.61	0.16	65	10419	K/L	COAL	C-2.BLK.BRKN
47	100.61	100.69	0.08	65	10419	K/L	COAL	C-5.BLK.BRKN
47	100.69	100.85	0.16	65	10419	K/L	COAL	C-4.BLK.BRKN
47	100.85	100.93	0.08	65	10419	K/L	MUDSTONE	CARB.BLK.BRKN
47	100.93	101.01	0.08	65	10419	K/L	ROCK LOSS	
47	101.01	101.06	0.05	65	10419	K/L	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	101.06	101.09	0.03	65	10419	K/L	COAL	C-4.BLK.BRKN
47	101.09	101.15	0.06	65	10419	K/L	COAL	C-5.BLK.BRKN
47	101.15	101.53	0.38	64	10420	K/L FLOOR	MUDSTONE	CARB.BLK.BRKN SAMPLED UPPER 25CM. COAL LAMS & STRINGERS. BECOMES MUCH LESS CARB TOWARDS BASE K/L SEAM FLOOR ROCK.
48	101.53	102.13	0.60	*64			MUDSTONE	CARB.VFG.VMEL.BLK.LAM.SSD.BRKN POSSIBLE CORE LOSS. QTZ STRINGERS. GRADING INTO SLTST. COALIFIED BANDS AND BLEBS.
48	102.13	102.18	0.05	66			ROCK LOSS	
48	102.18	102.24	0.06	66			BENTONITE	VFG.VMEL.LT.GY.SLD
48	102.24	102.34	0.10	67			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	102.34	103.07	0.73		69		MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. SSD. VBRKN QTZ STRINGERS. PYRITE NODULES & PYRITIZED FOSSILS. COALIFIED PLANT MATERIAL. N ILSSONIA TENUICAILIS & HASH. POSSIBLE CORE LOSS.
48	103.07	103.12	0.05		71		ROCK LOSS	
48	103.12	103.60	0.48	*73			SILTSTONE	SSY. FG. VMEL. DK. GY. LAM. SSD WITH MUDST LAM. LOAD CASTS - TOPS UP. M RMBUR.
49	103.60	105.67	2.07	*68			SILTSTONE	SSY. FG. VMEL. M-DK. GY. VTHNB. SSD. SLD ABUNDANT SS (FG) BEDS (APPROX 1-2CM) AND LOAD CASTS. ABUNDANT MUDST LAMS. FECA L. PELLETS. LAMINAE.
50	105.67	105.82	0.15	67			SILTSTONE	SSY. FG. VMEL. M-DK. GY. VTHNB. SSD. SLD AS ABOVE - NO PELLETS. SLIGHT X-BEDDING LAMINAE.
50	105.82	107.67	1.85	*67			SANDSTONE	CLYY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN LAMS OF MUDST & SLTST. THESE LAMS OCCUR IN BANDS OF 1-12CM. QTZ STRINGERS. MUD ST. BLEBS. SOME BIOTRB IN SLTST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	107.67	108.77	1.10	*70			SANDSTONE	CLYY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST & MUDST. SS MAY BE COALIFIED. QTZ STRINGERS.
51	108.77	109.66	0.89	68			SANDSTONE	CLYY. FG. VMEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE. WITH CARBONACEOUS BANDS. POSSIBLE CORE LOSS. FRACTURING WITH DISPLACEMENT. LOAD CASTS - TOPS UP. VTHNB TO LAMINATED.
52	109.66	109.71	0.05	68			ROCK LOSS	
52	109.71	111.76	2.05	*66			SANDSTONE	CLYY. FG. VMEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE BUT NO CARB BANDS. INCREASING AMOUNTS OF MUDST. MUD/CLAY FRACTURE FIL L. VTHNB TO LAMINATED.
53	111.76	112.13	0.37	67			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	112.13	114.22	2.09	*69			SANDSTONE	CLYY VFG VHEL GY VTHNB SSD BRKN INTERBEDDED WITH MUDST. PLANT WASH - SLIGHTLY COALIFIED. GRADING INTO A MUDST. LOAD CASTS - TOPS UP. LAMINATED IN PARTS. BLACK IN PARTS.
54	114.22	114.39	0.17	70			ROCK LOSS	
54	114.39	115.29	0.90	*70			MUDSTONE	SSY MOD DK GY LAM SSD BRKN MUDST WITH LT GREY FG SS INTERLAMS. SLUMP STRINGERS. LOAD CASTS; FLASER BDG; TOPS UP.
54	115.29	115.69	0.40	69	10421	K ROOF	MUDSTONE	LT BLK SSD SHRD SHEARED MUD WITH SUBANGULAR LITHIFIED MUDST CLASTS. CARBONACEOUS TOWARDS BASE. LOWER 25CM SAMPLED. K SEAM ROOF ROCK.
54	115.69	115.80	0.11	69	10422	K	COAL	C-5 BLK VBRKN MINOR QTZ VEINS - IMM THICK.
54	115.80	116.00	0.20	69	10422	K	COAL	C-1 BLK SLD WELL CLEATED CONCHOIDAL FRACTURE. VERY MINOR C-4 BANDS IMM THICK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	116.00	116.25	0.25	68	10422	K	COAL	C-2 BLK BRKN VERY MINOR C-4 BANDS (APPROX 1-2MM THICK K).
54	116.25	116.35	0.10	*68	10422	K	MUDSTONE	CARB DK GY BRKN 5MM COAL STRINGERS.
54	116.35	116.50	0.15	68	10422	K	COAL	C-3 BLK BRKN TALC LIKE COATING ON POORLY DEVELOPED C LEAT SURFACES.
54	116.50	116.53	0.03	68	10422	K	COAL	C-1 BLK SLD WELL DEVELOPED CLEAT.
54	116.53	116.63	0.10	68	10422	K	COAL	C-3 BLK VBRKN SOME C-2 AND C-4 BANDS APPROX 1CM THICK.
55	116.63	116.70	0.07	68	10422	K	COAL	C-4 BLK BRKN INTERBEDDED C-5 AND C-3.
55	116.70	116.77	0.07	68	10422	K	COAL	C-3 BLK VBRKN INTERBEDDED C-1, C-2, C-5 MIXED IN WITH C-3.
55	116.77	116.82	0.05	68	10422	K	COAL	C-3 BLK VBRKN INTERBEDDED C-2, C-3, C-4. ABUNDANT PYRITE BLEBS 2-10MM DIA.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	116.82	116.92	0.10	68	10422	K	COAL	C-5.SLD 5CM THICK C-3 BANDS. MUDSY BANDS.
55	116.92	117.02	0.10	68	10422	K	COAL	C-3.BLK.SHRD MODERATELY CLEATED. IMM THICK QZ STRINGERS.
55	117.02	117.10	0.08	68	10422	K	COAL	C-3.BLK.VSHRD INTERBEDDED C-2 AND C-4.
55	117.10	117.15	0.05	69	10422	K	MUDSTONE	CARB.M.GY.SLD VERY HEAVY. DISSEMINATED COAL PARTICLES THROUGHOUT.
55	117.15	117.20	0.05	69	10422	K	COAL	C-2.BLK.BRKN INTERBEDDED C-1 AND C-3. TALC LIKE COATING ON CLEAT SURFACES.
55	117.20	117.27	0.07	69	10422	K	COAL	C-5.BLK.VBRKN INTERBEDDED C-4, C-6, IN C-1 & C-2.
55	117.27	117.34	0.07	69	10422	K	COAL	C-5.BLK.VBRKN SHEARED ON BRKN SURFACES.
55	117.34	117.37	0.03	69	10422	K	MUDSTONE	CARB.LT.BLK.SHRD COAL STRINGERS 1-2MM THICK. MUD IS UNCONSOLIDATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	117.37	117.42	0.05	69	10422	K	COAL	C-5.BLK.BRKN C-3 INTERBEDDED WITH CARB MUDST.
55	117.42	117.50	0.08	69	10423	K	COAL	C-2.BLK.VBRKN ABUNDANT INTERBEDDED C-1 AND C-3.
55	117.50	117.55	0.05	69	10423	K	COAL	C-4.BLK.VBRKN MINOR C-2 BANDS. C-5 BANDS PRESENT 1-3M THICK.
55	117.55	117.70	0.15	69	10423	K	COAL	C-3.BLK.VBRKN INTERBEDDED C-2 AND C-4.
55	117.70	117.85	0.15	69	10423	K	COAL	C-2.BLK.BRKN SOME C-3 INTERMIXED.
55	117.85	117.90	0.05	69	10423	K	COAL	C-5.BLK.VSHRD
55	117.90	118.01	0.11	69	10423	K	COAL	C-3.BLK.BRKN SOME C-2 AND C-4 INTER BDG.
55	118.01	118.16	0.15	69	10423	K	COAL	C-2.BLK.BRKN SOME C-1/C-3 INTERBDG. WELL DEVELOPED C LEATING.
55	118.16	118.21	0.05	69	10423	K	COAL	C-5.BLK.SHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	118.21	118.26	0.05	69	10423	K	COAL	C-2.BLK.VBRKN MINOR C-1 BANDS.
55	118.26	118.31	0.05	69	10423	K	COAL	C-4.BLK.VBRKN C-2 AND C-3 INTERBDG. SOME SHEARING ON BRKN SURFACES.
55	118.31	118.51	0.20	69	10423	K	COAL	C-1.BLK.SLD
55	118.51	118.61	0.10	69	10423	K	COAL	C-2.BLK.VBRKN MINOR C-3 BANDING.
55	118.61	118.74	0.13	69	10423	K	COAL	C-1.BLK.VBRKN
56	118.74	118.84	0.10	70	10423	K	COAL	C-3.BLK.VBRKN
56	118.84	118.99	0.15	70	10423	K	COAL	C-4.BLK.VBRKN MINOR C-1 BANDING. C-6 INTERBEDDING.
56	118.99	119.01	0.02	70	10423	K	COAL	C-5.BLK.VBRKN MINOR C-2 BANDING.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	119.01	119.31	0.30	70	10424	K FLOOR	MUDSTONE	CARB.BLK.THNB.SLD NUMEROUS THN 1-5MM THICK COAL PARTINGS. SHEARED ALONG BRKN SURFACES. FIBROUS M HITE BANDS OF WHITE QTZ LIKE (SOFTER) M INERAL NEAR BASE. ABUNDANT COALIFIED PL ANT FRAGMENTS. UPPER 25 CM SAMPLED. K S EAM FLOOR ROCK.
56	119.31	119.41	0.10	70			MUDSTONE	CARB.BLK.SSD.SLD M GREY RIP UP CLAST BAND. CLASTS - SUBR OUNDED 5-20MM DIA. ABUNDANT COALIFIED P LANT FRAGMENTS.
56	119.41	119.71	0.30	*70			MUDSTONE	CARB.DK.GY.LAM.SSD.SLD FLASER BDG - INTERBEDDED WITH M GREY MU DST. LOAD CASTS INDICATE TOPS UP. OCCAS IONAL M GREY RIP-UP CLASTS. RARE C-3 BA NDS.
56	119.71	119.73	0.02	70			BENTONITE	LY.GY.SHRD SOFT, UNCONSOLIDATED.
56	119.73	120.63	0.90	72			MUDSTONE	DK.GY.BIOTR.SLD VERY THIN (<1MM) QTZ STRINGERS. VERY BI OTURBATED BDG. OCCASIONAL COALIFIED PLA NT FRAGMENTS. RARE RIP-UP CLASTS 1-3CM NEAR BASE. LOAD CASTING NEAR BASE INDIC ATE TOPS UP. MORE BIOTRB NEAR BASE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	120.63	120.98	0.35	73		MUDSTONE	SLTY. DK. GY. LAM. SSD. SLD INTERLAMINATED MUDST AND SLTST. LOAD CASTS. MINOR SLUMPS AND XBDG INDICATE TOP S UP. FISSILE SOFT MUDST AT TOP.
57	120.98	121.42	0.44	74		MUDSTONE	VFG. VMEL. GY. LAM. SSD. SLD AS ABOVE. VERY THIN SS LAMS. INCREASING MUDST. LOAD CASTS - TOPS UP. MUD FRACTURE FILL. PLANT HASH.
57	121.42	122.95	1.53	*77		MUDSTONE	SLTY. VMEL. BLK. VTHNB. SSD. BRKN LAMS OF SLTST. LOAD CASTS - TOPS UP. POSSIBLE CORE LOSS. LAMINATED IN PARTS.
58	122.95	123.37	0.42	75		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SSD. SLD AS ABOVE.
58	123.37	124.96	1.59	73		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. SLD PLANT HASH. SLTST. INTERBEDS. SOME SLIGHT SSD.
59	124.96	125.51	0.55	70		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. YBRKN POSSIBLE CORE LOSS.
59	125.51	125.61	0.10	70		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	125.61	126.70	1.09	68		SANDSTONE	SLTY. VFG. MEL. M. GY. LAM. BIOTR. SLD MUDSTONE LAMS. PYRITE. INCREASING BIOTURBATION. QTZ FRACTURE FILL.
59	126.70	127.10	0.40	67		SILTSTONE	SSY. VFG. MEL. M. GY. LAM. BIOTR. SLD AS ABOVE. NUMEROUS FOSSIL FRAGMENTS. VERY SANDY. BIVALVES IN PLANT FRAG.
60	127.10	127.32	0.22	*66		SILTSTONE	SSY. VFG. MEL. M. GY. LAM. BIOTR. SLD AS ABOVE WITH FOSSILS.
60	127.32	127.89	0.57	*66		SILTSTONE	SSY. VFG. MEL. M. GY. VTHNB. SSD. SLD INTERBEDDED WITH SS & MUDST. LOAD CAST FILLED WITH FECAL PELLETS. QTZ FRACTURE FILL. LAMINATED IN PARTS.
60	127.89	129.08	1.19	*69		SILTSTONE	SSY. VFG. MEL. M. GY. VTHNB. SSD. SLD SAND LIKE. LOAD CASTS - TOPS UP. QTZ FRACTURE FILL. LAMS OF MUDST. INTERBEDDED WITH SS.
61	129.08	130.86	1.78	*68		SILTSTONE	SSY. VFG. VMEL. M-DK. GY. VTHNB. SSD. SLD BEDS OF SS 1CM TO 14CM. MUDST LAMS. TOPS UP.
61	130.86	131.09	0.23	62		SILTSTONE	CLYY. VMEL. DK. GY. LAM. SSD. SLD NO SS. X-BEDDING - TOPS UP. QTZ FRACTURE FILL. RHYTHMIC SLTST & MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	131.09	131.45	0.36	*60			SILTSTONE	CLYY.VHEL.DK.GY.LAM.SSD.SLD FEM SS BEDS APPROX 1CM. LOAD CASTS - TO PS UP.
62	131.45	133.11	1.66	*70			SANDSTONE	FG.VHEL.S-P.GY.VTHNB.SSD.SLD INTERBEDDED WITH SLTST. QTZ FRACTURE FILL. LL. X-BDG. - TOPS UP.
63	133.11	133.32	0.21	68			SANDSTONE	FG.VHEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE.
63	133.32	134.48	1.16	67			SILTSTONE	CLYY.VFG.VHEL.DK.GY.LAM.BIOTR.BRKN POSSIBLE CORE LOSS. QTZ FRACTURE FILL. RYTHMIC SLTST & MUDST. FRACTURE DISPLACEMENT. A FEM SS BEDS APPROX 1-2CM. SS D.
63	134.48	134.78	0.30	65			ROCK LOSS	
63	134.78	135.56	0.78	64			SILTSTONE	CLYY.VFG.VHEL.DK.GY.LAM.BIOTR.BRKN AS ABOVE.
64	135.56	136.00	0.44	*63			SILTSTONE	CLYY.VFG.VHEL.DK.GY.LAM.SSD.SLD AS ABOVE. NO QTZ OR FRACTURE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	136.00	137.26	1.26	65			SANDSTONE	VFG.VHEL.S-P.GY.THNB.SSD.BRKN SMALL SLTST LAMS. GRADES INTO FG SS WIT H NO SLTST.
64	137.26	137.63	0.37	68			SANDSTONE	FG.VHEL.S-P.GY.BRKN QTZ FRACTURE FILL.
65	137.63	139.60	1.97	*71			SANDSTONE	FG.VHEL.S-P.GY.THNB.BRKN AS ABOVE. FEM BANDS OF INTERBEDDED SLTS & SS (X-BEDDING AND SSD) WHICH AVERAG E 15CM IN THICKNESS, EVERY 66CM.
66	139.60	140.30	0.70	*66			SANDSTONE	FG.VHEL.S-P.GY.THNB.BRKN AS ABOVE. SMALL SS DYKES WITH SOME QTZ ALTERATION. QTZ FRACTURE FILL. POSSIBLE CORE LOSS.
66	140.30	140.50	0.20	66			ROCK LOSS	
66	140.50	141.65	1.15	66			SANDSTONE	FG.VHEL.S-P.GY.THNB.SSD.SLD AS ABOVE. RIP-UP CLASTS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	141.65	143.48	1.83	*67			SANDSTONE	FG.VMEL.S-P.GY.THNB.SSD.BRKN AS ABOVE. NO CLASTS. PLANT IMPRESSION FOUND ON WOOD. LARGE FRACTURE FILLS WITH QTZ. POSSIBLE CORE LOSS. SLIGHT X-BEDDING - TOPS UP.
68	143.48	144.26	0.78	*65			SANDSTONE	SLTY.VFG.VMEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. MORE SLST & MUDST STRINGERS THROUGHOUT SS.
68	144.26	145.61	1.35	*68			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.SLD MUDSTONE LAMS. INTERBEDDED SLST & MUDST. ALSO SS BEDS. APPROX 1-2CM THICK. VFG WITH X-BEDDING. LAMINATED IN PARTS.
69	145.61	146.41	0.80	68			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.SLD AS ABOVE. 1 LARGE MG SS BED APPROX 7CM THICK. X BDG - TOPS UP. LAMINATED IN PARTS.
69	146.41	146.54	0.13	68			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.SLD AS ABOVE. LAMINATED IN PARTS.
69	146.54	147.68	1.14	69			MUDSTONE	SLTY.VFG.VMEL.BLK.VTHNB.SLD IRREGULAR INTERBEDDED SILT & MUDSTONE. FEW BANDS OF FG SS <1CM EVENTUALLY DISAPPEARING. LOAD CAST - TOPS UP. LAMINATED IN PARTS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	147.68	148.36	0.68	69			MUDSTONE	SLTY.VFG.VMEL.BLK.VTHNB.SLD IRREGULAR INTERBEDS OF SILT & MUDST. LAMINATED IN PARTS.
70	148.36	149.38	1.02	*69			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SLD COASTER ZONE. RHYTHMITES OF SILTST & MUDST.
70	149.38	149.74	0.36	69			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.BRKN AS ABOVE - CLEAN BREAKS. POSSIBLE CORE LOSS. COASTERS.
71	149.74	151.76	2.02	*68			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.BRKN AS ABOVE. CLEAN BREAKS. POSSIBLE CORE LOSS. COASTERS.
72	151.76	152.30	0.54	69			MUDSTONE	SLTY.VMEL.BLK.LAM.BRKN MUDST & SLTST RHYTHMITES, COASTER ZONE. POSSIBLE CORE LOSS.
72	152.30	152.50	0.20	69			ROCK LOSS	
72	152.50	153.66	1.16	69			MUDSTONE	SLTY.VMEL.BLK.LAM.VBRKN AS ABOVE.
73	153.66	155.50	1.84	*70			MUDSTONE	SLTY.VMEL.BLK.LAM.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	155.50	155.66	0.16	71		MUDSTONE	SLTY. VMEL. BLK. LAM. SLD AS ABOVE.
74	155.66	156.24	0.58	*71		MUDSTONE	SLTY. VMEL. BLK. LAM. SLD AS ABOVE. WITH QTZ FRACTURE FILL.
74	156.24	157.03	0.79	69		MUDSTONE	CARB. VMEL. BLK. LAM. SSD. BRKN LOTS QTZ FRACTURE FILL. HEAVILY FRACTURED. BENTONITE BANDS APPROX 3CM. POSSIBLE CORE LOSS.
74	157.03	157.23	0.20	67		BENTONITE	CLYY. VMEL. LT. GY. SLD MUDST LAMS. J SEAM ROOF. ROCK. NOT SAMPLED.
74	157.23	157.26	0.03	67 99999	J	COAL	C-3. BLK. SLD J SEAM.
74	157.26	157.29	0.03	67 99999	J	COAL	C-6. BLK. BRKN J SEAM.
74	157.29	157.30	0.01	67 99999	J	COAL LOSS	
74	157.30	157.53	0.23	67 99999	J	COAL	C-2. BLK. SLD J SEAM.
74	157.53	157.63	0.10	66		MUDSTONE	CARB. BLK. LAM. SLD CARB & QTZ STRINGERS. J SEAM FLOOR ROCK. NOT SAMPLED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	157.63	158.28	0.65	*65		MUDSTONE	CARB. VMEL. BLK. LAM. BRKN QTZ FRACTURE FILL. INTERBEDDED WITH SLT ST. CORE LOSS POSSIBLE. CARB & QTZ STRINGERS.
75	158.28	158.36	0.08	65		ROCK LOSS	
75	158.36	159.63	1.27	66		MUDSTONE	CARB. VMEL. BLK. LAM. BRKN AS ABOVE. PYRITE ALTERATION WITH QTZ. PLANT MASH ASSOC WITH MUDST BEDDING PLANES.
76	159.63	161.02	1.39	66		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. BRKN CARB. STRINGERS. FE STAINING. POSSIBLE CORE LOSS. FOSSIL FRAGS VISIBLE.
76	161.02	161.40	0.38	67		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SSD. SLD QTZ FRACTURE FILL. CARB STRINGERS. PLANT MASH.
77	161.40	162.54	1.14	*67		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. BRKN AS ABOVE. POSSIBLE CORE LOSS.
77	162.54	162.69	0.15	68		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	162.69	163.49	0.80	*68		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD SS BANDS & MUDST LAMS. SS - 2CM THICK O F VFG. LAMINATED IN PARTS.
78	163.49	163.66	0.17	68		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. TOPS UP (X-BEDDING). LAMINATE D. IN PARTS.
78	163.66	164.12	0.46	68		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. SLD INTERBEDDED SLTST AND SS BANDS APPROX 6 CM THICK EVERY 10 CM.
78	164.12	165.46	1.34	*69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. SLD AS ABOVE. ALSO BLEBS OF MUDST. LOAD CAS TS - TOPS UP. MG TO CG.
79	165.46	166.67	1.21	69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE. NO BANDS OF SLTST. LAMALLAE O F SLTST. INTERSPERSED IN SS. POSSIBLE CO RE LOSS.
79	166.67	167.07	0.40	69		ROCK LOSS	
79	167.07	167.50	0.43	69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	167.50	168.16	0.66	69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. VBRKN CORE LOSS. AS ABOVE. MUDST BLEBS APPROX 0.5CM.
80	168.16	168.81	0.65	69		ROCK LOSS	
80	168.81	169.68	0.87	69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE. BLEBS NOT SEEN.
81	169.68	170.00	0.32	69		SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE. CG TO MG. END OF HOLE. TD = 1 70.00M.

* DENOTES MEASURED BCA
NEWPAGE

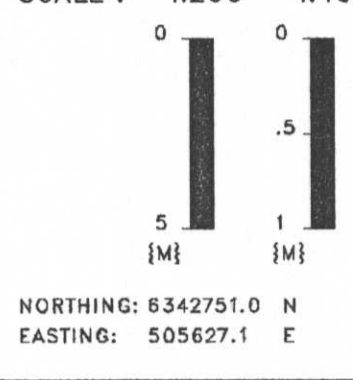
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88003

GEOLOGIST : KRAUS

DATE : FEB 21/89

DRAWING NO. :

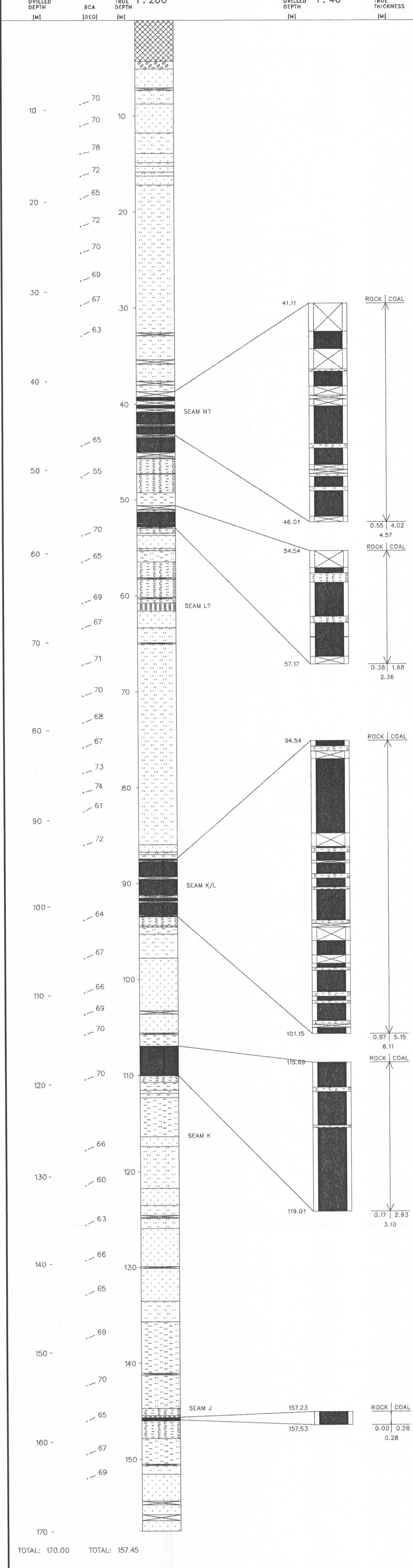
LITHOLOGIC SYMBOLS



NORTHING: 6342751.0 N INCLINATION: 90.0°
 EASTING: 505627.1 E

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

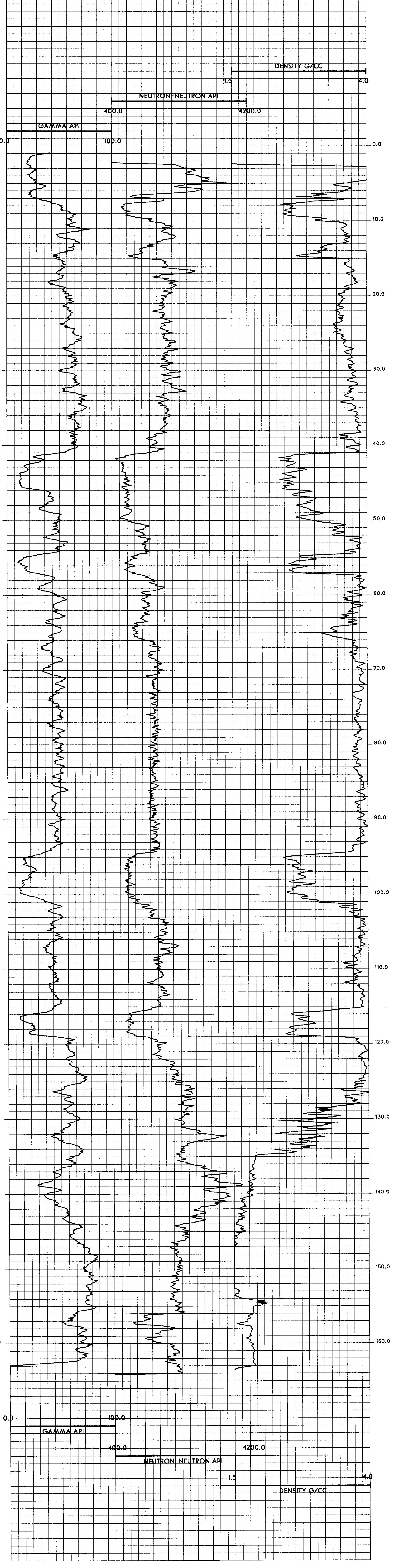
SEAM DETAIL



Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88003 Log Date: 88-06-14 Company: CENTURY Geologist: KRAUS	Province: BC Northing: 6342750.00 Lat: 571347 Zone: 9 Easting: 505627.00 Long: 1285424 Measuring Point: GROUND LEVEL Elevation: 1672.1																									
Scale: 1 to 200.0 Depth Range: 0.0 to 169.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.																									
Logs Plotted:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Axis Range</th> <th style="text-align: left;">Axis Length</th> <th style="text-align: left;">Smoothing Points</th> <th style="text-align: left;">Tool</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td>1. GAMMA API</td> <td>0.0 to 100.0</td> <td>7.0</td> <td>31</td> <td>9055A</td> <td></td> </tr> <tr> <td>2. NEUTRON-NEUTRON API</td> <td>400.0 to 4200.0</td> <td>9.0</td> <td>9</td> <td>9055A</td> <td></td> </tr> <tr> <td>3. DENSITY G/CC</td> <td>1.5 to 4.0</td> <td>9.0</td> <td>15</td> <td>9030AA</td> <td></td> </tr> </tbody> </table>	Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments	1. GAMMA API	0.0 to 100.0	7.0	31	9055A		2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A		3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA			
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments																					
1. GAMMA API	0.0 to 100.0	7.0	31	9055A																						
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A																						
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA																						



KPNLRDDH88004

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88004

DATE - 02/15/89

- HISTORY -

START DATE - 06/13/88

END DATE - 06/15/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - HEARN

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - SEAMS J,J2,?,?,I,H INTERSECTED.

- LOCATION -

PROVINCE - BC

ELEVATION - 1650.45

LICENCE/LEASE NUMBER - 7149

ZONE - 9

NORTHING - 6342222.27

EASTING - 504450.18

LATITUDE - 571330

LONGITUDE - 1285535

- ORIENTATION -

LENGTH - 148.54

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-004

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

J/J₂

0.94 m/0.69 m

I

7.95 m

H

3.32 m



SCALE
1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



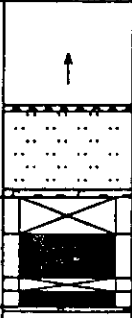
GULF CANADA CORPORATION

COAL DIVISION MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88004 SEAM : J2 INTERVAL(M) : 28.80 - 29.55 ELEVATION(M) : 1650.5
 GEOLOGIST : HEARN SCALE: 1:40 DATE : JAN 23/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG	
	28.80	↑  ↓		(0.23)												
				0.28	54.6	10426	12	0.68 / 0.00	0.68 / 0.00	0.81	32.13	5.55	61.51	—	21.61	—
	29.55			(0.28) 0.10				0.68	0.68							

GULF CANADA CORPORATION

COAL DIVISION MOUNT KLAPPAN PROJECT

TRUE THICKNESS

SEAM DETAIL

DATA SOURCE: KPN LR DDH88004 SEAM : ? INTERVAL(M) : 56.25 - 56.70 ELEVATION(M) : 1650.5
 GEOLOGIST : HEARN SCALE: 1:40 DATE : JAN 23/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.							
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG		
	56.25	↑															
	56.70	↓	0.20	0.20	100.0	10440	13	0.38 / 0.05		1.09	39.08	5.25	54.58	—	19.70	—	

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	62			OVERBURDEN	CASING DEPTH.
1	3.05	3.15	0.10	62			ROCK LOSS	
1	3.15	4.23	1.08	62			SILTSTONE	M-DK.GY.VTHNB.BIOTR.BRKN MUDDY SLTST. 7CM FG SS RIP-UP CLAST. SS D ON BASAL UNIT.
1	4.23	4.43	0.20	*62			SANDSTONE	VFG.M-DK.GY.VTHNB.BRKN MUDDY WISPS OF LAMELLAE. FINE FRACTURE AT BASAL UNIT; OXIDIZED.
1	4.43	4.71	0.28	63			SANDSTONE	FG.M-DK.GY VFG-FG INTERBEDDED SANDSTONE. FAULTED Q TZ VEIN WITH BROKEN LAMELLAE OF SS THRO UGHOUT. AT BASAL UNIT.
1	4.71	4.90	0.19	64			SANDSTONE	FG.M-DK.GY.BRKN MUDDY WISPS AND LAMELLAE. DISPERSED NEA THERED DETRITAL GRAINS CONCENTRATED ABO UT FRACTURE BREAKS. MORE DISPERSED HIGH ER IN UNIT.
1	4.90	5.16	0.26	65			SANDSTONE	VFG.M-DK.GY.LAM.BRKN VF-FG LAMINATED SS. FRACTURED AND MUD M. ISPS AT BASAL UNIT.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	5.16	5.68	0.52	*66			SANDSTONE	FG.M-DK.GY.BRKN VERY THIN MUDDY BEDS AT BASAL UNIT GRAD ES INTO LAMINATED MUDDY BEDS AT TOP WIT H 6CM OF SILTSTONE & SANDSTONE INTERBED DED.
1	5.68	5.87	0.19	67			SANDSTONE	VERY THIN MUDDY BEDS AT BASAL UNIT GRAD ES INTO LAMINATED BEDS AT TOP OF UNIT. REPEATS, VF QTZ FRACTURE VEINS AT TOP O F UNIT.
2	5.87	5.97	0.10	*67			SANDSTONE	FG.M-DK.GY.SLD VERY THIN CENTRAL SLTST BED & ASSOCIATE D FAULT. GRADATIONAL TO VFG.
2	5.97	6.57	0.60	66			SANDSTONE	VFG.M-DK.GY.BRKN QTZ VEIN FILL (.75CM) & ASSOCIATED VF (LESS .5CM) QTZ CRENULATIONS (PRESSURE S OL'N?). SEVERAL VF QTZ FILLED FRACTURES THROUGHOUT.
2	6.57	6.60	0.03	65			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	6.60	6.66	0.06	65			SANDSTONE	FG.M-DK.GY.VBRKN WEATHERED QTZ & MG SS WITH DISPERSED DETRITAL WEATHERED GRAINS. POSSIBLE CORE LOSS.
3	6.66	7.45	0.79	64			SANDSTONE	FG.LT-M.GY.SLD FEW VF QTZ VEINS IN CENTER OF UNIT.
3	7.45	7.51	0.06	63			SANDSTONE	VFG.LT-M.GY.BRKN SLTST & MUD LAMINATIONS WITH VF QTZ CRENULATION, DISPLACED LESS THAN 1CM WHERE FOLDED.
3	7.51	7.81	0.30	62			SANDSTONE	VFG.LT-M.GY.SLD FG SS WITH WISPS OF SLTST & MUDSTONE AT BASAL UNIT. VERY THIN SLTST BEDS AT TOP.
3	7.81	8.92	1.11	*60			SANDSTONE	VFG.LT-M.GY.SLD AS ABOVE. CONCRETION (?) IN CENTER OF UNIT. QTZ VEIN APPROX 2/3 FROM BASAL UNIT WITH DETRITAL CARBONATE CRYSTALS.
4	8.92	9.43	0.51	60			SANDSTONE	VFG.LT-M.GY.SLD REPEAT UNIT OF VERY THIN MUDDY BEDS AT BASAL UNIT. GRADES INTO LAMINATED BEDS AT TOP OF UNIT. FAULT NEAR BASE OF UNIT WITH LESS THAN 1 CM DISPLACEMENT - WITH WORM BURROWS (?) POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	9.43	10.63	1.20	60			SANDSTONE	FG.LT-M.GY.MAS.SLD MASSIVE.
4	10.63	10.74	0.11	60			SANDSTONE	FG.LT-M.GY.SLD MUDDY WISPS & LAMELLAE NEAR TOP OF UNIT. BROKEN ALONG QTZ VEIN AT BASAL UNIT.
4	10.74	10.86	0.12	60			SANDSTONE	FG.LT-M.GY.MAS.SLD MASSIVE.
5	10.86	12.39	1.53	*60			SILTSTONE	M-DK.GY.BRKN INTERBEDDED FG SS. POSSIBLE THIST-OFF AT 38.0CM.
5	12.39	12.81	0.42	63			SILTSTONE	M-DK.GY.LAM.BRKN RHYTHMITES. TOP OF UNIT HAS LESS 1.5CM QTZ VEIN AND SS LOAD CAST. SS LENSES APPEAR RANDOMLY THROUGHOUT.
5	12.81	13.02	0.21	64			SILTSTONE	VFG.M-DK.GY.SSD.BRKN MUDDY LAMELLAE & WISPS. SSD.
6	13.02	13.61	0.59	65			SILTSTONE	M-DK.GY.BRKN
6	13.61	13.71	0.10	66			SILTSTONE	M-DK.GY.BRKN CROSS-BEDDING (APPEARS WRONG WAY UP).

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	13.71	13.75	0.04	*66			SILTSTONE	M-DK. GY. BRKN COASTERS WITH VF SS & MUD, RHYTHMIC.
6	13.75	15.10	1.35	*68			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC (30CM SHOWS NORMAL FAULT WITH QTZ & MUDST INFILL IN FRACTURE S).
7	15.10	16.75	1.65	*63			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC. QTZ VEIN LESS THAN 2 CM PRESENT.
7	16.75	17.04	0.29	63			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC.
8	17.04	19.19	2.15	*62			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC.
9	19.19	19.69	0.50	*60			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC.
9	19.69	21.14	1.45	*65			SILTSTONE	M-DK. GY. BRKN COASTERS, RYTHMIC.
10	21.14	22.29	1.15	*56			SILTSTONE	M. GY. LAM. BRKN RHYTHMIC FINING UP LAMS (SLT TO MUD). COASTER ZONE, FEEDING TRAILS ON SLATEY SURFACES. J SEAM ROOF ROCK. NOT SAMPLED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	22.29	22.70	0.41	55	99998	J	COAL LOSS	
10	22.70	22.81	0.11	54	99998	J	COAL	C-3. BLK. BRKN
10	22.81	22.86	0.05	54	99998	J	MUDSTONE	CARB. BLK. BRKN
10	22.86	22.92	0.06	54	99998	J	ROCK LOSS	
10	22.92	23.21	0.29	54	99998	J	COAL LOSS	
10	23.21	23.26	0.05	53	99998	J	COAL	C-2. BLK. BRKN
10	23.26	23.33	0.07	53	99998	J	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	23.33	23.37	0.04	53	99998	J	COAL	C-4. BLK. YBRKN
10	23.37	23.45	0.08	53	99998	J	COAL LOSS	
10	23.45	23.61	0.16	*53			SANDSTONE	YFG. MOD. M. GY. BRKN J SEAM FLOOR ROCK. NOT SAMPLED.
10	23.61	23.73	0.12	54			SILTSTONE	DK. GY. BRKN
10	23.73	23.83	0.10	55			SANDSTONE	SLTY. YFG. M. GY. LAM. SLD VFG SS WITH SLTST LAMS.
10	23.83	24.24	0.41	56			ROCK LOSS	
10	24.24	24.29	0.05	58			MUDSTONE	CARB. BLK. BRKN CORE TWIST OFF. NO GRADUAL CHANGE FROM SS TO CARB MUDST. DEFINITE CORE LOSS.
11	24.29	24.36	0.07	58			MUDSTONE	DK. GY. YBRKN MUDSTONE WITH FEW COAL STRINGERS. QTZ V EIN WITH DETRITAL MUDST CLASTS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	24.36	24.42	0.06	59			COAL	DK. GY. YBRKN MUDST INTERBEDDED WITH C-3.
11	24.42	24.67	0.25	*60			SILTSTONE	M-DK. GY. BRKN MUDST LAMELLAE & WISPS. DEFINITE CORE LOSS (TUBE DID NOT LOCK).
11	24.67	25.07	0.40	60			ROCK LOSS	
11	25.07	25.34	0.27	59			SANDSTONE	M-DK. GY. BRKN GRADES FROM SLTST TO SS. SS CONTAINS MUDST LAMELLAE & WISPS. SSD. TWIST-OFF. POS. SIBLE CORE LOSS.
11	25.34	25.44	0.10	59			ROCK LOSS	
11	25.44	25.58	0.14	59			MUDSTONE	DK. GY. YBRKN MUDST WITH COAL STRINGERS & QTZ FRACTURE FILLING.
11	25.58	25.71	0.13	58			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	25.71	26.77	1.06	58			MUDSTONE	DK.GY.BRKN MODERATELY BRKN UNIT. QTZ & COAL INFILL IN FRACTURE. 1CM CLAY INFILL IN 1 FRA TURE. THIST-OFF AT TOP OF UNIT; POSSIBL E CORE LOSS.
12	26.77	28.17	1.40	*56			MUDSTONE	DK.GY.SSD.BRKN COAL STRINGERS ABUNDANT. SSD NEAR TOP O F UNIT. QTZ & COAL INFILL, MULTIPLE FRA CTURE AT CENTER OF UNIT.
12	28.17	28.22	0.05	62			BENTONITE	LT-M.GY.SLD
12	28.22	28.75	0.53	65	10425	J2 ROOF	SILTSTONE	DK.GY.SSD.BRKN COAL STRINGERS. SSD. DISCONTINUOUS QTZ FRACTURE CUTS COAL STRINGERS. LOWER 20C M SAMPLED. J2 SEAM ROOF ROCK.
13	28.75	28.80	0.05	*67	10425	J2 ROOF	MUDSTONE	CARB.BLK.SLD J2 SEAM ROOF ROCK.
13	28.80	29.02	0.22	67	10426	J2	COAL LOSS	
13	29.02	29.05	0.03	67	10426	J2	COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	29.05	29.12	0.07	67	10426	J2	COAL	C-4.BLK.SLD BRECCIATED (QTZ FILLED).
13	29.12	29.17	0.05	67	10426	J2	COAL	C-2.BLK.BRKN
13	29.17	29.35	0.18	66	10426	J2	COAL	C-3.BLK.VBRKN
13	29.35	29.44	0.09	66	10426	J2	COAL LOSS	
13	29.44	29.50	0.06	66	10426	J2	COAL	C-4.BLK.BRKN
13	29.50	29.53	0.03	66	10426	J2	COAL	C-2.BLK.VBRKN
13	29.53	29.55	0.02	66	10426	J2	COAL	C-5.BLK.BRKN
13	29.55	29.57	0.02	66	10427	J2 FLOOR	MUDSTONE	CARB.BLK.BRKN
13	29.57	29.58	0.01	66	10427	J2 FLOOR	COAL	C-1.BLK.SLD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	29.58	31.13	1.55	*65	10427	J2 FLOOR	SILTSTONE	M. GY. BRKN M GREY SLTST MOTTLED WITH M-LY GREY SLY ST (POSSIBLE EARLY RECRYSTALIZATION). UPPER 21.0CM SAMPLED. J2 SEAM FLOOR ROCK.
14	31.13	31.86	0.73	61			SILTSTONE	M-DK. GY. BIOTR. BRKN FG SS & MUDST LAMELLAE & SSD. SOFT AQUA GREEN CRYSTALS FILL FRACTURES (ONE ASSOCIATED WITH QTZ). FINES UPWARD.
14	31.86	32.54	0.68	*59			SILTSTONE	M-DK. GY. SLD FG SS LAMELLAE & MUDST. HISPS. MINOR SSD.
14	32.54	33.25	0.71	61			SILTSTONE	M-DK. GY. HRMBU. BRKN FAUNA ASSEMBLAGE. HRMBUR. PITYOPHYLLUM MORDENSKIOLDI & PYRITE IN BASAL CROSS SECTION. LOAD CAST & SAND LENSES.
15	33.25	34.33	1.08	63			SILTSTONE	M-DK. GY. SSD. BRKN COAL STRINGERS. HRMBUR.
15	34.33	34.58	0.25	65			ROCK LOSS	
15	34.58	35.15	0.57	*66			SILTSTONE	M-DK. GY. HRMBU. BRKN CRUSTACEAN BURROW: OMPHIOMORPHA?

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.15	35.39	0.24	63			SILTSTONE	M-DK. GY. SSD. BRKN SSD WITH FRACTURES & LESS THAN 1CM DISPLACEMENT & MUD INFILL.
15	35.39	35.62	0.23	61			ROCK LOSS	
15	35.62	35.66	0.04	60			BENTONITE	LT-M. GY. BRKN LAYERED BENTONITE WITH LAMELLAE OF SOFT AQUA GREEN SHEET SILICATE (TALC?).
15	35.66	35.76	0.10	59			SILTSTONE	M-DK. GY. SSD. SLD
16	35.76	36.49	0.73	*56			SILTSTONE	M-DK. GY. SSD. BRKN BIOTRB.
16	36.49	37.24	0.75	46			SILTSTONE	M-DK. GY. LAM. SSD. SLD LAMELLAE OF FG SS.
16	37.24	37.89	0.65	36			SILTSTONE	M-DK. GY. LAM. SSD. SLD AS ABOVE WITH RIP-UP CLASTS.
16	37.89	37.97	0.08	31			BRECCIA	M-DK. GY. LAM. SLD BREC QTZ FILL WITH SLTST CLASTS THROUGH OUT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	37.97	38.37	0.40	*28			SILTSTONE	M-DK.GY.LAM.SSD.BRKN HIGH ANGLE BEDDING WITH SSD.
17	38.37	38.47	0.10	30			ROCK LOSS	
17	38.47	39.10	0.63	*33			SILTSTONE	M-DK.GY.LAM.SSD.SLD HIGH ANGLE TECTONIC DEFORMED BEDDING WITH HIGHLY FRACTURED QTZ AND AQUA GREEN SHEET SILICATE VEINS. BCA'S - 14 & 26.
17	39.10	39.55	0.45	*33			SILTSTONE	M-DK.GY.LAM.SSD.BRKN FRACTURED THROUGHOUT WITH QTZ & SOFT AQUA BLUE SHEET SILICATE. ? SEAM ROOF ROCK.
17	39.55	39.78	0.23	34	99999 ?		COAL	DK.GY.BRKN C-4.
18	39.78	39.83	0.05	34	99999 ?		COAL LOSS	
18	39.83	39.98	0.15	34	99999 ?		COAL	DK.GY.LAM.BRKN C-3.
18	39.98	40.16	0.18	35			MUDSTONE	DK.GY.LAM.SSD.BRKN FRACTURED WITH QTZ. INEILL. ? SEAM FLOOR ROCK.
18	40.16	40.53	0.37	35			SILTSTONE	M.GY.LAM.SSD.BRKN BIOTURB.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	40.53	41.23	0.70	36			SANDSTONE	MG.LT-M.GY.SSD.SLD SPARSE MUDSTONE LAMELLAE & WISPS. PYRO PHYLLUM Plicatum?
18	41.23	41.48	0.25	38			SILTSTONE	M.GY.SLD PYRITIZED & QTZ FILLED VEINS.
18	41.48	41.90	0.42	38			SILTSTONE	M.GY COARSENS UPWARD WITH FG SS AND HAS EXTENSIVE QTZ FRACTURING & ASSOCIATED AQUA GREEN SHEET SILICATE. WELL DEFINED QTZ NEEDLE LIKE CRYSTALS ALSO ABUNDANT FROM FRACTURE FILL.
18	41.90	42.22	0.32	39			SANDSTONE	MG.M.GY.LAM.BIOTR.SLD SS FINES UPWARD. LARGE PYRITE BLEB & LARGE QTZ BLEB. MUDST LAMELLAE.
18	42.22	42.42	0.20	40			MUDSTONE	M.GY.SLD COALIFIED MUDST. PLANT DEBRIS & COAL ST RINGS.
19	42.42	42.58	0.16	40			MUDSTONE	M.GY.BRKN TOP OF UNIT HAS 3CM OF CLAY OR TUFFITE/ BENTONITE. LESS 1CM QTZ & SOFT AQUA SHEET SILICATE INFILL.

* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	42.58	43.88	1.30	42		MUDSTONE	M.GY.BRKN JUMBLED FINE QTZ INFILL FRACTURES AT TO P OF UNIT. GRADES INTO SPARSE QTZ FRACTURES AND COAL STRINGERS. SHEAR ZONE. PT EROPHYLLUM PLICATUM.
19	43.88	44.36	0.48	44		MUDSTONE	M-DK.GY.LAM.BRKN BURROWS & MULTIPLE SHEAR ZONES. GRADES INTO SS WITH MUDSTONE LAMELLAE.
19	44.36	44.59	0.23	44		SANDSTONE	MG.LT-M.GY.SLD FEW SLTST LAMELLAE & QTZ VEINS. COARSEN S UPWARD.
20	44.59	44.64	0.05	45		SILTSTONE	M-DK.GY SHEAR ZONE. SOME QTZ & PYRITE.
20	44.64	44.95	0.31	45		SANDSTONE	MG.LT-M.GY.BRKN THIN QTZ VEINS.
20	44.95	46.45	1.50	47		MUDSTONE	M.GY.BRKN COAL STRINGERS. EXTENSIVE SHEAR ZONES. SMALL QTZ FRACTURE. SPARSE AQUA SOFT SHEET SILICATE.
21	46.45	47.17	0.72	50		MUDSTONE	M.GY.BRKN INTERBEDDED FG SS. ABUNDANT COAL STRINGERS. FEW QTZ VEINS. NORM BURROWS. ABUNDANT SHEAR ZONES. NORM BURROW.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	47.17	47.77	0.60	51		SILTSTONE	M.GY.SSD.BRKN JUMBLED SOFT AQUA SHEET SILICATE VEINS.
21	47.77	47.84	0.07	52		ROCK LOSS	
21	47.84	48.01	0.17	52		SILTSTONE	M.GY.BIOTR.VBRKN TWIST-OFF. POSSIBLE CORE LOSS.
21	48.01	48.51	0.50	53		SANDSTONE	MG.M.GY.VBRKN
22	48.51	49.19	0.68	54		SANDSTONE	MG.LT-M.GY.BRKN FEW QTZ VEINS. (LESS 1CM THICK).
22	49.19	49.87	0.68	56		SILTSTONE	M.GY.SSD.BRKN PYRITIZED & COALIFIED STRINGERS. ABUNDANT SHEAR ZONES. FERN (CLADOPHEBIS STRICTINERVIS).
22	49.87	49.97	0.10	57		ROCK LOSS	
22	49.97	50.37	0.40	57		SILTSTONE	M.GY.BRKN TWIST-OFF. POSSIBLE CORE LOSS. PLANT MASS. SHEAR ZONES.
22	50.37	50.57	0.20	58		MUDSTONE	M-DK.GY.BRKN CARBONACEOUS MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	50.57	50.67	0.10	58			COAL	DK.GY.VBRKN C-3.
23	50.67	50.93	0.26	58			SILTSTONE	M.GY.BRKN MUDDY SLTST. SHEAR ZONES.
23	50.93	51.14	0.21	59			SANDSTONE	MG.LT-M.GY.BRKN
23	51.14	51.81	0.67	*60			SANDSTONE	MG.LT-M.GY.BRKN FEM THIN QTZ VEINS (LESS 1 CM).
23	51.81	52.22	0.41	*62			SILTSTONE	GY.SSD.BRKN FG SS LAMELLAE. SHEAR ZONES. CLAY INFIL L SHEAR.
23	52.22	52.48	0.26	62			SANDSTONE	LT-M.GY.VBRKN QTZ VEINS. SHEAR ZONES.
24	52.48	52.82	0.34	62			SILTSTONE	M.GY.BRKN MED (APROX 2.0CM) QUARTZ VEIN.
24	52.82	53.12	0.30	63			MUDSTONE	M-DK.GY SHEAR ZONE. AQUA SOFT SHEET SILICATE IN SHEAR ZONE.
24	53.12	53.37	0.25	63			MUDSTONE	M-DK.GY.VBRKN COALIFIED MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	53.37	53.69	0.32	63			ROCK LOSS	
24	53.69	54.74	1.05	64			MUDSTONE	M-DK.GY.BRKN TWIST-OFF. POSSIBLE CORE LOSS AT TOP OF UNIT. COAL STRINGERS.
25	54.74	54.78	0.04	64			BENTONITE	LT.GY.SLD
25	54.78	55.91	1.13	64			MUDSTONE	SLTY.DK.GY.BRKN VERY SLTY MUDST. SLIGHTLY CARB TOWARDS BASE.
25	55.91	56.25	0.34	65	10439	? ROOF	MUDSTONE	CARB.BLK.BRKN SOME COAL LAMS & BANDS. LOWER 25CM SAMP LED. ? SEAM ROOF ROCK.
25	56.25	56.31	0.06	65	10440	?	COAL	C-2.BLK.BRKN
25	56.31	56.34	0.03	65	10440	?	MUDSTONE	CARB.BLK.SLD
25	56.34	56.40	0.06	65	10440	?	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	56.40	56.43	0.03	65	10440	?	COAL	C-2. BLK. VSHRD
25	56.43	56.48	0.05	65	10440	?	COAL	C-6. BLK. BRKN
25	56.48	56.56	0.08	65	10440	?	COAL	C-3. BLK. BRKN
25	56.56	56.58	0.02	65	10440	?	MUDSTONE	CARB. BLK. BRKN
25	56.58	56.68	0.10	65	10440	?	COAL	C-3. BLK. VBRKN
26	56.68	56.70	0.02	65	10440	?	COAL	C-4. DK. GY. VBRKN C-4.
26	56.70	57.32	0.62	66	10441	?	FLOOR SILTSTONE	M-DK. GY. BRKN GRADES FROM SSY SLTST AT BASAL TO MUDDY SLTST AT TOP OF UNIT (MINOR SSD AT TOP) - FAULTED QTZ VEINS NEAR TOP. UPPER 25 CM SAMPLED. ? SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	57.32	58.69	1.37	66			SILTSTONE	M. GY. SSD. BRKN SHEAR ZONES. THIN QTZ VEINS.
27	58.69	59.69	1.00	67			SILTSTONE	M. GY. SSD. BRKN MUDDY SLTST. EXTENSIVE SHEAR ZONES.
27	59.69	60.61	0.92	68			SILTSTONE	M. GY. BRKN BAIERA FURCATA. MUDDY SLTST. PITYOPHYLL UM NORDENSKIOLDI. SHEAR ZONES.
28	60.61	62.61	2.00	69			SILTSTONE	M. GY. BRKN INTERBEDDED VFG SS WITH MUDST LAMELLAE. SHEAR ZONES. 1 MED. QTZ VEIN. FINE QTZ VEINS THROUGHOUT. WRMBUR NEAR BASE.
29	62.61	62.84	0.23	70			SILTSTONE	M. GY. BRKN INTERBEDDED VFG SS WITH MUDST LAMELLAE.
29	62.84	64.10	1.26	71			SILTSTONE	M. GY. BRKN AS ABOVE.
29	64.10	64.65	0.55	71			SANDSTONE	SLTY. FG. M. GY. SSD. BRKN EXTENSIVE QTZ VEINS & FRACTURES (THICK TO THIN).
30	64.65	64.79	0.14	72			SANDSTONE	SLTY. FG. M. GY. AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	64.79	65.97	1.18	*72		SILTSTONE	M. GY. BIOTR. BRKN INTERBEDDED VFG SS WITH MUDST LAMELLAE.
30	65.97	66.70	0.73	*75		SILTSTONE	M. GY. BIOTR. BRKN AS ABOVE. SSD AT BASAL UNIT.
31	66.70	68.70	2.00	*74		SILTSTONE	M. GY. BIOTR. BRKN AS ABOVE WITH SHEAR ZONES.
32	68.70	68.87	0.17	73		SILTSTONE	M. GY. BIOTR. BRKN AS ABOVE.
32	68.87	70.76	1.89	*72		SILTSTONE	M. GY. BRKN INTERBEDDED VFG SS WITH MUDST LAMELLAE. BCA (70.74, 72) VARIES. BIOTURB IN MED UNIT. SSD AT BASAL UNIT.
33	70.76	72.03	1.27	*74		SILTSTONE	M. GY. SLD INTERBEDDED VFG SS WITH MUDSTONE LAMELLAE. MINOR SSD. BCA = 75.
33	72.03	72.85	0.82	76		SILTSTONE	M. GY. SLD AS ABOVE.
34	72.85	75.02	2.17	*78		SILTSTONE	M. GY. SLD AS ABOVE WITH COUPLE OF SHEAR ZONES. FE W FAULTS WITH LESS ICM DISPLACEMENT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	75.02	76.63	1.61	*82		SILTSTONE	M. GY. SLD INTERBEDDED VFG SS WITH MUDSTONE LAMELLAE. MINOR SSD.
35	76.63	77.08	0.45	83		SILTSTONE	M. GY. BRKN INTERBEDDED VFG SS WITH MUDSTONE LAMELLAE.
35	77.08	78.03	0.95	84		SILTSTONE	M. GY. BRKN AS ABOVE. TWIST-OFF. POSSIBLE CORE LOSS.
36	78.03	79.17	1.14	85		SILTSTONE	M. GY. BRKN MINOR SSD.
37	79.17	80.11	0.94	*86		SILTSTONE	M. GY. SLD AS ABOVE.
37	80.11	80.71	0.60	84		SILTSTONE	M. GY. BRKN AS ABOVE WITH AQUA SOFT SHEET SILICATE IN SHEAR ZONES. TWIST-OFF AT BASAL UNIT. POSSIBLE CORE LOSS.
37	80.71	80.92	0.21	83		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	80.92	81.09	0.17	82			SILTSTONE	M.GY.VBRKN INTERBEDDED VFG SS WITH MUDSTONE LAMELL AE.
37	81.09	81.44	0.35	82			SILTSTONE	M.GY.SLD AS ABOVE.
38	81.44	82.44	1.00	*80			SILTSTONE	M.GY.LAM.BRKN
38	82.44	82.48	0.04	79			ROCK LOSS	
38	82.48	82.68	0.20	79	10428	I	MUDSTONE	CARB.BLK.BRKN LOWER 17CM SAMPLED. I SEAM ROOF ROCK.
38	82.68	82.76	0.08	79	10428	I	SILTSTONE	M.GY.BRKN I SEAM ROOF ROCK. SAMPLED.
38	82.76	82.90	0.14	79	10429	I	COAL LOSS	
38	82.90	83.04	0.14	79	10429	I	COAL	C-5.BLK.BRKN
38	83.04	83.19	0.15	79	10429	I	COAL	C-5.BLK.BRKN
38	83.19	83.39	0.20	79	10429	I	COAL	C-5.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	83.39	83.59	0.20	79	10429	I	COAL	C-2.BLK.VBRKN SHEARED SLIGHTLY.
39	83.59	83.86	0.27	78	10429	I	COAL	C-2.BLK.BRKN MOD CLEATED.
39	83.86	84.96	1.10	78	10429	I	COAL LOSS	
39	84.96	85.01	0.05	77	10429	I	MUDSTONE	CARB
39	85.01	85.09	0.08	77	10429	I	COAL	C-4.BLK.BRKN QTZ FRACTURE FILL.
39	85.09	85.15	0.06	77	10429	I	MUDSTONE	CARB.BLK.BRKN
39	85.15	85.24	0.09	77	10429	I	MUDSTONE	CARB.BLK.BRKN
39	85.24	85.37	0.13	77	10429	I	COAL	C-5.BLK.BRKN
39	85.37	85.40	0.03	77	10429	I	COAL	C-2.BLK.SLD
39	85.40	85.44	0.04	77	10429	I	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	85.44	85.48	0.04	77	10429	I	COAL	C-1.BLK.SLD
39	85.48	85.56	0.08	77	10429	I	COAL	C-4.BLK.VSHRD
39	85.56	85.79	0.23	76	10429	I	COAL	C-3.BLK.VSHRD
39	85.79	85.89	0.10	76	10429	I	COAL	C-2.BLK.BRKN
39	85.89	86.06	0.17	76	10429	I	COAL	C-3.BLK.VSHRD
39	86.06	86.16	0.10	76	10430	I	MUDSTONE	M.BN.SHRD
39	86.16	86.20	0.04	76	10430	I	COAL	C-5.BLK.SHRD
39	86.20	86.25	0.05	76	10430	I	MUDSTONE	M.BN.SHRD
39	86.25	86.30	0.05	76	10430	I	COAL	C-3.BLK.SLD SOLID BUT SHEARED. NUMEROUS QTZ FILLED FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	86.30	86.40	0.10	76	10430	I	MUDSTONE	M.BN.SHRD
40	86.40	86.44	0.04	76	10430	I	COAL	C-5.BLK.BRKN
40	86.44	86.55	0.11	76	10430	I	COAL	C-3.BLK.BRKN
40	86.55	86.61	0.06	76	10430	I	MUDSTONE	CARB.BLK.BRKN
40	86.61	86.65	0.04	75	10430	I	COAL	C-3.BLK.BRKN
40	86.65	86.71	0.06	75	10430	I	SILTSTONE	CARB.DK.GY.SHRD
40	86.71	86.79	0.08	75	10430	I	COAL	C-4.BLK.VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	86.79	86.86	0.07	75	10430	I	MUDSTONE	CARB. BLK. VSHRD
40	86.86	86.96	0.10	75	10430	I	COAL	C-3. BLK. SHRD
40	86.96	87.00	0.04	75	10430	I	MUDSTONE	CARB. BLK. SLD
40	87.00	87.27	0.27	75	10431	I	COAL	C-3. BLK. VSHRD
40	87.27	88.12	0.85	74	10431	I	COAL	C-3. BLK
41	88.12	88.60	0.48	74	10431	I	COAL	C-3. BLK. VSHRD
41	88.60	88.65	0.05	74	10431	I	COAL	C-4. BLK. VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	88.65	88.90	0.25	73	10431	I	COAL	C-3. BLK. VSHRD
41	88.90	89.00	0.10	73	10431	I	COAL	C-4. BLK. VSHRD
41	89.00	89.04	0.04	73	10431	I	MUDSTONE	CARB. BLK. SHRD
41	89.04	89.21	0.17	73	10431	I	COAL	C-3. BLK. VSHRD
41	89.21	89.44	0.23	73	10431	I	COAL	C-3. BLK. VSHRD
41	89.44	89.48	0.04	73	10431	I	COAL	C-2. BLK. BRKN
41	89.48	89.98	0.50	72	10431	I	COAL LOSS	
41	89.98	90.03	0.05	72	10431	I	COAL	C-6. BLK. VSHRD

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	90.03	90.10	0.07	72	10431 I	COAL	C-3.BLK.PHRD
41	90.10	90.14	0.04	72	10431 I	COAL	C-4.BLK.VSHRD
41	90.14	90.16	0.02	72	10431 I	COAL	C-2.BLK.YBRKN
41	90.16	90.28	0.12	72	10431 I	COAL	C-3.BLK.YBRKN
41	90.28	90.31	0.03	72	10431 I	COAL	C-2.BLK.SLD
41	90.31	90.33	0.02	72	10431 I	COAL	C-4.BLK.SLD
41	90.33	90.34	0.01	72	10431 I	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	90.34	90.43	0.09	72	10432 I	COAL	C-2.BLK.BRKN VERY HARD. BANDED WITH C-1.
41	90.43	90.51	0.08	72	10432 I	COAL LOSS	
41	90.51	90.60	0.09	72	10432 I	COAL	C-2.BLK.BRKN AS ABOVE.
42	90.60	90.62	0.02	72	10432 I	COAL	C-1.BLK.SLD
42	90.62	91.20	0.58	71	10432 I	COAL	C-2.BLK.BRKN
42	91.20	91.82	0.62	71	10432 I	COAL	C-1.BLK.BRKN
42	91.82	91.84	0.02	70	10432 I	COAL	C-4.BLK.BRKN
42	91.84	91.87	0.03	70	10432 I	COAL	C-2.BLK.BRKN
42	91.87	91.91	0.04	70	10432 I	COAL	C-3.BLK.BRKN
42	91.91	91.95	0.04	70	10432 I	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	91.95	92.54	0.59	70	10433	I FLOOR	MUDSTONE	SLTY DK.GY SHRD BECOMES VERY SLTY NEAR BASE. SOME HAIRL INE TALC FRACTURES & STRINGERS. SLICKEN SIDED SHEAR SURFACES SHOWING DEXTRAL MO VEMENT. UPPER 25CM SAMPLED. I SEAM FLOO R ROCK.
43	92.54	92.78	0.24	70			MUDSTONE	CARB.DK.GY.BRKN SHEAR ZONE & SSD AT BASAL UNIT.
43	92.78	92.84	0.06	69			SANDSTONE	PYR.MG.M.GY.SLD FAULTED. LARGE PYRITE BLEB.
43	92.84	92.90	0.06	69			MUDSTONE	CARB.DK.GY.SLD CARB MUDST GRADES INTO INTERBEDDED VERY THIN SS.BED. CLAST OF SLTST.
43	92.90	93.10	0.20	69			SANDSTONE	MG.M.GY.SSD.BRKN FEW AQUA.SOFT SHEET SILICATE BLEBS.
43	93.10	93.13	0.03	69			ROCK LOSS	
43	93.13	93.35	0.22	69			SILTSTONE	H.GY.BRKN MUDDY SLTST INTERBEDDED WITH SS LAMELLA E. FRACTURE DISPLACEMENT LESS THAN 2CM. SHEARED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	93.35	93.38	0.03	69			ROCK LOSS	
43	93.38	93.48	0.10	69			SANDSTONE	MG.M.GY.SLD AS ABOVE.
43	93.48	93.63	0.15	69			SANDSTONE	MG.M.GY.SLD VERY THIN MUDST LAMELLAE.
43	93.63	93.68	0.05	69			SILTSTONE	LT-M.GY.BRKN FG SS LAMELLAE. SHEARED.
43	93.68	93.71	0.03	69			ROCK LOSS	
43	93.71	93.74	0.03	69			ROCK LOSS	
43	93.74	93.81	0.07	69			SANDSTONE	CLYY.MG.LT-M.GY.BRKN SHEARED.
43	93.81	93.88	0.07	68			ROCK LOSS	
43	93.88	94.09	0.21	68			SANDSTONE	MG.LT-M.GY.BRKN
43	94.09	94.60	0.51	68			SANDSTONE	CG.LT.GY.BRKN FEW VUGS. QTZ FILLING EXTENSIVE THIN VE INS CARB. FEW CLASTS OF MG SS & SLTST INCORPORATED FROM ABOVE UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	94.60	96.24	1.64	67			SANDSTONE	CARB. CG. LT. GY. BRKN THIN VEINS TO HEAVY FRACTURING & INFILLING OF CARBONATE. SHEAR ZONES. SLTST RIP-UP CLASTS.
44	96.24	96.27	0.03	66			ROCK LOSS	
44	96.27	96.59	0.32	*66			SILTSTONE	M. GY. SSD. VBRKN INTERBEDDED WITH MG SS LAMELLAE. SHEAR ZONE.
44	96.59	96.89	0.30	67			ROCK LOSS	
44	96.89	96.93	0.04	68			SILTSTONE	M. GY. SLD AS ABOVE.
45	96.93	97.19	0.26	*68			SILTSTONE	M-DK. GY. SLD FG SS LAMELLAE AT BASAL UNIT. FRACTURE DISPLACEMENT.
45	97.19	98.43	1.24	*72			SANDSTONE	FG. M. GY. WRMBU. BRKN LAMINATED & VERY THIN BEDS OF SLTST.
45	98.43	98.46	0.03	72			ROCK LOSS	
45	98.46	98.66	0.20	72			SANDSTONE	FG. M. GY. RIPMK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	98.66	99.14	0.48	72			SANDSTONE	FG. M. GY. WRMBU. BRKN LAMINATED & VERY THIN BEDS OF SLTST. SCOUR & FILL.
45	99.14	99.16	0.02	71			ROCK LOSS	
46	99.16	99.99	0.83	71			MUDSTONE	SLTY. M. GY. LAM. BIOTR. SLD FG SS LAMELLAE, SCOUR & FILL. ABUNDANT HELMINTHOPSIS. COUPLE VERY THIN FG. SS. BEDS. SPARSE PYRITE FLECKS.
46	99.99	101.28	1.29	71			MUDSTONE	SLTY. M. GY. SSD. SLD AS ABOVE WITH WRMBUR & PLANT HASH.
47	101.28	101.63	0.35	70			MUDSTONE	SLTY. M. GY. SSD. SLD FG SLTST LAMELLAE. ABUNDANT HELMINTHOPSIS. SHEAR ZONE.
47	101.63	101.93	0.30	70			SANDSTONE	FG. M. GY. SLD MUDDY SS (GRADES INTO SS).
47	101.93	102.95	1.02	*70			SANDSTONE	MG. LT-M. GY. BRKN FINE CARBONATE VEINS.
47	102.95	103.01	0.06	72			ROCK LOSS	
48	103.01	103.12	0.11	72			SANDSTONE	MG. LT-M. GY. SLD AS ABOVE. FINE SS RIP-UPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	103.12	103.30	0.18	73			SANDSTONE	MG.LT-M.GY.RIPMK.BRKN SLTST LAMELLAE & RIP-UPS. SILICIFIED GA STROPOD (APPROX 1.0CM LONG). ABRUPT BOU NDARY ON VERY THIN SLTST BED.
48	103.30	104.02	0.72	*74			SANDSTONE	MG.LT-M.GY.RIPMK.BRKN EXTENSIVE CARBONATE FRACTURES. TECTONIC DEFORMATION. THIN SLTST BED. FAULT FRA CTURE ZONE.
48	104.02	104.05	0.03	73			ROCK LOSS	
48	104.05	104.46	0.41	72			SANDSTONE	MG.LT-M.GY.RIPMK.BRKN RIP-UP CLASTS. FEW SLTST LAMELLAE.
48	104.46	104.49	0.03	71			ROCK LOSS	
48	104.49	105.14	0.65	*70			SANDSTONE	MG.M.GY.LAM.BRKN MUDST LAMELLAE. GRADUALLY FINES UPWARD. SCOUR FILL. FRACTURE DISPLACEMENT.
48	105.14	105.17	0.03	69			ROCK LOSS	
49	105.17	105.57	0.40	69			SANDSTONE	MG.M.GY.BRKN FINE CARBONATE FRACTURES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	105.57	105.84	0.27	*68			SANDSTONE	FG.M.GY.LAM.WRMBU.BRKN SLTST LAMELLAE. MINOR BIOTURB LOAD CAST S. FEW CARBONATE VEINS.
49	105.84	107.11	1.27	70			SANDSTONE	FG.M.GY.LAM.WRMBU.BRKN AS ABOVE.
49	107.11	107.19	0.08	71			ROCK LOSS	
50	107.19	108.09	0.90	*72			SANDSTONE	FG.M.GY.LAM SLTST LAMELLAE & VERY THIN BEDS BETWEEN THIN SS BEDS.
50	108.09	108.73	0.64	70			SANDSTONE	MG.LT-M.GY THIN CARBONACEOUS VEINS. LARGE WORM BUR ROW (14CM).
50	108.73	109.15	0.42	69			SANDSTONE	FG.LT-M.GY THIN CARBONACEOUS VEINS.
51	109.15	110.05	0.90	68			SANDSTONE	FG.LT-M.GY CRENULATED LAMINATIONS OF SLTST AND CAR BONATE - SOFT DARK SHINY MINERAL: COAL? SMALL SCALE FRACTURES APPROX 1CM DISPL ACEMENT. MUDSTONE MISP. AT BASAL UNIT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	110.05	111.12	1.07	*66			SILTSTONE	M.GY. LAM. BRKN VERY THIN MUDST BEDS AT BASAL UNYI GRAD E INTO MUDST LAMELLAE AT TOP OF UNIT. B IOTURB, SSD & HRMBUR.
51	111.12	111.20	0.08	66			ROCK LOSS	
52	111.20	111.77	0.57	66			SILTSTONE	M.GY. LAM AS ABOVE.
52	111.77	112.61	0.84	*66			SILTSTONE	M.GY. LAM AS ABOVE.
52	112.61	113.19	0.58	68			SANDSTONE	FG.M.GY. FEW MUDST WISPS. APPROX 1.0CM CARBONATE VEIN & FEW THIN ONES.
53	113.19	114.66	1.47	*70			SANDSTONE	FG.M.GY. LAM. SSD. BRKN MUDST LAMELLAE & VERY THIN BEDS. SS GRA DES INTO VFG. BURROWS PRESENT.
53	114.66	114.74	0.08	69			ROCK LOSS	
53	114.74	114.90	0.16	69			SANDSTONE	MG.M.GY. BRKN CARBONATE VEIN.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	114.90	115.38	0.48	69			SANDSTONE	MG.M.GY. LAM. SSD. SLD MUDST LAMELLAE & VERY THIN BEDS.
54	115.38	115.77	0.39	*68			SILTSTONE	M.GY. LAM. BRKN AS ABOVE. SHEAR ZONE.
54	115.77	116.05	0.28	68			ROCK LOSS	
54	116.05	117.00	0.95	69			SANDSTONE	MG.M.GY. LAM. SSD. BRKN JUMBLED AND BRECCIATED WITH QTZ INFILLI NG AT TOP OF UNIT. MUDST WISPS & LAMELL AE. SMALL SCALE FAULT DISPLACEMENT, (LE SS. THAN 1.0CM).
54	117.00	117.64	0.64	*69			SILTSTONE	M.GY. LAM. BIOTR. BRKN MUDST LAMELLAE. HELMINTHOPSIS AT BASAL UNIT.
55	117.64	118.25	0.61	68			SILTSTONE	M.GY. LAM. SSD. BRKN AS ABOVE.
55	118.25	118.32	0.07	67			SILTSTONE	M.GY. LAM. SSD. SLD AS ABOVE. TWIST-OFF; POSSIBLE CORE LOSS
55	118.32	119.76	1.44	*65			SILTSTONE	M.GY. LAM. SSD. SLD MUDSTONE LAMELLAE. HELMINTHOPSIS THROUG HOUT. WEATHERED AT CENTER OF UNIT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	119.76	120.50	0.74	*69			MUDSTONE	SLTY. M.GY. LAM. BIOTR. BRKN VFG SS LAMELLAE & VERY THIN BEDS. SSD. HELMINTHOPSIS THROUGHOUT.
56	120.50	121.10	0.60	70			SILTSTONE	M.GY. LAM. BIOTR. BRKN MUDDY SLTST WITH WISPS LAMELLAE & VERY THIN BEDS OF MUDST. SSD. HELMINTHOPSIS THROUGHOUT.
56	121.10	121.22	0.12	70			SANDSTONE	FG. M.GY. LAM. SLD MUDDY SS.
56	121.22	121.85	0.63	70			SANDSTONE	MG. M.GY. LAM. SLD MUDDY WISPS & LAMELLAE. MINOR BIOTRB.
57	121.85	123.27	1.42	71			SANDSTONE	MG. M.GY. SLD MUDDY WISPS. MUDDY LAMELLAE IN TOP 1/3 OF UNIT. SSD & DROPSTONE. VERY THIN QTZ VEIN IN CENTER OF UNIT.
57	123.27	124.01	0.74	*72			SILTSTONE	M.GY. LAM. SSD. BRKN MUDDY SLTST. MUDSTONE LAMELLAE. LOAD. CA STS.
58	124.01	124.26	0.25	72			MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	124.26	126.07	1.81	72			MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN MUDDY LAMELLAE. FEW BURROWS. PYRITE LOA D CASTS. RARE PYRITE PLANT MATERIAL.
59	126.07	127.25	1.18	*72			MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN SLTST LAMELLAE. COALIFIED PLANT LEAF (2 CM WIDE, ELIPSOIDAL IN SHAPE). HELMINTHOPSIS THROUGHOUT. FEW TINY PYRITE BLEBS
59	127.25	128.16	0.91	74			MUDSTONE	M-DK. GY. BRKN SLTST LAMELLAE AT TOP OF UNIT. SHEAR ZONE. SPARSE HELMINTHOPSIS.
60	128.16	130.26	2.10	*77			MUDSTONE	M-DK. GY. MAS. BRKN AQUA. SOFT SHEET SILICATE THIN VEIN. BIV ALVES 3/4 CM LONG. COALIFIED PLANT LEAF (ELLIPSOIDAL SHAPE). SHEAR ZONE AT BAS AL UNIT.
61	130.26	130.37	0.11	74			MUDSTONE	M-DK. GY. MAS. BRKN
61	130.37	132.25	1.88	71			MUDSTONE	M-DK. GY. MAS. BRKN TWIST-OFF AT TOP OF UNIT: POSSIBLE CORE LOSS. BIVALVES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	132.25	133.50	1.25	66			MUDSTONE	M-DK.GY.MAS.BRKN BIVALVES FERGANOCONCHA (LESS 2CM), PYRITE BLEBS.
62	133.50	134.30	0.80	63			MUDSTONE	M-DK.GY.MAS.BRKN TWIST-OFF AT TOP OF UNIT: POSSIBLE CORE LOSS. BIVALVES (UP TO 3CM) FERGANOCONCHA? PENTACRINUS. PYRITE BLEBS.
63	134.30	136.44	2.14	58			MUDSTONE	M-DK.GY.MAS.BRKN PYRITE BLEBS. ABUNDANT BIVALVES.
64	136.44	136.62	0.18	55			MUDSTONE	DK.GY.YBRKN HOMOGENOUS.
64	136.62	136.77	0.15	54			MUDSTONE	DK.GY.SHRD SOFT, UNCONSOLIDATED, SLICKENSIDED - POSSIBLE FAULT ZONE.
64	136.77	137.32	0.55	53			MUDSTONE	DK.GY.BRKN SPARSE QTZ GRAINS MIXED WITH MUDST, SANDIER TOWARDS BASE, OCCASIONAL SMALL (APPROX 5-BMM) BIVALVES.
64	137.32	137.72	0.40	*52			MUDSTONE	DK.GY.THNB.SLD THIN (<1MM) WISPY FG SS INTERBEDS, ABUNDANT DISSEMINATED PYRITE, SOME FORMING WISPY LENSES. RARE FIBROUS CALCITE VEINS APPROX 2MM THICK.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	137.72	138.00	0.28	53	10434	H ROOF	MUDSTONE	SLTY.DK.GY.LAM.BRKN WISPY SLTY INTERBEDS, DISSEMINATED, POWD PYRITE, 2CM THICK FIBROUS CALCITE VEIN AT TOP. LOWER 25CM SAMPLED. H SEAM ROOF ROCK.
64	138.00	138.03	0.03	54	10435	H	COAL	C-3.BLK.BRKN SOME C-2 AND C-5 MIXED IN.
64	138.03	138.05	0.02	54	10435	H	MUDSTONE	M.GY.LAM.SLD DISSEMINATED, POWDERED PYRITE.
64	138.05	138.08	0.03	54	10435	H	COAL	C-3.BLK.YBRKN
64	138.08	138.13	0.05	54	10435	H	COAL	C-2.BLK.YBRKN MINOR C-1 BAND, C-3 BANDS.
64	138.13	138.18	0.05	55	10435	H	COAL	C-3.BLK.BRKN SOME C-1 BANDS.
64	138.18	138.43	0.25	55	10435	H	COAL	C-2.BLK.BRKN ABUNDANT INTERBEDDED C-1 AND C-3.
65	138.43	138.73	0.30	56	10435	H	COAL	C-2.BLK.YBRKN
65	138.73	138.79	0.06	57	10435	H	COAL	C-3.BLK.YBRKN SOME C-2 BANDING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	138.79	138.87	0.08	57	10435 H	COAL	C-5, BLK, VBRKN SOME C-3 BANDING.
65	138.87	138.99	0.12	58	10435 H	COAL	C-4, BLK, VBRKN
65	138.99	139.09	0.10	58	10435 H	COAL	C-2, BLK, VBRKN SOME C-1 BANDING.
65	139.09	139.19	0.10	59	10435 H	COAL	C-3, BLK, VBRKN
65	139.19	139.30	0.11	59	10435 H	COAL	C-2, BLK, VBRKN
65	139.30	139.34	0.04	59	10435 H	COAL	C-3, BLK, SLD ABUNDANT QTZ 1-4CM THICK.
65	139.34	139.47	0.13	60	10435 H	MUDSTONE	CARB. LT. BLK. SHRD SOFT, UNCONSOLIDATED.
65	139.47	139.50	0.03	60	10435 H	MUDSTONE	CARB. BLK. SLD HARD, SOME COAL BANDING 3-6MM THICK.
65	139.50	139.75	0.25	61	10435 H	COAL	C-2, BLK MINOR MUDST INTERBEDDING APPROX 5.0MM THICK THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	139.75	139.78	0.03	61	10435 H	COAL	C-3, BLK, VBRKN WET, MINOR MUD INTERMIXED WITH COAL.
65	139.78	139.83	0.05	61	10435 H	COAL	C-4, BLK, VBRKN
65	139.83	139.85	0.02	61	10435 H	COAL	C-5, BLK, BRKN SHEARED ALONG BRKN SURFACES.
65	139.85	139.98	0.13	62	10435 H	COAL	C-4, BLK, VBRKN MINOR MUDST INTERBEDDING.
65	139.98	140.00	0.02	*62	10435 H	COAL	C-6, BLK, BRKN SHEARED ALONG BRKN SURFACES.
65	140.00	140.10	0.10	62	10435 H	COAL	C-3, BLK, VBRKN MINOR C-2 BANDING.
65	140.10	140.31	0.21	62	10436 H	ROCK LOSS	
65	140.31	140.44	0.13	61	10436 H	MUDSTONE	DK. GY. SLD WISPY QTZ VEINS 0.5MM TO 10.0MM, 1CM C-3 BAND NEAR TOP.
65	140.44	140.74	0.30	61	10436 H	COAL	C-6, BLK, VSHRD HIGHLY POLISHED SHEAR SURFACES. POSSIBLE FAULT ZONE? OCCASIONAL FIBROUS CALCITE VEINS 5-10MM THICK. QUITE HARD, INTERBEDDED WITH MUDST.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	140.74	140.99	0.25	61	10436	H	COAL	C-5, BLK, YSHRD AS ABOVE.
66	140.99	141.09	0.10	60	10436	H	MUDSTONE	CARB, YSHRD SOFT, UNCONSOLIDATED.
66	141.09	141.19	0.10	60	10436	H	COAL	C-5, BLK, YSHRD AS ABOVE C-6.
66	141.19	141.27	0.08	60	10436	H	MUDSTONE	CARB, BLK, YSHRD SOFT, POLISHED.
66	141.27	141.54	0.27	60	10437	H	COAL	C-3, BLK, VBRKN C-2 BANDING, SOME C-6 INTERBEDDING.
66	141.54	141.59	0.05	59	10437	H	COAL	C-4, BLK, BRKN ABUNDANT C-3, C-6 BANDS.
66	141.59	142.13	0.54	59	10437	H	COAL	C-4, BLK, PHRD SOME ORDENCE AT SHEARING. MINOR MUDST I NTERMIXING. ABUNDANT C-3 PARTICLES.
66	142.13	142.28	0.15	58	10437	H	COAL	C-2, BLK, VBRKN ABUNDANT C-1 BANDS.
66	142.28	142.44	0.16	58	10437	H	COAL	C-4, BLK, PHRD ABUNDANT C-3 PARTICLES AND MUDST INTERB EDDING.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	142.44	142.58	0.14	58	10437	H	COAL	C-3, BLK, BRKN ABUNDANT C-4 BANDS, MINOR MUDST PARTICLES.
67	142.58	142.63	0.05	58	10437	H	MUDSTONE	CARB, DK, GY, BRKN COALIFIED PLANT IMPRESSIONS.
67	142.63	142.78	0.15	58	10437	H	COAL	C-3, BLK, VBRKN ABUNDANT C-2 AND C-5 BANDS.
67	142.78	142.81	0.03	57	10437	H	COAL	C-5, DK, GY, SLD SHEARED, POLISHED SURFACES IN ENDS OF C ORE.
67	142.81	142.87	0.06	57	10437	H	COAL	C-3, BLK, VBRKN
67	142.87	142.96	0.09	57	10437	H	COAL	C-4, BLK, VBRKN SOME MUDST INTERBEDDING.
67	142.96	143.07	0.11	57	10437	H	COAL	C-5, DK, GY ABUNDANT CALCITE VEINING THROUGHOUT.
67	143.07	143.17	0.10	57	10438	H FLOOR	MUDSTONE	CARB, MEL, DK, GY, LAM, BRKN SLTST INTERLAM, SANDIER TOWARDS BASE. H SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	143.17	143.63	0.46	56	10438	H FLOOR	MUDSTONE	SSY MOD DK GY THNB GRADED BDG - COARSENING UP CYCLES 1-10C M THICK NEAR TOP. PLANT FRAGMENTS. UPPE R 15CM SAMPLED. H SEAM FLOOR ROCK.
67	143.63	144.50	0.87	55			SANDSTONE	CLYY FG MOD LT GY THNB SSD MUDST LENSES 1-2MM THICK. 1-3CM LONG. R ARE MUDST RIP-UP CLASTS <1MM DIA. RARE ISOPAEOUS CALCITE VEINS APPROX 1CM THICK.
68	144.50	145.10	0.60	54			SANDSTONE	FG LT-M GY BRKN FEW MUDST WISPS.
68	145.10	145.17	0.07	54			COAL	M-DK GY BRKN COALIFIED MUDST.
68	145.17	145.71	0.54	53			SILTSTONE	M GY LAM SLD MUDDY SLTST THIN QTZ VEIN. FEW COAL ST RINGERS. GRADES INTO SLTST WITH MUDST L AMELLAE.
68	145.71	146.55	0.84	*52			SANDSTONE	FG M GY LAM SLD
69	146.55	147.96	1.41	52			SANDSTONE	MG LT-M GY FEW MUDST WISP. THIN QTZ WISP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	147.96	148.54	0.58	52			MUDSTONE	SLTY M-DK GY LAM SSD BRKN END OF HOLE. DRILLER'S MARK. TD = 148.54.

* DENOTES MEASURED BCA
NEWPAGE

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GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88004

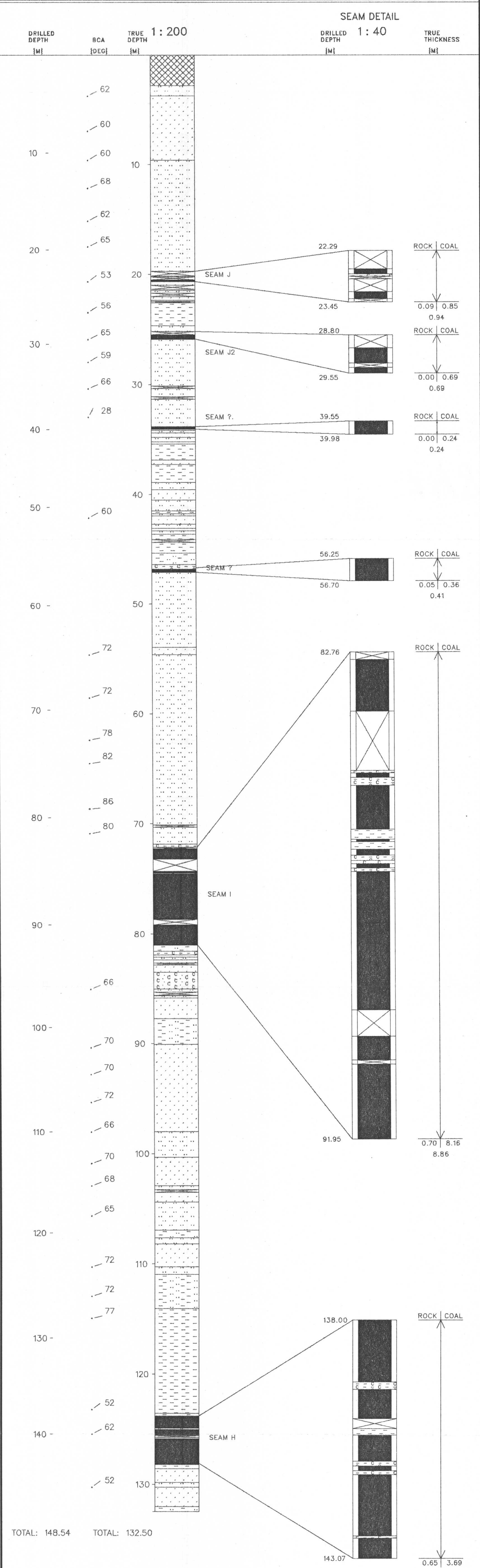
GEOLOGIST : HEARN DATE : FEB 21/89 DRAWING NO. :

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SCALE : 1:200 1:40

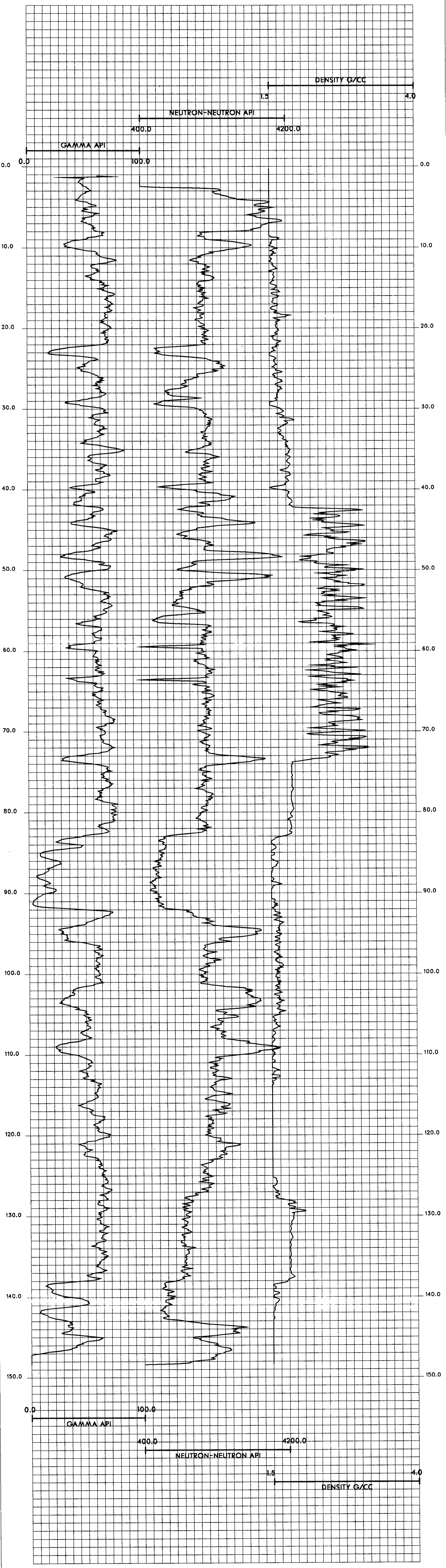
NORTHING: 6342222.0 N INCLINATION: 90.0°
 EASTING: 504450.1 E



Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88004 Log Date: 88-06-15 Company: CENTURY Geologist: HEARN	Province: BC Northing: 6342220.00 Lat: 571330 Zone: 9 Easting: 504450.00 Long: 1285535 Measuring Point: GROUND LEVEL Elevation: 1650.4				
Scale: 1 to 200.0 Depth Range: 0.0 to 153.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.				
Logs Plotted:					
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88005

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88005

DATE - 02/15/89

- HISTORY -

START DATE - 06/16/88

END DATE - 06/19/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - ETMANSKI

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - AQUIFER = 135.62. INTERSECTED SEAMS ; K/L,K,J,I.

- LOCATION -

PROVINCE - BC
ELEVATION - 1682.69

ZONE - 9
NORTHING - 6342794.52
EASTING - 505390.09

LICENCE/LEASE NUMBER - 7148

LATITUDE - 571348
LONGITUDE - 1285439

- ORIENTATION -

LENGTH - 141.00

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 15.24
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

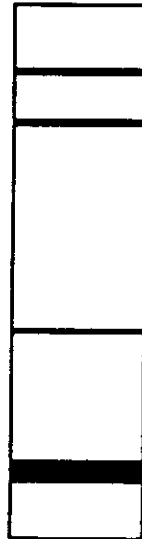
SCHEMATIC PROFILE

DDH88-005

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

K/L
K



0.97 m

1.03 m

J

0.75 m

I

5.65 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	6.10	6.10	87			OVERBURDEN	ORIGINAL CASING DEPTH. MORE CASING ADDED TO A DEPTH OF 15.24 M. O
1	6.10	8.47	2.37	87			ROCK LOSS	
1	8.47	9.07	0.60	87			MUDSTONE	M-DK.GY.VBRKN RUBBLE. POSSIBLE CORE LOSS. SOME SLTST PIECES MIXED IN. CARB NEAR BASE.
1	9.07	9.11	0.04	87			BENTONITE	LT.GY.BRKN VERY PASTY.
1	9.11	9.14	0.03	87			MUDSTONE	CARB.BLK.BRKN
1	9.14	9.31	0.17	87			MUDSTONE	CARB.BLK.PWRD VERY SOUPY.
1	9.31	9.41	0.10	87			COAL	C-6.BLK.SLD VERY DENSE. BONE COAL. QTZ FILLED FRACTURES.
1	9.41	9.57	0.16	87			MUDSTONE	CARB.DK.BN.VBRKN UPPER HALF IS PASTY. LOWER HALF IS HARD.
1	9.57	10.17	0.60	87			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	10.17	10.40	0.23	*87			SANDSTONE	CLYY.LT.GY.VBRKN VERY ARGILLACEOUS SS. CLAY LAMS THROUGH OUT.
1	10.40	11.08	0.68	83			ROCK LOSS	
1	11.08	11.28	0.20	80			MUDSTONE	DK.GY.VBRKN
2	11.28	11.60	0.32	78			MUDSTONE	M-DK.GY.VBRKN POORLY CONSOLIDATED.
2	11.60	11.90	0.30	75			MUDSTONE	CARB.DK.GY.VBRKN POORLY CONSOLIDATED.
2	11.90	12.05	0.15	74			ROCK LOSS	
2	12.05	12.50	0.45	71			MUDSTONE	DK.GY.VBRKN POORLY CONSOLIDATED.
2	12.50	12.61	0.11	69			SILTSTONE	M.GY.SLD VERY HARD. PYRITE BLEBS. ALMOST MUD SIZ E.GRAINS. LOOKS CALCAREOUS.
2	12.61	12.91	0.30	67			MUDSTONE	DK.GY.VBRKN POORLY CONSOLIDATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	12.91	13.69	0.78	63			MUDSTONE	DK.GY.VBRKN
3	13.69	13.81	0.12	60			MUDSTONE	DK.GY.BRKN POORLY CONSOLIDATED. SHEARED.
3	13.81	14.07	0.26	58			MUDSTONE	CARB.BLK.VBRKN PYRITE CRYSTALLIZATION. VERY CARB. CORE TWIST-OFF. CORE IS RUBBLED.
3	14.07	14.57	0.50	55			MUDSTONE	CARB.DK.GY.VBRKN LOWER PORTION IS VERY SHEARED.
4	14.57	15.24	0.67	51			MUDSTONE	DK.GY.BRKN HARD AND WELL CONSOLIDATED.
4	15.24	15.56	0.32	47			ROCK LOSS	
4	15.56	15.66	0.10	45			MUDSTONE	CARB.BLK.PHRD SOUPY.
4	15.66	15.81	0.15	44			MUDSTONE	CARB.DK.GY.BRKN BECOMING SLTY.
4	15.81	16.13	0.32	42			MUDSTONE	SLTY.DK.GY.BRKN VERY SLTY (ALMOST SLTST).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	16.13	16.37	0.24	*40			SILTSTONE	M.GY.SLD CALCAREOUS SLTST. VERY HARD. COAL FLECK S IN CORE.
4	16.37	16.57	0.20	41			ROCK LOSS	
4	16.57	16.82	0.25	42	04370	K/L ROOF	MUDSTONE	CARB.DK.BLK.VSHRD K/L SEAM ROOF ROCK. SAMPLED.
4	16.82	16.85	0.03	43	04371	K/L	COAL	C-2.BLK.PHRD
5	16.85	16.94	0.09	43	04371	K/L	COAL	C-4.BLK.SHRD
5	16.94	17.28	0.34	44	04371	K/L	COAL LOSS	
5	17.28	17.34	0.06	45	04371	K/L	MUDSTONE	CARB.BLK.VSHRD
5	17.34	17.45	0.11	45	04371	K/L	MUDSTONE	DK.GY.BRKN
5	17.45	17.47	0.02	46	04371	K/L	MUDSTONE	CARB.BLK.BRKN
5	17.47	17.59	0.12	46	04371	K/L	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	17.59	18.04	0.45	47	04371 K/L	COAL	C-3.BLK.YBRKN BORDERLINE WITH C-2 IN PLACES.
5	18.04	18.06	0.02	49	04371 K/L	COAL	C-5.BLK.BRKN
5	18.06	18.09	0.03	49	04371 K/L	COAL	C-2.BLK.BRKN
5	18.09	18.17	0.08	49	04371 K/L	COAL LOSS	
5	18.17	18.57	0.40	50	04372 K/L FLOOR	MUDSTONE	CARB.DK.GY.YBRKN UPPER 25CM SAMPLED. K/L SEAM FLOOR ROCK
5	18.57	19.47	0.90	53		MUDSTONE	DK.GY.BRKN CORE IS CRACKED. SLIGHTLY SHEARED.
5	19.47	19.57	0.10	56		SILTSTONE	SSY.M-DK.GY.SSD.BRKN LOAD CASTS (RIGHT WAY UP).
5	19.57	19.62	0.05	56		SILTSTONE	LT.GY.SLD
5	19.62	19.68	0.06	56		SILTSTONE	LT.GY.SLD CALCAREOUS. VERY HARD. QTZ STRINGERS. H AIRLINE COALY STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	19.68	19.77	0.09	56		SILTSTONE	SSY.LT-M.GY.YTHNB.SLD INTERBEDDED SLTST & VFG SS.
5	19.77	19.90	0.13	*57		SANDSTONE	LT.GY.SSD.SLD LOAD CAST (RIGHT WAY UP).
6	19.90	20.41	0.51	*39		SILTSTONE	LT.GY.YTHNB.BRKN SANDSTONE BEDS - FROM VERY THIN TO LAMI NATED, LISTRIC SURFACES, QUARTZ FILLED FRACTURES.
6	20.41	20.62	0.21	*57		SANDSTONE	SLTY.FG.LT.GY.LAM.SSD.BRKN SOFT SEDIMENT FRACTURE FILLED WITH SS. QUARTZ FILLED FRACTURE.
6	20.62	20.75	0.13	56		SANDSTONE	SLTY.VFG.LT.GY.SLD SLTY FILLED FRACTURES. DEWATERING STRUC TURES? SHOWING TOPS UP.
6	20.75	20.95	0.20	54		SILTSTONE	LT.GY.YTHNB.SSD.SLD SSD, QTZ FILLED FRACTURES, THIN SS BEDS
6	20.95	21.08	0.13	*53		SILTSTONE	M.GY.LAM.YBRKN QTZ FILLED FRACTURES, FRACTURE ZONE FIL LED WITH QTZ CREATING BRECCIA, LISTRIC. THIN MUDST BEDS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	21.08	21.28	0.20	*55			SILTSTONE	M. GY. VTHNB. SLD PYRITE, QTZ FILLED FRACTURES. FOSSIL FRAGMENT, CLAUDEPHLEBIS VIRGINIENSIS.
6	21.28	21.46	0.18	*54			MUDSTONE	DK. GY. VSHRD LISTRIC SURFACES. QTZ FILLED FRACTURES. MUDSTONE LAYERS VERY SHEARED.
6	21.46	21.71	0.25	*53			SANDSTONE	CLYY. VFG. M. GY. SLD TWIST-OFF, LISTRIC SURFACES. SANDSTONE WITH MUDST BANDS. POSSIBLE CORE LOSS.
7	21.71	22.86	1.15	*68			SANDSTONE	CLYY. FG. LT. GY. VTHNB. SSD. BRKN MUDST BANDS. HAIRLINE QTZ VEIN. TOPS UP
7	22.86	23.68	0.82	*62			SANDSTONE	CLYY. FG. LT. GY. SSD. BRKN MUDST BANDS, FOSSIL FRAGMENTS.
8	23.68	25.65	1.97	*60			SANDSTONE	CLYY. FG. M. GY. VTHNB. SLD MUDSTONE BANDS UP TO 2.5CM. TOPS UP, SS D. ODD LISTRIC SHEAR SURFACES.
9	25.65	25.82	0.17	*53			SANDSTONE	CLYY. FG. LT. GY. VTHNB BANDS OF MUDST.
9	25.82	27.59	1.77	*60			SANDSTONE	CLYY. FG. M. GY. VTHNB. BRKN LISTRIC SURFACES. MUDST BANDS. THIN MUDST BANDS, MUDST FILLING IN FRACTURES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	27.59	28.15	0.56	*60			SANDSTONE	CLYY. FG. M. GY. VTHNB. VBRKN MUD & MUDST IN FRACTURES CREATING BANDS, LISTRIC SURFACES.
10	28.15	28.55	0.40	*54			SILTSTONE	CLYY. FG. M. GY. VTHNB. VBRKN BANDS OF MUDST, 45CM BED OF SHEARED MUDST. MUD FILLS MANY FRACTURES, VERY THIN MUDST BEDS.
10	28.55	29.10	0.55	*55			SILTSTONE	VFG. M. GY. VTHNB. SSD. VBRKN SSD, DARK MUDST BEDS.
10	29.10	29.69	0.59	56			MUDSTONE	VFG. DK. GY. VTHNB. VBRKN MUDST WITH OCCASIONAL COAL PARTINGS, LISTRIC SURFACES, FRACTURES OF MED WITH MUD. FEATURELESS MUDSTONE.
11	29.69	29.78	0.09	56			MUDSTONE	DK. GY. VBRKN SHEARED ALONG BROKEN SURFACES WITH TALC ALONG THESE SURFACES. MINOR AMOUNT OF FAULT GOUGE PRESENT.
11	29.78	29.98	0.20	56			MUDSTONE	CARB. DK. GY. BRKN SOFT, POORLY LITHIFIED COALIFIED PLANT FRAGMENTS. RARE COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	29.98	30.58	0.60	56	04373	K ROOF	MUDSTONE	CARB. DK. GY SOFT, POORLY LITHIFIED COALIFIED PLANT FRAGMENTS. ABUNDANT COAL BANDS UP TO 1C M THICK. POLISHED BROKEN SURFACES NEAR BASE DUE TO SHEARING. LOWER 25CM SAMPLE D. K SEAM ROOF ROCK.
11	30.58	30.74	0.16	57	04374	K	COAL LOSS	
11	30.74	30.98	0.24	57	04374	K	COAL	C-4. BLK. VBRKN HIGHLY POLISHED ON BROKEN SURFACED DUE TO SHEARING. SOME C-5 INTERBEDDING.
11	30.98	31.04	0.06	57	04374	K	COAL	C-3. BLK. VBRKN
11	31.04	31.08	0.04	57	04374	K	COAL	C-4. BLK. VBRKN MINOR C-3 INTERBED.
11	31.08	31.64	0.56	57	04374	K	COAL	C-3. BLK. VBRKN OCCASIONAL C-1 BANDS NEAR BASE, ABUNDAN T C-2 BANDS NEAR BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	31.64	31.71	0.07	58	04374	K	COAL	C-5. BLK. PHRD SOME CARB MUDST INTERMIXING.
11	31.71	31.80	0.09	58	04374	K	COAL	C-3. BLK. BRKN
11	31.80	31.86	0.06	58	04375	K PARTING	MUDSTONE	CARB. BLK. SHRD SAMPLED.
11	31.86	31.97	0.11	*58	04375	K PARTING	MUDSTONE	SLTY. MEL. DK. GY. LAM INTERLAMINATED MUDST AND SLTST. SAMPLED
12	31.97	32.18	0.21	62	04375	K PARTING	MUDSTONE	SLTY. MEL. M. GY. THNB. BRKN MINOR PLANT HASH NEAR TOP. INTERBEDDED SLTST. AND MUDST. UPPER 8CM SAMPLED.
12	32.18	32.33	0.15	*67		K PARTING	MUDSTONE	SLTY. MOD. M. GY. THNB. BRKN SILT IS SOMEWHAT SANDY AND SUCROSI. IN TERBEDDED MUDST AND SLTST. OCCASIONAL P LANT HASH.
12	32.33	32.81	0.48	*68		K PARTING	SILTSTONE	CLYY. MEL. M. GY. THNB. XBDG. BRKN SLTST WITH MUDST INTERBEDS. XBDG INDICA TES TOPS UP. SLTST IS SUCROSI. IN TEXTU RE. MUDST BEDS BECOME THINNER AND LENTI CULAR TOWARDS BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	32.81	32.88	0.07	66		K PARTING	MUDSTONE	M.GY. SHRD SOFT, UNLITHIFIED.
12	32.88	33.13	0.25	65		K PARTING	SILTSTONE	CLYY. MEL. M.GY. SLD VERY HARD, SOME CALCAREOUS, CONTAINS CARBONACEOUS BLEBS AND RARE PLANT FRAGMENTS.
12	33.13	33.16	0.03	64		K PARTING	MUDSTONE	CARB. BLK. PWRD
12	33.16	33.24	0.08	63		K	COAL LOSS	
12	33.24	33.32	0.08	63		K	COAL	C-5. BLK. PWRD
12	33.32	33.47	0.15	62		K	COAL	C-4. BLK. PWRD MUDST AND C-3 FRAGMENTS COMMON.
12	33.47	33.52	0.05	61		K	COAL LOSS	
12	33.52	33.59	0.07	61			MUDSTONE	CARB. BLK. VSHRD SOFT, UNLITHIFIED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	33.59	33.63	0.04	61			MUDSTONE	DK. GY. VSHRD SOFT, UNLITHIFIED. CONTAINS SUBANGULAR LT GY MUDST CLASTS. APPROX 5MM DIA.
12	33.63	33.93	0.30	59			MUDSTONE	M.GY. VSHRD SOFT, UNLITHIFIED. SOME EVIDENCE. MINOR PLANT HASH.
13	33.93	34.00	0.07	*58			SILTSTONE	M.GY. BRKN OCCASIONAL MUDSTONE BANDS. SHEARED MUDSTONE BAND.
13	34.00	34.14	0.14	58			ROCK LOSS	
13	34.14	34.47	0.33	59			MUDSTONE	VFG. M.GY. YBRKN SHEARED SURFACES. BAND OF MUD. TWIST-OFF F - POSSIBLE CORE LOSS.
13	34.47	35.44	0.97	*62			SANDSTONE	FG. LT. GY. BRKN THIN BANDS OF SLTST. FRACTURES HAVE SLIGHT LISTRIC SURFACES.
13	35.44	35.69	0.25	65			SILTSTONE	VFG. LT. GY. BRKN HEAVILY FRACTURED. FILLED WITH QTZ. LISTRIC SURFACES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	35.69	35.79	0.10	66			SANDSTONE	FG.LT.GY.LAM.BRKN FRACTURED; QTZ FILLED. SLTST BANDS LAMINATED.
14	35.79	36.19	0.40	*67			SANDSTONE	SLTY.FG.VTHNB A FAULT OF 4 DEGREE RUNS A LENGTH OF 30 CM. LISTRIC SURFACES FAULT HAS QTZ.FILL
14	36.19	36.32	0.13	63	04367		BENTONITE	LT.GY.VBRKN SAMPLE #04367.
14	36.32	36.43	0.11	61			SANDSTONE	MG.LT.GY.BRKN SLTST BANDS, QTZ FILLED FRACTURES. LISTRIC SURFACES.
14	36.43	36.60	0.17	58			SILTSTONE	M.GY.VBRKN SHEAR ZONE, LISTRIC SURFACES.
14	36.60	37.76	1.16	*47			MUDSTONE	CLYY.VFG.M.GY.BRKN LISTRIC SURFACES. SLTST BAND VTHNB, MUD WITHIN, OCCASIONAL FRACTURE, SHEAR ZONE, SLICKENSIDE.
15	37.76	39.62	1.86	*61			MUDSTONE	SLTY.VFG.M.GY.BRKN BANDS OF SLTST, SHEAR ZONE, SLICKENSIDE LISTRIC SURFACES, OCCASIONAL MUD PARTING.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	39.62	40.08	0.46	65			ROCK LOSS	
16	40.08	41.25	1.17	*67			SILTSTONE	CLYY.VFG.M.GY.VTHNB.VBRKN SHEAR ZONE, LISTRIC SURFACE, MUD PARTING UP TO 4CM. FRACTURES ALONG BEDDING PLANE.
16	41.25	41.51	0.26	64			MUDSTONE	CARB.FG.DK.GY.BRKN CARBONACEOUS MUDSTONE, SHEAR ZONE, MULTI-FRACTURE, VERY SHEAR SURFACES.
16	41.51	41.61	0.10	63			SANDSTONE	FG.LT.GY.SLD VERY MUD SS WITH BRECCIA PIECES WITHIN. BRECCIA CHUNKS ARE SS FILLED WITH QTZ VEINS.
16	41.61	42.12	0.51	*62			SILTSTONE	CLYY.FG.M.GY.VTHNB.SSD.BRKN FOSSIL FRAGMENTS, THIN BANDS OF MUDST.
17	42.12	42.78	0.66	*53			SILTSTONE	SSY.FG.M.GY.BRKN PLANT FRAGMENTS, THIN SS BANDS, SLIGHTLY WAXY.
17	42.78	43.08	0.30	*53			SILTSTONE	SSY.FG.M.GY.SSD.SLD LARGE SECTIONS OF BIOTRB WITHIN THE SS & SLTST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	43.08	44.08	1.00	*55		SANDSTONE	SLTY.MG.LT.GY.BIOTR.SLD MANY BEDS OF SS & SLTST, TOPS UP.
17	44.08	44.18	0.10	57		ROCK LOSS	
17	44.18	44.42	0.24	*58		SILTSTONE	FG.LT.GY.VBRKN SHATTERED, POSSIBLE TWIST-OFF (CORE LOSS), MINOR SHEAR ZONE, BRITTLE.
18	44.42	44.47	0.05	59		MUDSTONE	M.GY.VBRKN VERY BROKEN, CRUMBLY.
18	44.47	45.77	1.30	*62		SILTSTONE	M-DK.GY.SSD.SLD FRACTURING & LARGE BEDDING PLANES, FINE GRAIN SS BEDS, OCCASIONAL SSD.
18	45.77	46.17	0.40	*57		SILTSTONE	CLYY.FG.M.GY.SLD ODD FRACTURE BUT NOT BRKN.
18	46.17	46.48	0.31	*58		SILTSTONE	CLYY.VFG.M.GY.SLD AS ABOVE.
19	46.48	47.23	0.75	*59		SILTSTONE	SSY.VFG.M.GY.VTHNB.SSD.SLD SSD, FINE GRAINED SS BAND, LIGHT GREY.
19	47.23	48.68	1.45	*64		SILTSTONE	SSY.VFG.M.GY.BIOTR.SLD TOPS UP INDICATES, LARGE SECTION OF BIO TRB, FOSSIL FRAGMENTS, MINOR AREA OF SS D.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	48.68	49.30	0.62	*67		SILTSTONE	CLYY.VFG.LT.GY.SLD FOSSIL PLANT, VERY THIN BANDS OF MUDST.
20	49.30	49.91	0.61	*70		SILTSTONE	LT.GY.SLD PLAROPHYLLUM PPLICATUM, ODD QTZ VEIN, NISSONIA TENUCAULIS, PLANT FOSSILS.
20	49.91	50.50	0.59	*54		SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.BRKN SPHENOPTERIS, VERY THIN BANDS OF SLTST VERY FINE GRAINED, QTZ VEINS, WORM BURROWS.
21	50.50	52.19	1.69	*64		SANDSTONE	SLTY.FG.LT.GY.VTHNB.BIOTR.SLD BIOTRB, THIN SLTST BAND WITH MINOR SSD, WORM BURROWS, ODD QTZ FILLED FRACTURE.
21	52.19	52.60	0.41	*68		SANDSTONE	SLTY.FG.LT.GY.VTHNB.SLD TOPS UP INDICATE, VERY THIN WHISPS LIKE BANDS OF SLTST.
22	52.60	54.77	2.17	*62		SANDSTONE	SLTY.FG.LT.GY.VTHNB.SLD (PLANT) FOSSIL FRAGMENTS, VERY FINE GRAIN IN SLTST BANDS, SLTST BANDS UP TO 2CM THICK.
23	54.77	55.27	0.50	*52		SANDSTONE	SLTY.FG.LT.GY.SLD SLTST BANDS INCREASING, LESS & LESS SS, BANDS UP TO 2CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	55.27	56.05	0.78	*56			SILTSTONE	SSY. VFG. M. GY. XBDG MAINLY SLTST, VERY THIN SS BED WITH X-BEDDING, TOPS UP.
23	56.05	56.84	0.79	*61			SANDSTONE	SLTY. FG. LT. GY. BRKN MANY TOPS UP INDICATES, BANDS OF SLTST, VERY FINE GRAINS UP TO 4CM THICK. SOME SECTIONS OF VERY FINE GRAINED SS.
24	56.84	57.45	0.61	*58			SANDSTONE	VFG. LT. GY. SLD VERY FINE HAIR LIKE VEINS OF QTZ RUNNING THROUGH FRACTURES, WHEN BROKEN LISTRIC SURFACES.
24	57.45	57.94	0.49	63			SANDSTONE	SLTY. FG. LT. GY. VBRKN VERY BADLY BROKEN, NO BEDDING PLANES VISIBLE. BANDS OF SLTST.
24	57.94	58.31	0.37	*67			SANDSTONE	SLTY. FG. LT. GY. BRKN BROKEN ALONG QTZ FILLED FRACTURES 0.5 CM SLTST BANDS.
24	58.31	58.54	0.23	*64			SANDSTONE	SLTY. FG. LT. GY. SSD. VBRKN FINE GRAINS SLTST BEDS 0.5 CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	58.54	60.49	1.95	*75			SILTSTONE	SSY. FG. LT-M. GY. VTHNB. BRKN TOPS UP, MAINLY SLTST BUT SECTIONS OF EVENLY ALTERING BANDS OF SLTST AND SS BANDS RANGE FROM 0.5CM TO 3-4CM. QDZ FILLED FRACTURE.
26	60.49	61.32	0.83	*62			SILTSTONE	VFG. LT-M. GY. SLD PLANT FRAGMENTS, TOPS UP INDICATES, VERY FINE BEDS OF SS, VERY FINE GRAINED PARALLEL BEDDING.
26	61.32	62.61	1.29	*60			SANDSTONE	SLTY. VFG. LT. GY. SSD. BRKN THIN BANDS OF SLTST, QTZ FILLED FRACTURE, TOPS UP.
27	62.61	64.49	1.88	*66			SANDSTONE	VFG. LT. GY. SLD DEWATERING ZONE, TOPS UP INDICATES, LOW ANGLE QTZ FILLED FRACTURES, VERY THIN SLTST BANDS.
27	64.49	64.71	0.22	66			SILTSTONE	SSY. VFG. LT-M. GY. SLD LARGE SS BAND WITH GRADED BEDDING 9CM, TOPS UP LOAD CAST.
28	64.71	65.44	0.73	66			SILTSTONE	SSY. M. GY. SSD. SLD SS BEDS, 5-1CM IN THICKNESS, VEIN LIKE FRACTURES FILLED WITH QTZ.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	65.44	66.16	0.72	*66			SANDSTONE	CLYY.FG.LT.GY.SSD.SLD FRACTURES FILLED WITH MUDST & QTZ VEINS , WHEN BROKEN SHEAR SURFACE (LISTRIC).
28	66.16	66.85	0.69	*64			SANDSTONE	MG.LT.GY.SLD FINER GRAIN SS BANDS WITHIN, COARSER GR AINED SS 1-4CM THICK, LONG HAIR LIKE FR ACTURES FILLED WITH QTZ.
29	66.85	67.46	0.61	*60			SANDSTONE	MG.LT.GY.BRKN QTZ FILLED FRACTURES, LOW ANGLE <0.25CM THICK.
29	67.46	68.04	0.58	60			SANDSTONE	MG.LT.GY.BRKN LOW ANGLE FRACTURES, A FEW FRACTURES HA VE LISTRIC SURFACES.
29	68.04	68.78	0.74	60			SANDSTONE	SLTY.MG.LT.GY.BRKN MASSIVE BEDDING, ODD QTZ FILLED FRACTUR ES.
30	68.78	69.39	0.61	*60			SANDSTONE	SLTY.FG.LT.GY.VTHNB.BRKN VERY FINE BANDS OF SLTST THROUGHOUT SS.
30	69.39	70.66	1.27	*70			SILTSTONE	SSY.VFG.LT-M.GY.BRKN ALTERNATING BEDS OF SS & SLTST. FRACTUR ES FILLED WITH QTZ VEIN LIKE FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	70.66	70.76	0.10	*67			SANDSTONE	SLTY.FG.LT.GY.VTHNB.SLD FINE SLTST BANDS THROUGHOUT.
31	70.76	72.32	1.56	*58			SANDSTONE	SLTY.FG.LT.GY.SLD BANDS OF SLTST <2CM, FINE FRACTURES FIL LED WITH QTZ, SHALLOW ANGLE FRACTURES.
31	72.32	73.04	0.72	57			ROCK LOSS	
31	73.04	73.44	0.40	*57			SILTSTONE	CLYY.VFG.LT-M.GY.VBRKN FINE QTZ VEINS, SHATTERED THIN MUDST BA NDS. IRREGULAR FRACTURES, ODD SS BAND.
31	73.44	73.64	0.20	59			ROCK LOSS	
32	73.64	74.11	0.47	*61			SILTSTONE	SSY.VFG.LT.GY.VBRKN MAINLY SS BANDS BUT ODD MUDST BAND, BRE CCIA FILLED IN A FEW FRACTURES, QTZ VEI N.
32	74.11	74.55	0.44	*57			SANDSTONE	SLTY.FG.LT.GY.BRKN SLTST BANDS <1CM, TOPS UP.
32	74.55	75.39	0.84	*66			SANDSTONE	SLTY.FG.LT.GY.BRKN THIN BANDS OF SLTST, GRADED BEDDING SHO WN IN SANDSTONE BED, TOPS UP. ODD QTZ F ILLED FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	75.39	77.44	2.05	*64			SILTSTONE	SSY.VFG.LT-M.GY.BRKN SS BEDS 0.5-2CM THICK CLEAR ZONE FRACTURE RES. TWIST-OFF - POSSIBLE CORE LOSS VERY FINE QTZ FILLED FRACTURES.
34	77.44	77.53	0.09	*63			SILTSTONE	CLYY.VFG.LT-M.GY.BRKN ALTERNATING BEDS.
34	77.53	79.46	1.93	*62			MUDSTONE	SLTY.VFG.M.GY.YTHNB.BRKN ALTERNATING BEDS COASTERS IN PLACES. CORE BADLY BROKEN, PARALLEL BEDDING.
34	79.46	80.14	0.68	*64			ROCK LOSS	
35	80.14	81.37	1.23	*65			MUDSTONE	SLTY.VFG.M.GY.YTHNB.BRKN AS ABOVE.
35	81.37	81.98	0.61	*64			MUDSTONE	SLTY.VFG.M.GY.YTHNB.BRKN AS ABOVE.
36	81.98	84.04	2.06	*65			MUDSTONE	SLTY.VFG.M.GY.YTHNB.BRKN AS ABOVE.
37	84.04	85.14	1.10	*66			MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD INTERLAM SLTST & MUDST GRADED BDG 1-3MM THICK. FINING UP, LOAD CAST INDICATES TOPS UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	85.14	85.40	0.26	65	04376	J ROOF	MUDSTONE	DK.GY.VSHRD SHEARED SURFACES VERY POLISHED SOFT, UNLITHIFIED. LOWER 19CM SAMPLED. J SEAM ROOF ROCK.
37	85.40	85.46	0.06	65	04376	J ROOF	MUDSTONE	CARB.DK.GY.VSHRD SOFT, UNLITHIFIED. CONTAINS COAL FRAGMENTS. J SEAM ROOF ROCK. SAMPLED.
37	85.46	85.67	0.21	64	04377	J	COAL LOSS	SAMPLED.
37	85.67	85.79	0.12	64	04377	J	COAL	C-2.BLK.PHRD
37	85.79	86.04	0.25	64	04377	J	COAL	C-2.BLK.BRKN MINOR C-6 INTERBEDS. ABUNDANT C-1 BANDS.
37	86.04	86.09	0.05	63	04377	J	COAL	C-1.BLK.BRKN MINOR C-2 BANDS.
37	86.09	86.11	0.02	63	04377	J	COAL	C-3.BLK.BRKN
37	86.11	86.14	0.03	63	04377	J	COAL	C-4.BLK.BRKN
37	86.14	86.30	0.16	63	04377	J	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	86.30	86.46	0.16	63	04378	J FLOOR MUDSTONE	CARB. DK. GY. BRKN SHEARED ON BROKEN SURFACES. COALIFIED PLANT FRAG. SAMPLED. J SEAM FLOOR ROCK.
38	86.46	87.42	0.96	*62		MUDSTONE	SLTY. M. GY. LAM. BRKN THIN BANDS OF COAL WITH LAMINATED CARBO NACEOUS MUD. THIN BANDS OF SLTST. VERY THIN QTZ VEIN. UPPER 9CH SAMPLED. J SEAM FLOOR ROCK.
38	87.42	88.50	1.08	*62		MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN AS ABOVE ALSO A BIT OF SSD.
39	88.50	89.87	1.37	*58		SILTSTONE	CLYY. LT-M. GY. SSD. BRKN SHEAR ZONE FRACTURED BAND OF MUDSTONE 8 CM THICK. TOPS UP INDICATES. PLANT FRAGMENTS. A FEW BANDS OF C-6 (BONE COAL), VERY DENSE.
39	89.87	90.55	0.68	*58		SILTSTONE	SSY. LT-M. GY. YTHNB. BRKN SHEAR ZONE FRACTURES, SS BANDS <1CM, LOW ANGLE FRACTURE.
40	90.55	91.56	1.01	*66		SILTSTONE	YFG. M. GY. BRKN VERY THIN BED OF MUDSTONE. SHEAR ZONE FRACTURES, PLANT FRAGMENTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	91.56	92.65	1.09	*64		MUDSTONE	YFG. M. GY. BRKN COAL STRINGER BEDS (C-6) BONE COAL, VERY FINE QTZ FILLED FRACTURES, SHEAR ZONE FRACTURES, CRACKED THROUGHOUT. PLANT FRAGMENTS.
41	92.65	93.38	0.73	*62		MUDSTONE	YFG. M. GY. SSD. BRKN BEDS ARE VERY WAVY, VERY THIN BEDS <1.5 CM IN THICKNESS, SHEAR ZONE SURFACES OF FRACTURES, VERY FINE TO FINE GRAIN SS.
41	93.38	94.64	1.26	*68		MUDSTONE	SSY. YFG. M. GY. SSD. BRKN AS ABOVE, ALONG WITH CROSS-BEDDING. TOPS UP CAST.
42	94.64	96.34	1.70	*62		SANDSTONE	CLYY. FG. LT. GY. LAM. BRKN WITHIN THE FINE GRAIN SS, WHISPIER THIN LAYERS OF MUDST, DISCONTINUOUS LAMINATIONS. TOPS UP INDICATES.
42	96.34	96.65	0.31	*64		SANDSTONE	CLYY. FG. LT. GY. LAM. BRKN THIN LAYERS MUDST. (LAMINATED), SHEAR ZONE FRACTURES.
43	96.65	98.75	2.10	*61		SANDSTONE	CLYY. FG. LT. GY. LAM. BRKN WITHIN SS VERY THIN LAMINATED LAYERS OF MUDST, YFG MUDSTONE, SHEAR ZONE, FRACTURE SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	98.75	99.45	0.70	*52		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
44	99.45	100.92	1.47	*51		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
45	100.92	102.51	1.59	*50		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE, ALSO FINE QTZ FILLED FRACTURE S.
45	102.51	102.92	0.41	*54		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
46	102.92	104.98	2.06	*63		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
47	104.98	105.50	0.52	*68		SANDSTONE	CLYY.FG.LT.GY.LAM.SLD AS ABOVE.
47	105.50	107.05	1.55	*66		SANDSTONE	CLYY.FG.LT.GY.LAM.SLD AS ABOVE.
48	107.05	108.49	1.44	*63		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
48	108.49	108.79	0.30	*59		SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN AS ABOVE.
48	108.79	108.81	0.02	59		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	108.81	109.20	0.39	*59		SILTSTONE	CLYY.VFG.LT.GY.LAM.VBRKN THIN LAMINATED LAYERS OF MUDST, VERY BADLY SHEARED, SLICKENSIDE SURFACES, ALMOST LOOKS LIKE A BRECCIA.
49	109.20	109.24	0.04	58		ROCK LOSS	
49	109.24	110.00	0.76	*56		SILTSTONE	CLYY.VFG.LT-M.GY.LAM.VBRKN AS ABOVE. FAULT DISPLACEMENT, BAND OF CARBONATE 6CM THICK, 36CM FROM THE END OF BOX.
49	110.00	110.08	0.08	48		ROCK LOSS	
49	110.08	111.28	1.20	*35		SILTSTONE	CLYY.FG.M.GY.VTHNB.VBRKN VERY THIN BEDS OF MUDST, SHEAR ZONE SURFACES, SLICKENSIDE, VERY BROKEN.
49	111.28	111.32	0.04	49		ROCK LOSS	
50	111.32	111.70	0.38	*54		SILTSTONE	CLYY.VFG.LT-M.GY.VTHNB.BRKN AS ABOVE.
50	111.70	111.83	0.13	54		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	111.83	113.24	1.41	*56			SILTSTONE	CLYY.VFG.LT-M.GY.VTHNB.VBRKN AS ABOVE, TOPS UP INDICATES.
50	113.24	113.39	0.15	57			ROCK LOSS	
51	113.39	115.08	1.69	*58			SILTSTONE	CLYY.VFG.LT-M.GY.VTHNB.VBRKN VERY THIN BEDS OF MUDST. SHEAR ZONE SUR FACES, MAJOR FRACTURING.
51	115.08	115.34	0.26	*59			SILTSTONE	CLYY.FG.LT-M.GY.BRKN AS ABOVE.
52	115.34	117.21	1.87	*62			SILTSTONE	CLYY.FG.LT-M.GY.BRKN AS ABOVE.
52	117.21	117.34	0.13	*62			MUDSTONE	VFG.M.GY.MAS.BRKN MASSIVE BEDDING, CARB MUDST, WELL FRACTURED BUT NOT BROKEN.
53	117.34	119.27	1.93	65			MUDSTONE	VFG.M.GY.MAS.BRKN AS ABOVE.
53	119.27	119.45	0.18	*68	04379	I ROOF	MUDSTONE	SLTY.VFG.M.GY.BRKN VERY THIN BEDS OF SLTST, MUD PARTING 10 CM UP, VERY SOFT & BROKEN UP. LOWER 8CM SAMPLED. I SEAM ROOF ROCK.
54	119.45	119.62	0.17	68	04379	I ROOF	MUDSTONE	DK.GY.VBRKN HOMOGENOUS. SAMPLED. I SEAM ROOF ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	119.62	119.69	0.07	68	04380	I	COAL LOSS	
54	119.69	119.73	0.04	68	04380	I	COAL	C-4.BLK.VSHRD
54	119.73	119.93	0.20	68	04380	I	COAL	C-2.BLK.VBRKN ABUNDANT C-3 INTERBEDDING.
54	119.93	120.07	0.14	68	04380	I	COAL	C-4.BLK.VBRKN SOME MUDST INTERBEDDING.
54	120.07	120.10	0.03	68	04380	I	COAL	C-6.BLK.SHRD ABUNDANT MUDST. INTERBEDDING.
54	120.10	120.20	0.10	68	04380	I	COAL LOSS	
54	120.20	120.25	0.05	68	04381	I	MUDSTONE	CARB.DK.GY.SLD SOME C-6 PARICLES INTERMIXED.
54	120.25	120.85	0.60	67	04381	I	MUDSTONE	DK.GY.THNB.BIOTR.BRKN SLICKENSIDED AND SHEARED SURFACES. RARE PLANT IMPRESSIONS. RARE COAL FRAGMENTS.
54	120.85	120.94	0.09	67	04381	I	MUDSTONE	CARB.BLK.LAM.VBRKN ABUNDANT COALIFIED PLANT FRAGMENTS.
54	120.94	121.07	0.13	67	04381	I	COAL	C-6.BLK.BRKN C-3 BANDING INCREASES TOWARDS BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	121.07	121.16	0.09	67 04382	I	COAL	C-3.BLK.BRKN
54	121.16	121.29	0.13	67 04382	I	COAL	C-1.BLK.VBRKN
54	121.29	121.41	0.12	67 04382	I	COAL	C-2.BLK.VBRKN ABUNDANT C-1 AND C-3 INTERBANDING.
54	121.41	121.52	0.11	67 04382	I	COAL	C-3.BLK.VBRKN C-2 AND C-4 INTERBANDING.
54	121.52	121.72	0.20	67 04382	I	COAL	C-2.BLK.VBRKN SOME C-3 INTERBEDDING.
54	121.72	121.83	0.11	67 04382	I	COAL LOSS	
54	121.83	121.94	0.11	67 04382	I	COAL	C-1.BLK.VBRKN
55	121.94	121.96	0.02	67 04382	I	COAL	C-2.BLK.BRKN
55	121.96	122.05	0.09	67 04382	I	COAL LOSS	
55	122.05	122.21	0.16	67 04383	I	MUDSTONE	DK.GY.SHRD SOFT, UNLITHIFIED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	122.21	122.27	0.06	67 04383	I	COAL	C-5.BLK.VBRKN MINOR C-4 BANDS.
55	122.27	122.30	0.03	67 04383	I	COAL	C-2.BLK.VBRKN
55	122.30	122.35	0.05	67 04383	I	COAL	C-5.BLK.VBRKN SOME MUDST INTERBEDDING.
55	122.35	122.43	0.08	67 04383	I	COAL	C-1.BLK.VBRKN
55	122.43	122.49	0.06	67 04383	I	COAL	C-6.BLK.VBRKN
55	122.49	122.57	0.08	67 04383	I	COAL	C-3.BLK.VBRKN
55	122.57	122.67	0.10	67 04383	I	COAL	C-5.BLK.PWRD DISSEMINATED C-4 PIECES AND CARB MUDST.
55	122.67	122.71	0.04	67 04383	I	COAL	C-4.BLK.VBRKN
55	122.71	122.72	0.01	67 04383	I	COAL	C-6.BLK.SLD MIXED WITH CARB MUDST.
55	122.72	122.79	0.07	67 04383	I	COAL	C-4.BLK.PWRD

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	122.79	122.88	0.09	66 04383	I	COAL	C-3. BLK. VBRKN INTERBEDDED C-2 AND C-4.
55	122.88	122.98	0.10	66 04383	I	COAL	C-2. BLK. PHRD SOME C-4 INTERMIXED.
55	122.98	123.10	0.12	66 04383	I	COAL	C-6. BLK. VSHRD MINOR C-2 PARTICLES.
55	123.10	123.30	0.20	66 04383	I	COAL	C-2. BLK. PHRD
55	123.30	123.52	0.22	66 04383	I	COAL	C-6. BLK. PHRD VERY SHEARED UP, MIXED WITH CARB MUDST.
55	123.52	123.55	0.03	66 04383	I	COAL	C-5. BLK. SLD
55	123.55	123.69	0.14	66 04383	I	COAL	C-3. BLK. PHRD SOME CARB MUDST INTERMIXED.
55	123.69	123.93	0.24	66 04383	I	COAL	C-6. BLK. PHRD VERY SHEARED TO THE POINT OF BEING POWDERED.
56	123.93	124.03	0.10	66 04383	I	MUDSTONE	CARB. BLK. VSHRD DISSEMINATED COAL PARTICLES THROUGHOUT. MUD IS SOFT, UNLITHIFIED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	124.03	124.11	0.08	66 04383	I	MUDSTONE	CARB. DK. GY. VSHRD SOFT, UNLITHIFIED.
56	124.11	124.20	0.09	66 04384	I	COAL	C-4. BLK. PHRD MINOR MUDST INTERMIXED.
56	124.20	124.28	0.08	66 04384	I	COAL	C-5. BLK. PHRD AS ABOVE.
56	124.28	124.40	0.12	66 04384	I	COAL	C-4. BLK. PHRD VERY SHEARED, SOME CARB MUDST INTERMIXED.
56	124.40	124.47	0.07	66 04384	I	COAL	C-5. BLK. PHRD SOME CARB MUDST INTERMIXED.
56	124.47	124.65	0.18	66 04384	I	COAL	C-4. BLK. PHRD AS ABOVE.
56	124.65	124.73	0.08	66 04384	I	COAL	C-3. BLK. PHRD
56	124.73	125.13	0.40	66 04384	I	COAL	C-2. BLK. PHRD ABUNDANT C-1 FRAGMENTS.
56	125.13	125.17	0.04	65 04384	I	COAL	C-2. BLK. BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	125.17	125.25	0.08	65	04384	I	COAL	C-2.BLK.VSHRD
56	125.25	125.41	0.16	65	04384	I	COAL	C-3.BLK.PHRD SOME MUOYST INTERMIXING.
56	125.41	125.48	0.07	65	04384	I	COAL	C-6.BLK.PHRD SOME MUD INTERMIXING.
56	125.48	125.55	0.07	65	04384	I	COAL	C-3.BLK.PHRD SOME MUOYST INTERMIXING.
56	125.55	125.59	0.04	65	04384	I	COAL	C-2.BLK.BRKN INTERBEDDED C-1 AND C-3.
56	125.59	125.86	0.27	65	04384	I	COAL	C-3.BLK.PHRD MIXED WITH C-2 AND C-4 FRAGMENTS.
56	125.86	125.97	0.11	65	04384	I	COAL	C-2.BLK.PHRD SOME C-1 AND C-3 FRAGMENTS.
57	125.97	126.40	0.43	65	04384	I	COAL	C-2.BLK.VBRKN
57	126.40	126.51	0.11	65	04384	I	COAL	C-3.BLK.PHRD SOME C-2 AND CARB MUOYST INTERMIXED.
57	126.51	126.61	0.10	65	04384	I	COAL	C-2.BLK.PHRD SOME C-1 FRAGMENTS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 34

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	126.61	126.65	0.04	65	04384	I	COAL	C-3.BLK.VBRKN INTERBEDDED C-2 AND C-5.
57	126.65	126.66	0.01	65	04384	I	COAL LOSS	
57	126.66	126.81	0.15	65	04385	I FLOOR	MUDSTONE	CARB.DK.GY.BRKN SHEARED ALONG BROKEN SURFACES, TALC FRACTURE. SAMPLED. I SEAM FLOOR ROCK.
57	126.81	127.01	0.20	65	04385	I FLOOR	MUDSTONE	CARB.DK.GY.VBRKN COALIFIED PLANT FRAGMENTS. UPPER 10CM SAMPLED. I SEAM FLOOR ROCK.
57	127.01	127.41	0.40	65	04385	I FLOOR	MUDSTONE	CARB.DK.GY.LAM.BRKN ABUNDANT COALIFIED PLANT FRAGMENTS, NIL SSONIA CANADENSIS. BROKEN SURFACES ARE HIGHLY POLISHED.
57	127.41	128.17	0.76	64			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE.
58	128.17	128.87	0.70	*64			SILTSTONE	CLYY.LI-M.GY.VTHNB.SHRD SHEAR ZONE, SLICKENSIDE SURFACE, BRECCI A LOOKING IN PLACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	128.87	130.11	1.24	63		SANDSTONE	CLYY.FG.LT.GY.BRKN MUDST BANDS UP TO 1CM THICK, RIP-UP CLASTS, QTZ VEINS CARBONATE VEINS DISPLACED BY MICRO FAULT. SHEAR SURFACES VERY BROKEN UP.
59	130.11	131.92	1.81	62		SANDSTONE	CLYY.FG.LT.GY.VTHNB.VBRKN AS ABOVE, VERY LARGE RIP-UP CLASTS, VERY CONGLOMERATE LIKE.
60	131.92	133.13	1.21	*60		SANDSTONE	CLYY.FG.LT.GY.VBRKN AS ABOVE, SHEAR SURFACE ALONG MUDST BANDS, VERY FINE CARBONATE VEINS.
60	133.13	133.24	0.11	*69		MUDSTONE	SSY.VFG.LT-M.GY.VTHNB.SSD.BRKN ABRUPT CHANGE TO MUDST WITH SS BANDS, TOPS UP.
60	133.24	133.52	0.28	*70		SILTSTONE	CLYY.FG.LT-M.GY.VTHNB.SHRD VERY THIN BEDS OF MUDST, BADLY SHEARED, BROKEN ANYWHERE ON SHEAR SURFACE.
61	133.52	135.47	1.95	*72		SILTSTONE	CLYY.FG.LT-M.GY.VTHNB.VBRKN AS ABOVE, BECOMES A BRECCIA WITH MORE MUDST & MUD.
62	135.47	135.85	0.38	69		SILTSTONE	CLYY.FG.LT-M.GY.VTHNB.SHRD AS ABOVE, SOME PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	135.85	136.17	0.32	68		SILTSTONE	SSY.FG.LT.GY.VTHNB.SHRD AS ABOVE.
62	136.17	136.34	0.17	67		ROCK LOSS	
62	136.34	137.68	1.34	65		SANDSTONE	FG.LT.GY.MAS.SHRD BADLY SHEARED, SLICKENSIDE SURFACES, CARBONATE VEINS, RIP-UP CLASTS, MUDST.
63	137.68	138.96	1.28	*62		SANDSTONE	FG.LT.GY.THNB.SHRD CARBONATE VEINS, 8CM FROM TOP OF BOX, BADLY SHEARED ZONE FOR 14CM, SS IS ALMOST ALL A POWDER SS THROUGHOUT, SECTION IS NOT WELL SORTED.
63	138.96	139.18	0.22	62		SANDSTONE	CLYY.FG.LT.GY.VTHNB.VBRKN CARBONATE VEINS, SS NOT WELL SORTED.
64	139.18	141.00	1.82	*61		SANDSTONE	CLYY.FG.LT.GY.VTHNB.BRKN MUDST BANDS UP TO 2CM THICK, POORLY SORTED, THIN MISPS, THICK VEINS OF MUDST. END OF HOLE. TD=141.00M.

* DENOTES MEASURED BCA
NEWPAGE

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GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88005

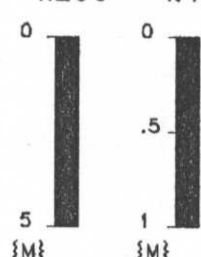
GEOLOGIST : ETMANSKI

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40

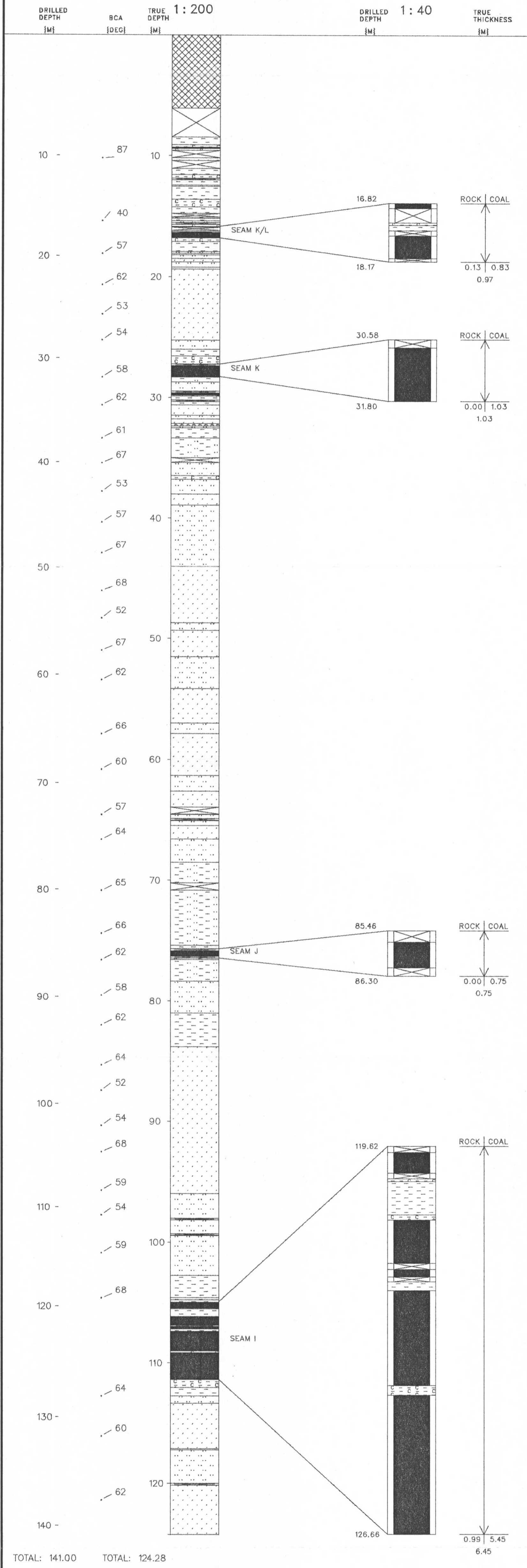


NORTHING: 6342794.0 N
 EASTING: 505390.0 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 141.00

TOTAL: 124.28

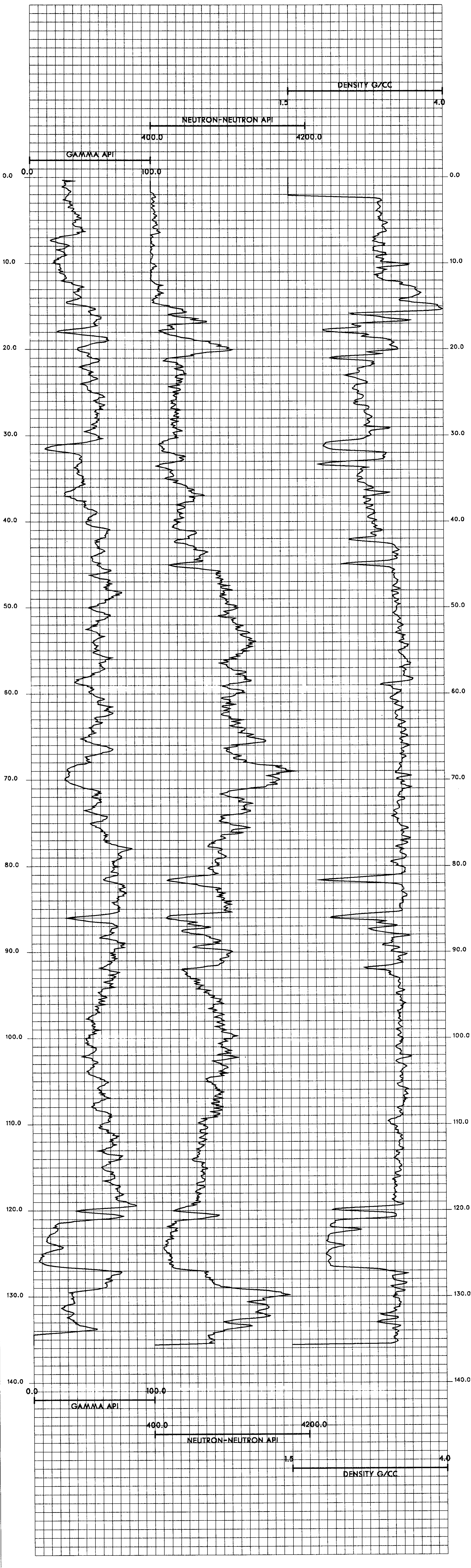
748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88005 Log Date: 88-06-16 Company: CENTURY Geologist: ETMANSKI	Province: BC Northing: 6342800.00 Lat: 571348 Zone: 9 Easting: 505390.00 Long: 1285439 Measuring Point: GROUND LEVEL Elevation: 1682.6	
Scale: 1 to 200.0 Depth Range: 0.0 to 140.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88006

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88006

DATE - 02/15/89

- HISTORY -

START DATE - 06/16/88

END DATE - 06/18/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MATTHEWS

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS; K (OVT), ? (OVT), K/L (OVT).

- LOCATION -

PROVINCE - BC

ELEVATION - 1697.40

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343788.69

EASTING - 506730.92

LATITUDE - 571421

LONGITUDE - 1285319

- ORIENTATION -

LENGTH - 254.61

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

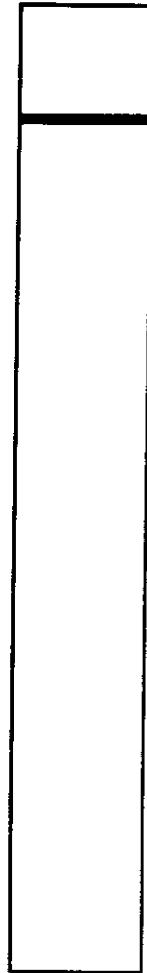
DDH88-006

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

K ovt.

2.11 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000



GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88006 SEAM : K/L? OVT INTERVAL(M) : 219.00 - 221.02 ELEVATION(M) : 1697.4
 GEOLOGIST : MATTHEWS SCALE: 1:40 DATE : JAN 23/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.								
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG			
	219.00	↑		(0.00)														
	221.02	↓		0.33	82.8	8107	30	0.48 / 0.02	0.48	1.02	47.72	6.80	44.36	3.75	18.88	—		

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	06		OVERBURDEN	CASING DEPTH.
1	3.05	5.55	2.50	06		ROCK LOSS	
1	5.55	6.83	1.28	*06		SANDSTONE	MG.WEL.LT-M.GY.THKB.VBRKN CORE TWIST-OFF (CORE LOSS). FRACTURE OF FSETS. QTZ FILLED FRACTURE. LOW ANGLE BEDDING. OXIDIZED. MUDDY LAMELLAE NEAR START.
1	6.83	7.17	0.34	07		SANDSTONE	MG.WEL.LT-M.GY.THKB.VBRKN AS ABOVE.
2	7.17	8.77	1.60	08		SANDSTONE	MG.WEL.LT-M.GY.VTHKB.VBRKN QTZ INFILLING FRACTURES (OFFSET). FRACTURE ORIENTATION & THICKNESS VARIABLE. MUDDY LAMINAE IN PLACES. BRECCIA NEAR END OF BOX. MUDDY LAMS CONTAIN CARB FILMS. MINOR SHEAR IN PLACES. PRESENCE OF SLICKENSIDES ON BRKN QTZ FRACTURE. OXIDIZED. CORE LOSS?
3	8.77	9.18	0.41	10		SANDSTONE	MG.WEL.LT-M.GY.THKB.VBRKN QTZ FILLED FRACTURE WITH OFFSET. MINOR MUDDY WISPS. MINOR CARBONACEOUS FILMS PRESENT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	9.18	9.62	0.44	10		SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN QTZ FILLED FRACTURE. INCREASING MUDDY LAMELLAE & MUD CONTENT. CARBONACEOUS FILMS & PRESENCE OF SLICKENSIDED SURFACES ON FRACTURES. ABRUPT CHANGE TO MUDDY SILTSTONE. POSSIBLE CORE LOSS.
3	9.62	10.52	0.90	*11		SANDSTONE	CLYY.WEL.M-DK.GY.LAM.SSD.BRKN QTZ FILLED FRACTURE. LAMELLAE OF LT-GY SLTST. MINOR SLICKENSIDES FOUND ON BROKEN FRACTURE SURFACE. DISSEMINATED PYRITE.
4	10.52	10.89	0.37	*12		MUDSTONE	SLTY.WEL.M-DK.GY.LAM.BRKN ALT LT-GY & DK-GY LAMELLAE. QTZ FILLED FRACTURE (OFFSET). SOME FRACTURES PARALLEL BEDDING PLANES. COARSENESS TO SS. POSSIBLE CORE LOSS.
4	10.89	11.87	0.98	12		SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN QTZ FILLED FRACTURE (CONJUGATE FRACTURE). OFFSET ON FRACTURE. WISPS OF MUDDY LAMELLAE.
4	11.87	12.12	0.25	13		SILTSTONE	WEL.M-DK.GY QTZ FILLED FRACTURE WITH OFFSET CONJUGATE FRACTURE. ABRUPT LITHO CHANGE TO SS AT END OF BOX.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	12.12	12.66	0.54	13		SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN CONJUGATE FRACTURE. QTZ FILLED FRACTURE. OFFSET ON FRACTURE.
5	12.66	13.13	0.47	13		SILTSTONE	CLYY. WEL. LT-M. GY. VTHKB. VBRKN QTZ FILLED FRACTURE. DISSEMINATED PYRITE GRAINS IN BRKN PARTS OF CORE. POSSIBL E CORE LOSS.
5	13.13	13.15	0.02	13		ROCK LOSS	
5	13.15	13.86	0.71	13		SILTSTONE	CLYY. WEL. LT-M. GY. VTHNB. SLD AS ABOVE.
6	13.86	14.60	0.74	14		SILTSTONE	CLYY. WEL. LT-M. GY. VTHNB. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
6	14.60	15.50	0.90	14		SILTSTONE	WEL. LT-M. GY. LAM. SSD. SLD AS ABOVE. PYRITE.
7	15.50	17.27	1.77	15		SILTSTONE	WEL. LT-M. GY. LAM. SSD. SLD AS ABOVE. DISSEMINATED PYRITE.
7	17.27	17.31	0.04	15		SILTSTONE	WEL. LT-M. GY. LAM. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	17.31	19.29	1.98	*16		MUDSTONE	SLTY. LT-M. GY. LAM. SSD. SLD BEDDING HIGHLY DISTURBED. SSD & RIP UP CLASTS.
9	19.29	20.04	0.75	17		MUDSTONE	SLTY. LT-M. GY. LAM. BRKN DISSEMINATED PYRITE. ALT LAMELLAE OF BL K & GY MUDST. CONTORTED BEDDING. POSSIBL E CORE LOSS.
9	20.04	21.00	0.96	*17		MUDSTONE	SLTY. LT-M. GY. VTHKB AS ABOVE. BECOMING MORE SILTY AT END OF BOX. MINOR SHEAR. SLICKENSIDES ON QTZ FILLED SHEAR SURFACES.
10	21.00	22.19	1.19	*14		SILTSTONE	SSY. FG. WEL. LT-M. GY. LAM. BRKN CONTORTED BEDDING. ALT LAMELLAE OF GY & BLK SLTST. VERY THIN BED OF SS PRESENT AT THIS POINT ALT LAMELLAE OF SS & SLTST. BEGIN.
10	22.19	22.87	0.68	10		SANDSTONE	MG. WEL. LT-M. GY. LAM. BRKN QTZ FILLED FRACTURE (FRACTURE OFFSET). ALT LAMELLAE OF SS & GY SLTST.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	22.87	24.74	1.87	*04			SANDSTONE	MG. MEL. LT-M. GY. LAM. RIPMK. SLD DISSEMINATED PYRITE. CONJUGATE QTZ FILL ED FRACTURE. LAMELLAE OF SILTY MUDST PR ESENT. INCREASE IN MUD CONTENT RESULTIN G IN FEWER LAMELLAE & THE APPEARANCE OF A GRADATIONAL CHANGE INTO A MUDDY SLTS T. MINOR SHEAR.
12	24.74	25.76	1.02	06			MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD AS ABOVE. DISSEMINATED PYRITE. SILT CON TENT DECREASES TOWARDS END OF BOX.
12	25.76	26.66	0.90	07			MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD AS ABOVE. SILT CONTENT DECREASES TOWARD S END OF BOX.
13	26.66	27.30	0.64	*08			MUDSTONE	CARB. M. GY. LAM. SLD VERY SMALL COAL WISPS THROUGHOUT.
13	27.30	27.82	0.52	09			MUDSTONE	CARB. M-DK. GY. LAM. BRKN QTZ FILLED FRACTURE & COALPARTINGS.
13	27.82	28.17	0.35	09			ROCK LOSS	
13	28.17	28.57	0.40	10			MUDSTONE	M-DK. GY. THNB. BRKN SHEARED IN PLACES. POSSIBLE CORE LOSS.
13	28.57	28.59	0.02	10			COAL	C-1 PARTING 2CM THICK.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	28.59	28.68	0.09	10	08101		MUDSTONE	DK. GY. THNB. SLD SHEARED IN PLACES. C-1 PARTING APPROXIM ATELY 0.5CM ASSOC WITH QTZ VEIN. K OVT F LOOR ROCK. LOWER BCM. S. AMPLED.
14	28.68	28.85	0.17	11	08101	K OVT ROOF	MUDSTONE	CARB. BLK. VBRKN ABUNDANT QTZ VEINING. K OVT FLOOR ROCK. SAMPLED.
14	28.85	28.87	0.02	11	08102	K OVT	COAL	C-2. BLK. BRKN BRITTLE.
14	28.87	28.97	0.10	11	08102	K OVT	COAL	C-6. BLK. BRKN
14	28.97	29.72	0.75	11	08102	K OVT	COAL LOSS	
14	29.72	29.97	0.25	12	08102	K OVT	COAL	C-5. BLK. VSHRD ABUNDANT LISTRIC SURFACES.
14	29.97	30.03	0.06	12	08102	K OVT	MUDSTONE	CARB. BLK. VSHRD
14	30.03	30.14	0.11	12	08102	K OVT	ROCK LOSS	
14	30.14	31.46	1.32	13	08102	K OVT	COAL LOSS	
14	31.46	31.79	0.33	15	08102	K OVT	COAL	C-3. BLK. VSHRD

* DENOTES MEASURED BCA

FORM 4001

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	31.79	31.94	0.15	15 08102	K QVT	COAL	C-6.BLK.PHRD
14	31.94	31.99	0.05	15 08102	K QVT	COAL	C-3.BLK.BRKN WELL CLEATED.
14	31.99	32.24	0.25	15 08102	K QVT	COAL	C-3.BLK.YSHRD
14	32.24	32.26	0.02	15 08102	K QVT	COAL	C-5.BLK.BRKN
15	32.26	32.37	0.11	15 08102	K QVT	COAL	C-4.BLK.YSHRD
15	32.37	32.42	0.05	16 08102	K QVT	COAL	C-3.BLK.YBRKN
15	32.42	32.45	0.03	16 08102	K QVT	COAL	C-5.BLK.BRKN
15	32.45	32.52	0.07	16 08102	K QVT	COAL	C-3.BLK.YBRKN
15	32.52	32.62	0.10	16 08102	K QVT	COAL	C-5.BLK.YBRKN
15	32.62	33.12	0.50	16 08102	K QVT	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.12	33.18	0.06	17 08102	K QVT	COAL	C-5.BLK.YBRKN VERY HARD.
15	33.18	33.38	0.20	17 08103	K QVT	MUDSTONE	DK.GY.YBRKN
15	33.38	33.48	0.10	17 08103	K QVT	SILTSTONE	DK.GY.BRKN
15	33.48	33.56	0.08	17 08103	K QVT	MUDSTONE	CARB.BLK.BRKN
15	33.56	33.78	0.22	17 08104	K QVT	COAL	C-6.BLK.BRKN VERY HARD. ONE 1CM C-1 BAND.
16	33.78	34.06	0.28	18 08104	K QVT	COAL	C-5.BLK.YBRKN SHEAR SURFACES PRESENT.
16	34.06	34.20	0.14	18 08104	K QVT	COAL	C-4.BLK.YSHRD
16	34.20	34.32	0.12	18 08104	K QVT	COAL	C-5.BLK.BRKN SOME PIECES ARE VERY HARD.
16	34.32	34.44	0.12	18 08104	K QVT	COAL	C-6.BLK.YSHRD
16	34.44	35.39	0.95	19 08104	K QVT	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.39	36.06	0.67	20	08104	K OYT	COAL	C-3, BLK. VSHRD VERY SHEARED - POWDERED.
16	36.06	36.52	0.46	21	08104	K OYT	COAL LOSS	
16	36.52	36.57	0.05	21	08105	K OYT FLOOR	MUDSTONE	BLK. VSHRD K. OYT. ROOF. ROCK. SAMPLED.
16	36.57	36.82	0.25	22	08105	K OYT FLOOR	MUDSTONE	SLTY. DK. GY. BRKN TOP. 20CM SAMPLED. K. OYT. ROOF. ROCK.
16	36.82	37.06	0.24	*22			MUDSTONE	SLTY. M. GY. VTHNB. BRKN INTERLAMINATED & VTHNB. SLIST. & CLAY.
17	37.06	38.01	0.95	18			MUDSTONE	LT-M. GY. LAM. BRKN SHEARING PRESENT. QTZ & TALC FILLED FRA CTURE. MINOR LAMELLAE OF ALT MUDST & LI GHT MUDDY SLTST.
17	38.01	38.11	0.10	14			ROCK LOSS	
17	38.11	38.97	0.86	*10			MUDSTONE	M-DK. GY. LAM. BRKN FRACTURE FILLED WITH QTZ & TALC. ALT. LA MELLAE OF LIGHT GREY & DARK GREY MUDST. POSSIBLE CORE LOSS. LOAD CAST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	38.97	39.07	0.10	10			ROCK LOSS	
18	39.07	40.84	1.77	*09			MUDSTONE	SLTY. LT. GY. LAM. SSD. BRKN ALT LAMELLAE OF LIGHT GREY & DARK GREY SLTY MUDST. BEDDING SLIGHTLY CONTORTED. CARBONACEOUS FILMS. MINOR SHEARING, FR ACTURE DISPL.
18	40.84	41.14	0.30	10			ROCK LOSS	
19	41.14	41.21	0.07	11			MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD AS ABOVE.
19	41.21	43.00	1.79	*12			MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD AS ABOVE. MINOR SHEARING. FEW QTZ FILLE D FRACTURES. MINOR TALC. SMALL LIGHT GR EY CLAYFILL NEAR END O. BOX APPROXIMATEL Y 3MM THICK.
20	43.00	43.93	0.93	*09			MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD SHEARED. LAMELLAE OF SILTY LIGHT GREY M UDST & DARK GREY MUDST. FEW QTZ & TALC FILLED FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	43.93	44.91	0.98	07		MUDSTONE	SLTY. LT-M.GY. LAM. SSD. SLD AS ABOVE.
21	44.91	46.83	1.92	*05		MUDSTONE	SLTY. M.GY. LAM. SSD. BRKN AS ABOVE. FRACTURE DISPL. SHEARED. BDG OVERTURNED. POSSIBLE CORE LOSS.
21	46.83	46.93	0.10	07		ROCK LOSS	
22	46.93	48.67	1.74	09		MUDSTONE	SLTY. MEL. M.GY. LAM. BRKN ALT LAMELLAE OF M-DK GREY MUDST & GREY SLTST. SHEARED. TALC & QTZ INFILL OF FRACTURE. POSSIBLE CORE LOSS.
22	48.67	48.97	0.30	11		ROCK LOSS	
23	48.97	49.90	0.93	12		MUDSTONE	SLTY. MEL. M.GY. LAM. BRKN AS ABOVE. SLIGHT BRECCIATION NEAR START. LESS FRACTURE & QTZ & TALC INFILL NEAR END.
23	49.90	50.00	0.10	13		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	50.00	50.83	0.83	*14		MUDSTONE	SLTY. MEL. M.GY. LAM AS ABOVE.
23	50.83	50.95	0.12	14		ROCK LOSS	
24	50.95	52.87	1.92	*14		MUDSTONE	SLTY. MEL. M.GY. LAM. BRKN SOME SHEARING. MINOR CARBONACEOUS FILM. ALT LAMELLAE OF M-DK GREY MUDST & LT GREY MUDDY SLTST. POSSIBLE CORE LOSS.
24	52.87	53.00	0.13	13		ROCK LOSS	
25	53.00	53.08	0.08	13		MUDSTONE	SLTY. MEL. M.GY. LAM. SLD ALT LAMELLAE OF M-DK GREY MUDST & LT GREY MUDDY SLTST.
25	53.08	53.23	0.15	12		ROCK LOSS	
25	53.23	53.30	0.07	12 04398		BENTONITE	M-DK. GY. SLD OVERTURNED.
25	53.30	53.42	0.12	12		ROCK LOSS	
25	53.42	55.07	1.65	*11		MUDSTONE	SLTY. MEL. M.GY. LAM. SLD AS ABOVE. MINOR SHEARING.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	55.07	55.97	0.90	*14			MUDSTONE	SLTY. MEL. M. GY. LAM. BRKN ALT LAMELLAE OF MUDDY SLTST & MUDST. MI NOR SHEARING. FRACTURES PRESENT ARE QTZ FILLED.
26	55.97	56.12	0.15	12			ROCK LOSS	
26	56.12	56.89	0.77	*11			MUDSTONE	SLTY. MEL. M. GY. LAM. SLD AS ABOVE. NO FRACTURING. SOME CARBONACE OUS FILMS.
26	56.89	57.04	0.15	13			ROCK LOSS	
27	57.04	58.71	1.67	*16			MUDSTONE	SLTY. MEL. M. GY. LAM. BRKN AS ABOVE. MINOR SHEARING.
27	58.71	58.86	0.15	15			ROCK LOSS	
28	58.86	59.23	0.37	15			MUDSTONE	SLTY. MEL. M. GY. LAM. BRKN AS ABOVE. LOAD CAST, GRADED BDG.
28	59.23	59.24	0.01	15			ROCK LOSS	
28	59.24	60.71	1.47	14			MUDSTONE	SLTY. MEL. M. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS. LOAD CAST , GRADED BDG.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	60.71	60.73	0.02	14			ROCK LOSS	
29	60.73	62.41	1.68	*13			MUDSTONE	SLTY. MEL. M. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS. MINOR SHE ARING, QTZ FILLED FRACTURE (WITH DISPLA CEMENT).
29	62.41	62.66	0.25	13			ROCK LOSS	
29	62.66	62.78	0.12	13			MUDSTONE	SLTY. MEL. M. GY. LAM. SLD AS ABOVE.
30	62.78	63.88	1.10	*13			SILTSTONE	MEL. LT-M. GY. LAM. SSD. BRKN ALT LAMELLAE OF SLTST & SLTY MUDST. SHE ARING, QTZ & TALC INFILL OF SOME FRACTU RES. POSSIBLE CORE LOSS.
30	63.88	64.18	0.30	13			ROCK LOSS	
30	64.18	64.85	0.67	13			SANDSTONE	VFG. MEL. LT-M. GY. THNB. BRKN MUDDY WISPS & LAMELLAE THROUGHOUT. POSS IBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	64.85	65.09	0.24	13			ROCK LOSS	
31	65.09	66.09	1.00	13			SANDSTONE	VFG. MEL. LT-M. GY. THKB. BRKN SLTY MUDST WISPS & LAMELLAE THROUGHOUT. POSSIBLE CORE LOSS.
31	66.09	66.37	0.28	13			ROCK LOSS	
31	66.37	67.10	0.73	12			SANDSTONE	VFG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
32	67.10	68.77	1.67	12			SANDSTONE	VFG. MEL. LT-M. GY. THKB. BRKN AS ABOVE. RIP-UP NEAR END OF BOX. QTZ & TALC FILLED FRACTURE.
32	68.77	69.00	0.23	12			ROCK LOSS	
33	69.00	69.29	0.29	12			SANDSTONE	MG. MEL. LT-M. GY. THKB. RIPMK. SLD SLIGHT BRECCIATION NEAR BEGINNING. ARGIL- LACEOUS LAMINAE & WISPS OCCUR THROUGH- OUT. QTZ & TALC FILLED FRACTURES.
33	69.29	70.86	1.57	12			SANDSTONE	MG. MEL. LT-M. GY. THKB. RIPMK. SLD AS ABOVE.
33	70.86	71.00	0.14	12			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	71.00	72.45	1.45	12			SANDSTONE	MG. MEL. LT-M. GY. THKB. RIPMK. SLD AS ABOVE.
34	72.45	72.47	0.02	11	04399		BENTONITE	
34	72.47	73.12	0.65	11			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
35	73.12	74.59	1.47	11			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
35	74.59	74.69	0.10	11			ROCK LOSS	
35	74.69	75.19	0.50	*11			MUDSTONE	SLTY. M-DK. GY. LAM. SLD ALT LAMS OF SLTY MUDSTONE & MUDDY SLTST & SHEARING PRESENT.
36	75.19	75.72	0.53	11			MUDSTONE	SLTY. M-DK. GY. LAM. SLD AS ABOVE.
36	75.72	76.27	0.55	11			MUDSTONE	SLTY. M-DK. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS. SHEARED.
36	76.27	76.51	0.24	11			ROCK LOSS	
36	76.51	77.19	0.68	11			SANDSTONE	MG. MEL. LT-M. GY. THKB. RIPMK. SLD CALCITE FILLED FRACTURE. SOME ARGILLACE- OUS WISPS & LAMINAE PRESENT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	77.19	78.01	0.82	11			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD MINOR CALCITE IN FRACTURE. ARGILLACEOUS WISPS PRESENT.
37	78.01	78.10	0.09	11			ROCK LOSS	
37	78.10	78.20	0.10	11			SANDSTONE	CG.WEL.LT-M.GY.VTHNB.SLD ARGILLACEOUS WISPS.
37	78.20	78.50	0.30	11			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD ARGILLACEOUS WISPS. MINOR CALCITE, QTZ & TALC FRACTURE FILLS. FRACTURE DISPLAC EMENT.
37	78.50	78.52	0.02	11			COAL	C-6 AS ABOVE. THIN BONE COAL (C-6) LENSE.
37	78.52	79.23	0.71	11			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD CORE TWIST OFF. POSSIBLE CORE LOSS.
37	79.23	79.32	0.09	11			ROCK LOSS	
38	79.32	79.84	0.52	11			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD SOME ARGILLACEOUS WISPS, QTZ, MINOR CAL CITE & TALC FRACTURE INFILLS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	79.84	80.64	0.80	11			MUDSTONE	M-DK.GY.LAM.SLD ALT LAMELLAE TO VERY THINLY INTERBEDDED SS & SLT ST. SHEARED.
38	80.64	80.79	0.15	11			ROCK LOSS	
38	80.79	81.46	0.67	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD QTZ & CALCITE FRACTURE INFILLS.
39	81.46	81.72	0.26	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN POSSIBLE CORE LOSS. TALC FRACTURE INFIL LS.
39	81.72	81.87	0.15	10			ROCK LOSS	
39	81.87	83.51	1.64	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD QTZ & MINOR CALCITE FRACTURE INFILLS. A RGILLACEOUS WISPS.
40	83.51	83.92	0.41	10			SANDSTONE	MG.WEL.LT-M.GY.THNB.SLD ARGILLACEOUS WISPS. CALCITE & QTZ FRACT URE INFILLS. LARGE INFILL OF 6CM.
40	83.92	84.02	0.10	10			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	84.02	84.23	0.21	10			MUDSTONE	M-DK.GY.THNB.BRKN POSSIBLE CORE LOSS. SHEARED.
40	84.23	84.43	0.20	10			ROCK LOSS	
40	84.43	84.77	0.34	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD LARGE FRACTURE UP TO 3.5CM. CALCITE & Q TZ FRACTURE INFILLS. WELL DEVELOPED QTZ CRYST IN FRACTURE.
40	84.77	85.43	0.66	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD AS ABOVE.
40	85.43	85.53	0.10	10			ROCK LOSS	
41	85.53	86.56	1.03	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD ARGILLACEOUS WISPS. CONJUGATE FRACTURE. QTZ & CALCITE FRACTURE INFILLS.
41	86.56	87.13	0.57	*10			MUDSTONE	M-DK.GY.THNB.SLD LARGE FRACTURE FILLED WITH TALC & MINOR CALCITE.
41	87.13	87.22	0.09	10			SANDSTONE	MG.WEL.LT-M.GY.VTHNB.SLD ARGILLACEOUS WISPS.
41	87.22	87.49	0.27	10			MUDSTONE	M-DK.GY.THNB.BRKN SHEARING.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	87.49	87.58	0.09	10			ROCK LOSS	
42	87.58	87.69	0.11	10			MUDSTONE	M-DK.GY.VTHNB.WRMBU.SLD SANDY WISPS.
42	87.69	87.96	0.27	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN QTZ & CALCITE FILLED FRACTURE. POSSIBLE CORE LOSS.
42	87.96	87.99	0.03	10			ROCK LOSS	
42	87.99	89.60	1.61	10			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE. NEAR END OF BOX. ARGILLACEOUS LAMELLAE & VTHN BED FOUND.
43	89.60	90.82	1.22	09			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN QTZ & CALCITE FRACTURE INFILLS. ARGILLA CEOUS LAMELLAE & VTHN BEDS FOUND. SHEAR ING IN ARGILLACEOUS LAMELLAE. POSSIBLE CORE LOSS.
43	90.82	91.17	0.35	09			ROCK LOSS	
43	91.17	91.60	0.43	*09			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN AS ABOVE. LOAD CASTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	91.60	93.49	1.89	10			SANDSTONE	MG. WEL. LT-M. GY. THKB. WRMBU. SLD ARGILLACEOUS WISPS. QTZ & CALCITE FRACTURE INFILLS. RIP UP CLASTS.
44	93.49	93.60	0.11	10			ROCK LOSS	
45	93.60	94.17	0.57	11			SANDSTONE	MG. WEL. LT-M. GY. THKB. SLD AS ABOVE.
45	94.17	95.51	1.34	11			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE. SHEARING IN ARGILLACEOUS ZONE S. PERIODIC APPEARANCE OF ARGILLACEOUS WISPS, LAMELLAE & VTHN BED. POSSIBLE CORE LOSS.
45	95.51	95.61	0.10	12			ROCK LOSS	
46	95.61	97.06	1.45	12			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN ARGILLACEOUS WISPS. QTZ & CALCITE FRACTURE INFILLS. POSSIBLE CORE LOSS.
46	97.06	97.14	0.08	13			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	97.14	97.53	0.39	13			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE.
46	97.53	97.59	0.06	13			ROCK LOSS	
47	97.59	99.03	1.44	14			SANDSTONE	MG. WEL. LT-M. GY. THKB. SLD AS ABOVE.
47	99.03	99.62	0.59	14			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE.
48	99.62	100.21	0.59	15			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE.
48	100.21	100.27	0.06	15			ROCK LOSS	
48	100.27	101.62	1.35	15			SANDSTONE	MG. WEL. LT-M. GY. THKB. SLD AS ABOVE.
49	101.62	103.19	1.57	16			SANDSTONE	MG. WEL. LT-M. GY. THKB. SLD AS ABOVE.
49	103.19	103.24	0.05	17			ROCK LOSS	
49	103.24	103.65	0.41	17			SANDSTONE	MG. WEL. LT-M. GY. THKB. SLD AS ABOVE.
50	103.65	105.45	1.80	18			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	105.45	105.75	0.30	18			ROCK LOSS	
51	105.75	106.35	0.60	19			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
51	106.35	107.70	1.35	19			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
52	107.70	109.36	1.66	20			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE. TALC FRACTURE INFILL.
52	109.36	109.78	0.42	21			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
53	109.78	111.80	2.02	22			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
54	111.80	112.23	0.43	23			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE. POSSIBLE CORE LOSS.
54	112.23	113.61	1.38	23			SANDSTONE	MG. MEL. LT-M. GY. THKB. BRKN AS ABOVE.
54	113.61	113.86	0.25	24			ROCK LOSS	
55	113.86	115.92	2.06	25			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	115.92	117.20	1.28	26			SANDSTONE	MG. MEL. LT-M. GY. THKB. RIPMK. SLD AS ABOVE.
56	117.20	117.40	0.20	26			SANDSTONE	MG. MEL. LT-M. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.
56	117.40	117.52	0.12	26			ROCK LOSS	
56	117.52	117.99	0.47	27			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
56	117.99	118.33	0.34	27			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
57	118.33	119.35	1.02	27			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.
57	119.35	119.95	0.60	28			MUDSTONE	M-DK. GY. LAM. SLD ALT LAMINAE OF SLTST. & MUDST.
58	119.95	120.00	0.05	28			MUDSTONE	M-DK. GY. LAM. SLD AS ABOVE.
58	120.00	121.26	1.26	29			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD ARGILLACEOUS WISPS. QTZ & CALCITE FILLE D FRACTURES.
58	121.26	121.97	0.71	29			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	121.97	123.72	1.75	*30			SANDSTONE	SLTY. VFG. PR. LT. GY. SLD. ARGILLACEOUS SS WITH MINOR SLTST LAMS. QTZ FILLED FRACTURES. SHEARED SURFACES WITH COAL & TALC INFILL. BECOMES VERY SLTY NEAR BASE OF UNIT.
59	123.72	124.02	0.30	29			BRECCIA	SLTY. LT. GY. SHRD BRECCIATED SLTST WITH SANDY REGIONS. QTZ & TALC FRACTURE FILL. SHEARED.
59	124.02	124.06	0.04	29			COAL	C-6. BLK. SHRD BRECCIATED.
59	124.06	124.14	0.08	29			ROCK LOSS	
60	124.14	124.29	0.15	29			BRECCIA	WH. SHRD QTZ BRECCIA WITH SLTST CLASTS.
60	124.29	124.52	0.23	29			ROCK LOSS	
60	124.52	124.99	0.47	29			BRECCIA	C-6. DK. GY. SHRD COALY BRECCIA.
60	124.99	125.34	0.35	28			ROCK LOSS	
60	125.34	125.64	0.30	28			MUDSTONE	M-DK. GY. SHRD BRECCIATED MUDST. QTZ & TALC FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	125.64	125.96	0.32	28			SILTSTONE	LT. GY. SLD. VERY BRECCIATED CALCAREOUS SLTST. QTZ & TALC FRACTURE FILL.
60	125.96	126.02	0.06	28			MUDSTONE	M-DK. GY. SHRD QTZ & TALC FRACTURE FILL.
60	126.02	126.06	0.04	28			ROCK LOSS	
60	126.06	126.14	0.08	28			SANDSTONE	VFG. LT-M. GY. SHRD QTZ & TALC FRACTURE FILL.
60	126.14	126.52	0.38	28			BRECCIA	C-6. DK. GY. SHRD COALY BRECCIA. QTZ & TALC FRACTURE FILL.
60	126.52	126.66	0.14	27			SANDSTONE	VFG. LT. GY. SHRD BRECCIATED. QTZ & TALC FRACTURE FILL. SOME SLTST CLASTS.
61	126.66	126.75	0.09	27			SILTSTONE	LT. GY. SHRD QTZ & TALC FRACTURE FILLS. ? SEAM (OVT) FLOOR ROCK. NOT SAMPLED.
61	126.75	126.79	0.04	27	99999	? OVT	COAL	C-6. DK. GY. SHRD AS ABOVE.
61	126.79	126.96	0.17	27	99999	? OVT	COAL	C-5. DK. GY. SHRD QTZ FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	126.96	127.70	0.74	27	99999	? OVT	COAL LOSS	
61	127.70	128.00	0.30	27	99999	? OVT	COAL	C-6. DK. GY. SHRD QTZ FRACTURE FILLS.
61	128.00	128.31	0.31	26			ROCK LOSS	? SEAM (OVT) ROOF ROCK. NOT SAMPLED.
61	128.31	128.46	0.15	26			SILTSTONE	CARB. LT. GY. SHRD QTZ & TALC FRACTURE FILLS. ARGILLACEOUS SLTST.
61	128.46	128.81	0.35	26			MUDSTONE	DK. GY. SHRD QTZ & TALC FRACTURE FILLS.
61	128.81	128.93	0.12	26			MUDSTONE	DK. GY. SHRD AS ABOVE.
61	128.93	129.45	0.52	26			BRECCIA	C-6. M. GY. SHRD COALY BRECCIA. QTZ & TALC FRACTURE INFILLS.
62	129.45	129.69	0.24	25			MUDSTONE	DK. GY. SHRD QTZ & TALC FRACTURE INFILLS. ARGILLACEOUS.
62	129.69	130.16	0.47	25			MUDSTONE	CARB. DK. GY. SHRD QTZ & TALC FRACTURE INFILLS.
62	130.16	130.24	0.08	25			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	130.24	130.71	0.47	25			MUDSTONE	LT-M. GY. SHRD QTZ & TALC FRACTURE FILLS. BRECCIATED IN PLACES WITH C-4 COAL STRINGERS.
62	130.71	130.75	0.04	25			ROCK LOSS	
62	130.75	131.45	0.70	24			MUDSTONE	CARB. DK. GY. SHRD QTZ & TALC FRACTURE FILLS. C-4 STRINGER S. ARGILLACEOUS.
62	131.45	131.54	0.09	24			ROCK LOSS	
63	131.54	131.60	0.06	24			MUDSTONE	M-DK. GY. THKB. BRKN POSSIBLE CORE LOSS. SHEARED.
63	131.60	131.84	0.24	24			ROCK LOSS	
63	131.84	133.54	1.70	23			MUDSTONE	M-DK. GY. THKB. BRKN SHEARED. QTZ, CALCITE & TALC FRACTURE INFILLS. CARBONACEOUS CONTENT INCREASES TOWARDS END OF BOX. SMALL COAL C-1 PARTINGS NEAR END. POSSIBLE CORE LOSS.
64	133.54	134.67	1.13	22			MUDSTONE	CARB. M-DK. GY. THKB. BRKN HIGHLY FRACTURED. TALC, QTZ & CALCITE INFILLS. SHEARED. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	134.67	134.84	0.17	22			ROCK LOSS	
64	134.84	135.54	0.70	22			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE. BRECCIATED IN PLACES. POSSIBL E CORE LOSS.
64	135.54	135.74	0.20	21			ROCK LOSS	
65	135.74	137.49	1.75	21			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE. C-1 PARTINGS. SHEARED. POSSIB LE CORE LOSS.
65	137.49	137.74	0.25	20			ROCK LOSS	
66	137.74	138.02	0.28	20			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE. C-1 PARTINGS.
66	138.02	139.12	1.10	19			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE. C-1 PARTINGS.
66	139.12	139.37	0.25	19			SILTSTONE	MEL.LT.GY.THNB.BRKN FRACTURES WITH CALCITE & QTZ INFILLS. P OSSIBLE CORE LOSS.
66	139.37	139.44	0.07	19			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	139.44	139.56	0.12	19			SILTSTONE	CLYY.MEL.M.GY.VTHNB.BRKN INCREASING IN ARGILLACEOUS & CARBONACEO USCONTENT TOWARDS BASE. CALCITE, QTZ & TALC FRACTURE INFILLS. SLIGHT BRECCIATI ON IN PLACES.
67	139.56	140.18	0.62	18			MUDSTONE	CARB.DK.BLK.THNB.BRKN SHEARED. BRECCIATED C-1 COAL PARTING.
67	140.18	140.33	0.15	18			ROCK LOSS	
67	140.33	141.30	0.97	18			SANDSTONE	MG.MEL.LT-M.GY.THKB.SLD QTZ & CALCITE FRACTURE FILL. ARGILLACEO US WISPS.
68	141.30	142.96	1.66	17			SANDSTONE	MG.MEL.LT-M.GY.THKB.BRKN SHEARING ALONG LARGER ARGILLACEOUS WISP S.
68	142.96	143.02	0.06	16			ROCK LOSS	
68	143.02	143.24	0.22	16			SANDSTONE	MG.MEL.LT-M.GY.THKB.BRKN AS ABOVE.
68	143.24	143.30	0.06	16			ROCK LOSS	
69	143.30	143.51	0.21	16			SANDSTONE	MG.MEL.LT-M.GY.THKB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	143.51	143.70	0.19	16			SILTSTONE	CLYY, DK. GY. VTHNB. BRKN MUDDY CARBONACEOUS SLTST WITH FRACTURIN G. POSSIBLE CORE LOSS.
69	143.70	143.79	0.09	16			ROCK LOSS	
69	143.79	145.10	1.31	15			SANDSTONE	MG. WEL. LT-M. GY. VTHKB. RIPMK. BRKN SANDSTONES AS ABOVE. FRACTURE DISPLACEMENT.
69	145.10	145.20	0.10	15			ROCK LOSS	
70	145.20	146.03	0.83	14			SANDSTONE	MG. WEL. LT-M. GY. VTHKB. RIPMK. SLD AS ABOVE.
70	146.03	147.16	1.13	14			SANDSTONE	MG. WEL. LT-M. GY. VTHKB. RIPMK. SLD AS ABOVE. SHEAR IN ARGILLACEOUS WISPS. CONJUGATE FRACTURE.
71	147.16	147.82	0.66	13			SANDSTONE	MG. WEL. LT-M. GY. THNB. RIPMK. BRKN ARGILLACEOUS LAMELLAE/WISPS, SOME BEARING COAL C-1 PARTINGS. QTZ & CALCITE FRACTURE INFILLS.
71	147.82	147.89	0.07	13			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	147.89	148.96	1.07	13			SANDSTONE	MG. WEL. LT-M. GY. THKB. RIPMK. BRKN ARGILLACEOUS WISPS, QTZ & CALCITE FRACTURE FILLS. POSSIBLE CORE LOSS.
71	148.96	149.06	0.10	12			ROCK LOSS	
72	149.06	149.63	0.57	12			SANDSTONE	MG. WEL. LT-M. GY. THKB. RIPMK. BRKN QTZ, TALC & CALCITE FRACTURE INFILLS. ARGILLACEOUS WISPS. BRECCIATED IN PLACES.
72	149.63	150.82	1.19	11			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN ARGILLACEOUS WISPS, QTZ & CALCITE FRACTURE INFILLS.
72	150.82	151.03	0.21	11			ROCK LOSS	
73	151.03	151.93	0.90	10			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.
73	151.93	152.08	0.15	10			ROCK LOSS	
73	152.08	152.79	0.71	10			SANDSTONE	MG. WEL. LT-M. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.
73	152.79	152.94	0.15	10			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	152.94	154.44	1.50	09			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
74	154.44	154.64	0.20	08			ROCK LOSS	
75	154.64	155.10	0.46	08			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE. POSSIBLE CORE LOSS.
75	155.10	155.20	0.10	08			ROCK LOSS	
75	155.20	156.14	0.94	08			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
75	156.14	156.52	0.38	07			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE.
75	156.52	156.72	0.20	07			ROCK LOSS	
76	156.72	158.37	1.65	06			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE. BRECCIATED NEAR THE START. POSSIBLE CORE LOSS.
76	158.37	158.51	0.14	06			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
77	158.51	160.60	2.09	05			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	160.60	161.23	0.63	04			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE.
78	161.23	161.28	0.05	04			ROCK LOSS	
78	161.28	162.52	1.24	03			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE.
78	162.52	162.60	0.08	03			ROCK LOSS	
79	162.60	164.25	1.65	02			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
79	164.25	164.61	0.36	02			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
80	164.61	166.17	1.56	*01			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
81	166.17	168.20	2.03	02			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.SLD AS ABOVE.
81	168.20	168.22	0.02	02			ROCK LOSS	
82	168.22	170.06	1.84	02			SANDSTONE	MG.WEL.LT-M.GY.VTHKB.BRKN AS ABOVE. POSSIBLE CORE LOSS.
82	170.06	170.16	0.10	03			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	170.16	170.98	0.82	03			SANDSTONE	MG. MEL. LT-M. GY. VTHKB. RIPMK. BRKN AS ABOVE.
83	170.98	171.13	0.15	03			ROCK LOSS	
83	171.13	172.04	0.91	03			SANDSTONE	MG. MEL. LT-M. GY. VTHKB. RIPMK. SLD AS ABOVE.
84	172.04	173.66	1.62	04			SANDSTONE	MG. MEL. LT-M. GY. THKB. BRKN AS ABOVE. SOME SHEARING.
84	173.66	173.71	0.05	04			ROCK LOSS	
84	173.71	173.84	0.13	04			SANDSTONE	MG. MEL. LT-M. GY. THNB. BRKN ARGILLACEOUS IN AREAS WITH COAL C-1 PARTINGS.
84	173.84	173.85	0.01	04			ROCK LOSS	
84	173.85	174.03	0.18	04			SANDSTONE	MEL. LT-M. GY. THNB. BRKN TALC, CALCITE & QTZ FRACTURE INFILLS. ARGILLACEOUS WISPS.
84	174.03	174.04	0.01	04			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	174.04	174.16	0.12	04			SANDSTONE	MG. MEL. LT-M. GY. THNB. BRKN AS ABOVE. COAL C-1 PARTINGS FOUND IN FRACTURE. POSSIBLE CORE LOSS.
85	174.16	174.21	0.05	04			ROCK LOSS	
85	174.21	174.61	0.40	04			SANDSTONE	MG. MEL. LT-M. GY. THNB. BRKN AS ABOVE.
85	174.61	174.67	0.06	04			ROCK LOSS	
85	174.67	175.69	1.02	04			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE (BUT NO COAL).
85	175.69	175.99	0.30	05			SANDSTONE	MG. MEL. LT-M. GY. THNB. BRKN AS ABOVE. COAL C-1 PARTINGS.
85	175.99	176.04	0.05	05			ROCK LOSS	
86	176.04	177.29	1.25	*05			SANDSTONE	MG. MEL. LT-M. GY. THKB. BRKN AS ABOVE. CARBONACEOUS FILMS FOUND IN PLACES.
86	177.29	177.49	0.20	05			ROCK LOSS	
86	177.49	178.17	0.68	05			SANDSTONE	MG. MEL. LT-M. GY. THKB. SLD AS ABOVE. COAL C-1 PARTINGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	178.17	178.83	0.66	05			SANDSTONE	MG.WEL.LT-M.GY.THNB.BRKN AS ABOVE. C-1 PARTINGS.
87	178.83	178.93	0.10	05			ROCK LOSS	
87	178.93	179.52	0.59	05			SANDSTONE	MG.WEL.LT-M.GY.THNB.BIOTR.BRKN AS ABOVE. NO COAL. MINOR SHEARING. PELL ETS.
87	179.52	179.62	0.10	05			ROCK LOSS	
87	179.62	180.17	0.55	05			SANDSTONE	MG.WEL.M.GY.THNB.YBRKN AS ABOVE. COAL C-6. HEAVILY FRACTURED W ITH QTZ & CALCITE FRACTURE INFILLS. SLI GHTLY BRECCIATED. POSSIBLE CORE LOSS.
87	180.17	180.27	0.10	05			ROCK LOSS	
88	180.27	180.76	0.49	*05			SANDSTONE	MG.WEL.LT-M.GY.THKB.YBRKN POSSIBLE CORE LOSS. ARGILLACEOUS WISPS & PERIODIC LAMELLAE WITH COAL C-6 PARTI NGS. MINOR SHEARING.
88	180.76	180.81	0.05	05			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	180.81	181.91	1.10	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.YBRKN AS ABOVE.
88	181.91	181.93	0.02	05			ROCK LOSS	
89	181.93	183.48	1.55	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.BRKN AS ABOVE - MORE C-1 THAN C-6. POSSIBLE CORE LOSS.
89	183.48	183.53	0.05	04			ROCK LOSS	
89	183.53	183.93	0.40	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD AS ABOVE.
90	183.93	185.94	2.01	*04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.BRKN AS ABOVE. SSD.
91	185.94	186.04	0.10	04			SANDSTONE	MG.WEL.LT-M.GY.THNB.BRKN ARGILLACEOUS WISPS. ABRUPT LITHO CHANGE
91	186.04	186.05	0.01	04			ROCK LOSS	
91	186.05	186.38	0.33	04			MUDSTONE	DK.GY.THNB.BRKN SLTY WISPS & SHEARING.
91	186.38	186.42	0.04	04			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
91	186.42	186.98	0.56	04			MUDSTONE	DK.GY.THKB.BIOTR.BRKN SHEARED. ABRUPT CHANGE BACK TO SS. FECA L PELLETS.
91	186.98	187.02	0.04	04			ROCK LOSS	
91	187.02	187.86	0.84	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.BRKN QTZ & CALCITE FILLED FRACTURE. POSSIBLE CORE LOSS.
91	187.86	187.90	0.04	04			ROCK LOSS	
92	187.90	189.28	1.38	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD AS ABOVE.
92	189.28	189.81	0.53	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD AS ABOVE.
93	189.81	191.85	2.04	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.RIPMK.SLD TALC & QTZ FRACTURE INFILLS.
94	191.85	192.20	0.35	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE.
94	192.20	193.78	1.58	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	193.78	195.07	1.29	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE.
95	195.07	195.82	0.75	04			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE.
96	195.82	197.78	1.96	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE. CALCITE FRACTURE INFILLS ALSO PRESENT. C-1 COAL PARTING. INCREASE IN ARGILLACEOUS MISPS. SHEARED.
97	197.78	197.87	0.09	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE. NO COAL PARTINGS.
97	197.87	199.68	1.81	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.SLD AS ABOVE. SHEARED.
98	199.68	200.73	1.05	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN AS ABOVE. BRECCIATED IN TWO PLACES. POSSIBLE CORE LOSS.
98	200.73	200.78	0.05	05			ROCK LOSS	
98	200.78	201.56	0.78	05			SANDSTONE	MG.WEL.LT-M.GY.THKB.BRKN AS ABOVE.
98	201.56	201.61	0.05	05			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
99	201.61	203.68	2.07	05			SANDSTONE	MG.HEL.LT-M.GY.THKB.SSD.SLD AS ABOVE. LOAD CASTS.
100	203.68	203.80	0.12	05			SANDSTONE	MG.HEL.LT-M.GY.THKB.SLD AS ABOVE.
100	203.80	205.65	1.85	05			SANDSTONE	MG.HEL.LT-M.GY.THKB.SLD AS ABOVE. SHEARED.
101	205.65	206.77	1.12	05			SANDSTONE	MG.HEL.LT-M.GY.THKB.SSD.SLD AS ABOVE.
101	206.77	207.71	0.94	05			SANDSTONE	MG.HEL.LT-M.GY.THKB.SSD.SLD AS ABOVE.
102	207.71	208.81	1.10	*05			SANDSTONE	MG.HEL.LT-M.GY.THKB.BRKN AS ABOVE. ABRUPT CHANGE.
102	208.81	209.72	0.91	06			SANDSTONE	MG.HEL.M.GY.THKB.SSD.SLD AS ABOVE. INCREASED ARGILLACEOUS CONTEN T.
103	209.72	211.47	1.75	07			SANDSTONE	MG.HEL.M.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS.
103	211.47	211.67	0.20	08			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
104	211.67	212.64	0.97	08			SANDSTONE	MG.HEL.M.GY.THKB.SSD.SLD INCREASE IN ARGILLACEOUS WISPS & LAMELL AE.
104	212.64	212.96	0.32	09			SANDSTONE	MG.HEL.M.GY.THNB.BRKN AS ABOVE. DISSEMINATED OXIDIZED PYRITE.
104	212.96	213.06	0.10	09			ROCK LOSS	
104	213.06	213.53	0.47	09			MUDSTONE	DK.GY.THNB.BRKN ABRUPT CHANGE. SMALL CLAY BAND APPROX 3 CM THICK, SLTY LAMELLAE PRESENT.
104	213.53	213.63	0.10	09			ROCK LOSS	
105	213.63	215.33	1.70	10			MUDSTONE	DK.GY.THKB.BRKN MINOR AMOUNTS OF SLTY LAMINAE. C-1 COAL PARTINGS. POSSIBLE CORE LOSS. SHEARED.
105	215.33	215.53	0.20	11			ROCK LOSS	
106	215.53	215.82	0.29	11			MUDSTONE	DK.GY.THNB.SLD CARBONACEOUS MUDST. WISPS. SHEARED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 43

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
106	215.82	217.20	1.38	11		MUDSTONE	CARB. DK. GY. THKB. BRKN COAL C-1 PARTINGS. FRACTURE NEAR END OF BOX WITH QTZ INFILL. POSSIBLE CORE LOS S.
106	217.20	217.50	0.30	12		ROCK LOSS	
107	217.50	218.82	1.32	13	08106	K/L? OYT. RF. MUDSTONE	CARB. BLK. MAS. BRKN SOME SHEAR SURFACES SHOWING SINISTRAL M OVEMENT. ABUNDANT COAL LENSES & STRINGE RS WITH TALC LIKE CROSS-HATCHING. BOTTO M 7CM SAMPLED. ? SEAM OVT FLOOR ROCK.
107	218.82	219.00	0.18	13	08106	K/L? OYT. RF. MUDSTONE	CARB. BLK. MAS. BRKN AS ABOVE. SAMPLED. ? SEAM OVT FLOOR ROC K.
107	219.00	219.33	0.33	13	08107	K/L? OYT	COAL LOSS
107	219.33	219.37	0.04	14	08107	K/L? OYT	COAL C-6. BLK. SHRD
107	219.37	219.49	0.12	14	08107	K/L? OYT	COAL C-6. BLK. SHRD PYRITE LENSES & STREAKS. SLIGHTLY SHEAR ED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 44

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
107	219.49	219.64	0.15	14	08107	K/L? OYT	COAL C-4. BLK. SHRD SLIGHTLY SHEARED.
108	219.64	220.18	0.54	14	08107	K/L? OYT	COAL C-3. BLK
108	220.18	220.58	0.40	14	08107	K/L? OYT	COAL C-4. BLK. VSHRD PYRITE STRINGERS & LENSES.
108	220.58	220.73	0.15	15	08107	K/L? OYT	COAL C-5. BLK. SHRD
108	220.73	220.80	0.07	15	08107	K/L? OYT	MUDSTONE CARB. BLK. SHRD
108	220.80	220.83	0.03	15	08107	K/L? OYT	COAL C-6. BLK. SLD ABUNDANT QTZ FILLED FRACTURES.
108	220.83	220.95	0.12	15	08107	K/L? OYT	COAL C-3. BLK. BRKN WELL CLEATED. QTZ FILLED FRACTURES ARE VERY NUMEROUS AND APPEAR TO FOLLOW CLEA TING IN THE COAL.
108	220.95	221.02	0.07	15	08107	K/L? OYT	COAL C-6. BLK. SLD ABUNDANT QTZ FILLED FRACTURES.
108	221.02	221.38	0.36	*15	08108	K/L? OYT FL	MUDSTONE CARB. BLK. SLD COAL LENSES WITH TALC CROSS-HATCHING. T OP 25CM SAMPLED. ? SEAM OVT ROOF ROCK.

* DENOTES MEASURED BCA

FORM
4001

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
109	221.38	221.84	0.46	16			MUDSTONE	DK.GY.THKB.BRKN COAL C-1 PARTINGS.
109	221.84	222.34	0.50	16			ROCK LOSS	
109	222.34	222.44	0.10	17			MUDSTONE	DK.GY.THKB.BRKN COAL PARTINGS (C-1).
109	222.44	222.50	0.06	17			BENTONITE	SAMPLE ID #DDH8800603.
109	222.50	223.63	1.13	18			MUDSTONE	DK.GY.THKB.BRKN AS ABOVE.
110	223.63	224.93	1.30	19			MUDSTONE	CARB.DK.GY.THKB.BIOTR.BRKN AS ABOVE. (C-1). AMMONITES & PELLETS IN CARBONACEOUS MUDST. SHEARED.
110	224.93	225.33	0.40	21			MUDSTONE	DK.GY.THKB.BRKN AS ABOVE.
110	225.33	226.33	1.00	22			ROCK LOSS	
111	226.33	227.93	1.60	23			MUDSTONE	CARB.DK.GY.THKB.BRKN C-6 & SOME C-1 COAL PARTINGS. SHEARED I N PARTS. QTZ, TALC & CALCITE FRACTURE I NFILLS. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
112	227.93	228.12	0.19	25			MUDSTONE	M-DK.GY.THKB.BRKN SHEARED. QTZ & TALC INFILL. PYRITIZED B IVALVES COMMON.
112	228.12	229.63	1.51	26			MUDSTONE	M-DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS.
112	229.63	230.63	1.00	28			ROCK LOSS	
113	230.63	231.71	1.08	29			MUDSTONE	M-DK.GY.THKB.SSD.BRKN PYRITE. BIVALVES. QTZ & CALCITE FRACTUR E FILLS. POSSIBLE CORE LOSS. BIOTRB (FE CAL PELLETS).
113	231.71	233.21	1.50	31			ROCK LOSS	
113	233.21	233.87	0.66	32			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE.
114	233.87	235.74	1.87	34			MUDSTONE	M-DK.GY.THKB.BIOTR.BRKN PYRITE. BIVALVES. FRACTURE DISPLACEMENT & QTZ, TALC, & CALCITE FRACTURE INFILLS & POSSIBLE CORE LOSS.
114	235.74	236.24	0.50	36			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
115	236.24	236.64	0.40	36			MUDSTONE	M-DK.GY.THKB.SLD AS ABOVE.
115	236.64	238.30	1.66	38			MUDSTONE	M-DK.GY.THKB.SSD.SLD AS ABOVE. BIVALVES. SHEARED.
116	238.30	239.55	1.25	40			MUDSTONE	M-DK.GY.THKB.BIOTR.BRKN AS ABOVE. BIVALVES. SHEARED. POSSIBLE C ORE LOSS.
116	239.55	239.97	0.42	41			MUDSTONE	M-DK.GY.THKB.BRKN AS ABOVE. PYRITE.
117	239.97	241.58	1.61	43			MUDSTONE	M-DK.GY.THKB.BIOTR.BRKN CALCITE FILL FRACTURE. POSSIBLE CORE LO SS.
117	241.58	242.28	0.70	44			ROCK LOSS	
118	242.28	242.82	0.54	*45			MUDSTONE	M-DK.GY.THKB.SSD.BRKN AS ABOVE. PLANT.HASH. PYRITE. SHEARED. FECAL PELLETS.
118	242.82	243.99	1.17	*48			MUDSTONE	M-DK.GY.THKB.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS. FECAL PEL LETS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
119	243.99	245.50	1.51	47			MUDSTONE	M-DK.GY.THKB.BIOTR.BRKN CALCITE & QTZ FRACTURE INFILLS. SHEARED LOAD CASTS.
119	245.50	245.90	0.40	46			ROCK LOSS	
119	245.90	246.10	0.20	46			MUDSTONE	M-DK.GY.THKB.BIOTR.BRKN AS ABOVE. POSSIBLE CORE LOSS. LOAD CAST
120	246.10	247.88	1.78	*45			MUDSTONE	M-DK.GY.LAM.SSD.BRKN ALT LAMS OF MUOYST & SLTST. SHEARED. OVE RTURNED BEDDING. LOAD CASTS.
121	247.88	248.54	0.66	*35			MUDSTONE	M-DK.GY.LAM.BRKN SHEARED. ALT LAMELLAE OF MUOYST & SLTST. QTZ & CALCITE FRACTURE INFILLS.
121	248.54	248.94	0.40	32			ROCK LOSS	
121	248.94	249.87	0.93	29			MUDSTONE	M-DK.GY.LAM.BRKN AS ABOVE. POSSIBLE CORE LOSS.
122	249.87	251.41	1.54	*22			MUDSTONE	M-DK.GY.LAM.BRKN AS ABOVE. POSSIBLE CORE LOSS.
122	251.41	251.94	0.53	22			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88006

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
122	251.94	252.27	0.33	22		MUDSTONE	M-DK. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS.
123	252.27	253.79	1.52	22		MUDSTONE	M-DK. GY. LAM. BIOTR. BRKN AS ABOVE. POSSIBLE CORE LOSS. LOAD CAST
123	253.79	253.89	0.10	22		SANDSTONE	MG. WEL. LT-M. GY. THNB. BRKN
124	253.89	254.10	0.21	22		SANDSTONE	MG. WEL. LT-M. GY. THNB. BRKN QTZ. FILLED FRACTURE.
124	254.10	254.61	0.51	22		SANDSTONE	MG. WEL. LT-M. GY. THNB. BRKN VERY CLYY SS. HIGHLY FRACTURED & SHEARED D IN PLACES. POSSIBLE CORE LOSS. END OF HOLE. DRILLER'S MARK. TD = 254.61M.

* DENOTES MEASURED BCA
NEWPAGE

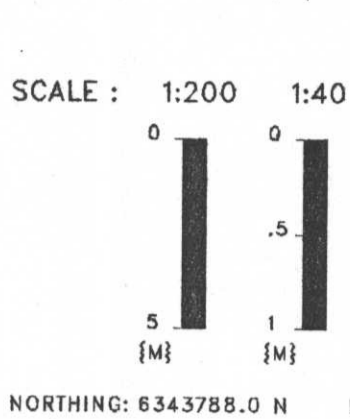
748

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88006

GEOLOGIST : MATTHEWS

DATE : FEB 21/89

DRAWING NO. :

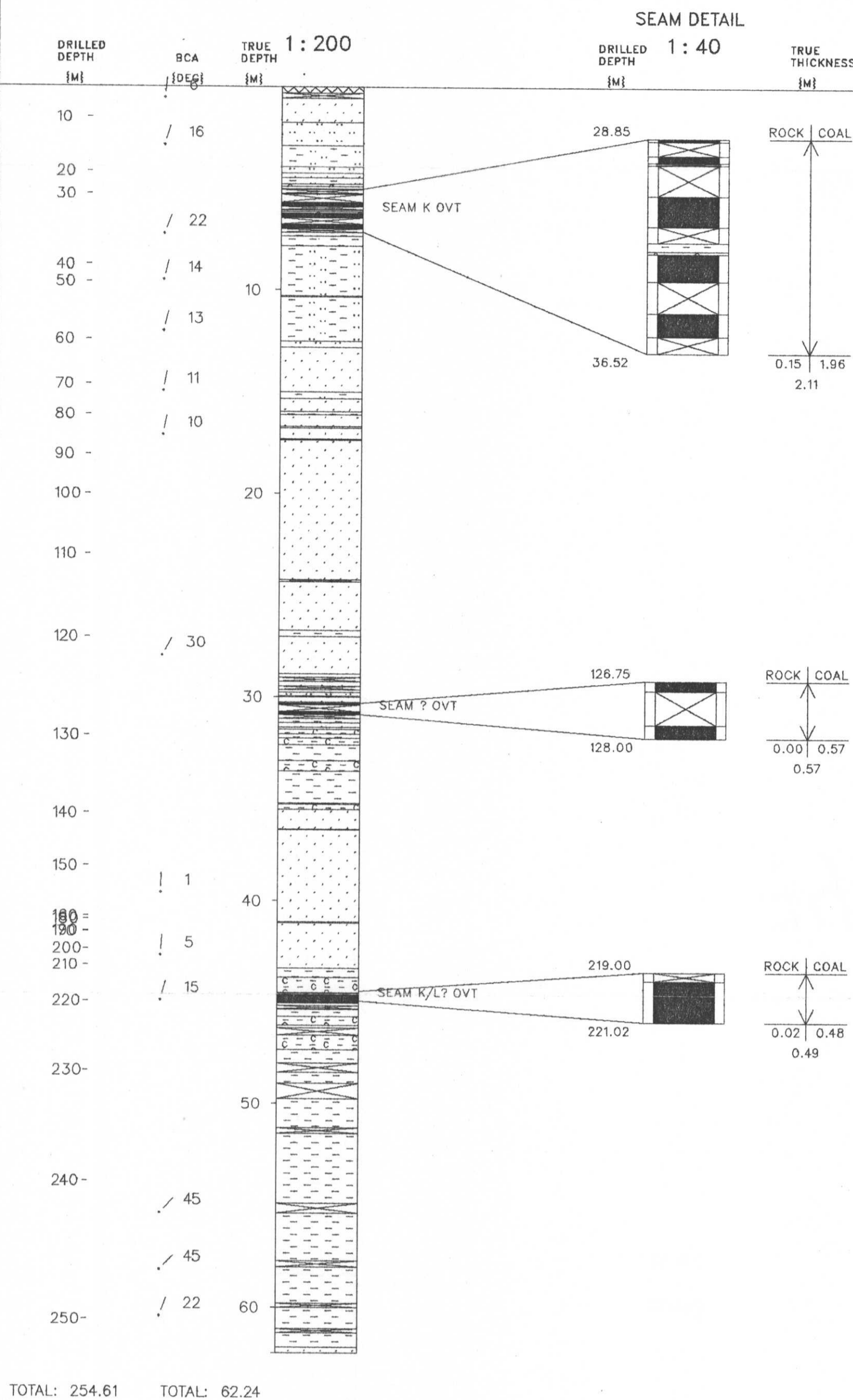


NORTHING: 6343788.0 N
 EASTING: 506730.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED



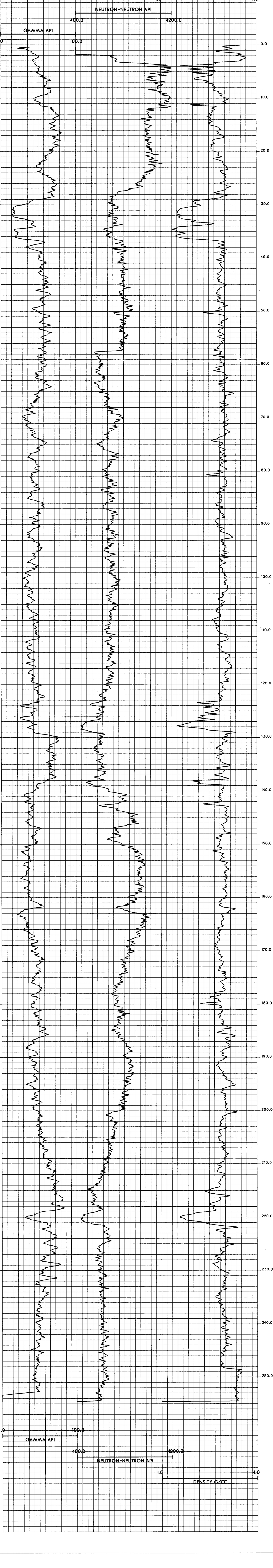
748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88006 Log Date: 88-06-18 Company: CENTURY Geologist: MATTHEWS	Province: BC Northing: 6343790.00 Lat: 571421 Zone: 9 Easting: 506731.00 Long: 1285319 Measuring Point: GROUND LEVEL Elevation: 1697.4	
Scale: 1 to 200.0 Depth Range: 0.0 to 259.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88007

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88007

DATE - 02/15/89

- HISTORY -

START DATE - 06/16/88
END DATE - 06/20/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - WALLACE

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - HOLE WAS TD'ED BECAUSE AN ARTESIAN AQUIFER WAS INTERSECTED. SEAMS INTERSECTED: I? (OVT), H?, ?, PH?, G?.

- LOCATION -

PROVINCE - BC
ELEVATION - 1689.54

ZONE - 9
NORTHING - 6342733.98
EASTING - 505143.30

LICENCE/LEASE NUMBER - 7148

LATITUDE - 571347
LONGITUDE - 1285453

- ORIENTATION -

LENGTH - 188.45

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-007

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

I out?

3.99 m

H ?

2.60 m

G

1.37 m



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	58			OVERBURDEN	CASING DEPTH.
1	4.57	8.87	4.30	58			ROCK LOSS	
1	8.87	9.32	0.45	58			MUDSTONE	CARB. BLK. MAS. PWRD CORE UNCONSOLIDATED AND WET WITH NUMEROUS CLAY PARTINGS. PROBABLE ROCK LOSS.
1	9.32	9.36	0.04	58			ROCK LOSS	
1	9.36	9.46	0.10	58			MUDSTONE	CARB. BLK. LAM. BRKN
1	9.46	9.71	0.25	58			MUDSTONE	CLYY. M. GY. LAM. BRKN POORLY CONSOLIDATED MUD AND CLAY INTERL AMINATED.
1	9.71	9.86	0.15	58			MUDSTONE	CARB. BLK. BRKN CORE IS BROKEN AND POORLY CONSOLIDATED, PROBABLE ROCK LOSS.
1	9.86	9.89	0.03	58			ROCK LOSS	
1	9.89	10.03	0.14	58			MUDSTONE	CLYY. DK. GY. MAS. BRKN POORLY CONSOLIDATED CLYY. MUD. PROBABLE ROCK LOSS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	10.03	10.43	0.40	58			MUDSTONE	CLYY. M. GY. MAS. SLD POORLY CONSOLIDATED CLAY RICH MUD, OCCA SIONAL SILTSTONE PARTINGS UP TO 3CM. LA MINAE.
1	10.43	10.66	0.23	58			MUDSTONE	CLYY. DK. GY. MAS. BRKN POORLY CONSOLIDATED MUDSTONE INTERBEDDE D WITH SILTSTONE, ABUNDANT QUARTZ FRAGM ENTS. PROBABLE ROCK LOSS. VTHNB.
2	10.66	11.26	0.60	58			SILTSTONE	M. GY. THNB. BRKN SILTSTONE WITH OCCASIONAL CLAYEY MUD PA RTING (2CM). PROBABLE ROCK LOSS.
2	11.26	11.35	0.09	58			ROCK LOSS	
2	11.35	11.45	0.10	58			SILTSTONE	CLYY. DK. GY. MAS. BRKN PROBABLE ROCK LOSS.
2	11.45	11.48	0.03	58			ROCK LOSS	
2	11.48	11.86	0.38	58			MUDSTONE	CLYY. M. GY. MAS. BRKN PROBABLE ROCK LOSS. TWIST-OFF.
2	11.86	12.96	1.10	58			ROCK LOSS	

* DENOTES MEASURED BCA

FORM
4001

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	12.96	13.39	0.43	58			MUDSTONE	CARB. BLK. LAM. SLD CORE IS WEAKLY SHEARED. MICRO FRACTURES INFILLED WITH SILICEOUS CEMENT, ABUNDA NT PLANT FRAGMENTS.
2	13.39	13.57	0.18	58			COAL	C-3. BLK. LAM. BRKN WELL CLEATED IN PARTS. INTERBANDS OF C- 2 & C-3, PROBABLE ROCK LOSS.
3	13.57	13.69	0.12	58			MUDSTONE	CARB. BLK. LAM. BRKN OCCASIONAL BANDS OF C-2 AND C-3 UP TO 0 .5CM THICK. QUARTZ VEINING UP TO 2CM TH ICK. PROBABLE ROCK LOSS.
3	13.69	13.72	0.03	58			ROCK LOSS	
3	13.72	14.05	0.33	58			MUDSTONE	SILTY M. GY. MAS. SSD. SLD BEDDING EXTREMELY CONTORTED DUE TO SOFT SEDIMENT DEFORMATION AND BIOTURBATION. THE SILTSTONE IS VERY HARD POSSIBLY SI LICEOUS.
3	14.05	14.47	0.42	58			MUDSTONE	CLYY. M. GY. MAS. BRKN PROBABLE ROCK LOSS. 7CM THICK SILICEOUS SILTSTONE BED. 1CM THICK QUARTZ VEIN.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	14.47	14.52	0.05	58			ROCK LOSS	
3	14.52	15.62	1.10	58			MUDSTONE	CARB. BLK. LAM. SHRD MUDSTONE IS BOTH SHEARED AND FRACTURED WITH OCCASIONED QUARTZ INFILLING. SILIC EOUS SILTY MUDSTONE BEDS UP TO 10CM THI CK OCCUR. PROBABLE ROCK LOSS. AS ABOVE.
3	15.62	16.07	0.45	58			ROCK LOSS	
4	16.07	18.17	2.10	58			MUDSTONE	CARB. BLK. LAM. SHRD AS ABOVE.
4	18.17	18.67	0.50	58			ROCK LOSS	
5	18.67	19.11	0.44	*58			MUDSTONE	CLYY. DK. GY. LAM. SSD. BRKN PROBABLE ROCK LOSS. OCCASIONAL SILTSTON E LAMINATIONS.
5	19.11	19.80	0.69	53			MUDSTONE	CLYY. DK. GY. LAM. SSD. SHRD AS ABOVE. THIN (.5CM) COAL BAND. PROBAB LE ROCK LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	19.80	20.42	0.62	47			SANDSTONE	SLTY.VFG.MEL.LT.GY.LAM.SSD.BRKN INTERLAMINATED FINE SANDSTONE AND SILTS TONE. OCCASIONAL MUD PARTING (UP TO 3CM).
6	20.42	20.53	0.11	*44			SANDSTONE	SLTY.VFG.MEL.LT.GY.LAM.BRKN PROBABLE ROCK LOSS.
6	20.53	20.56	0.03	44			ROCK LOSS	
6	20.56	22.45	1.89	47			MUDSTONE	CARB.BLK.LAM.SHRD TWIST-OFF PROBABLE ROCK LOSS. OCCASIONAL SILTSTONE PARTINGS UP TO 5CM. ABUNDANT PLANT FRAGMENTS.
6	22.45	24.25	1.80	51			ROCK LOSS	
7	24.25	26.30	2.05	*56			MUDSTONE	SLTY.M.GY.LAM.SLD PREDOMINANTLY MUDSTONE VARYING FROM COM SOLIDATED TO POORLY CONSOLIDATED. CORE IS SHEARED AND FRACTURED.
8	26.30	27.53	1.23	51			MUDSTONE	CARB.DK.GY.LAM.BRKN MUDSTONE CARBONACEOUS IN PARTS. OCCASIONAL PYRITE BLEBS. MUDSTONE IS UNCONSOLIDATED. ABUNDANT SILTSTONE CLASTS FLOATING IN MUD MATRIX. MINOR QUARTZ VEINING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	27.53	28.29	0.76	48			MUDSTONE	CARB.DK.GY.LAM.BRKN AS ABOVE. TWIST-OFF - PROBABLE ROCK LOSS.
8	28.29	29.39	1.10	46			ROCK LOSS	
9	29.39	29.88	0.49	44			MUDSTONE	CLYY.DK.GY.LAM.BRKN CARBONACEOUS IN PARTS. FINE SANDSTONE CLASTS FLOAT IN MUD MATRIX.
9	29.88	30.46	0.58	*42			SANDSTONE	FG.MEL.LT.GY.THNB.SLD RIP-UP MUDSTONE CLASTS AT THE TOP. BEDS POSSIBLY OVERTURNED.
9	30.46	31.35	0.89	46			MUDSTONE	DK.GY.LAM.SHRD MINOR QUARTZ VEINING.
9	31.35	31.40	0.05	49			ROCK LOSS	
10	31.40	32.54	1.14	*52			MUDSTONE	CLYY.DK.GY.LAM.SHRD 1CM WIDE QUARTZ VEINS. CORE HAS A CLAYEY TEXTURE IN PARTS. ABUNDANT LITRIFIC SURFACES. MUD CLAST BRECCIA IN PARTS.
10	32.54	33.01	0.47	50			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	33.01	33.90	0.89	49		MUDSTONE	DK.GY.LAM.SHRD AS ABOVE.
11	33.90	34.75	0.85	47		MUDSTONE	CLYY.DK.GY.LAM.SHRD AS ABOVE.
11	34.75	35.63	0.88	45		MUDSTONE	CLYY.DK.GY.LAM.SHRD AS ABOVE.
11	35.63	35.72	0.09	44		COAL	C-4.BLK.PHRD MINOR QUARTZ VEINLETS.
11	35.72	35.73	0.01	43		ROCK LOSS	
11	35.73	35.93	0.20	43		MUDSTONE	SLTY.DK.GY.SHRD MINOR QUARTZ VEINING. EXTREMELY FRACTUR ED. POORLY CONSOLIDATED.
11	35.93	35.97	0.04	43		ROCK LOSS	
12	35.97	37.88	1.91	41		MUDSTONE	SLTY.DK.GY.LAM.SSD.SHRD CORE IS EXTREMELY FRACTURED NUMEROUS MI CRO FAULTS. LAMINATIONS EXTREMELY CONTO RTED. LISTRIC SHEAR SURFACES COMMON. PO SSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	37.88	38.41	0.53	38		ROCK LOSS	
12	38.41	38.56	0.15	37		MUDSTONE	SLTY.DK.GY.LAM.SSD.SHRD AS ABOVE.
13	38.56	38.71	0.15	37		MUDSTONE	SLTY.DK.GY.LAM.SSD.SHRD NUMEROUS SMALL QUARTZ VEINS UP TO 0.5CM THICK.
13	38.71	40.44	1.73	35		MUDSTONE	SSY.DK.GY.LAM.SSD.SHRD EXTREMELY CONTORTED LAMINATIONS. NUMERO US MICRO FAULTS. LISTRIC SURFACES COMMO N. VERY FINE GRAINED SAND INTERBEDDED W ITH MUDSTONE. POSSIBLE BIOTURBATION.
13	40.44	40.96	0.52	32		ROCK LOSS	
14	40.96	41.81	0.85	31		MUDSTONE	SSY.DK.GY.LAM.SSD.SHRD AS ABOVE.
14	41.81	41.83	0.02	30		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	41.83	43.08	1.25	28			MUDSTONE	SSY, DK. GY. LAM. SSD. SHRD AS ABOVE.
14	43.08	43.54	0.46	26			ROCK LOSS	
15	43.54	44.13	0.59	25			MUDSTONE	SSY, DK. GY. LAM. SSD. SHRD AS ABOVE.
15	44.13	44.17	0.04	24			ROCK LOSS	
15	44.17	45.30	1.13	*23			MUDSTONE	SSY, DK. GY. LAM. SSD. SLD VERY FINE GRAINED SANDSTONE INTERBEDDED WITH MUDSTONE. MINOR PYRITE.
15	45.30	45.43	0.13	*31			MUDSTONE	BLK. LAM. PMRD EXTREMELY SHEARD. NUMEROUS SHINY LISTRIC SURFACES.
15	45.43	45.46	0.03	30			ROCK LOSS	
16	45.46	46.74	1.28	*20			MUDSTONE	SSY, VFG. M. GY. LAM. SSD. SLD INTERBEDDED, VERY FINE SAND AND MUDSTONE.
16	46.74	46.84	0.10	20			MUDSTONE	SSY, VFG. M. GY. LAM. SSD. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	46.84	47.52	0.68	20			MUDSTONE	SSY, VFG. M. GY. LAM. SSD. BRKN MICRO FAULTS & FRACTURES. LOAD CASTS INDICATE BEDS POSSIBLY OVERTURNED.
17	47.52	48.70	1.18	20			MUDSTONE	SSY, VFG. M. GY. LAM. SSD. BRKN COARSENING UPWARDS. SAND BECOMES MORE ABUNDANT.
18	48.70	49.67	0.97	20			MUDSTONE	SLTY. M. GY. LAM. SHRD NUMEROUS FRACTURES IN CORE WITH MINOR QUARTZ VEINING. LAMINATIONS VERY CONTORTED. PROBABLE ROCK LOSS.
18	49.67	49.97	0.30	20			ROCK LOSS	
18	49.97	50.82	0.85	20			MUDSTONE	SLTY. M. GY. LAM. BRKN PROBABLE ROCK LOSS.
18	50.82	50.90	0.08	20			ROCK LOSS	
19	50.90	51.16	0.26	20	04389	I? OVT FLOOR	MUDSTONE	DK. GY. BRKN THIN (<1MM) CONTORTED CARBONIFEROUS STRINGS, THIN CALCITE VEINS (~1MM). MUDSTONE IS SLIGHTLY CALCAREOUS. VERY SHEARED AT BASE, POSSIBLE FAULT ZONE. SAMPLED LOWER 25 CM. M? OVT FLOOR ROCK.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	51.16	51.21	0.05	20	04390 I? OVT	COAL	C-4. BLK. PMRD EXTREMELY SHEARED.
19	51.21	51.46	0.25	20	04390 I? OVT	COAL	C-3. BLK. PMRD AS ABOVE.
19	51.46	51.50	0.04	20	04390 I? OVT	COAL	C-4. BLK. PMRD AS ABOVE.
19	51.50	51.58	0.08	20	04390 I? OVT	COAL	C-5. BLK. PMRD EXTREMELY SHEARED, SOME C-4 AND C-3 FRA GMENTS PRESENT. SHEAR ZONE NEAR BASE. 5 DEGREES FROM VERTICAL.
19	51.58	51.64	0.06	*20	04390 I? OVT	MUDSTONE	CARB. DK. GY. LAM. SHRD
19	51.64	51.80	0.16	21	04390 I? OVT	MUDSTONE	CARB. DK. GY. VSHRD UNLITHIFIED, SOFT, COAL PARTICLES, TALC ? PRESENT.
19	51.80	51.84	0.04	21	04390 I? OVT	COAL	C-6. BLK. SHRD BROKEN UP.
19	51.84	52.14	0.30	22	04390 I? OVT	COAL	C-4. BLK. PMRD SOME C-3 AND C-6 PARTICLES INTERMIXED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	52.14	52.28	0.14	23	04390 I? OVT	COAL	C-6. BLK. PMRD EXTREMELY SHEARED.
19	52.28	52.46	0.18	23	04390 I? OVT	MUDSTONE	CARB. LT. BLK. PMRD EXTREMELY SHEARED.
19	52.46	52.61	0.15	24	04390 I? OVT	COAL	C-6. BLK. PMRD AS ABOVE WITH CARB MUDST INTERBEDDING.
20	52.61	52.71	0.10	25	04390 I? OVT	COAL	C-6. BLK. PMRD AS ABOVE.
20	52.71	52.84	0.13	25	04390 I? OVT	COAL	C-4. BLK. PMRD EXTREMELY SHEARED.
20	52.84	52.91	0.07	26	04390 I? OVT	COAL	C-6. BLK. PMRD EXTREMELY SHEARED.
20	52.91	53.11	0.20	26	04390 I? OVT	COAL	C-4. BLK. PMRD EXTREMELY SHEARED.
20	53.11	53.36	0.25	27	04390 I? OVT	COAL	C-6. BLK. PMRD MINOR BANDS OF C-3 AND C-2. ABUNDANT PY RITE NODULES.
20	53.36	53.69	0.33	29	04391 I? OVT	MUDSTONE	DK. GY. BRKN ABUNDANT QTZ VEINING, PYRITE VEIN APPRO X 1MM THICK. MINOR COAL STRINGERS 1-3MM THICK. SOMEWHAT SHEARED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	53.69	53.85	0.16	30	04391	I? OVT	MUDSTONE	M.GY.VBRKN POLISHED SURFACES ON BROKEN PIECES.
20	53.85	53.93	0.08	30	04391	I? OVT	MUDSTONE	M.GY.VSHRD SOFT.
20	53.93	54.19	0.26	31	04391	I? OVT	MUDSTONE	M.GY.BRKN
21	54.19	54.43	0.24	32	04391	I? OVT	MUDSTONE	M.GY.SHRD
21	54.43	54.53	0.10	33	04391	I? OVT	MUDSTONE	CARB.DK.GY.PWRD
21	54.53	54.71	0.18	34	04391	I? OVT	MUDSTONE	CARB.DK.GY.VSHRD EXTREMELY SHEARED AND BROKEN UP.
21	54.71	54.79	0.08	34	04392	I? OVT	COAL	C-6.BLK.PWRD INTERMIXED CARB MUDST, VERY SOFT, CRUMB LY.
21	54.79	54.85	0.06	35	04392	I? OVT	COAL	C-6.BLK.VSHRD POLISHED SHEAR SURFACES, THIN (APPROX 1 MM) QTZ VEINS THROUGHOUT.
21	54.85	55.25	0.40	36	04392	I? OVT	COAL	C-6.BLK.PWRD VERY CRUMBLY, MIXED WITH CARB MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	55.25	55.35	0.10	37	04392	I? OVT	COAL	C-6.BLK.PWRD A MUSHY SLUDGE WITH BUBBLES LIKE AN AER O BAR.
21	55.35	55.71	0.36	38	04392	I? OVT	COAL	C-6.BLK.PWRD EXTREMELY SHEARED, CRUMBLY.
22	55.71	55.81	0.10	39	04392	I? OVT	COAL	C-6.BLK.PWRD AS ABOVE.
22	55.81	55.88	0.07	39	04392	I? OVT	MUDSTONE	CARB.BLK.PWRD AERO BAR TEXTURE - MUSH FULL OF AIR BUB BLES.
22	55.88	56.63	0.75	41	04392	I? OVT	COAL	C-6.BLK.VSHRD HIGHLY SHEARED AND BROKEN UP.
22	56.63	57.13	0.50	44	04392	I? OVT	COAL	C-5.BLK.PWRD MIXED WITH C-6 AND CARB MUDST.
22	57.13	57.37	0.24	46	04392	I? OVT	COAL	C-6.BLK.PWRD EXTREMELY SHEARED.
22	57.37	57.62	0.25	47	04392	I? OVT	COAL	C-5.BLK.PWRD EXTREMELY SHEARED, VERY CRUMBLY.
23	57.62	58.02	0.40	48	04392	I? OVT	COAL	C-5.BLK.PWRD EXTREMELY SHEARED, VERY CRUMBLY.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	58.02	58.13	0.11	50	04392	I? OVT	COAL	C-6. BLK. PWRD EXTREMELY SHEARED, VERY CRUMBLY.
23	58.13	58.47	0.34	51	04392	I? OVT	COAL LOSS	
23	58.47	58.67	0.20	52	04392	I? OVT	MUDSTONE	CARB. DK. GY. PWRD EXTREMELY SHEARED.
23	58.67	59.19	0.52	53	04392	I? OVT	COAL	C-6. BLK. PWRD EXTREMELY SHEARED, CRUMBLY.
23	59.19	59.45	0.26	55	04393	I? OVT ROOF	MUDSTONE	CARB. DK. GY. VSHRD VERY THIN (<1MM) C-6 STRINGERS, H? OVT ROOF ROCK, SAMPLED.
23	59.45	59.59	0.14	56			MUDSTONE	CARB. DK. GY. VSHRD AS ABOVE.
23	59.59	60.03	0.44	57			MUDSTONE	M. GY. LAM. YBRKN BRECCIATED, SOMEWHAT SHEARED.
24	60.03	61.13	1.10	*61			MUDSTONE	SLTY. DK. GY. LAM. VSHRD NUMEROUS SHINY LISTRIC SURFACES. CORE B RECCIATED IN PARTS. MINOR QUARTZ VEININ G. PROBABLE CORE LOSS.
24	61.13	61.33	0.20	52			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	61.33	61.97	0.64	46			MUDSTONE	SLTY. DK. GY. LAM. VSHRD VERY BRECCIATED WITH MUD CLASTS FLOATIN G IN UNCONSOLIDATED MUD MATRIX.
25	61.97	62.10	0.13	40			MUDSTONE	SLTY. DK. GY. LAM. VSHRD AS ABOVE.
25	62.10	62.70	0.60	*35			MUDSTONE	SLTY. DK. GY. LAM. SLD INTERLAMINATED LIGHT GREY AND BLACK MUD STONE AND FINE SILTSTONE. MUD CLAST BRE CCIA FOUND IN PARTS WHERE CORE APPEARS VERY SHEARED. MINOR QUARTZ VEINING IN S HEARED AREAS.
25	62.70	63.97	1.27	34			MUDSTONE	SLTY. DK. GY. LAM. SLD AS ABOVE.
26	63.97	65.97	2.00	*33			MUDSTONE	SLTY. DK. GY. LAM. SLD AS ABOVE. PROBABLE CORE LOSS.
27	65.97	66.05	0.08	28			MUDSTONE	SLTY. DK. GY. LAM. SLD AS ABOVE.
27	66.05	67.92	1.87	*23			MUDSTONE	SLTY. DK. GY. LAM. VSHRD CORE EXTREMELY SHEARED IN LOWER PORTION OF THE INTERVAL. MUD CLAST BRECCIA PRE DOMINATES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	67.92	67.96	0.04		25		ROCK LOSS	
28	67.96	68.46	0.50		*26		MUDSTONE	SLTY.DK.GY.LAM.SLD AS ABOVE.
28	68.46	68.66	0.20		28		SANDSTONE	CLYY.MG.WEL.LT.GY.VTHNB.VSHRD QUARTZ VEINS COMMON UP TO 0.5CM THICK.
28	68.66	68.68	0.02		29		ROCK LOSS	
28	68.68	69.18	0.50		31		MUDSTONE	SSY.DK.GY.VTHNB.SSD.VSHRD INTERBEDDED SAND AND MUD. LOAD CASTS IN DICATE POSSIBLY OVERTURNED BEDS.
28	69.18	69.86	0.68		*35		MUDSTONE	SSY.DK.GY.VTHNB.SSD.VSHRD AS ABOVE.
29	69.86	70.10	0.24		*20		SANDSTONE	MG.WEL.LT.GY.LAM.SLD MINOR QTZ VEIN.
29	70.10	70.36	0.26		26		MUDSTONE	SLTY.DK.GY.LAM.SHRD NUMEROUS SHEARED LISTRIC SURFACES.
29	70.36	70.80	0.44		34		SANDSTONE	MG.WEL.LT.GY.LAM.SSD.SHRD PREDOMINATELY SANDSTONE WITH RARE MUD C LASTS. MINOR QTZ VEINING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	70.80	71.29	0.49		44		MUDSTONE	SSY.DK.GY.LAM.VSHRD NUMEROUS QUARTZ VEINS AND SHEARED SURFACES. FINE SAND INTERBEDDED WITH POORLY CONSOLIDATED MUD. PROBABLE CORE LOSS.
29	71.29	71.31	0.02		50		ROCK LOSS	
29	71.31	71.96	0.65		*58		SANDSTONE	CLYY.FG.WEL.LT.GY.LAM.VSHRD VERY THIN BEDS WITH MUD LAMINATIONS. QU ARTZ VEINING ABUNDANT.
29	71.96	71.98	0.02		61		ROCK LOSS	
30	71.98	72.36	0.38		63		MUDSTONE	SSY.DK.GY.VSHRD MUDSTONE BRECCIA WITH CONTORTED FINE SAND BEDS. QUARTZ FILLED FRACTURES COMMON
30	72.36	73.53	1.17		*70		MUDSTONE	SSY.DK.GY.VSHRD AS ABOVE.
30	73.53	73.98	0.45		67		SANDSTONE	FG.WEL.LT.GY.LAM.SHRD ARGILLACEOUS SAND WITH MUD LAMINATIONS. MINOR QUARTZ VEINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	73.98	74.36	0.38	*65			SANDSTONE	FG.WEL.LT.GY.LAM.SLD FAULT STRUCTURE AT BOTTOM OF INTERVAL.
31	74.36	74.44	0.08	59			BRECCIA	SSY.LT.GY.VSHRD CLAYEY SAND ZONE WITH ANGULAR SANDSTONE CLASTS. POSSIBLE FAULT ZONE.
31	74.44	75.47	1.03	*45			MUDSTONE	SSY.DK.GY.LAM.VSHRD INTERBEDDED SILT AND SAND. SHINEY LISTR IC SURFACES ABUNDANT. MINOR QUARTZ VEIN ING.
31	75.47	75.72	0.25	*72			MUDSTONE	SSY.DK.GY.LAM.YBRKN POSSIBLE CORE LOSS. ? SEAM ROOF ROCK. N OT SAMPLED.
31	75.72	75.87	0.15	71	99998	H?	COAL	C-4.BLK.PHRD COAL IS COMPLETELY CRUSHED. ? SEAM.
32	75.87	75.90	0.03	70	99998	H?	COAL LOSS	? SEAM.
32	75.90	76.00	0.10	69	99998	H?	MUDSTONE	M.GY.LAM.SHRD INTERLAMINATED LIGHT GREY AND BLACK MUD . ? SEAM FLOOR ROCK. NOT SAMPLED.
32	76.00	76.03	0.03	69	99998	H?	BENTONITE	LT.GY.SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	76.03	76.16	0.13	68	99998	H?	MUDSTONE	CARB.M.GY.SHRD MINOR QUARTZ VEINING.
32	76.16	76.56	0.40	67	99998	H?	ROCK LOSS	
32	76.56	76.66	0.10	65	99998	H?	MUDSTONE	CLYY.DK.GY.BRKN POSSIBLY BENTONITE.
32	76.66	76.96	0.30	63	99998	H?	MUDSTONE	DK.GY.LAM.VSHRD POSSIBLE CORE LOSS.
32	76.96	77.60	0.64	*60	99998	H?	MUDSTONE	SLTY.DK.GY.LAM.BRKN POSSIBLE CORE LOSS.
32	77.60	77.65	0.05	60	99998	H?	ROCK LOSS	
32	77.65	77.98	0.33	60	99998	H?	MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE.
33	77.98	78.08	0.10	59	99998	H?	MUDSTONE	SLTY.DK.GY.LAM.BRKN AS ABOVE.
33	78.08	78.28	0.20	59	99998	H?	ROCK LOSS	H? SEAM ROOF ROCK.
33	78.28	78.43	0.15	59	99998	H?	COAL	C-4.BLK.PHRD POSSIBLE CORE LOSS. H? SEAM.
33	78.43	78.66	0.23	59	99998	H?	COAL LOSS	H? SEAM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	78.66	78.95	0.29		59		MUDSTONE	SLTY. DK. GY. LAM. BRKN POSSIBLE CORE LOSS. PYRITE ABUNDANT.
33	78.95	80.26	1.31	*58			SANDSTONE	SLTY. VFG. WEL. M. GY. LAM. SSD. BRKN COARSENING UPWARDS SEQUENCE.
34	80.26	80.99	0.73	*51			SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. SLD INTERBEDDED SANDSTONE AND SILTSTONE. BI OTURBATION COMMON. LOAD STRUCTURES INDI CATE BEDS ARE UPRIGHT.
34	80.99	81.66	0.67		55		SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. YBRKN AS ABOVE.
34	81.66	81.97	0.31		57		ROCK LOSS	
34	81.97	82.61	0.64	*60			SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. SLD AS ABOVE.
35	82.61	83.31	0.70	*65			SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. SLD AS ABOVE.
35	83.31	83.91	0.60		61		SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. BRKN AS ABOVE.
35	83.91	84.05	0.14		59		SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	84.05	84.46	0.41	*58			SANDSTONE	SLTY. FG. WEL. M. GY. LAM. SSD. SLD AS ABOVE.
36	84.46	85.79	1.33		62		MUDSTONE	SSY. DK. GY. LAM. SSD. SLD BIOTURBATION AND LOAD STRUCTURES INDICA TE BEDS ARE UPRIGHT. ? SEAM ROOF ROCK.
36	85.79	85.99	0.20		65	99999 ?	COAL	C-4 ? SEAM.
36	85.99	86.12	0.13		66	99999 ?	COAL LOSS	? SEAM.
36	86.12	86.62	0.50		67		MUDSTONE	BLK. MAS. BRKN SLIGHTLY CARBONACEOUS IN THE TOP 5CM. ? SEAM FLOOR ROCK.
37	86.62	87.48	0.86	*70			MUDSTONE	SSY. M. GY. LAM. SSD. SLD LAMINATIONS EXTREMELY CONTORTED. EVIDEN CE & BIOTURBATION. FINING UPWARDS SEQUE NCE.
37	87.48	88.60	1.12		68		SANDSTONE	VFG. WEL. LT. GY. YTHNR. SLD ALTERNATING FINE TO VERY FINE SAND AND MUD LAMINATIONS. OVERALL FINING UPWARDS SEQUENCE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	88.60	89.83	1.23	66			SANDSTONE	PBLY. FG. PR. M. GY. VTHNB. SSD. VBRKN PREDOMINANTLY FINE SAND WITH ABUNDANT MUD RIP-UP CLASTS THROUGHOUT.
38	89.83	90.25	0.42	64			SANDSTONE	FG. PR. M. GY. THNB. SSD. VBRKN POSSIBLE ROCK LOSS. SANDSTONE VERY ARGILLACEOUS. MUDSTONE RIP-UP CLASTS AND PEBBLES PRESENT RARELY.
38	90.25	90.30	0.05	63			ROCK LOSS	
39	90.30	90.90	0.60	63			SANDSTONE	FG. PR. M. GY. THNB. SSD. VBRKN AS ABOVE.
39	90.90	91.90	1.00	*61			SANDSTONE	SLTY. FG. MOD. LT. GY. LAM. SLD SANDSTONE VARIES FROM LAMINATED TO THINLY BEDDED. THE SANDSTONE IS ARGILLACEOUS.
39	91.90	92.17	0.27	63			SANDSTONE	PBLY. FG. PR. LT. GY. THNB. SSD. SLD ARGILLACEOUS SANDSTONE WITH ABUNDANT MUDSTONE RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	92.17	93.10	0.93	*65			SANDSTONE	FG. PR. LT. GY. MAS. SSD. SLD ARGILLACEOUS SANDSTONE WITH RARE MUDSTONE PEBBLES. VERY THIN MUDSTONE BEDS TOWARDS THE TOP OF THE INTERVAL. RIP-UP CLASTS AND LOAD CASTS INDICATE BEDS ARE UPRIGHT.
40	93.10	93.87	0.77	64			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN SANDSTONE AS ABOVE EXCEPT MINOR QUARTZ VEINING AT THE TOP OF THE INTERVAL.
40	93.87	94.24	0.37	63			SANDSTONE	FG. PR. LT. GY. MAS. SSD. SLD ABUNDANT MUDSTONE RIP-UP CLASTS AND LOAD STRUCTURES.
40	94.24	94.32	0.08	63			SANDSTONE	FG. PR. LT. GY. MAS. SSD. SLD AS ABOVE.
41	94.32	96.31	1.99	*61			SANDSTONE	VFG. MOD. DK. GY. LAM. BIOTR. SLD INTERLAMINATED SAND AND MUD IN AN OVERALL COARSENING UPWARDS SEQUENCE. ABUNDANT HELMINTHOPSIS. SOFT SEDIMENT DEFORMATION COMMON.
42	96.31	97.00	0.69	*63			SANDSTONE	VFG. MOD. DK. GY. LAM. BIOTR. SLD APPROXIMATELY 50% MUDSTONE OVER THIS INTERVAL. HELMINTHOPSIS ABUNDANT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	97.00	98.37	1.37	*54			MUDSTONE	SSY, DK, GY, LAM, BIOTR, VBRKN BLACK MUDSTONE INTERLAMINATED WITH VERY FINE GRAINED SANDSTONE. ABUNDANT HELMINTHOPSIS.
43	98.37	100.24	1.87	*60			MUDSTONE	SLTY, DK, GY, LAM, BIOTR, SLD INTERLAMINATED MUD AND SILT, ABUNDANT HELMINTHOPSIS AND GASTROPODS (PYRITIZED). PYRITE COMMON.
43	100.24	100.38	0.14	*56			MUDSTONE	SLTY, DK, GY, LAM, BIOTR, SLD AS ABOVE.
44	100.38	102.45	2.07	*60			MUDSTONE	DK, GY, LAM, BIOTR, SLD MUDSTONE SILTY TOWARDS TOP OF THE INTERVAL. HELMINTHOPSIS ABUNDANT IN TOP 20CM. PYRITE COMMON. BIVALVES & GASTROPODS OCCUR. BIVALVES BECOME MORE ABUNDANT TOWARDS THE BOTTOM OF INTERVAL.
45	102.45	102.72	0.27	*72			MUDSTONE	DK, GY, LAM, BIOTR, SLD AS ABOVE.
45	102.72	102.75	0.03	70			BENTONITE	LT, GY, SLD
45	102.75	102.81	0.06	69			MUDSTONE	BLK, LAM, SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	102.81	102.98	0.17	68			SILTSTONE	LT, GY, MAS, BIOTR, SLD BIVALVE COQUINA. ABUNDANT PYRITE.
45	102.98	103.13	0.15	66			MUDSTONE	SLTY, BLK, LAM, BRKN SLIGHTLY CARBONACEOUS. PLANT FRAGMENTS. ABUNDANT MICRO FRACTURES INFILLED WITH QUARTZ, PYRITE.
45	103.13	103.83	0.70	*60			MUDSTONE	SLTY, DK, GY, MAS, SLD ABUNDANT PLANT FRAGMENTS AND COAL STRINGERS. PYRITE BLEBS.
45	103.83	104.41	0.58	60			MUDSTONE	SSY, DK, GY, LAM, SLD VERY FINE SAND ABUNDANT TOWARDS BOTTOM OF THE INTERVAL. PLANT FRAGMENTS COMMON
46	104.41	105.95	1.54	*60			MUDSTONE	SSY, M, GY, LAM, SSD, SLD INTERLAMINATED MUD AND VERY FINE SAND. CONTORTED BEDDING AND MICRO FAULTS. RARE PLANT FRAGMENTS. SAND BECOMES MORE ABUNDANT TOWARDS THE BOTTOM OF THE INTERVAL (FUS).
46	105.95	106.08	0.13	62			SANDSTONE	FG, MOD, LT, GY, LAM, SSD, SLD LOAD CASTS INDICATES BEDS UPRIGHT. ABUNDANT RIP-UP CLASTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	106.08	106.20	0.12	62			SANDSTONE	FG. MOD. LT. GY. MAS. SLD RARE MUD CLASTS.
47	106.20	107.30	1.10	63			SANDSTONE	FG. MOD. LT. GY. VTHNB. VBRKN PREDOMINANTLY ARGILLACEOUS FINE GRAINED SAND VARYING TO MEDIUM SAND OVER SMALL INTERVALS. RARE MUDSTONE CLASTS. MINOR FRACTURING WITH CARBONATE INFILL. PROB ABLE ROCK LOSS. SALT AND PEPPER SANDSTO NE.
47	107.30	107.55	0.25	64			ROCK LOSS	
47	107.55	108.27	0.72	65			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN AS ABOVE.
47	108.27	108.36	0.09	66			ROCK LOSS	
48	108.36	109.07	0.71	67			SANDSTONE	FG. MOD. LT. GY. MAS. VBRKN AS ABOVE.
48	109.07	110.12	1.05	68			SANDSTONE	FG. MOD. LT. GY. MAS. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	110.12	111.03	0.91	*70			SANDSTONE	MG. MOD. LT. GY. VTHNB. SLD RARE MUD CLASTS. CARBONATE VEINING AND FRACTURE FILL. ARGILLACEOUS.
49	111.03	111.70	0.67	*75			SANDSTONE	FG. MOD. LT. GY. VTHNB. SLD SMALL MUD LAMINATIONS. CARBONATE INFILL ING FRACTURES. SALT AND PEPPER SAND STO NE.
49	111.70	111.89	0.19	67			SANDSTONE	MG. PR. LT. GY. MAS. SLD SALT AND PEPPER SANDSTONE WITH RARE MUD STONE PEBBLES. MODERATELY ARGILLACEOUS.
50	111.89	112.30	0.41	*61			SANDSTONE	MG. PR. LT. GY. MAS. SLD AS ABOVE.
50	112.30	112.75	0.45	60			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN ARGILLACEOUS SALT AND PEPPER SANDSTONE. SMALL.
50	112.75	113.00	0.25	59			SANDSTONE	FG. PR. LT. GY. LAM. VBRKN ARGILLACEOUS SAND INTERLAMINATED WITH M UD. WELL FRACTURED WITH QUARTZ VEINING AND INFILLING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	113.00	113.71	0.71	*58			MUDSTONE	SSY. M. GY. LAM. BIOTR. SLD INTERLAMINATED MUD AND FINE GRAINED SAND. WORM BURROWS ARE ABUNDANT AND INDICATE BEDS ARE UPRIGHT. RIP-UP CLASTS ARE ABUNDANT IN PARTS.
51	113.71	115.43	1.72	*55			MUDSTONE	SSY. M. GY. LAM. BIOTR. SLD AS ABOVE, ALONG WITH LOAD CASTS INDICATING UPRIGHT BEDS.
51	115.43	115.66	0.23	58			SANDSTONE	FG. MOD. LT. GY. VTHNB. SSD. SLD ARGILLACEOUS, SALT AND PEPPER SAND INTERBEDDED WITH MUD. ABUNDANT LOAD CASTS AND WORM BURROWS INDICATE BEDS ARE UPRIGHT. FRACTURES FILLED WITH CARBONATE CEMENT.
51	115.66	115.84	0.18	58			SANDSTONE	FG. MOD. LT. GY. VTHNB. SSD. SLD AS ABOVE.
52	115.84	117.91	2.07	*61			SANDSTONE	FG. MOD. LT. GY. VTHNB. SSD. SLD AS ABOVE.
53	117.91	118.70	0.79	*65			SANDSTONE	FG. MOD. LT. GY. VTHNB. SSD. SLD AS ABOVE.
53	118.70	120.05	1.35	*56			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	120.05	121.26	1.21	*56			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD AS ABOVE WITH SOFT SEDIMENT AND BIOTURBATION STRUCTURES BECOMING RARER.
54	121.26	121.54	0.28	57			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD AS ABOVE.
54	121.54	122.09	0.55	*58			SANDSTONE	FG. MOD. LT. GY. THNB. SLD ARGILLACEOUS SALT AND PEPPER SANDSTONE WITH RARE MUD BEDS UP TO 1CM THICK. SMALL FRACTURES FILLED WITH CARBONATE.
55	122.09	124.05	1.96	*57			SANDSTONE	FG. MOD. LT. GY. MAS. SLD AS ABOVE.
56	124.05	124.30	0.25	58			SANDSTONE	FG. MOD. LT. GY. MAS. SLD AS ABOVE.
56	124.30	126.02	1.72	*58			SANDSTONE	FG. MOD. LT. GY. THNB. SLD AS ABOVE.
57	126.02	127.35	1.33	*55			SANDSTONE	MG. PR. LT. GY. THNB. SLD ARGILLACEOUS SALT AND PEPPER SAND. LARGE FRACTURE TOWARDS BOTTOM OF THE INTERVAL INFILLED WITH QUARTZ AND CARBONATE CEMENT. THIN MUD LAMINATIONS IN PARTS.
57	127.35	128.13	0.78	*51			SANDSTONE	FG. MOD. LT. GY. VTHNB. SLD ARGILLACEOUS SAND WITH MUD LAMINATIONS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	128.13	130.22	2.09	*60		SANDSTONE	SLTY. VFG. MOD. LT. GY. VTHNB. SSD. SLD INTERBEDDED SAND AND MUD IN APPROXIMATELY EQUAL PROPORTIONS. LOAD CASTS INDICATE UPRIGHT BEDS. MUDSTONE RIP-UP CLASTS COMMON.
59	130.22	130.42	0.20	59		SANDSTONE	SLTY. VFG. MOD. LT. GY. VTHNB. SSD. VBRKN AS ABOVE BUT CORE IS VERY BROKEN WITH QUARTZ VEINING AND BRECCIA. POSSIBLE CORE LOSS.
59	130.42	130.46	0.04	59		ROCK LOSS	
59	130.46	132.20	1.74	*58		SANDSTONE	SLTY. VFG. MOD. LT. GY. VTHNB. SSD. VBRKN AS ABOVE WITH MINOR BIOTURBATION IN PARTS. IMPARTING A MOTTLED APPEARANCE MINOR FRACTURING WITH CARBONATE AND QUARTZ INFILL.
60	132.20	132.77	0.57	*59		SANDSTONE	SLTY. VFG. MOD. LT. GY. VTHNB. SSD. VBRKN AS ABOVE.
60	132.77	133.27	0.50	*59		MUDSTONE	SSY. DK. GY. VTHNB. SSD. SLD BLACK MUDSTONE INTERBEDDED W FINE SANDSTONE. BEDDING CONTORTED IN PARTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	133.27	133.92	0.65	*60		MUDSTONE	SSY. VFG. MOD. DK. GY. VTHNB. SSD. VSHRD AS ABOVE BUT EXTREMELY FRACTURED AND BRECCIATED. QUARTZ AND CARBONATE INFILLS FRACTURE PLANES. SMALL FAULT STRUCTURES
60	133.92	134.13	0.21	61		ROCK LOSS	
61	134.13	136.26	2.13	*65		MUDSTONE	SSY. DK. GY. VTHNB. BIOTR. VSHRD INTERBEDDED BLACK MUDSTONE AND FINE SANDSTONE WHICH HAS BEEN BRECCIATED IN PARTS. ABUNDANT LOAD CASTS INDICATE BEDS ARE UPRIGHT. ABUNDANT HELMINTHOPSIS. SMALL FRACTURES FILLED WITH CARBONATE CEMENT.
61	136.26	136.29	0.03	67		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	136.29	136.71	0.42	*67			MUDSTONE	SSY.DK.GY.VTHNB.BIOTR.VSHRD AS ABOVE WITH SOME SMALL FAULT STRUCTURES. WORM BURROWS AND ABUNDANT FECAL PELLETS OCCUR.
62	136.71	136.99	0.28	*60			MUDSTONE	SSY.DK.GY.VTHNB.BIOTR.VBRKN AS ABOVE.
62	136.99	137.01	0.02	60			ROCK LOSS	
62	137.01	138.44	1.43	60			MUDSTONE	SSY.DK.GY.VTHNB.BIOTR.SLD AS ABOVE.
63	138.44	139.87	1.43	*59			MUDSTONE	SSY.DK.GY.VTHNB.BIOTR.SLD AS ABOVE.
63	139.87	140.57	0.70	*62			MUDSTONE	SSY.DK.GY.VTHNB.BIOTR.SLD AS ABOVE.
64	140.57	142.72	2.15	*63			MUDSTONE	SSY.BLK.VTHNB.SSD.SLD BLACK MUDSTONE INTERBEDDED WITH VERY FINE SAND AND SILTSTONE. ABUNDANT PYRITE.
65	142.72	142.91	0.19	64			MUDSTONE	SSY.BLK.VTHNB.SSD.SLD AS ABOVE.
65	142.91	144.70	1.79	*65			MUDSTONE	SSY.BLK.MAS.SLD FEATURELESS BLACK MUDSTONE WITH OCCASIONAL SAND LAMINATIONS. ABUNDANT PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	144.70	145.49	0.79	*60			MUDSTONE	BLK.MAS.SLD AS ABOVE.
66	145.49	146.62	1.13	*57			MUDSTONE	BLK.MAS.SLD AS ABOVE.
67	146.62	146.87	0.25	*60			MUDSTONE	SSY.DK.GY.MAS.SLD BLACK MUDSTONE WITH VERY FINE SAND. NO VISIBLE BEDDING.
67	146.87	147.42	0.55	61			SANDSTONE	DK.GY.VTHNB.SLD VERY ARGILLACEOUS SANDSTONE WITH LESSER MUD LAMINATIONS. ABUNDANT PYRITE.
67	147.42	147.46	0.04	61			BRECCIA	SSY.BLK.SLD ANGULAR VERY FINE SANDSTONE CLASTS. FRACTURES INFILLED BY QUARTZ AND CARBONATE CEMENT.
67	147.46	147.57	0.11	61			MUDSTONE	CARB.DK.GY.VSHRD CORE IS EXTREMELY SHEARED. DISPLAYING NUMEROUS SHINY LISTRIC SURFACES.
67	147.57	147.59	0.02	61			ROCK LOSS	? SEAM ROOF ROCK.
67	147.59	147.79	0.20	61	99998	PH?	COAL	C-6.BLK.VSHRD AS ABOVE. ? SEAM.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	147.79	147.87	0.08	62	99998	PH?	COAL	C-6, BLK, PWRD AS ABOVE. ? SEAM.
67	147.87	148.69	0.82	62			MUDSTONE	SLTY, M. GY, VTHNB, VSHRD EXTREMELY SHEARED MUDSTONE WITH NUMEROUS SHINEY LISTRIC SURFACES ON BROKEN PIECES. BRECCIATED IN PARTS. NUMEROUS FRACTURES INFILLED WITH QUARTZ.
68	148.69	150.13	1.44	64			MUDSTONE	SLTY, M. GY, VTHNB, VSHRD AS ABOVE.
68	150.13	150.58	0.45	*65			MUDSTONE	SSY, M. GY, VTHNB, SSD, SHRD INTERBEDDED FINE SAND AND BLACK MUD. LOAD CASTS INDICATE BEDS ARE UPRIGHT. MINOR FRACTURING WITH QUARTZ & CARBONATE INFILL CEMENT.
69	150.58	150.66	0.08	64			MUDSTONE	SSY, M. GY, VTHNB, SSD, SHRD AS ABOVE.
69	150.66	152.03	1.37	60			SANDSTONE	FG, MOD, LT, GY, VTHNB, SSD, SHRD PREDOMINANTLY ARGILLACEOUS SALT AND PEPPER SANDSTONE WITH SOME MUD LAMINATIONS. LOAD CASTS INDICATE BEDS ARE UPRIGHT. NUMEROUS FRACTURES THROUGHOUT WHICH ARE INFILLED WITH QUARTZ AND CARBONATE CEMENT.

* DENOTES MEASURED. BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	152.03	152.54	0.51	*56			SANDSTONE	FG, MOD, LT, GY, VTHNB, SSD, SHRD AS ABOVE WITH SOME EN ECHEL OR FRACTURE SETS.
70	152.54	152.93	0.39	*60			SANDSTONE	FG, MOD, LT, GY, VTHNB, SSD, SHRD AS ABOVE.
70	152.93	154.61	1.68	63			MUDSTONE	CARB, DK, GY, VSHRD CORE IS EXTREMELY SHEARED WITH FRAGMENT S DISPLAYING SHINEY SMOOTH LISTRIC SURFACES. SMALL PARTINGS OF C-6 OCCUR USUALLY LESS THAN 2CM THICK.
71	154.61	155.22	0.61	67			MUDSTONE	CARB, DK, GY, VSHRD AS ABOVE.
71	155.22	156.52	1.30	70			SANDSTONE	VFG, LT, GY, VTHNB, SHRD ARGILLACEOUS SALT AND PEPPER SAND INTERBEDDED WITH MUD AND SILT. NUMEROUS FRACTURES INFILLED WITH BOTH QUARTZ AND CARBONATE CEMENT. SANDSTONE IS BRECCIATED IN PARTS.
72	156.52	156.83	0.31	73			SANDSTONE	VFG, LT, GY, VTHNB, SHRD AS ABOVE.

* DENOTES MEASURED. BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	156.83	158.23	1.40	76			SANDSTONE	FG. MOD. LT. GY. MAS. SLD RELATIVELY FEATURELESS SS, SALT AND PEPPER SAND WITH RARE MUD LAMINATIONS. NUMEROUS FRACTURES INFILLED WITH QUARTZ AND CARBONATE CEMENT.
72	158.23	158.59	0.36	79			SANDSTONE	FG. MOD. LT. GY. MAS. SLD AS ABOVE.
73	158.59	159.24	0.65	81			SANDSTONE	FG. MOD. LT. GY. MAS. SSD. BRKN AS ABOVE WITH SAME LOAD STRUCTURES INDICATING BEDS ARE UPRIGHT.
73	159.24	160.64	1.40	*84			SANDSTONE	SLTY. FG. MOD. LT. GY. THNB. SSD ARGILLACEOUS SALT AND PEPPER SANDS INTERBEDDED WITH SILTS AND MUDS.
74	160.64	161.22	0.58	*68			SANDSTONE	SLTY. FG. MOD. LT. GY. THNB. SLD AS ABOVE ALONG WITH FRACTURING AND MICRO FAULTING. QUARTZ AND CARBONATE CEMENT INFILL FRACTURES.
74	161.22	162.07	0.85	*80			SANDSTONE	VFG. MOD. LT. GY. VTHNB. SSD. SLD INTERBEDDED VERY FINE SAND, SILT AND MUD. LOAD CAST INDICATE BEDS UPRIGHT. SMALL FRACTURES AND MICRO FAULTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	162.07	162.50	0.43	81			MUDSTONE	CARB. BLK. VSHRD
74	162.50	162.69	0.19	82			MUDSTONE	SSY. FG. MOD. LT. GY. VTHNB. SSD. SHRD INTERBEDDED MUD AND FINE SAND. LOAD CASTS AND BIOTURBATION HAVE CONTORTED BEDDING. NUMEROUS FRACTURED AREAS WITH MICRO FAULT STRUCTURES. MINOR PYRITE.
75	162.69	164.11	1.42	84			MUDSTONE	SSY. FG. MOD. LT. GY. VTHNB. SSD. SHRD AS ABOVE.
75	164.11	164.31	0.20	*86			SANDSTONE	VFG. LT. GY. VTHNB. SSD. SHRD ARGILLACEOUS SAND INTERBEDDED WITH SILT AND MUD. MICRO FAULT STRUCTURES.
75	164.31	164.76	0.45	83			SANDSTONE	FG. LT. GY. VTHNB. SSD. SHRD AS ABOVE WITH MUD BEDS UP TO 4CM THICK. GENERALLY THE PROPORTION OF SAND INCREASES TOWARDS THE BOTTOM OF THE INTERVAL (FUS).
76	164.76	165.86	1.10	*76			SANDSTONE	FG. LT. GY. VTHNB. SSD. VSHRD AS ABOVE ALONG WITH NUMEROUS FAULTS AND FRACTURES. RIP-UP CLASTS AND LOAD CASTS COMMON.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	165.86	166.72	0.86		71		SANDSTONE	MG. PR. LT. GY. MAS. SSD. VSHRD CORE IS EXTREMELY BRITTLE. RIP-UP CLASTS COMMON.
77	166.72	167.45	0.73		67		SANDSTONE	FG. MOD. LT. GY. MAS. VSHRD ARGILLACEOUS SALT AND PEPPER SANDSTONE. NUMEROUS FRACTURES. INFILLED WITH QUARTZ CEMENT.
77	167.45	168.76	1.31	*62			BRECCIA	CLY. LT. GY. VSHRD BRECCIA CONSISTS OF ANGULAR CLASTS OF SANDSTONE, SILTSTONE AND MUDSTONE. CLAST SUPPORTED WITH A MUDDY MATRIX. NUMEROUS QUARTZ VEINS. PROBABLE ROCK LOSS.
78	168.76	169.46	0.70		69		BRECCIA	CLY. LT. GY. VSHRD AS ABOVE.
78	169.46	170.42	0.96		75		SANDSTONE	VFG. MOD. M. GY. VTHNB. SHRD PREDOMINANTLY ARGILLACEOUS SAND WITH SILT AND MUD LAMINATIONS. NUMEROUS FRACTURES. INFILLED WITH CARBONATE CEMENT.
78	170.42	170.56	0.14	*79			SANDSTONE	VFG. MOD. M. GY. VTHNB. VSHRD INTERBEDDED SAND, SILT AND MUD. ABUNDANT FRACTURES AND FAULTS WITH DISPLACEMENT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	170.56	170.76	0.20	*80			SANDSTONE	VFG. MOD. M. GY. VTHNB. SSD. VSHRD AS ABOVE.
79	170.76	171.44	0.68		80		SANDSTONE	VFG. MOD. LT. GY. VTHNB. SSD. VSHRD INTERBEDDED FINE SAND AND MUD. NUMEROUS FRACTURES AND FAULT STRUCTURES WITH DISPLACEMENT. BRECCIATED IN PARTS.
79	171.44	171.66	0.22		79		SANDSTONE	VFG. MOD. LT. GY. VTHNB. SSD. SHRD AS ABOVE.
79	171.66	172.81	1.15		78		MUDSTONE	SLTY. DK. GY. LAM. BIOTR. VSHRD EXTREMELY SHEARED AND BRECCIATED MUDSTONE. MINOR QUARTZ VEINING. HELMINTHOPSIS IN PARTS. RARE PYRITE. POSSIBLE ROCK LOSS.
80	172.81	172.92	0.11		78		MUDSTONE	SLTY. DK. GY. LAM. VSHRD AS ABOVE WITH CLAY INFILLING ALONG FRACTURES.
80	172.92	173.88	0.96		77		MUDSTONE	SLTY. DK. GY. LAM. VSHRD AS ABOVE.
80	173.88	174.88	1.00		76		MUDSTONE	SSY. DK. GY. VTHNB. BIOTR. SHRD INTERBEDDED VERY FINE SAND, SILT AND MUD. BRECCIATED IN PARTS WITH CLAY ALONG FRACTURES. ABUNDANT HELMINTHOPSIS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	174.88	175.28	0.40	76			MUDSTONE	SLTY. MOD. DK. GY. LAM. BIOTR. BRKN BIVALVE ESCAPE STRUCTURE 10CM LONG x 20 CM WIDE - INDICATE TOPS UP. MINOR LOAD CASTS - TOPS UP. VERY ABUNDANT HELMINTH OPSIS.
81	175.28	175.55	0.27	75	04394	G? ROOF	MUDSTONE	M. GY. LAM. HRMBU. SHRD HELMINTHOPSIS PRESENT. BROKEN SURFACES HIGHLY POLISHED FAULT ZONE. BOTTOM 25CM SAMPLED. D? ROOF ROCK.
81	175.55	175.81	0.26	75	04395	G?	COAL	C-6. BLK. PWRD EXTREMELY SHEARED.
81	175.81	175.89	0.08	75	04395	G?	COAL	C-5. BLK. PWRD EXTREMELY SHEARED. MORE MUD MIXED IN.
81	175.89	175.98	0.09	75	04395	G?	COAL	C-5. BLK. PWRD AS ABOVE.
81	175.98	176.03	0.05	75	04395	G?	COAL	C-4. BLK. PWRD AS ABOVE.
81	176.03	176.22	0.19	75	04395	G?	COAL	C-5. BLK. PWRD AS ABOVE WITH ANGULAR AERO. BAR. TEXTURE.
82	176.22	176.31	0.09	75	04395	G?	COAL	C-6. BLK. PWRD INTERBEDDED CARB MUDST.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	176.31	176.39	0.08	74	04395	G?	COAL	C-4. BLK. PWRD
82	176.39	176.53	0.14	74	04395	G?	COAL	C-6. BLK. PWRD SOME CARB MUDST INTERMIXING.
82	176.53	176.60	0.07	74	04395	G?	COAL	C-5. BLK. PWRD AS ABOVE.
82	176.60	176.71	0.11	74	04395	G?	COAL	C-4. BLK. PWRD C-5 AND C-6 FRAGMENTS. BROKEN UP BANDS OF C-3.
82	176.71	176.77	0.06	74	04395	G?	COAL	C-6. BLK. PWRD EXTREMELY SHEARED.
82	176.77	176.86	0.09	74	04395	G?	COAL	C-5. BLK. VSHRD BANDS OF C-5 AND C-6.
82	176.86	176.97	0.11	74	04395	G?	COAL LOSS	
82	176.97	178.24	1.27	73	04396	G? FLOOR	MUDSTONE	DK. GY. SHRD VERY POLISHED ON BROKEN SURFACES. TALC LIKE GOUGE ON MANY SHEARED SURFACE. TOP 25CM SAMPLED. D? FLOOR ROCK.
82	178.24	178.40	0.16	73			MUDSTONE	CARB. DK. GY. VSHRD EXTREMELY BROKEN UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	178.40	179.18	0.78		72		MUDSTONE	CARB. DK. GY. VSHRD NUMEROUS THIN (<1MM) QTZ VEINS. COAL PARTING 1-2MM THICK, MORE ABUNDANT TOWARD S. BASE. COALIFIED PLANT FRAGMENTS IN PARTINGS.
83	179.18	179.26	0.08		72		COAL	C-6.BLK.PHRD
83	179.26	179.55	0.29		71		MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED.
83	179.55	179.71	0.16		71		COAL	C-6.BLK.PHRD AS ABOVE.
83	179.71	180.06	0.35		71		MUDSTONE	CARB.BLK.VSHRD C-6 & PARTINGS AND PARTICLES INTERMIXED
84	180.06	180.26	0.20		71		MUDSTONE	CARB.BLK.VSHRD EXTREMELY SHEARED AND BROKEN UP.
84	180.26	180.30	0.04		71		COAL	C-6.BLK.PHRD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	180.30	180.44	0.14		71		MUDSTONE	CARB.BLK.PHRD AS ABOVE.
84	180.44	181.40	0.96	*	70		SILTSTONE	SSY.WEL.M.GY.THNB.SLD CALCAREOUS, VERY HARD. MINOR THIN (<1MM) CALCITE VEINS. CORE TWIST-OFF AT TOP. POSSIBLE CORE LOSS. SPARSE MUDST CLASTS (<1MM DIA) PRESENT. RARE MUDST LENSES 1MM x 1CM LONG.
84	181.40	181.44	0.04		73		MUDSTONE	M.GY.VSHRD SOFT, SLIGHTLY BENTONITE.
84	181.44	182.12	0.68		76		SANDSTONE	SLTY.VFG.WEL.M.GY.THNB.BRKN CALCAREOUS, VERY HARD. MINOR 1MM CALCITE VEINS AND A 1CM THICK CALCITE VEIN. SPARSE MUDST CLASTS (<1MM DIA) PRESENT. RARE MUDST LENSES 1MM x 10MM LONG.
85	182.12	182.44	0.32	*	79		SANDSTONE	SLTY.VFG.PR.M.GY.VYHNB.BIOTR.SLD INTERBEDDED VERY FINE SAND, SILT AND MUD. SEDIMENT HAS BEEN MOSTLY DESTROYED BY BURROWING. INTERVAL BECOMES SILTIER TOWARDS THE BOTTOM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	182.44	182.83	0.39	79			SANDSTONE	SLTY. VFG. PR. M. GY. VTHNB. BIOTR. SLD AS ABOVE WITH FECAL PELLETS AND MINOR PYRITE. FRACTURES INFILLED WITH BLUISH COLORED SOFT CEMENT.
85	182.83	183.65	0.82	79			SILTSTONE	SSY. DK. GY. VTHNB. BIOTR. SLD SILTSTONE INTERBEDDED WITH VERY FINE SAND AND MUD. NUMEROUS FECAL PELLETS. PYRITE COMMON.
85	183.65	183.67	0.02	79			BRECCIA	GRAN. PR. M. GY. SLD SILTSTONE BRECCIA WITH QUARTZ FRACTURE FILL.
85	183.67	184.24	0.57	79			SILTSTONE	M. GY. VTHNB. BIOTR. SLD PREDOMINANTLY SILTSTONE WITH VERY THIN SAND AND MUD BEDS AND LAMINATIONS. FECAL PELLETS ABUNDANT. BLUISH CRYSTALLINE FRACTURE FILL WITH QUARTZ. PYRITE.
86	184.24	185.62	1.38	79			MUDSTONE	SLTY. M. GY. LAM. BIOTR. SLD ABUNDANT FECAL PELLETS. PYRITE BLEBS COMMON. POSSIBLE ROCK LOSS.
87	185.62	187.70	2.08	*79			MUDSTONE	SLTY. M. GY. LAM. BIOTR. SLD AS ABOVE ALONG WITH VERY THIN BEDS OF VERY FINE SAND. ABUNDANT FECAL PELLETS AND PYRITE BLEBS. RARE BIVALVE SHELLS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88007

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	187.70	188.45	0.75	*70			MUDSTONE	SLTY. M. GY. LAM. BIOTR. SLD AS ABOVE. END OF HOLE. TD = 188.45M.

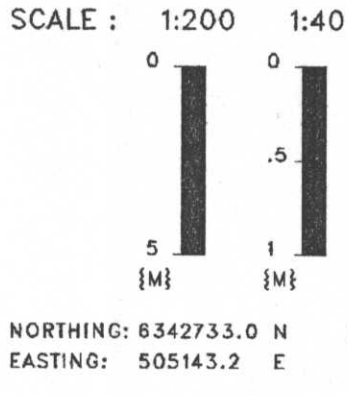
* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88007

GEOLOGIST : WALLACE

DATE : FEB 21/89

DRAWING NO. :



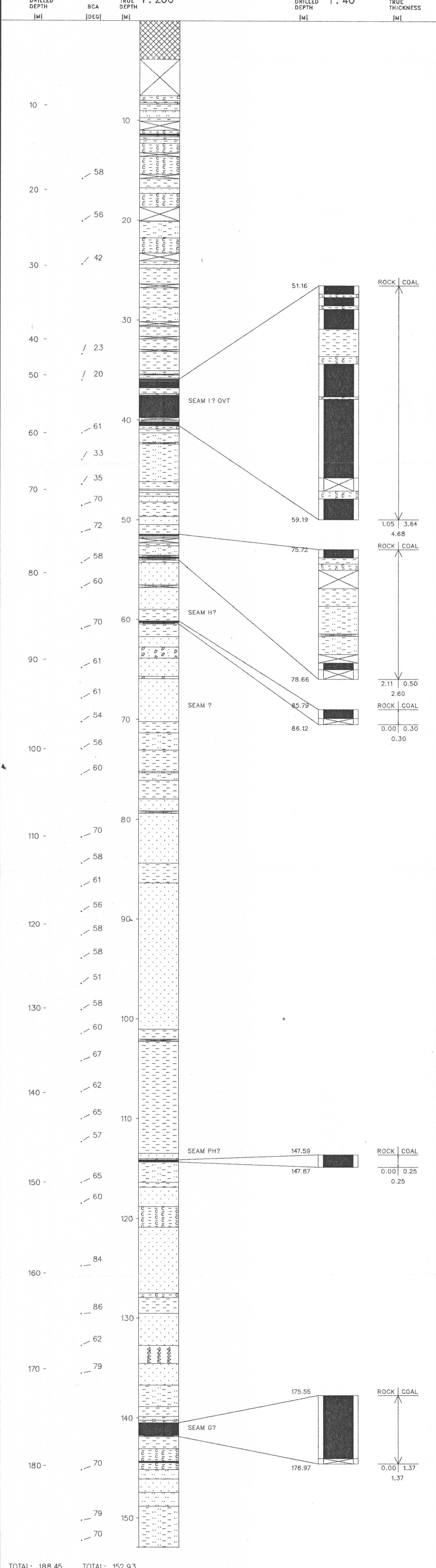
NORTHING: 6342733.0 N
 EASTING: 505143.2 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 188.45 TOTAL: 152.93

748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: **KPNLRDDH88007**

Province: BC Northing: 6342730.00 Lat: 571347

Log Date: 88-06-19

Zone: 9 Easting: 505143.00 Long: 1285453

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1689.5

Geologist: WALLACE

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 189.0

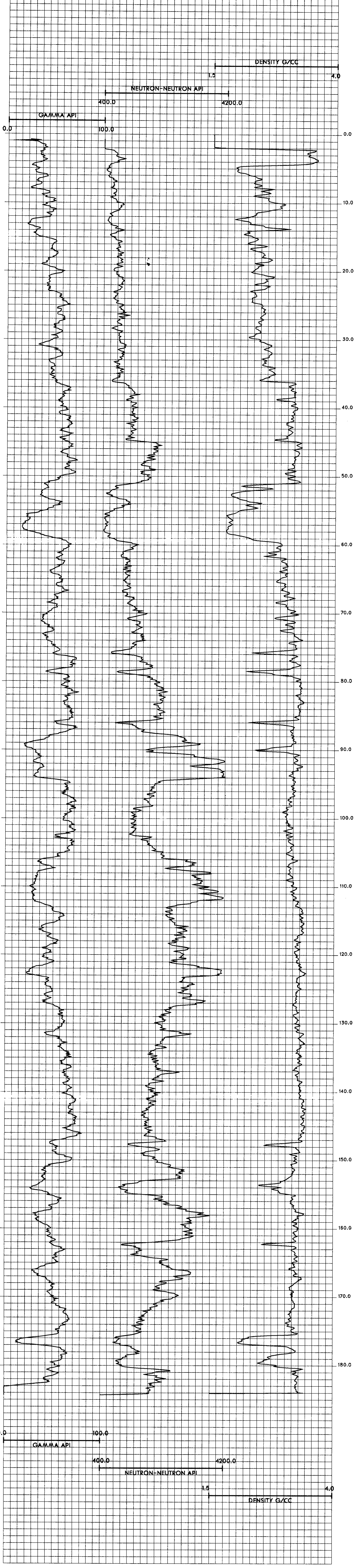
1. LOGGED THROUGH RODS

2.

True Thickness: NO

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88008

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88008

DATE - 02/15/89

- HISTORY -

START DATE - 06/19/88

END DATE - 06/21/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - SECTION OVERTURNS AT APPROX 20.25M. J SEAM INTERSE
CTED AT 117.68 M.

- LOCATION -

PROVINCE - BC

ELEVATION - 1671.87

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343610.52

EASTING - 506854.35

LATITUDE - 571415

LONGITUDE - 1285311

- ORIENTATION -

LENGTH - 157.44

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ -

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** O INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

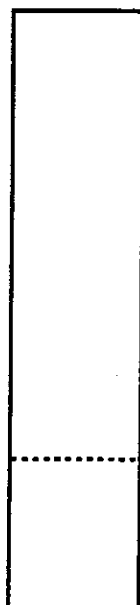
SCHEMATIC PROFILE

DDH88-008

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

J ovt.



0.06 m

SCALE
1:2000



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	0.00	3.05	3.05	71			OVERBURDEN	CASING DEPTH.
1	3.05	4.72	1.67	*71			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED FG SS AND M GREY SILTSTO NE. FE STAIN ALONG FRACTURES AND BEDDIN G PLANE. MINOR QTZ FRACTURE FILL. LOAD CASTS INDICATE TOPS UP.
1	4.72	5.18	0.46	71			ROCK LOSS	
1	5.18	5.38	0.20	72			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE, TOPS UP.
2	5.38	7.16	1.78	*72			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE, SOME VERY BROKEN ZONES. POSSI BLE CORE LOSS.
2	7.16	7.35	0.19	72			ROCK LOSS	
3	7.35	8.23	0.88	71			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE, SILT CONTENT INCREASING.
3	8.23	8.92	0.69	71			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE, TOPS UP.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	8.92	9.09	0.17	71			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE.
3	9.09	9.69	0.60	71			ROCK LOSS	
4	9.69	11.28	1.59	*70			SANDSTONE	FER.FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE, NEAR BASE IS LAMINATED VFG SS AND SILT. MINOR CARBONACEOUS MUDST PAR TINGS <5MM. LOAD CASTS INDICATE TOPS UP . FECAL PELLETS AT BASE.
5	11.28	12.75	1.47	*68			SILTSTONE	FER.WEL.M.GY.LAM.VBRKN INTERLAMINATED SILTSTONE AND VFG SS. FE STAINING THROUGHOUT. NUMEROUS TWIST-OF FS, POSSIBLE CORE LOSS.
5	12.75	13.58	0.83	50			ROCK LOSS	
6	13.58	13.98	0.40	*40			SILTSTONE	WEL.M.GY.LAM.RIPMK.BRKN AS ABOVE, MINOR FE STAIN, SSD, TOPS UP.
6	13.98	14.22	0.24	44			SILTSTONE	M.GY.LAM.VBRKN AS ABOVE, MIXED WITH VERY SOFT CLAY.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	14.22	14.32	0.10	47			SANDSTONE	VFG. MEL. LT. GY. LAM. SSD. SLD INTERLAMINATED SILT AND MUD. QTZ FRACTURE FILL THROUGHOUT.
6	14.32	14.57	0.25	49			SANDSTONE	FG. MEL. LT. GY. LAM. SHRD. NUMEROUS QTZ VEINS THROUGHOUT. INTERLAMINATED WITH NUMEROUS CLAY BANDS 0.5 - 1 CM THICK. WAXY TEXTURE POSSIBLE BENTONITE. POSSIBLE CORE LOSS.
6	14.57	16.48	1.91	64			ROCK LOSS	
6	16.48	16.98	0.50	*81			SANDSTONE	FG. MEL. LT. GY. LAM. SSD. YBRKN AS ABOVE. SOME SILTY LAMS.
7	16.98	17.12	0.14	76			SANDSTONE	FG. MEL. LT. GY. LAM. YBRKN AS ABOVE.
7	17.12	17.37	0.25	73			SANDSTONE	CLYY. FG. MEL. LT. GY. LAM. BRKN. INTERLAMINATED FG SAND AND M-DK GREY SILT. MINOR CLAY.
7	17.37	17.84	0.47	68			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	17.84	18.06	0.22	63	04386		BENTONITE	CLYY. LT. GY. SLD. VERY SOFT AND WAXY. SAMPLE #04386.
7	18.06	18.28	0.22	59			SILTSTONE	M. GY. LAM. SHRD. MOSTLY RUBBLE. THIN QTZ VEINS THROUGHOUT.
7	18.28	18.36	0.08	57			BRECCIA	MH. YBRKN. NUMEROUS ANGULAR SILTSTONE CLASTS WITHIN CORE OR FOLD?
7	18.36	18.56	0.20	*55			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN. INTERLAMINATED SILT AND VFG SANDSTONE. FECAL PELLETS THROUGHOUT. BEDS SEEM TO BE STEEPENING NEAR TOP. BEDDING IS WAVY / UPRIGHT.
7	18.56	18.70	0.14	*44			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE.
7	18.70	18.86	0.16	*36			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE.
8	18.86	19.56	0.70	*02			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE. BEDS ARE WAVY. BEDDING NEAR VERTICAL.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	19.56	20.25	0.69	04			MUDSTONE	SLTY. DK. GY. LAM. SHRD MINOR QTZ FRACTURE FILL. POSSIBLE CORE LOSS.
8	20.25	20.32	0.07	06			ROCK LOSS	
8	20.32	20.49	0.17	*06			SILTSTONE	CLYY. DK. GY. LAM. BRKN BEDDING NEAR VERTICLE.
9	20.49	22.47	1.98	*18			SILTSTONE	M. GY. LAM. BRKN THINLY LAMINATED WITH VFG SS. MINOR QTZ INFILL. SOME TALC BEDDING SURFACES INC REASING SAND CONTENT NEAR BASE. MINOR CARB MUD BANDS 2.0MM.
10	22.47	23.37	0.90	*28			SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. LOAD CAST INDICATES BEDS ARE OVERTURNED!! MINOR QTZ FRACTURE FILL. F ECAL PELLETS THROUGHOUT.
10	23.37	23.87	0.50	29			SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. QTZ FRACTURE INFILL. SMALL SCALE FAULTS DISPLACEMENTS APPROX 0.5MM, LISTRIC SURFACES THROUGHOUT.
10	23.87	23.94	0.07	29	04388		BENTONITE	CLYY. LT. GY. SHRD WAXY TEXTURE. SOFT. SAMPLE #04388.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	23.94	24.12	0.18	29			ROCK LOSS	
10	24.12	24.40	0.28	30			SILTSTONE	SSY. LT. GY. LAM. VBRKN APPEARS TO BE INTERBEDDED SILT AND VFG SANDSTONE WITH THIN BENTONITE/CLAY BAND S. QTZ FRACTURE FILL AND NUMEROUS TWIST -OFFS. POSSIBLE CORE LOSS.
10	24.40	25.06	0.66	30			ROCK LOSS	
11	25.06	25.54	0.48	31			SILTSTONE	SSY. LT. GY. LAM. VBRKN AS ABOVE.
11	25.54	26.42	0.88	*32			SILTSTONE	SSY. LT. GY. LAM. BRKN INTERLAMINATED SILT AND VFG SS. QTZ FRACTURE FILL THROUGHOUT.
11	26.42	26.59	0.17	38			SILTSTONE	SSY. LT. GY. LAM. BRKN AS ABOVE.
12	26.59	26.99	0.40	*42			SILTSTONE	SSY. LT-M. GY. LAM. VBRKN AS ABOVE. LISTRIC SURFACES.
12	26.99	27.37	0.38	40			SANDSTONE	SLTY. VFG. MEL. LT-M. GY. LAM. SLD QTZ FRACTURE INFILL.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	27.37	27.42	0.05	38			MUDSTONE	CLYY, M. GY UNCONSOLIDATED. TALC FRACTURE INFILL.
12	27.42	28.36	0.94	35			ROCK LOSS	
12	28.36	28.46	0.10	32			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. VBRKN POSSIBLE CORE LOSS. TWIST-OFFS.
12	28.46	29.34	0.88	29			SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED M. GREY SILTSTONE. MINOR QTZ FRACTURE FILL. LOAD CAST INDICATES BEDS OVERTURNED.
13	29.34	29.47	0.13	26			SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
13	29.47	31.35	1.88	*20			SANDSTONE	FG. MEL. LY-M. GY. LAM. SSD. SLD AS ABOVE. SCOUR SURFACE INDICATES BEDS OVERTURNED.
14	31.35	32.58	1.23	*22			SANDSTONE	YFG. MEL. LT-M. GY. LAM. XBDG. SLD AS ABOVE. BECOMES SILTY TOWARDS BASE. T RUNCATIONS INDICATE TOP OVERTURNED.
14	32.58	33.37	0.79	*20			SANDSTONE	SLTY. YFG. MEL. M. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.37	35.25	1.88	*21			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN INTERLAMINATED WITH YFG SS. MINOR LISTR IC SURFACES AND QTZ INFILL.
16	35.25	35.44	0.19	21			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE.
16	35.44	36.74	1.30	*21			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE. SLICKENSIDES ON SOME FRACTURE PLANES. LISTRIC SURFACES. MINOR QTZ VE INING. FECAL PELLETS.
17	36.74	36.89	0.15	21			SILTSTONE	M. GY. LAM. BRKN AS ABOVE.
17	36.89	37.07	0.18	20			BRECCIA	MH. BRKN QTZ BRECCIA WITH NUMEROUS ANGULAR MUDST ONE CLASTS. MINOR SLICKENSIDES.
17	37.07	38.17	1.10	*20			SILTSTONE	M. GY. LAM. BRKN QTZ VEINING. INTERLAMINATED WITH YFG SS A VERY THIN CARBONACEOUS MUD LAMS.
17	38.17	38.61	0.44	15			ROCK LOSS	
17	38.61	39.02	0.41	*12			SILTSTONE	SSY. M. GY. LAM. SSD. VBRKN AS ABOVE. OVERTURNED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	39.02	40.95	1.93	*15			SILTSTONE	SSY.M.GY.LAM.SSD.VBRKN AS ABOVE. NUMEROUS TWIST-OFFS. POSSIBLE CORE LOSS. FECAL PELLETS.
18	40.95	41.19	0.24	13			ROCK LOSS	
19	41.19	41.66	0.47	13			SILTSTONE	SSY.M.GY.LAM.SSD.BRKN AS ABOVE.
19	41.66	43.29	1.63	*11			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. STILL OVERTURNED. MINOR QTZ V EINING.
20	43.29	44.69	1.40	*11			SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE. LOAD CAST INDICATE TOPS OVERT URNED.
20	44.69	44.97	0.28	11			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE.
20	44.97	45.22	0.25	11			BRECCIA	HT VBRKN QTZ BRECCIA. ANGULAR SLTST CLASTS THROU GHOUT.
20	45.22	45.38	0.16	12			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	45.38	47.40	2.02	*12			SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN INTERLAMINATED SS AND SILTSTONE. FECAL PELLETS THROUGHOUT.
22	47.40	47.73	0.33	11			SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE.
22	47.73	49.40	1.67	*10			SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE. LOAD CASTS INDICATE TOPS OVER TURNED.
23	49.40	50.66	1.26	*11			SANDSTONE	FG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE. BECOMING LESS SILTY. BURROWS I NDICATE BEDS OVERTURNED.
23	50.66	50.92	0.26	11			ROCK LOSS	
23	50.92	51.62	0.70	11			SANDSTONE	FG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE. LOAD CAST INDICATES OVERTURNE D.
24	51.62	53.69	2.07	*10			SANDSTONE	FG.WEL.LY-M.GY.LAM.SSD.SLD AS ABOVE. OVERTURNED.
25	53.69	53.83	0.14	13			SANDSTONE	FG.WEL.LY-M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	53.83	54.80	0.97	*14		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD INTERLAMINATED WITH SILTSTONE. MINOR CALC FRACTURE INFILL. LISTRIC SURFACES OVERTURNED.
25	54.80	55.39	0.59	14		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. CALCAREOUS FRACTURE FILL VERY MINOR MUD PARTINGS.
25	55.39	55.62	0.23	14		ROCK LOSS	
26	55.62	56.88	1.26	14		SANDSTONE	SLTY.FG.WEL.M.GY.LAM.SSD.SLD AS ABOVE. CALCAREOUS FRACTURE FILL ABSENT AT BASE.
26	56.88	57.61	0.73	14		SILTSTONE	SSY.WEL.M.GY.LAM.SSD.SLD INTERLAMINATED VFG SS AND SLTST.
27	57.61	59.61	2.00	*14		SILTSTONE	SSY.WEL.M.GY.LAM.SSD AS ABOVE. BECOMING LESS SANDY NEAR BASE.
28	59.61	59.75	0.14	15		SILTSTONE	WEL.M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	59.75	61.72	1.97	*15		SILTSTONE	SSY.WEL.M.GY.LAM.SSD.SLD LOAD CAST INDICATES TOPS OVERTURNED. AS ABOVE.
29	61.72	62.84	1.12	*13		SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN INTERLAMINATED SS AND SLTST.
29	62.84	63.32	0.48	14		ROCK LOSS	
29	63.32	64.19	0.87	14		SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE. MINOR CALCAREOUS FRACTURE INFILL.
30	64.19	66.00	1.81	*15		SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE.
30	66.00	66.08	0.08	16		SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE.
31	66.08	68.20	2.12	*17		SANDSTONE	SLTY.VFG.WEL.M.GY.LAM.SSD.SLD INTERLAMINATED SS AND SLTST. MINOR COALIFIED PLANT FRAGMENTS. SS COARSENS TO FG IN NEAR BASE.
32	68.20	69.07	0.87	17		SANDSTONE	SLTY.FG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE. LOAD CASTS INDICATE TOPS OVERTURNED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	69.07	70.09	1.02	17			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE. OVERTURNED.
32	70.09	70.25	0.16	17			ROCK LOSS	
33	70.25	72.17	1.92	*17			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
33	72.17	72.34	0.17	18			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
34	72.34	74.48	2.14	*20			SANDSTONE	SLTY. VFG. MEL. LT-M. GY. LAM. SSD. SLD AS ABOVE. FG. SS. NEAR TOP. GRADING TO SLT ST AT BASE.
35	74.48	75.23	0.75	20			SILTSTONE	SSY. M. GY. LAM. SLD AS ABOVE. INTERLAM SLTST AND VFG SS.
35	75.23	76.48	1.25	20			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE. LOAD CAST INDICATES OVERTURNE D.
36	76.48	78.20	1.72	*20			SILTSTONE	SSY. M. GY. LAM. RIPMK. SLD AS ABOVE. SAND CONTENT INCREASING. OVER TURNED.
36	78.20	78.53	0.33	19			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	78.53	80.73	2.20	*18			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE. OVERTURNED.
38	80.73	80.99	0.26	18			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.
38	80.99	82.79	1.80	*18			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.
39	82.79	84.13	1.34	19			SILTSTONE	SSY. MEL. M. GY. LAM. SSD. SLD AS ABOVE. OVERTURNED.
39	84.13	84.86	0.73	*20			SILTSTONE	SSY. MEL. M. GY. LAM. SSD. SLD AS ABOVE. SANDY IN PARTS. OVERTURNED.
40	84.86	87.02	2.16	20			SILTSTONE	SSY. MEL. M. GY. LAM. SSD. SLD AS ABOVE. RIP-UPS, LOAD CASTS, AND X-BE DING. OVERTURNED.
41	87.02	87.21	0.19	19			SILTSTONE	SSY. MEL. M. GY. LAM. SSD. SLD AS ABOVE.
41	87.21	89.11	1.90	*19			SILTSTONE	SSY. MEL. M. GY. LAM. SSD. SLD AS ABOVE. 2CM CALCAREOUS FRACTURE FILL INTERMIXED WITH THIN SILTY MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	89.11	90.06	0.95	19			SILTSTONE	SSY.WEL.M.GY.LAM.SSD.SLD AS ABOVE. RIP-UPS AND LOAD CASTS THROUGHOUT. OVERTURNED.
42	90.06	90.20	0.14	19			SILTSTONE	SSY.WEL.M.GY.LAM.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
42	90.20	90.56	0.36	20			ROCK LOSS	
42	90.56	91.33	0.77	20			SILTSTONE	SSY.WEL.M.GY.LAM.SSD.SLD AS ABOVE.
43	91.33	93.41	2.08	*20			SILTSTONE	WEL.M.GY.LAM.SSD.SLD AS ABOVE. BECOMES LESS SANDY TOWARDS BASE.
44	93.41	93.45	0.04	20			SILTSTONE	SSY.WEL.M.GY.LAM.SLD AS ABOVE.
44	93.45	95.13	1.68	*20			SILTSTONE	WEL.M.GY.LAM.SSD.BRKN SILTSTONE WITH VERY MINOR SS LAMINATION S. MINOR CALCAREOUS FRACTURE FILL ASSOCIATED WITH LISTRIC SURFACES.
45	95.13	95.40	0.27	20			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	95.40	95.71	0.31	21			SILTSTONE	WEL.M.GY.LAM.VBRKN MOSTLY RUBBLE. POSSIBLE CORE LOSS.
45	95.71	96.47	0.76	21			ROCK LOSS	
45	96.47	96.92	0.45	21			SILTSTONE	WEL.M-DK.GY.LAM.SLD THINLY LAMINATED SLTST AND MUDST.
45	96.92	97.60	0.68	21			SILTSTONE	WEL.M-DK.GY.LAM.SLD AS ABOVE.
46	97.60	99.47	1.87	*22			SILTSTONE	WEL.M-DK.GY.LAM.SSD.SLD AS ABOVE. SAND CONTENT INCREASES TOWARD S BASE. FECCAL PELLETS. OVERTURNED.
46	99.47	99.59	0.12	22			SILTSTONE	WEL.M-DK.GY.LAM.SSD.SLD AS ABOVE.
47	99.59	101.66	2.07	22			SILTSTONE	WEL.M-DK.GY.LAM.SSD.SLD MINOR CALCAREOUS FRACTURE FILL NEAR BASE. AS ABOVE. OVERTURNED.
48	101.66	102.36	0.70	*22			SILTSTONE	WEL.M.GY.LAM.SSD.SLD LAMINATED SAND AND SILT. LOAD CAST INDICATES TOPS OVERTURNED.
48	102.36	102.42	0.06	22			SILTSTONE	WEL.M.GY.LAM.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	102.42	102.82	0.40	22			ROCK LOSS	
48	102.82	103.95	1.13	22			SILTSTONE	MEL. M. GY. LAM. SSD. SLD AS ABOVE.
49	103.95	105.85	1.90	21			SILTSTONE	MEL. M. GY. LAM. SSD. BRKN AS ABOVE.
49	105.85	106.00	0.15	21			ROCK LOSS	
49	106.00	106.10	0.10	21			SILTSTONE	MEL. M. GY. LAM. SSD. SLD AS ABOVE.
50	106.10	108.17	2.07	*21			SILTSTONE	SSY. M. GY. LAM. SSD. SLD INTERLAMINATED SAND AND SILT. MINOR CALCAREOUS FRACTURE FILL.
51	108.17	108.97	0.80	21			SILTSTONE	SSY. M. GY. LAM. SSD. SLD AS ABOVE.
51	108.97	110.03	1.06	21			SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED SS. AND SLTST. OVERTURNED.
51	110.03	110.30	0.27	21			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	110.30	112.21	1.91	*21			SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE. BECOMES SILTY AT BASE.
52	112.21	112.33	0.12	21			SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
53	112.33	114.39	2.06	21			SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. LOAD CASTS INDICATE TOPS OVERTURNED.
54	114.39	115.26	0.87	20			SILTSTONE	M. GY. LAM. SSD. SLD AS ABOVE. SAND CONTENT DECREASING. OVERTURNED.
54	115.26	116.41	1.15	20			SILTSTONE	M. GY. LAM. SSD. SLD INTERLAMINATED WITH VERY THIN VFG. SS. OVERTURNED.
55	116.41	116.79	0.38	*20			SILTSTONE	CLYY. M. GY. LAM. SSD. SLD AS ABOVE. INCREASES IN MUDSTONE CONTENT AT BASE. GRADATIONAL BASAL CONTACT WITH MUDSTONE.
55	116.79	117.68	0.89	20			MUDSTONE	BLK. LAM. BRKN NUMEROUS PLANT FRAGS. CARBONACEOUS IN PARTS. NUMEROUS CALCAREOUS FRACTURE FILL. LISTRIC SURFACES THROUGHOUT. COALY PARTINGS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	117.68	117.86	0.18	20	99999	J OVT	MUDSTONE	CARB. BLK. LAM. BRKN CALCAREOUS FRACTURE FILL. COALY IN PARTS - SEAM J.
55	117.86	118.01	0.15	20			MUDSTONE	CARB. BLK. LAM. BRKN AS ABOVE.
55	118.01	118.31	0.30	20			MUDSTONE	BLK. LAM. BRKN CARBONACEOUS IN PARTS. MINOR COALY STRIPES.
55	118.31	118.41	0.10	20			MUDSTONE	BLK. LAM. BRKN AS ABOVE. OVERTURNED.
56	118.41	119.44	1.03	20			MUDSTONE	BLK. LAM. BRKN AS ABOVE.
56	119.44	119.56	0.12	20			MUDSTONE	BLK. LAM. VBRKN MOSTLY RUBBLE. CORE LOSS.
56	119.56	120.10	0.54	20			ROCK LOSS	
56	120.10	120.62	0.52	20			MUDSTONE	DK. GY. LAM. BRKN AS ABOVE. MINOR PLANT FRAGS. CALCAREOUS FRACTURE FILL. AT BASE. SILT LAMS.
57	120.62	120.71	0.09	20			MUDSTONE	GY. LAM. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	120.71	120.74	0.03	20	04387		BENTONITE	WH. SHRD SAMPLE #04387.
57	120.74	121.00	0.26	20			ROCK LOSS	
57	121.00	121.12	0.12	20			MUDSTONE	DK. GY. LAM. BRKN GRADES INTO CARBONACEOUS MUDSTONE AT BASE.
57	121.12	121.60	0.48	20			MUDSTONE	CARB. BLK. LAM. VBRKN LISTRIC SURFACES THROUGHOUT. CALCAREOUS FRACTURE FILL.
57	121.60	121.95	0.35	20			ROCK LOSS	
57	121.95	122.10	0.15	20			MUDSTONE	DK. GY. LAM. SLD INTERBEDDED WITH SILTSTONE.
57	122.10	122.87	0.77	20			MUDSTONE	CARB. BLK. LAM. BRKN LISTRIC SURFACES, SOME SILTY BANDS. CALCAREOUS FRACTURE FILL.
58	122.87	124.05	1.18	20			MUDSTONE	BLK. LAM. BRKN VERY MINOR SILTY LAMS.
58	124.05	124.73	0.68	20			MUDSTONE	SLTY. DK. GY. LAM. SLD COASTER LITHOLOGY. MINOR CALCAREOUS STRIPES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	124.73	126.49	1.76	*20			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN INTERBEDDED MUD AND SILT. COASTER LITHOLOGY.
60	126.49	126.86	0.37	21			MUDSTONE	SLTY.M-DK.GY.LAM.VBRKN AS ABOVE.
60	126.86	127.39	0.53	21			ROCK LOSS	
60	127.39	128.54	1.15	22			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN AS ABOVE.
61	128.54	130.15	1.61	*23			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN AS ABOVE.
61	130.15	130.42	0.27	22			MUDSTONE	SLTY.M-DK.GY.LAM.SLD AS ABOVE.
62	130.42	132.41	1.99	*21			MUDSTONE	SLTY.M-DK.GY.LAM.SLD AS ABOVE. SILT CONTENT INCREASING.
63	132.41	133.07	0.66	21			MUDSTONE	SLTY.M-DK.GY.LAM.SLD AS ABOVE.
63	133.07	134.48	1.41	20			MUDSTONE	SLTY.M-DK.GY.LAM.SLD AS ABOVE. POSSIBLE FEEDING TRAIL ON BEDDING PLANE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	134.48	135.65	1.17	*20			MUDSTONE	SLTY.DK.GY.LAM.SLD AS ABOVE.
64	135.65	135.92	0.27	20			MUDSTONE	SLTY.DK.GY.LAM.VBRKN AS ABOVE.
64	135.92	136.24	0.32	20			ROCK LOSS	
64	136.24	136.61	0.37	20			MUDSTONE	SLTY.DK.GY.LAM.SLD AS ABOVE.
65	136.61	138.50	1.89	21			MUDSTONE	SLTY.DK.GY.LAM.SLD AS ABOVE. FEEDING TRACES.
66	138.50	139.18	0.68	21			SILTSTONE	CLYY.DK.GY.LAM.BRKN AS ABOVE. LISTRIC SURFACES.
66	139.18	140.32	1.14	*21			SILTSTONE	M.GY.LAM.BRKN AS ABOVE. BECOMING SANDY NEAR BASE.
67	140.32	142.19	1.87	21			SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED SS AND SLTST. X-BEDS INDICATE OVERTURNED.
67	142.19	142.25	0.06	22			SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
67	142.25	142.43	0.18	22			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	142.43	144.39	1.96	*22		SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN AS ABOVE WITH OCCASIONAL LYSTRIC SURFACES. OVERTURNED.
69	144.39	145.31	0.92	23		SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
69	145.31	146.42	1.11	23		SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN AS ABOVE. COARSENING TO A FG SS AT BASE ...QTZ VEINING.
70	146.42	146.53	0.11	23		SANDSTONE	LT.GY.LAM.SLD AS ABOVE.
70	146.53	146.62	0.09	24		SILTSTONE	M.GY.LAM.VBRKN RUBBLE, POSSIBLE CORE LOSS.
70	146.62	146.67	0.05	24		ROCK LOSS	
70	146.67	148.36	1.69	*24		SILTSTONE	SSY.WEL.LT-M.GY.LAM.XBDG.BRKN INTERLAMINATED SS AND SLTST. QTZ VEINING G. THROUGHOUT.
71	148.36	150.43	2.07	22		SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD MINOR SLTST. LAMINATIONS. QTZ VEINING TH ROUGHOUT. MINOR PLANT HASH.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	150.43	150.69	0.26	*20		SILTSTONE	SSY.WEL.M.GY.LAM.SSD.BRKN INTERLAMINATED SS AND SLTST. QTZ VEINING G.
72	150.69	150.83	0.14	20		ROCK LOSS	
72	150.83	151.46	0.63	20		SANDSTONE	FG.WEL.LT-M.GY.LAM.BRKN VERY FINE SLTST LAMINATIONS. MINOR QTZ.
72	151.46	152.43	0.97	20		SANDSTONE	FG.WEL.LT-M.GY.LAM.BRKN AS ABOVE LYSTRIC SURFACES WITH TALC-LIKE FILL.
73	152.43	154.45	2.02	20		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE. NUMEROUS QTZ VEINS. LOAD CAST S INDICATE OVERTURNED.
74	154.45	156.20	1.75	20		SILTSTONE	SSY.WEL.M.GY.LAM.SSD.BRKN INTERLAMINATED SLTST AND VFG SS. COASTE R LITHOLOGY. MINOR SSD INDICATES OVERTU RNED.
74	156.20	156.50	0.30	20		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH88008

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
	75	156.50	157.44	0.94	20		SILTSTONE	SSY. MEL. M. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS. END OF HO LE. DRILLER'S MARK = 157.44 M.

* DENOTES MEASURED BCA
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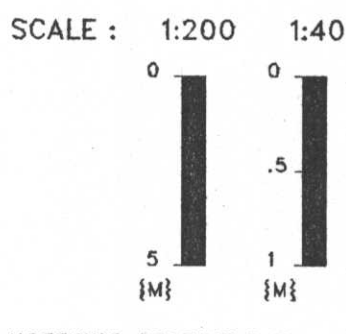
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88008

GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

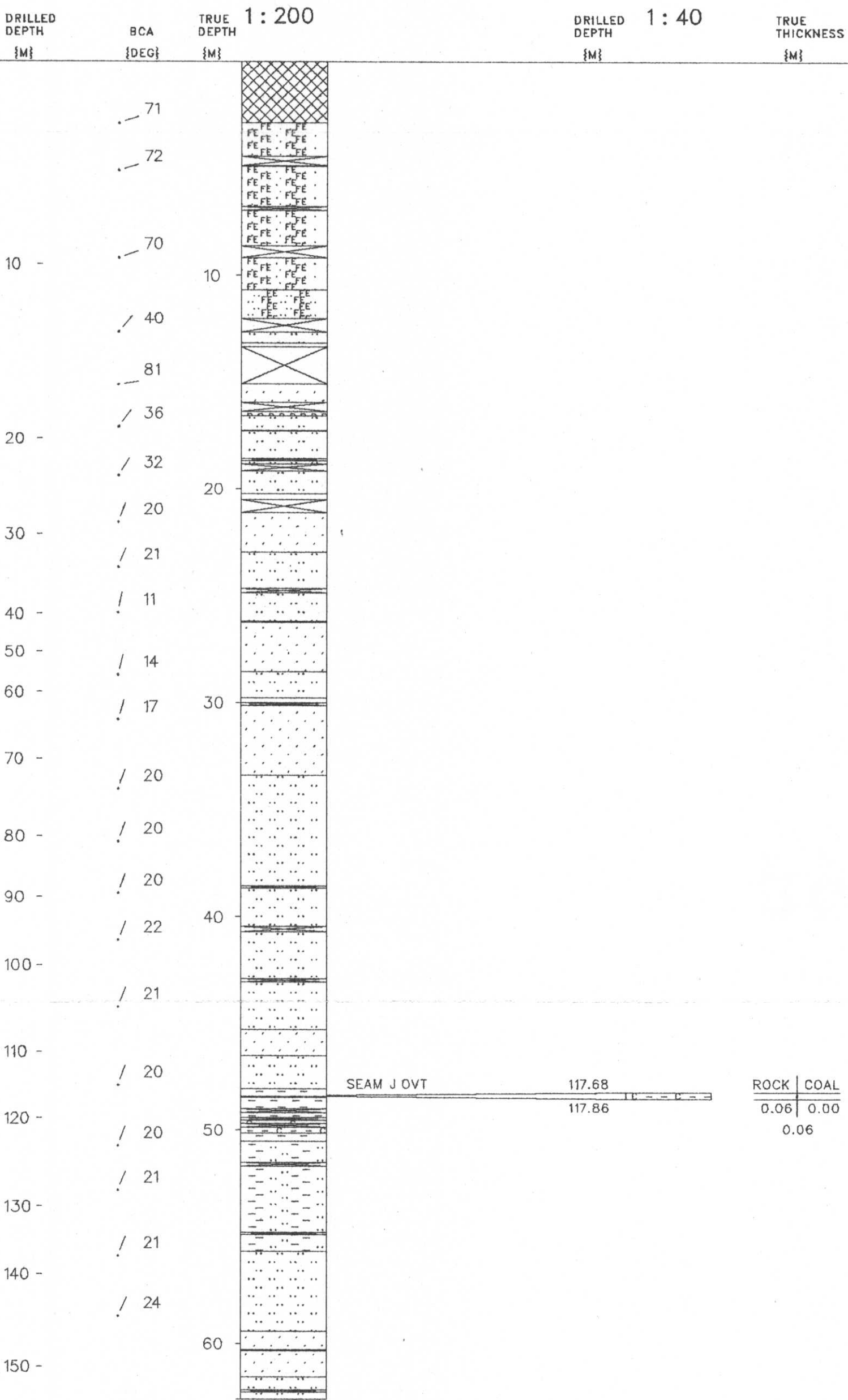


NORTHING: 6343610.0 N
 EASTING: 506854.3 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 157.44

TOTAL: 62.59

Gulf Canada Resources Limited

Coal Division

Geophysical Log

Datasource: **KPNLRDDH88008**

Province: BC Northing: 6343610.00 Lat: 571415

Log Date: 88-06-21

Zone: 9 Easting: 506854.00 Long: 1285311

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1671.8

Geologist: MURRAY

Scale: 1 to 200.0

Comments:

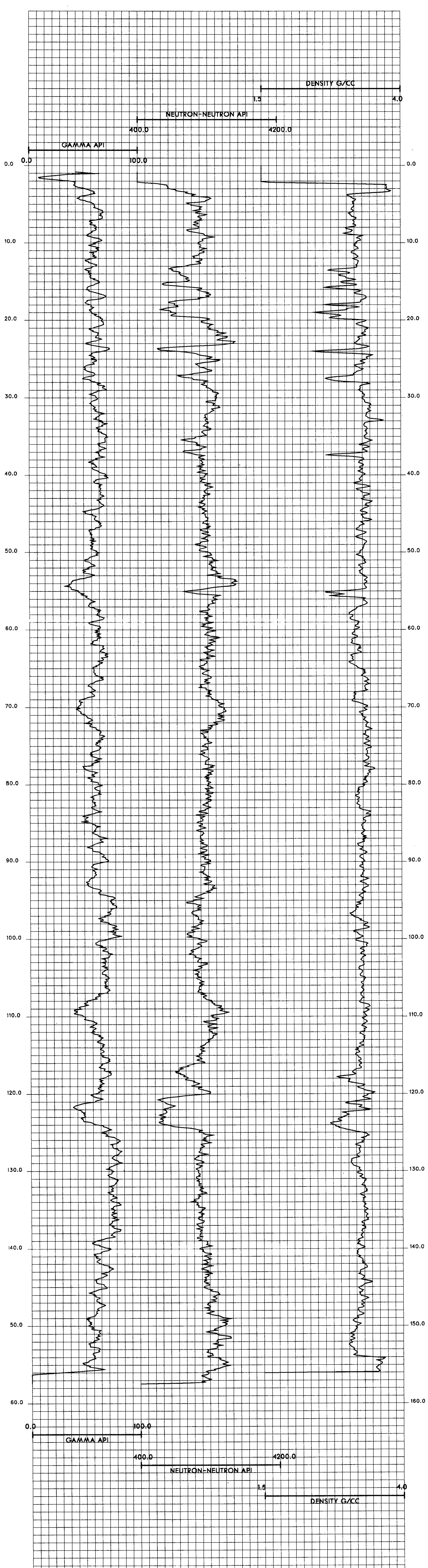
Depth Range: 0.0 to 162.0

1. LOGGED THROUGH RODS

2.

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88009

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88009

DATE - 02/15/89

- HISTORY -

START DATE - 06/20/88

END DATE - 06/22/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS H,I,J,K,K/L,L,&M?. CASING ADDED
DUE TO LOSS CIRC.

- LOCATION -

PROVINCE - BC
ELEVATION - 1637.90

ZONE - 9
NORTHING - 6342937.76
EASTING - 506557.40

LICENCE/LEASE NUMBER - 7147

LATITUDE - 571353
LONGITUDE - 1285329

- ORIENTATION -

LENGTH - 204.18

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 7.93
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



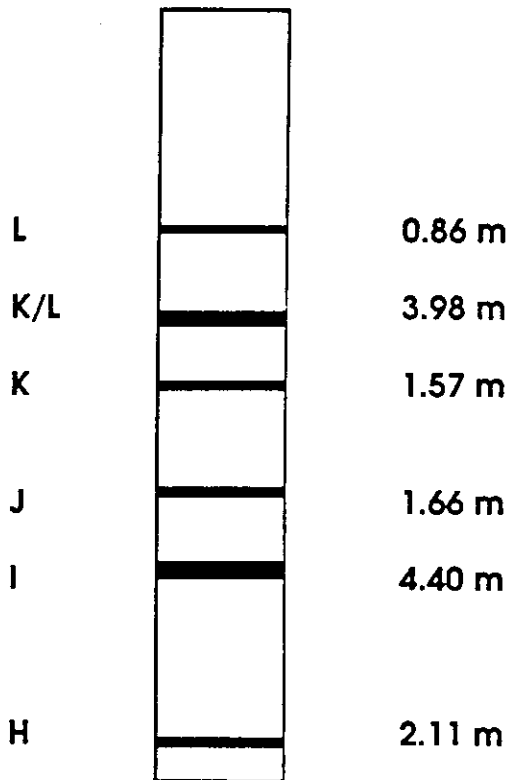
MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-009

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



GULF CANADA CORPORATION

COAL DIVISION

MOUNT KLAPPAN PROJECT

SEAM DETAIL

133

DATA SOURCE: KPN LR DDH88009 SEAM : M? INTERVAL(M) : 18.65 - 19.05
 LOGGIST : KRAUS SCALE: 1:40 DATE : FEB 01/89

SEAM	DRILL CORR. DEPTH	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY				
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	
	12.15	↑												
	18.65	↓		0.30	87.5	88888		0.35 / 0.00						
	19.05							0.35						

TRUE THICKNESS

ELEVATION(M) : 1637.9

DRAWING NO. :

QUALITY A.D.B.

VM	FC	TS	CAL. VAL MJ/KG	
5.27	50.32	0.35	18.21	—

SEAM DET.

DATA SOURCE:

GEOLOGIST:

SEAM
COMP. DRILL
DEPTH

1 2 3 4 5 6 METRE

125.00

127.00

P/C

GULF CANADA CORPORATION
 COAL DIVISION
 MOUNT KLAPPAN PROJECT

TRUE THICKNESS

30488009 SEAM : H INTERVAL(M) : 192.32 - 194.87 ELEVATION(M) :
 SCALE: 1:40 DATE : JAN 30/89 DRAWING NO. :

INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.				
ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TD
	0.68	87.5	8124	40	1.73 / 0.38 2.11	1.73 / 0.38 2.11	1.50	37.30	5.78	55.42	0.24
	0.19										
	0.11										
	0.46										
	0.59 (0.21)										
	0.30										

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	45			OVERBURDEN	THERE ARE 2 CASING DEPTH, #1 AT 3.05, 2 AT 7.93 M. CORE BEGINS AT 3.05 M.
1	3.05	3.75	0.70	45			ROCK LOSS	
1	3.75	5.07	1.32	45			BRECCIA	CLYY.VFG.VPR.DK.GY.MAS.SLD MULCHED - NOT LITHIFIED (MUD). CLAST VFG SS SIZE, 7CM TO 0.5CM, ANGULAR AND QIZ VEINING SEEN IN SOME OF THE ASTS. TOPPED WITH 6CM VFG SS. 60% MUD. 40% CLASTS.
1	5.07	5.18	0.11	45			ROCK LOSS	
1	5.18	5.65	0.47	45			SANDSTONE	CLYY.FG.VPR.S-P.GY.VBRKN CORE LOSS. MUD - 30%. IN SS, SLTST AND BANDS.
1	5.65	6.41	0.76	45			ROCK LOSS	
2	6.41	6.61	0.20	45			SANDSTONE	SLTY.MG.WEL.S-P.GY.THNB.BRKN POSSIBLE CORE LOSS. SLTST LAMS.

* DENOTES MEASURED BCA

P/C

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	6.61	8.11	1.50	45			ROCK LOSS	
2	8.11	9.09	0.98	*45			SANDSTONE	SLTY.MG.VHEL.S-P.GY.THNB.SSD.VBRKN POSSIBLE CORE LOSS. SLTST LAMS AND BLEBS. ALSO SLTST BANDS - 1CM THICK.
2	9.09	9.63	0.54	46			ROCK LOSS	
2	9.63	9.82	0.19	46			SANDSTONE	SLTY.MG.VHEL.S-P.GY.THNB.BRKN AS ABOVE.
3	9.82	11.15	1.33	*47			SANDSTONE	SLTY.MG.VHEL.S-P.GY.THNB.BRKN AS ABOVE. MODERATELY FRACTURED WITH INFILL. SOE QIZ ALTERATION IN SOME SLTST LAMS AND BLEBS.
3	11.15	11.69	0.54	*46			SANDSTONE	SLTY.MG.VHEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. INCREASING AMOUNT OF SLTST MS.
3	11.69	12.09	0.40	49			ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	12.09	13.75	1.66	*57			SANDSTONE	SLTY.MG.VHEL.S-P.GY.VTHNB.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS. TOPS UP INDICATED WITH LOAD CASTS. AT BOTTOM LARGE FRACTURE FILL OF MUD & STONES - 1CM SIZE.
5	13.75	13.89	0.14	43			SANDSTONE	SLTY.MG.VHEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE.
5	13.89	15.19	1.30	*31			SANDSTONE	SLTY.FG.VHEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. BECOMING FINER GRAINED. WITH BANDS OF BR ECCIATED MUD 1.0 TO 5.0CM THICK EVERY 70CM.
5	15.19	15.79	0.60	45			ROCK LOSS	
6	15.79	16.48	0.69	*54			SANDSTONE	SLTY.FG.VHEL.S-P.GY.THNB.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
6	16.48	17.60	1.12	57			SANDSTONE	SLTY.FG.VHEL.LT.GY.THNB.SSD.SLD AS ABOVE. INCREASING MUD FRACTURE FILL. CORE IS SOFT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	17.60	18.55	0.95	*60			SANDSTONE	SLTY.FG.VHEL.LT.GY.THNB.SSD.SLD AS ABOVE. AT BOTTOM INCREASING SLTST. BECOMES BLK IN COLOUR. M? SEAM ROOF ROCK. NOT SAMPLED.
7	18.55	18.65	0.10	60			ROCK LOSS	
7	18.65	19.00	0.35	60	99998	M?	COAL	C-4.BLK.PHRD
7	19.00	19.05	0.05	60	99998	M?	COAL LOSS	
7	19.05	19.30	0.25	60			ROCK LOSS	
7	19.30	19.85	0.55	59			MUDSTONE	CLYY.DK.GY.SLD BRECCIATED - 90% MUD. QTZ PRESENT. PROBABLY CARBONACEOUS MUDST. M? SEAM FLOOR ROCK. NOT SAMPLED.

* DENOTES MEASURED BCA

89/02/15 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY
8	19.85	21.25	1.40	59			MUDSTONE CLYY. BLK. SLT BRECCIATED - MUD NO QTZ STRINGERS
8	21.25	21.35	0.10	59			ROCK LOSS
8	21.35	21.98	0.63	58			SILTSTONE CLYY. VWEL. BLK. POSSIBLE CORE LOSS ITH MUD FILL RE FILL IN SLT
9	21.98	23.09	1.11	*58			SILTSTONE SSY. VFG. VWEL. BLK. POSSIBLE CORE LOSS ITH MUD FILL
9	23.09	23.71	0.62	*58			SILTSTONE SSY. VFG. VWEL. BLK. AS ABOVE.
10	23.71	24.67	0.96	58			SILTSTONE SSY. VFG. VWEL. BLK. AS ABOVE. TOP SMALL SS BED UD FRACTURE
10	24.67	25.30	0.63	*59			MUDSTONE SLTY. VWEL. BLK. POSSIBLE CORE NT HASH. MUD RBEDED WITH SLT

* DENOTES MEASURED BCA

P/c

89/02/15 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY
10	25.30	25.90	0.60	57			ROCK LOSS
11	25.90	25.95	0.05	56			MUDSTONE SLTY. VWEL. BLK. AS ABOVE.
11	25.95	27.50	1.55	*54			MUDSTONE SLTY. VWEL. BLK. AS ABOVE. TOP QTZ STRINGERS
11	27.50	28.50	1.00	52			ROCK LOSS
12	28.50	29.15	0.65	*50			MUDSTONE SLTY. VWEL. BLK. AS ABOVE. POSS
12	29.15	29.71	0.56	49			MUDSTONE SLTY. VWEL. BLK. AS ABOVE.
13	29.71	29.99	0.28	49			MUDSTONE SLTY. VWEL. BLK. AS ABOVE. SLT
13	29.99	30.29	0.30	49			MUDSTONE CARB. BLK. PHRD CORE LOSS.
13	30.29	30.69	0.40	49			ROCK LOSS

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	30.69	31.72	1.03	*48			MUDSTONE	SLTY.VFG.VHEL.BLK.VTHNB.BIOTR.VBRKN COALIFIED BANDS & PLANT HASH. MUD FRACTURE FILL (BRECCIATED). POSSIBLE CORE LOSS. FECAL PELLETS. LAMINAE.
13	31.72	32.22	0.50	48			ROCK LOSS	
14	32.22	32.48	0.26	49			SILTSTONE	CLYY.VFG.VHEL.BLK.VTHNB.BIOTR.VBRKN AS ABOVE. LAMINAE.
14	32.48	33.22	0.74	49			SILTSTONE	CLYY.VHEL.DK.GY.VTHNB.BIOTR.VBRKN POSSIBLE CORE LOSS. INTERBEDDED WITH MUDSTONE LAMS. MUD FRACTURE FILL.
14	33.22	33.66	0.44	49			SILTSTONE	CLYY.VHEL.DK.GY.VTHNB.BIOTR.VBRKN AS ABOVE. WITH LARGE BANDS OF BRECCIATED MUD. 20CM EVERY 20CM.
14	33.66	34.66	1.00	50			ROCK LOSS	
15	34.66	35.92	1.26	51			SILTSTONE	CLYY.VHEL.DK.GY.VTHNB.SSD.VBRKN POSSIBLE CORE LOSS. HEAVILY FRACTURED WITH MUD INFILL - 25% MUD.

* DENOTES MEASURED BCA

P/C

89/02 15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.92	36.36	0.44	51			SILTSTONE	CLYY.VHEL.DK.GY.VTHNB.SSD.SLD AS ABOVE.
16	36.36	38.08	1.72	52			SILTSTONE	SSY.VFG.VHEL.M.GY.VTHNB.SSD.BRKN COARSENING OF SLTST TO SS IN PLACES WITH MUDST LAMELLAE. HIGHLY FRACTURED WITH MUD INFILL. NILSSONIA? IDENTIFIED. OTHER PLANT HASH (BRECCIATED).
17	38.08	38.58	0.50	52			MUDSTONE	CLYY.VFG.PR.M.GY.SLD BRECCIATED WITH SLTST CLASTS - 1CM AVERAGE SIZE. RANGE 0.3CM TO 6CM; 95% MUD.
17	38.58	38.98	0.40	53			ROCK LOSS	
17	38.98	40.52	1.54	53			MUDSTONE	CLYY.VFG.PR.M.GY.SLD AS ABOVE. 95% MUD.
18	40.52	41.87	1.35	54			MUDSTONE	CARB.VHEL.BLK.SLD UNLITHIFIED.
18	41.87	42.37	0.50	55			ROCK LOSS	
18	42.37	42.96	0.59	55			SANDSTONE	CLYY.MG.VHEL.S-P.GY.BRKN POSSIBLE CORE LOSS. BRECCIATED WITH MUD MATRIX. CLASTS RANGE .7CM TO 15CM. SS VARIES FROM MG TO CG.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION

PROJECT: KPN BLOCK: LR

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID
19	42.96	44.49	1.53	56		
19	44.49	44.79	0.30	56		
19	44.79	45.24	0.45	57		
20	45.24	46.50	1.26	57		
20	46.50	47.15	0.65	58		
20	47.15	47.24	0.09	58		
21	47.24	47.74	0.50	58		
21	47.74	47.94	0.20	58		

* DENOTES MEASURED BCA

P/C

89/02/15

GULF CANADA CORPORATION - COAL DIVISION

PROJECT: KPN BLOCK: LR

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID
21	47.94	48.27	0.33	59		
21	48.27	49.16	0.89	*59		
22	49.16	51.00	1.84	62		
23	51.00	52.83	1.83	*66		
24	52.83	53.88	1.05	74		
24	53.88	54.75	0.87	*79		
25	54.75	54.97	0.22	*57		

* DENOTES MEASURED BCA

C

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55.11	0.14	59			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. POSSIBLE FAULT - SLICKENSIDES . BCA-21 DEGREES. HEAVILY FRACTURED WITH SLICKENSIDES.
55.41	0.30	62			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. HEAVILY FRACTURED WITH SLICKENSIDES. BCA-80 DEGREE. BCA'S CHANGE DUE TO FAULTING.
55.45	0.04	65			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. HEAVILY FRACTURED WITH SLICKENSIDES. 45 DEGREE BCA. BCA'S CHANGE DUE TO SMALL SCALE FAULTING.
55.48	0.03	*65			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE.
55.50	0.02	62			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. BCA = 80 DEGREES.
55.53	0.03	59			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. BCA = 31 DEGREES.
55.66	0.13	48			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. BCA = 7 DEGREES.
55.80	0.14	*31			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. BCA = 31 DEGREES.

MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55.96	0.16	*63			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE.
56.36	0.40	*67			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE.
56.63	0.27	66			SILTSTONE	M.GY.LAM.SSD.SLD ALT LAMS OF SLTST & MUDST.
56.73	0.10	66			ROCK LOSS	
57.02	0.29	66	08109	L ROOF	MUDSTONE	M.GY.LAM.BRKN ALT LAMS OF SLTST & MUDST. BRECCIATED. QTZ & TALC FRACTURE INFILLS. LOWER 25 CM SAMPLED. L SEAM ROOF ROCK.
57.33	0.31	65	08110	L	COAL	C-5.BLK.VSHRD SOME QTZ & TALC FRACTURE FILLS.
57.39	0.06	65	08110	L	ROCK LOSS	
57.61	0.22	64	08110	L	COAL	C-5.BLK.VSHRD AS ABOVE.
57.74	0.13	64	08110	L	ROCK LOSS	
57.97	0.23	64	08110	L	COAL LOSS	

MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	57.97	58.61	0.64		63	08111 L FLOOR	MUDSTONE	M. GY. SHRD CARB SLTST CLASTS. QTZ & TALC FRACTURE FILLS. L SEAM FLOOR ROCK. SAMPLED UPPER 25 CM.
27	58.61	58.80	0.19	*62			MUDSTONE	SLTY. VHEL. BLK. LAM. SSD. BRKN AS ABOVE.
27	58.80	58.98	0.18	61			MUDSTONE	SLTY. VHEL. BLK. LAM. SSD. BRKN AS ABOVE. BCA = 47 DEGREES.
27	58.98	59.09	0.11	61			MUDSTONE	SLTY. VHEL. BLK. LAM. SSD. BRKN AS ABOVE. BCA = 51 DEGREES.
27	59.09	59.24	0.15	*60			MUDSTONE	SLTY. VHEL. GY. LAM. SSD. BRKN AS ABOVE.
27	59.24	59.96	0.72	*65			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN POSSIBLE CORE LOSS. QTZ & SOFT GREEN FR ACTURE FILL. INTERBEDDED WITH MUDST LAM S & SS (VFG).
27	59.96	60.06	0.10	64			MUDSTONE	CLYY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN A BAND OF CLAY. UNLITHIFIED. MIXED IN W ITH MUDST.
27	60.06	60.50	0.44	63			MUDSTONE	SLTY. VFG. VHEL. BLK. LAM INTERBEDDED WITH VTHNB SLTST. FRACTURE AND FILL WITH SOFT GREEN SILICATE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	60.50	62.64	2.14	*58			MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. SSD. BRKN AS ABOVE WITH PLANT WASH AND RIP-UPS OF SLTST. ALSO QTZ AND MUD FRACTURE FILL. THIN COAL LAMS. BIOTR6.
29	62.64	62.98	0.34	*68			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. SLD INTERBEDDED WITH FG SS. LOAD CAST - TOP S UP. FRACTURE DISPLACEMENT. FRAC FILL: MUD, QUARTZ, GREEN SILICATE.
29	62.98	64.76	1.78	69			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE.
30	64.76	66.00	1.24	69			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS. LAMINAE.
30	66.00	66.78	0.78	*70			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE. LAMINAE.
31	66.78	68.63	1.85	*69			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE. INCREASING SS (VFG) BEDS. LAM INAE.
32	68.63	68.96	0.33	*69			SILTSTONE	SSY. VFG. VHEL. DK. GY. VTHNB. SSD. BRKN INTERLAMINATED WITH SS (VFG). HRMBUR. Q TZ & GREEN FRACTURE FILL. MUD FRAC FILL

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	68.96	70.48	1.52		73		SILTSTONE	SSY, YFG, VMEL, DK, GY, VTHNB, SSD, BRKN AS ABOVE. 12CM BAND - SEDIMENT IS TURBATED VERTICALLY BETWEEN FRACTURES (SLICK ENSIDES).
33	70.48	72.31	1.83		*79		SILTSTONE	SSY, YFG, VMEL, M-DK, GY, VTHNB, SSD, SLD INTERLAMINATED WITH SS (YFG), HRMBUR - TOPS UP. MUD FRACTURE FILL.
33	72.31	72.53	0.22		75		SANDSTONE	SLTY, YFG, VMEL, M-DK, GY, VTHNB, SSD, SLD INTERLAMINATED WITH SLTST, X-BEDDING TO PS UP. MUD FRACTURE FILL.
34	72.53	74.65	2.12		*70		SANDSTONE	SLTY, YFG, VMEL, M-DK, GY, VTHNB, SSD BRKN AS ABOVE, X-BDG, LOAD CASTS, SLUMP OR REACTION RIM FEATURE?
35	74.65	74.86	0.21		66		SILTSTONE	SSY, YFG, VMEL, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE, INTERLAMINATED WITH SS.
35	74.86	76.63	1.77		*63		SANDSTONE	SLTY, YFG, VMEL, M, GY, VTHNB, SSD, BRKN INTERLAMINATED WITH SLTST, FRACTURE FILL L MUD, FRACTURE DISPLACEMENT, LOAD CAST S - TOPS UP.
36	76.63	77.82	1.19		*75		SANDSTONE	SLTY, YFG, VMEL, M, GY, VTHNB, SSD, BRKN AS ABOVE, X-BDG.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.82	78.66	0.84		*80		SANDSTONE	SLTY, YFG, VMEL, M, GY, VTHNB, SSD, BRKN AS ABOVE, COAL STRINGERS, INCREASING MUD FRACTURE FILL.
36	78.66	79.00	0.34		78		ROCK LOSS	
37	79.00	79.74	0.74		76 08112	K/L ROOF	MUDSTONE	CARB, DK, GY, LAM, BRKN PLANT REMAINS ALT LT GREY & DK GREY MUD ST, C-4 PARTING, LOWER 19CM SAMPLED, K/L SEAM ROOF ROCK.
37	79.74	79.80	0.06		75 08112	K/L ROOF	MUDSTONE	BLK INTERBEDDED C-5 & CARB MUDST, SAMPLED. K/L SEAM ROOF ROCK.
37	79.80	80.31	0.51		74 08113	K/L	COAL LOSS	
37	80.31	80.35	0.04		73 08113	K/L	COAL	C-5, BLK INTERBEDDED C-5 & CARB MUDST.
37	80.35	80.38	0.03		75 08113	K/L	COAL	C-2, BLK, BRKN
37	80.38	80.41	0.03		73 08113	K/L	COAL	C-5, BLK, SHRD INTERBEDDED C-4 & CARB MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	80.41	80.46	0.05	73	08113	K/L	COAL	C-5, BLK, VBRKN
37	80.46	80.49	0.03	73	08113	K/L	COAL	C-3, BLK, VBRKN
37	80.49	80.50	0.01	73	08113	K/L	COAL	C-5, BLK, VBRKN
37	80.50	80.51	0.01	73	08113	K/L	COAL	C-1, BLK, VBRKN
37	80.51	80.52	0.01	73	08113	K/L	COAL	C-5, BLK, VBRKN
37	80.52	80.53	0.01	73	08113	K/L	COAL	C-2, BLK, VBRKN
37	80.53	80.83	0.30	72	08113	K/L	COAL	C-5, BLK, PHRD INTERBEDDED C-4 & C-5.
37	80.83	80.95	0.12	72	08113	K/L	MUDSTONE	CARB, BLK, VSHRD INTERMIXED COAL PARTICLES.
37	80.95	81.05	0.10	71	08113	K/L	COAL	C-4, BLK, VBRKN
38	81.05	81.07	0.02	71	08113	K/L	COAL	C-4, BLK, VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	81.07	81.13	0.06	71	08113	K/L	COAL	C-4, BLK, VBRKN
38	81.13	81.15	0.02	71	08113	K/L	COAL	C-5, BLK, PHRD MINOR MUDST INTERMIXED.
38	81.15	81.34	0.19	70	08113	K/L	COAL	C-5, BLK, BRKN MINOR C-1 AND C-2 BANDS 5-10MM THICK.
38	81.34	81.40	0.06	70	08113	K/L	COAL	C-4, BLK, BRKN INTERBEDDED C-3; C-5.
38	81.40	81.43	0.03	70	08113	K/L	COAL	C-5, BLK, VBRKN MINOR C-4 LAMS.
38	81.43	81.48	0.05	70	08113	K/L	MUDSTONE	CARB, BLK, BRKN MINOR THIN COAL PARTINGS.
38	81.48	81.64	0.16	69	08113	K/L	COAL	C-5, BLK, VBRKN INTERBEDDED C-4, C-5 AND CARB MUDST.
38	81.64	81.70	0.06	69	08113	K/L	MUDSTONE	CARB, BLK, VBRKN INTERBEDDED C-5, C-6 FRAGMENTS.
38	81.70	82.03	0.33	68	08113	K/L	COAL LOSS	
38	82.03	82.05	0.02	68	08113	K/L	COAL	C-5, BLK, VBRKN SOME CARB MUDST INTERBEDDED WITH C-5.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	82.05	82.08	0.03	68	08113	K/L	COAL	C-4.BLK.BRKN
38	82.08	82.10	0.02	68	08113	K/L	COAL	C-5.BLK.SLD
38	82.10	82.21	0.11	68	08113	K/L	COAL	C-3.BLK.VBRKN SOME C-4 AND C-5 INTERBANDING.
38	82.21	82.29	0.08	67	08113	K/L	COAL	C-5.BLK.VBRKN ABUNDANT MUDST INTERBEDS. RARE C-3 BAND S 5-10MM.
38	82.29	82.32	0.03	67	08113	K/L	MUDSTONE	CARB.BLK.VBRKN
38	82.32	82.39	0.07	67	08113	K/L	COAL	C-3.BLK.VBRKN 5MM C-1 BAND AT BASE.
38	82.39	82.41	0.02	67	08113	K/L	COAL	C-4.BLK.VBRKN
38	82.41	82.54	0.13	67	08113	K/L	COAL	C-5.BLK.VBRKN INTERBEDDED C-4 AND C-6.
38	82.54	82.70	0.16	66	08113	K/L	COAL	C-4.BLK.VBRKN INTERBEDDED C-3 AND C-5.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	82.70	82.89	0.19	66	08113	K/L	COAL LOSS	
38	82.89	83.03	0.14	65	08113	K/L	COAL	C-5.BLK.VBRKN
38	83.03	83.07	0.04	65	08113	K/L	COAL	C-4.BLK.VBRKN
38	83.07	83.09	0.02	65	08113	K/L	MUDSTONE	CARB.DK.GY.VBRKN
39	83.09	83.17	0.08	64	08113	K/L	MUDSTONE	CARB.DK.GY.VBRKN
39	83.17	83.30	0.13	64	08113	K/L	COAL	C-5.BLK.PWRD
39	83.30	83.39	0.09	64	08113	K/L	COAL	C-5.BLK.VBRKN INTERBEDDED C-5, C-4 AND CARB MUDST.
39	83.39	83.42	0.03	64	08113	K/L	COAL	C-2.BLK.BRKN
39	83.42	83.54	0.12	63	08113	K/L	COAL	C-5.BLK.PWRD C-5 FRAGMENTS, MINOR MUD.
39	83.54	83.71	0.17	63	08113	K/L	COAL	C-5.BLK.PWRD C-5 AND CARB MUDST FRAGMENTS INTERMIXED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	83.71	83.73	0.02	63	08113	K/L	MUDSTONE	CARB. BLK. PHRD C-6 FRAGMENTS PRESENT.
39	83.73	83.78	0.05	62	08113	K/L	COAL	C-3. BLK. BRKN
39	83.78	84.09	0.31	62	08113	K/L	COAL LOSS	
39	84.09	84.20	0.11	61	08114	K/L FLOOR	MUDSTONE	CARB. DK. GY. BRKN MINOR COAL PARTINGS. SAMPLED. K/L SEAM FLOOR ROCK.
39	84.20	84.30	0.10	61	08114	K/L FLOOR	MUDSTONE	DK. GY. BRKN K/L SEAM FLOOR ROCK. SAMPLED.
39	84.30	84.32	0.02	61	08114	K/L FLOOR	COAL	C-5. BLK. BRKN K/L SEAM FLOOR ROCK. SAMPLED.
39	84.32	84.43	0.11	60	08114	K/L FLOOR	MUDSTONE	DK. GY. BRKN MINOR COAL PARTINGS. SAMPLED TOP 2 CM. K/L SEAM FLOOR ROCK.
39	84.43	84.48	0.05	60			ROCK LOSS	
39	84.48	84.53	0.05	60			COAL	C-5. BLK. PHRD MUDST FRAGMENTS PRESENT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	84.53	84.67	0.14	60			MUDSTONE	DK. GY. VSHRD SOFT. VERY MINOR COAL PARTICLES PRESENT
39	84.67	84.75	0.08	59			ROCK LOSS	
39	84.75	85.05	0.30	59			MUDSTONE	DK. GY. BRKN VERY MINOR COAL PARTING. VERY THIN (<1M M) WISPY CALCITE VEINS. GRADATIONAL CON- TACT AT BASE.
39	85.05	85.20	0.15	58			ROCK LOSS	
39	85.20	85.39	0.19	58			SILTSTONE	M. GY. LAM VERY THIN WISPY MUDST STRINGERS. CALCAR EQUIS.
40	85.39	87.29	1.90	54			SILTSTONE	SSY. VFG. VHEL. BLK. LAM. BIOTR. BRKN INTERLAMINATED WITH MUDST. AND VFG SS. H IGHLY FRACTURED WITH MUD. BANDS OF UNLI THIFIED MUD 2-10CM THICK WITH RIP-UP CL ASTS. SSD.
41	87.29	88.05	0.76	*50			SILTSTONE	SSY. VFG. VHEL. BLK. VTHNB. BIOTR. BRKN AS ABOVE. POSSIBLE CORE LOSS. SSD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	88.05	89.23	1.18	*50			SANDSTONE	SLTY. VFG. VMEL. BLK. VTHNB. BIOTR. BRKN INTERLAMINATED WITH SLTST. LARGE MUD FRACTURE FILLS (BRECCIATED MUD). TOPS UP. FECAL PELLETS.
42	89.23	90.28	1.05	*62			SANDSTONE	SLTY. FG. VMEL. M. GY. VTHNB. SSD. VBRKN POSSIBLE CORE LOSS. HRMBUR. INTERLAMINATED WITH SLTST. TOPS UP FROM LOAD CASTS. MUD FRACTURE FILL.
42	90.28	90.48	0.20	62			ROCK LOSS	
42	90.48	91.03	0.55	62			SANDSTONE	SLTY. FG. VMEL. S-P. GY. VTHNB. SSD. VBRKN POSSIBLE CORE LOSS. COARSENING OF SS. SLTST LAMS. MUD FRACTURE. LOAD CASTS - TOPS UP.
42	91.03	91.29	0.26	63			ROCK LOSS	
43	91.29	93.32	2.03	*63			SANDSTONE	SLTY. MG. VMEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE.
44	93.32	93.37	0.05	63			MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BRKN POSSIBLE CORE LOSS. MUD FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	93.37	95.25	1.88	63			MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BRKN AS ABOVE. LOTS MUD FILL FRACTURING. INTERLAMINATED WITH SLTST. SOME PYRITE IN SLTST LAMS.
45	95.25	95.91	0.66	63			MUDSTONE	CARB. VFG. VMEL. BLK. LAM. BRKN MUD FRACTURE FILL. COAL LAMS. PYRITE DISSEMINATED PARALLEL TO BEDDING THROUGHOUT CORE.
45	95.91	96.98	1.07	63			MUDSTONE	CARB. VFG. VMEL. BLK. LAM. BRKN AS ABOVE.
46	96.98	97.27	0.29	63	08115 K	ROOF	MUDSTONE	DK. GY. SHRD BOTTOM 10CM SAMPLED. K SEAM ROOF ROCK.
46	97.27	97.36	0.09	63	08115 K	ROOF	MUDSTONE	M. GY. YSHRD MINOR TUFFACEOUS LENSES. K SEAM ROOF ROCK. SAMPLED.
46	97.36	97.42	0.06	62	08115 K	ROOF	MUDSTONE	CARB. DK. GY. SHRD MINOR COAL PARTINGS. K SEAM ROOF ROCK. SAMPLED.
46	97.42	97.68	0.26	62	08116 K		COAL LOSS	
46	97.68	97.81	0.13	62	08116 K		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	97.81	97.87	0.06	62	08116	K	COAL LOSS	
46	97.87	97.99	0.12	62	08116	K	COAL	C-4.BLK.BRKN
46	97.99	98.04	0.05	62	08116	K	MUDSTONE	CARB.BLK.BRKN NUMEROUS COAL PARTINGS.
46	98.04	98.40	0.36	62	08116	K	COAL	C-5.BLK.PHRD INCLUDES CARB MUDST, C-5 AND C-4 PARTICLES.
46	98.40	98.55	0.15	62	08116	K	MUDSTONE	CARB.BLK.SHRD CONTAINS MINOR VERY THIN CONTORTED COAL STRINGERS.
46	98.55	98.83	0.28	62	08116	K	COAL	C-5.BLK.VBRKN
46	98.83	98.89	0.06	62	08116	K	COAL	C-4.BLK.BRKN
46	98.89	98.99	0.10	62	08116	K	COAL	C-4.BLK.PHRD C-3 AND C-5 PARTICLES ARE ABUNDANT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	98.99	99.19	0.20	62	08116	K	COAL	C-5.BLK.PHRD
46	99.19	99.27	0.08	62	08117	K FLOOR	MUDSTONE	CARB.DK.GY.SLD PLANT FRAGMENTS ABUNDANT ON BEDDING PLANES. K SEAM FLOOR ROCK. SAMPLED.
47	99.27	99.97	0.70	62	08117	K FLOOR	MUDSTONE	CARB.VFG.VMEL.BLK.LAM.BRKN INTERLAMINATED WITH SLTST. COAL STRINGERS. POSSIBLE CORE LOSS. SAMPLED TOP 17CM. K SEAM FLOOR ROCK.
47	99.97	100.50	0.53	62			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.BRKN INTERLAMINATED WITH SLTST. HIGHLY FRACTURED WITH MMUD INFILL.
47	100.50	101.78	1.28	62			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN INTERLAMINATED WITH SLTST. LOAD CASTS - TOPS UP. Q.TZ. GREEN SILICATE. MUD FRACTURE FILL.
48	101.78	102.90	1.12	*62			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. NO GREEN OR MUD FRACTURE FILL. POSSIBLE CORE LOSS.
48	102.90	103.44	0.54	64			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.VBRKN INTERBEDDED WITH SS (VFG). MUDST LAMS. QTZ FRACTURE FILL. LOAD CAST - TOPS UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB8009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	103.44	103.58	0.14	65			ROCK LOSS	
49	103.58	104.12	0.54	65			SILTSTONE	SSY.VFG.VHML.DK.GY.VTHNB.SSD.VBRKN AS ABOVE. MUD FRACTURE.
49	104.12	104.28	0.16	66			ROCK LOSS	
49	104.28	104.42	0.14	66			MUDSTONE	CLYY.PR.M.GY.SLD BRECCIATED; NOT LITHIFIED. ROUNDED CLAS T APPROX = 3CM OF SS & SLTST.
49	104.42	104.64	0.22	67			SANDSTONE	SLTY.VFG.VHML.M.GY.PHRD INTERBEDDED WITH SLTST. QTZ FRACTURE FILL. CORE LOSS PROBABLE.
49	104.64	104.69	0.05	67			ROCK LOSS	
49	104.69	105.13	0.44	68			SANDSTONE	SLTY.VFG.VHML.S-P.GY.VBRKN AS ABOVE. PROBABLE CORE LOSS.
49	105.13	105.28	0.15	68			ROCK LOSS	
50	105.28	105.81	0.53	*69			SILTSTONE	SSY.VFG.VHML.DK.GY.VTHNB.SSD.BRKN CORE LOSS POSSIBLE. INTERBEDDED WITH SS. MUDST LAMS. LOAD CASTS - TOPS UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB8009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	105.81	106.06	0.25	67			ROCK LOSS	
50	106.06	107.19	1.13	*64			SILTSTONE	SSY.VFG.VHML.DK.GY.VTHNB.SSD.BRKN AS ABOVE. INTERBEDDED WITH VERY FEW SS BEDS. THICKER SLTST BEDS. MUD FRAC FILL. CLEAVES PARALLEL TO BEDDING.
51	107.19	108.20	1.01	*63			SILTSTONE	SSY.VFG.VHML.DK.GY.VTHNB.SSD.VBRKN AS ABOVE. INCREASE IN SS. CORE LOSS POSSIBLE. QTZ FRACTURE FILL. LOAD CASTS INDICATE TOPS UP.
51	108.20	108.61	0.41	64			ROCK LOSS	
51	108.61	109.16	0.55	66			SANDSTONE	SLTY.FG.VHML.S-P.GY.VTHNB.SSD.BRKN CORE LOSS POSSIBLE. FEW INTERBEDS OF SLTST. QTZ FRACTURE FILL.
51	109.16	109.22	0.06	66			SANDSTONE	SLTY.FG.VHML.S-P.GY.VTHNB.SLD AS ABOVE.
52	109.22	110.57	1.35	68			SANDSTONE	SLTY.MG.VHML.S-P.GY.VTHNB.VBRKN POSSIBLE CORE LOSS. QTZ FRACTURE FILL.
52	110.57	110.97	0.40	69			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	110.97	112.02	1.05	*71			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE. WITH FEW SLTST INTERBEDS. TOP S UP - LOAD CASTS.
53	112.02	112.55	0.53	68			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE.
54	112.55	113.44	0.89	*65			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. BRKN SLTST COARSENING TO MG THEM CG SS EVENT UALLY TO SLTST AGAIN. SLTST RIP-UP CLAS T.
54	113.44	113.59	0.15	65			ROCK LOSS	
54	113.59	114.62	1.03	*65			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. SSD. BRKN INTERLAMINATED MUDST/VFG SS.
55	114.62	115.12	0.50	*69			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. XBDG. SLD AS ABOVE. TOPS UP.
55	115.12	116.55	1.43	*70			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. XBDG. SLD AS ABOVE. WITH MUD FRACTURE FILL. PLANT MASH.
56	116.55	117.23	0.68	64			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	117.23	118.03	0.80	*59			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH MUDST. QTZ. MUD FRACTURE FILL. FRACTURE DISPLACEMENT. POSSI BLE CORE LOSS.
57	118.03	118.62	0.59	61			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. SSD. VBRKN AS ABOVE.
57	118.62	118.76	0.14	63			ROCK LOSS	
57	118.76	119.88	1.12	*65			MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. VBRKN INTERLAMINATED WITH SLTST. RHYTHMITES. LARGE BRECCIATED MUD FRACTURE 4CM THICK
57	119.88	120.26	0.38	63			ROCK LOSS	
58	120.26	120.40	0.14	62			MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. VBRKN AS ABOVE. NO ROUND FRACTURING.
58	120.40	120.48	0.08	62			ROCK LOSS	
58	120.48	122.05	1.57	*60			MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. VBRKN AS ABOVE. COASTER ZONE.
58	122.05	122.29	0.24	60			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	122.29	123.04	0.75	61		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. VBRKN AS ABOVE.
59	123.04	123.20	0.16	61		ROCK LOSS	
59	123.20	124.00	0.80	*61		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. VBRKN AS ABOVE. QTZ FRACTURE FILL.
59	124.00	124.20	0.20	61		ROCK LOSS	
60	124.20	125.60	1.40	60		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. VBRKN AS ABOVE.
61	125.60	125.68	0.08	60		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. VBRKN AS ABOVE.
61	125.68	125.83	0.15	60		ROCK LOSS	
61	125.83	125.95	0.12	60		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. VBRKN AS ABOVE.
61	125.95	126.95	1.00	59 99999 J		MUDSTONE	CARB. VMEL. BLK. SSD. VBRKN QTZ FRACTURE FILL. SLTST LAMS - LOAD CASTS TOPS UP. POSSIBLE CORE LOSS. PLANT MASH.
61	126.95	127.20	0.25	59 99999 J		MUDSTONE	CARB. VMEL. BLK. SSD. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	127.20	127.37	0.17	59 99999 J		ROCK LOSS	
62	127.37	127.88	0.51	59 99999 J		MUDSTONE	CARB. VMEL. BLK. SSD. VBRKN AS ABOVE.
62	127.88	128.09	0.21	58		ROCK LOSS	
62	128.09	129.35	1.26	*58		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. BRKN TOPS UP INDICATED. FOSSIL? MUD FRACTURE FILL. INTERLAMINATED WITH SLTST. SLTST CONTENT INCREASING.
63	129.35	130.01	0.66	*64		SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH MUDST & VFG SS. LOAD CASTS - TOPS UP. MUD & QTZ FRACTURE FILL. FRACTURE DISPLACEMENT. VTHNB. IN PARTS.
63	130.01	131.38	1.37	*68		SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE (SOME BIOTR). VTHNB.
64	131.38	132.95	1.57	*64		SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. SLD. AS ABOVE. BIVALVE IMPRESSION - STAFFINE LLA? VTHNB.
64	132.95	133.41	0.46	*59		SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. SSD. SLD INTERBEDS OF VFG SS & LAMS OF MUDST. HR MBUR. LOAD CASTS - TOPS UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	133.41	134.51	1.10	62			SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. BIOTR. SLD AS ABOVE.
65	134.51	135.64	1.13	*67			SANDSTONE	SLTY. VFG. VMEL. S-P. GY. VTHNB. SSD. SLD LAMS OF SLTST & MUDST. QTZ FRACTURE FILL. L. TOPS UP - LOAD STRUCTURE.
66	135.64	136.06	0.42	66			SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. SSD. BRKN LAMS OF VFG SS & MUDST. LOAD STRUX - TO PS UP. QTZ FRACTURE FILL. LAMINAE.
66	136.06	136.19	0.13	65			ROCK LOSS	
66	136.19	137.72	1.53	*64			SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE. WITH SOME FRACTURE DISPLACEMENT. LAMINAE.
67	137.72	139.13	1.41	*68			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE.
67	139.13	139.28	0.15	66			ROCK LOSS	
67	139.28	139.67	0.39	66			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE.
68	139.67	140.36	0.69	65			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	140.36	140.54	0.18	64			ROCK LOSS	
68	140.54	141.19	0.65	63			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE WITH INCREASING FRACTURING. FILLED WITH MUD & QTZ. FRACTURE DISPLACEMENT.
68	141.19	141.52	0.33	62			BENTONITE	SLTY. VFG. VMEL. LT. GY. SLD UNLITHIFIED; CONTAINING SLTST.
68	141.52	141.89	0.37	61			SILTSTONE	SSY. VFG. VMEL. M. GY. LAM. SSD. SLD INTERLAMINATED WITH MUDST. QTZ FRACTURE FILL. LOAD CASTS INDICATE TOPS UP.
69	141.89	142.56	0.67	*60			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE.
69	142.56	143.96	1.40	*66			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. SLD AS ABOVE.
69	143.96	144.16	0.20	66			ROCK LOSS	
70	144.16	145.57	1.41	*67			SILTSTONE	SSY. VFG. VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE. LAMINATED WITH MUDST. LOAD CASTS INDICATE TOPS UP.
70	145.57	145.74	0.17	69			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	145.74	146.26	0.52	*70		SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. SSD. BRKN AS ABOVE. PLANT FOSSILS.
71	146.26	146.53	0.27	70 08118	I ROOF	MUDSTONE	DK. GY. LAM. BRKN ABUNDANT PLANT FRAGMENTS: SPHENOPTERIS SP. HILLSONIA?, PITYOPHYLLUM NORDENSKIO LDI. POLISHED ON BROKEN SURFACES. POSSIBLE MINOR FAULT. MINOR COAL PARTINGS. THIN CALCITE VEINS MORE ABUNDANT AT THE BASE. SAMPLED. I SEAM ROOF ROCK.
71	146.53	146.64	0.11	70 08119	I	COAL LOSS	
71	146.64	146.80	0.16	70 08119	I	COAL	C-1. BLK. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	146.80	146.85	0.05	70 08119	I	COAL	C-3. BLK. SLD
71	146.85	146.88	0.03	70 08119	I	COAL	C-5. BLK. VSHRD
71	146.88	146.94	0.06	70 08119	I	COAL	C-4. BLK. VSHRD POSSIBLE CORE LOSS.
71	146.94	146.96	0.02	70 08119	I	COAL	C-1. BLK. BRKN
71	146.96	147.02	0.06	70 08119	I	COAL	C-2. BLK. VBRKN
71	147.02	147.07	0.05	70 08119	I	COAL	C-3. BLK. VBRKN

* DENOTES MEASURED BCA

40001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	147.07	147.11	0.04	70	08119 I	COAL	C-2. BLK. VBRKN
71	147.11	147.18	0.07	70	08119 I	COAL	C-5. BLK. VBRKN INTERBEDDED C-5 AND C-4.
71	147.18	147.33	0.15	71	08119 I	ROCK LOSS	
71	147.33	147.36	0.03	71	08119 I	COAL	C-1. BLK. VBRKN
71	147.36	147.39	0.03	71	08119 I	COAL	C-3. BLK. BRKN
71	147.39	147.55	0.16	71	08119 I	COAL	C-2. BLK. BRKN
71	147.55	147.57	0.02	71	08119 I	COAL	C-1. BLK. BRKN
71	147.57	147.61	0.04	71	08119 I	COAL	C-5. BLK. BRKN INTERBEDDED C-3 AND C-6.
71	147.61	147.72	0.11	71	08119 I	COAL	C-3. BLK. PHRD CARB MUDST PARTICLES INTERMIXED.
71	147.72	147.84	0.12	71	08119 I	COAL	C-4. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	147.84	147.94	0.10	71	08120 I	MUDSTONE	CARB. BLK. SHRD ABUNDANT PLANT FRAGMENTS.
71	147.94	148.06	0.12	71	08120 I	COAL	C-5. BLK. VBRKN
71	148.06	148.14	0.08	71	08120 I	MUDSTONE	CARB. BLK. SHRD CONSOLIDATED. ABUNDANT PLANT FRAGMENTS.
72	148.14	148.18	0.04	71	08121 I	COAL	C-5. BLK. VBRKN CARB MUDST INTERBEDDED. MINOR C-2 PARTI NGS.
72	148.18	148.21	0.03	71	08121 I	COAL	C-4. BLK. VBRKN
72	148.21	148.24	0.03	71	08121 I	COAL	C-5. BLK. PHRD INTERMIXED WITH CARB MUDST.
72	148.24	148.33	0.09	71	08121 I	COAL	C-4. BLK. BRKN
72	148.33	148.38	0.05	71	08121 I	COAL	C-3. BLK. BRKN SOME C-4 AND C-2 INTERBEDDING.
72	148.38	148.48	0.10	71	08121 I	COAL	C-3. BLK. PHRD SOME C-1 AND C-2 FRAGMENTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	148.48	148.67	0.19	71	08121	I	COAL	C-3.BLK.BRKN
72	148.67	148.79	0.12	71	08121	I	COAL	C-2.BLK.BRKN SOME C-1 AND C-3 BANDS.
72	148.79	148.82	0.03	71	08121	I	COAL	C-4.BLK.BRKN SOME C-2 BANDING.
72	148.82	148.87	0.05	71	08121	I	MUDSTONE	CARB.
72	148.87	148.91	0.04	71	08121	I	COAL	C-5.BLK.VBRKN SOME MUDST INTERBEDDING.
72	148.91	149.04	0.13	71	08121	I	COAL	C-2.BLK.BRKN SOME C-1 AND C-4 BANDS.
72	149.04	149.06	0.02	71	08121	I	COAL	C-5.BLK.BRKN SOME C-5 AND C-4 BANDS.
72	149.06	149.13	0.07	71	08121	I	COAL	C-2.BLK.BRKN MINOR C-3 BANDS.
72	149.13	149.14	0.01	71	08121	I	COAL	C-4.BLK.SLD
72	149.14	149.20	0.06	71	08121	I	COAL	C-1.BLK.BRKN MINOR C-2 BANDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	149.20	149.26	0.06	71	08121	I	COAL	C-2.BLK.BRKN
72	149.26	149.30	0.04	71	08121	I	COAL	C-1.BLK.BRKN
72	149.30	149.38	0.08	71	08121	I	COAL	C-2.BLK.BRKN
72	149.38	149.42	0.04	71	08121	I	MUDSTONE	CARB.BLK.SHRD
72	149.42	149.54	0.12	72	08121	I	COAL	C-2.BLK.BRKN MINOR C-4 BANDS PRESENT.
72	149.54	149.56	0.02	72	08121	I	COAL	C-5.BLK.SLD
72	149.56	149.59	0.03	72	08121	I	COAL	C-3.BLK.BRKN
72	149.59	149.63	0.04	72	08121	I	COAL	C-2.BLK.BRKN
72	149.63	149.65	0.02	72	08121	I	COAL	C-4.BLK.BRKN
72	149.65	149.72	0.07	72	08121	I	COAL	C-1.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	149.72	149.90	0.18	72 08121	I	COAL	C-3.BLK.BRKN MINOR C-1 BANDS.
72	149.90	150.07	0.17	72 08121	I	COAL	C-2.BLK.BRKN MINOR C-1 BANDS, MINOR C-4 BANDS.
72	150.07	150.10	0.03	72 08121	I	COAL	C-3.BLK.BRKN
72	150.10	150.14	0.04	72 08121	I	COAL	C-2.BLK.BRKN ABUNDANT C-1 BANDS, MINOR C-4 BANDS.
72	150.14	150.24	0.10	72 08121	I	COAL	C-3.BLK.BRKN
72	150.24	150.27	0.03	72 08121	I	COAL	C-4.BLK.BRKN
72	150.27	150.31	0.04	72 08121	I	COAL	C-5.BLK.BRKN
73	150.31	150.37	0.06	72 08121	I	COAL	C-5.BLK.PHRD
73	150.37	150.48	0.11	72 08121	I	COAL	C-1.BLK.BRKN VERY MINOR C-2 BANDS.
73	150.48	150.52	0.04	72 08121	I	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	150.52	150.65	0.13	72 08121	I	COAL	C-1.BLK.BRKN
73	150.65	150.77	0.12	72 08121	I	COAL	C-2.BLK.BRKN C-1 AND C-3 INTERBANDING.
73	150.77	150.81	0.04	72 08121	I	COAL	C-3.BLK.BRKN SOME C-2 BANDS AND C-4 BANDS.
73	150.81	150.85	0.04	72 08121	I	COAL	C-2.BLK.BRKN C-1 WITH MODERATE C-3 INTERBANDS.
73	150.85	150.87	0.02	72 08121	I	COAL	C-5.BLK.BRKN
73	150.87	150.92	0.05	72 08121	I	COAL	C-1.BLK.BRKN
73	150.92	150.96	0.04	72 08121	I	COAL	C-3.BLK.BRKN
73	150.96	151.03	0.07	72 08121	I	COAL	C-2.BLK.BRKN
73	151.03	151.09	0.06	72 08121	I	COAL	C-3.BLK.BRKN
73	151.09	151.12	0.03	72 08121	I	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	151.12	151.15	0.03	72	08121 I	COAL	C-3.BLK.BRKN
73	151.15	151.18	0.03	72	08121 I	COAL	C-5.BLK.BRKN
73	151.18	151.34	0.16	72	08122 I FLOOR	MUDSTONE	DK.GY.LAM.SLD MINOR THIN COAL PARTINGS. ABUNDANT PLANT FRAGS - NILSSONIA?. I SEAM FLOOR ROCK SAMPLED.
73	151.34	151.40	0.06	72	08122 I FLOOR	MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD INTERBEDDED SILTS AND MUDST. ABUNDANT PLANTS - NILSSONIA? NILSSONIA CANDENSIS. SHARP CONTACT AT BASE. I SEAM FLOOR ROCK SAMPLED.
73	151.40	151.44	0.04	72		SANDSTONE	FG.PR.LT.GY.THNB SHARP TOP GRADED BEDS, 5-15MM THICK. GRAIN SIZE RANGES FROM VFG-MG WITH VERY MINOR MUDST STRINGERS. SHARP BASE. TOP 1 CM SAMPLED. I SEAM FLOOR ROCK.
73	151.44	151.49	0.05	72		MUDSTONE	DK.GY.LAM.SLD VERY ABUNDANT PLANT HASH. NILSSONIA? SHARP BASE.
73	151.49	151.53	0.04	72		SANDSTONE	FG.PR.DK.GY.THNB.SLD AS ABOVE SS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	151.53	151.54	0.01	72		BENTONITE	LT.GY.VSHRD
73	151.54	151.66	0.12	72		MUDSTONE	SLTY.PR.DK.GY.LAM.SSD.SLD INTERLAMINATED SLTST AND MUDST WITH MINOR FG SS BEDS. SHARP CONTACT AT TOP AND BOTTOM. LOAD CAST INDICATES TOPS DOWN?
73	151.66	151.70	0.04	72		SANDSTONE	FG.MOD.LT.GY.THNB AS ABOVE SS. 2CM DISSEMINATED PYRITE LENSE 3MM THICK.
73	151.70	151.83	0.13	72		SILTSTONE	CLY.M.GY.LAM.SSD.SLD INTERLAMINATED SLTST AND SLTY MUDST. FRACTURE (1-3MM WIDE) WITH MG SS INFILL - SYNDEPOSITIONAL. FINES UPWARD.
73	151.83	151.93	0.10	73		SANDSTONE	FG.MOD.LT.GY.SLD FINES UPWARD.
73	151.93	151.99	0.06	73		SANDSTONE	MG.MOD.LT.GY.SSD.SLD VERY MINOR MUDST STRINGERS NEAR BASE. RARE MUDST RIP-UP NEAR BASE APPROX 0.5CM DIAMETER.
74	151.99	154.00	2.01	73		SANDSTONE	CG.VWEL.S-P.GY.THNB.BRKN POSSIBLE CORE LOSS. SLTST LENSE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	154.00	155.08	1.08	74			SANDSTONE	PBLY. CG. VHCL. S-P. GY. THNB BANDS OF CHERT AND SLTST PEBBLES (1CM) ABOUT 10C M THICK EVERY 50CM.
75	155.08	155.75	0.67	74			CONGLOMERATE	SSY. VCG. VPR. S-P. GY. SLD PEBBLES (0.5-3.0CM DIA): CHERT, SLTST, MUDST. CG. SS. MATRIX (APPROX. 30% MATRIX)
76	155.75	156.90	1.15	74			CONGLOMERATE	SSY. VCG. VPR. S-P. GY. BRKN AS ABOVE. POSSIBLE CORE LOSS.
76	156.90	157.72	0.82	75			ROCK LOSS	
76	157.72	157.94	0.22	75			SANDSTONE	PBLY. CG. MOD. S-P. GY. THNB. BRKN FEN CHERT & SLTST PEBBLES.
76	157.94	158.14	0.20	75			ROCK LOSS	
76	158.14	158.59	0.45	75			SANDSTONE	MG. VHCL. S-P. GY. THNB. SLD SLTST WISPS PRESENT. QZ FRACTURE FILL.
76	158.59	158.80	0.21	75			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	158.80	160.94	2.14	*76			SANDSTONE	SLTY. MG. VHCL. S-P. GY. THNB. SSD. BRKN AS ABOVE. GRADING TO SILTSTONE FOLLOWED BY COARSENING TO A CG SS. THEN MG SS W ITH SLTST BANDS 3CM THICK EVERY 10CM. L OAD CASTS - TOPS UP.
78	160.94	161.44	0.50	71			SANDSTONE	SLTY. MG. VHCL. S-P. GY. VTHNB. SLD QZ FRACTURE FILL. SLTST WISPS & LENSES
78	161.44	162.10	0.66	68			SANDSTONE	SLTY. MG. VHCL. S-P. GY. VTHNB. SLD AS ABOVE.
78	162.10	162.99	0.89	*65			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH VFG SS AND MUDST. L OAD CASTS INDICATE TOPS UP.
79	162.99	164.45	1.46	66			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH MUDST. TOPS UP. PYR ITE NODULES.
79	164.45	164.95	0.50	66			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. SSD. BRKN AS ABOVE. HIGHLY FRACTURED INFILLED WIT H MUD.
80	164.95	165.51	0.56	66			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. SSD. BRKN AS ABOVE. COARSENING TO A VFG SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	165.51	166.68	1.17	67			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. YTHNB. BIOTR BRKN SLTST WISPS. QTZ FRACTURE FILL. ALSO M UD FRACTURE FILL. POSSIBLE CORE LOSS.
81	166.68	167.24	0.56	67			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE. COARSENING OF SS. TOPS UP.
81	167.24	167.39	0.15	67			ROCK LOSS	
81	167.39	167.99	0.60	67			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. VBRKN AS ABOVE. INCREASING SLTST LAMS.
81	167.99	168.17	0.18	67			ROCK LOSS	
81	168.17	168.51	0.34	67			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. YTHNB. SSD VBRKN SLTST LAMS. TOPS UP. POSSIBLE CORE LOSS
81	168.51	168.71	0.20	68			ROCK LOSS	
82	168.71	170.47	1.76	*68			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. YTHNB. SSD VBRKN INTERBEDDED SLTST. SLUMP OR REACTION RI M FEATURE? TOPS UP. QTZ FRAC FILL. COAR SENING OF SS. IN PLACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	170.47	170.59	0.12	66			ROCK LOSS	
83	170.59	170.64	0.05	66			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. VTHNB. SSD VBRKN AS ABOVE.
83	170.64	170.67	0.03	66			ROCK LOSS	
83	170.67	171.90	1.23	65			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. VTHNB. SSD VBRKN AS ABOVE.
84	171.90	173.66	1.76	63			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. VTHNB. SSD VBRKN AS ABOVE.
84	173.66	173.88	0.22	61			ROCK LOSS	
85	173.88	176.58	2.70	*59			SILTSTONE	SSY. VFG. VHEL. S-P. GY. VTHNB. SSD. BRKN INTERBEDDED SS (VFG). LOAD CASTS - TOPS UP. BIOTRB.
86	176.58	176.76	0.18	63			SILTSTONE	SSY. VFG. VHEL. S-P. GY. VTHNB. SSD. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	176.76	178.27	1.51	*65			SILTSTONE	SSY.VFG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. BIOTRB.
86	178.27	178.43	0.16	71			MUDSTONE	CLYY.PR.M.GY.PWRD BRECCIATED. QTZ SEEN. POSSIBLE CORE LOSS.
86	178.43	178.49	0.06	72			ROCK LOSS	
87	178.49	179.36	0.87	*75			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN INTERLAMINATED WITH SLTST. PYRITIZATION OF SLTST LAMS. BANDS OF CLAY MUD. POSSIBLY FRACTURE FILL. TOPS UP.
87	179.36	180.27	0.91	75			MUDSTONE	BLK.LAM.BRKN ALMOST NO SLTST. MUD FRACTURE FILL.
88	180.27	182.34	2.07	75			MUDSTONE	BLK.LAM.SLD NO SLTST. BIVALVES COMMON. RARE PLANT IMPRESSIONS.
89	182.34	182.39	0.05	75			MUDSTONE	BLK.LAM.BRKN AS ABOVE.
89	182.39	183.69	1.30	75			MUDSTONE	SLTY.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. BIVALVES; FOSSIL FRAGMENTS, PLANT WASH.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	183.69	183.90	0.21	75			ROCK LOSS	
89	183.90	184.46	0.56	*75			SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.SSD.BRKN INTERLAMINATED MUDST. LOAD CASTS INDICATE TOPS UP. VFG SS INTERBEDS. FOSSIL FRAGMENTS. DISSEMINATED PYRITE.
90	184.46	185.30	0.84	77			SILTSTONE	VFG.VMEL.DK.GY.LAM.SSD.BRKN INTERLAMINATED WITH MUDST. LOAD CASTS INDICATE TOPS UP. MUDST FRACTURE FILL. 1 LARGE COALIFIED BAND WITH PLANT FOSSILS - 13CM THICK.
90	185.30	186.31	1.01	*80			SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.SSD.BRKN INTERLAMINATED MUDST. INCREASING SLTST CONTENT. FOSSIL FRAGMENT; COALIFIED. DISSEMINATED PYRITE.
91	186.31	187.28	0.97	77			SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.SSD.BRKN AS ABOVE.
91	187.28	188.25	0.97	74			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.BRKN BIVALVES & OTHER FOSSIL FRAGS.
92	188.25	190.22	1.97	69			MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.BRKN POSSIBLE CORE LOSS. DISSEMINATED PYRITE. FOSSIL FRAGMENTS ABUNDANT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	190.22	190.33	0.11	66		ROCK LOSS	
93	190.33	191.48	1.15	64		MUDSTONE	DK.GY.SLD HOMOGENOUS.
93	191.48	191.80	0.32	62		MUDSTONE	DK.GY.SLD HOMOGENOUS.
93	191.80	192.22	0.42	61	08123 H ROOF	MUDSTONE	DK.GY.LAM.SLD VERY THIN (<0.5MM) WISPY SLTST STRINGERS GETTING VERY ABUNDANT TOWARDS THE BASE. RARE PLANT FRAGMENTS, BOTTOM 15CM SAMPLED. H SEAM ROOF ROCK.
93	192.22	192.32	0.10	60	08123 H ROOF	MUDSTONE	CARB.DK.GY.LAM.BRKN MINOR SLTST STRINGERS. ABUNDANT STRINGERS OF DISSEMINATED PYRITE. MINOR CALCITE STRINGERS. MINOR COAL PARTINGS. SAMPLED. H SEAM ROOF ROCK.
93	192.32	192.34	0.02	60	08124 H	COAL	C-5.BLK.VBRKN INTERMIXED WITH CARB MUDST PARTICLES.
93	192.34	192.40	0.06	60	08124 H	COAL	C-4.BLK.VBRKN
94	192.40	192.53	0.13	60	08124 H	COAL	C-2.BLK.VBRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	192.53	192.61	0.08	59	08124 H	COAL	C-3.BLK.BRKN
94	192.61	192.64	0.03	59	08124 H	COAL	C-1.BLK.SLD
94	192.64	192.68	0.04	59	08124 H	COAL	C-2.BLK.BRKN ABUNDANT C-1 BANDS.
94	192.68	192.71	0.03	59	08124 H	COAL	C-3.BLK.SLD
94	192.71	192.72	0.01	59	08124 H	COAL	C-1.BLK.SLD
94	192.72	192.76	0.04	59	08124 H	COAL	C-3.BLK.SLD
94	192.76	192.95	0.19	58	08124 H	COAL	C-2.BLK.BRKN
94	192.95	193.00	0.05	58	08124 H	COAL	C-4.BLK.BRKN MINOR C-3 BANDS.
94	193.00	193.06	0.06	58	08124 H	COAL	C-5.BLK.BRKN
94	193.06	193.09	0.03	58	08124 H	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	193.09	193.11	0.02	58	08124	H	COAL	C-5. BLK. THNG. SLD INTERBEDDED WITH CARB MUDST.
94	193.11	193.34	0.23	57	08124	H	MUDSTONE	SSY. DK. GY. LAM. SSD. SLD RARE COAL PARTINGS. NUMEROUS PLANT FRAGMENTS. MILSSONIA SCHAUMBERGENSIS. FG SS INTERBEDS. 10-15MM THICK. SANDIER. TOHAR DS BASE.
94	193.34	193.47	0.13	57	08124	H	ROCK LOSS	
94	193.47	193.50	0.03	56	08124	H	COAL	C-5. BLK. SLD VERY MINOR C-3 PARTINGS.
94	193.50	193.52	0.02	56	08124	H	COAL	C-4. BLK. BRKN MINOR C-3 PARTINGS.
94	193.52	193.55	0.03	56	08124	H	COAL	C-3. BLK. BRKN
94	193.55	193.57	0.02	56	08124	H	COAL	C-2. BLK. BRKN
94	193.57	193.61	0.04	56	08124	H	COAL	C-5. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	193.61	193.65	0.04	56	08124	H	COAL	C-5. BLK. PHRD
94	193.65	193.76	0.11	56	08124	H	COAL	C-4. BLK. VBRKN
94	193.76	193.78	0.02	56	08124	H	COAL	C-5. BLK. BRKN C-1 PARTING PRESENT.
94	193.78	193.96	0.18	55	08124	H	COAL	C-3. BLK. BRKN
94	193.96	193.99	0.03	55	08124	H	COAL	C-5. BLK. SLD
94	193.99	194.00	0.01	55	08124	H	COAL	C-5. BLK. SLD
94	194.00	194.03	0.03	55	08124	H	COAL	C-3. BLK. SLD
94	194.03	194.05	0.02	55	08124	H	MUDSTONE	CARB. BLK. SLD
94	194.05	194.07	0.02	55	08124	H	COAL	C-5. BLK. SLD 3MM THICK. C-3 PARTINGS.
94	194.07	194.10	0.03	55	08124	H	COAL	C-5. BLK. BRKN C-4 AND C-6 BANDS VERY COMMON.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	194.10	194.12	0.02	54	08124 H	COAL	C-5.BLK.PHRD
94	194.12	194.15	0.03	54	08124 H	COAL	C-5.BLK.VBRKN C-1 BANDS (3-6MM THICK).
94	194.15	194.41	0.26	54	08124 H	COAL LOSS	
94	194.41	194.49	0.08	53	08124 H	ROCK LOSS	
94	194.49	194.84	0.35	53	08124 H	COAL LOSS	
94	194.84	194.87	0.03	52	08124 H	COAL LOSS	
94	194.87	195.05	0.18	52	08125 H FLOOR	MUDSTONE	CARB.BLK.VSHRD EXTREMELY SHEARED, POLISHED SURFACES. 5 AMPLED. H SEAM FLOOR ROCK.
95	195.05	195.16	0.11	51		SILTSTONE	CARB.VFG.VMEL.DK.GY.SSD.VBRKN WITH CARB MUDST. SHEARED LISTRIC SURFAC ES ON MUDST. POSSIBLE CORE LOSS.
95	195.16	196.31	1.15	49		MUDSTONE	CARB.BLK.LAM.VBRKN CLYD. COALIFIED PLANT FOSSILS. COAL STR INGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	196.31	196.78	0.47	*47		SANDSTONE	SLTY.FG.VMEL.M.GY.LAM.SSD.SLD INTERLAMINATED WITH MUDST AND SLTST. IN CREASING SSCONTENT. QTZ FILL FRACTURING
96	196.78	197.82	1.04	*66		SANDSTONE	SLTY.MG.VMEL.S-P.GY.VTHNB.SSD.BRKN SLTST LENSES AND LAMINATIONS. MUD FRACT URE FILL. SS GRADES INTO A SLTST WITH I NCREASING SLTST LAMS.
96	197.82	198.10	0.28	*65		SILTSTONE	SSY.VFG.VMEL.M.GY.LAM.SSD.BRKN INTERLAMINATED WITH MUDST & VFG SS. LOA D.CASTS INDICATE TOPS UP.
96	198.10	198.82	0.72	*65		SILTSTONE	SSY.VFG.VMEL.M.GY.LAM.SSD.BRKN AS ABOVE.
97	198.82	200.03	1.21	63		SILTSTONE	VFG.VMEL.DK.GY.LAM.VBRKN POSSIBLE CORE LOSS. INTERLAMINATED WITH MUDST. HIGHLY FRACTURED WITH QTZ & MUD FILL. SHEARED LISTRIC SURFACES. SOME VF G.SS.
97	200.03	200.19	0.16	62		SANDSTONE	SLTY.FG.VMEL.M.GY.SSD SLTST LAMS & LENSES. HIGHLY FRACTURED W ITH QTZ FILL.

* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH88009

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
97	200.19	200.89	0.70	62			SILTSTONE	CLYY.VFG.VWEL.BLK.LAM.BRKN INTERLAMINATED WITH MUDST. DISSEMINATED PYRITE. PLANT WASH. SHEARED LISTRIC SURFACES.
98	200.89	201.15	0.26	61			SILTSTONE	CLYY.VWEL.BLK.LAM.SLD AS ABOVE.
98	201.15	202.95	1.80	*59			SILTSTONE	CLYY.VWEL.BLK.LAM.SSD.SLD AS ABOVE. LOTS OF DISSEMINATED PYRITE. COAL STRINGERS. QTZ FRACTURE FILL. 1 BAND OF COARSER SLTST. PLANT FOSSIL FRAGMENTS.
99	202.95	204.18	1.23	*53			SILTSTONE	SSY.VFG.VWEL.DK.GY.VTHNB.BIOTR.SLD INTERBEDDED WITH VFG.SS.AND.MUDST. QTZ FRACTURE FILL. WRM BURROWS & LOAD CASTS TOPS UP. SOME DISSEMINATED PYRITE. COAL STRINGERS. END OF HOLE. DRILLER'S MARKER. TD = 204.18M.

* DENOTES MEASURED BCA
NEWPAGE

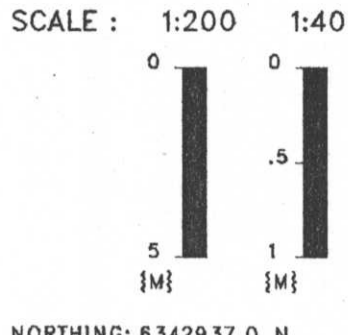
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88009

GEOLOGIST : KRAUS

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

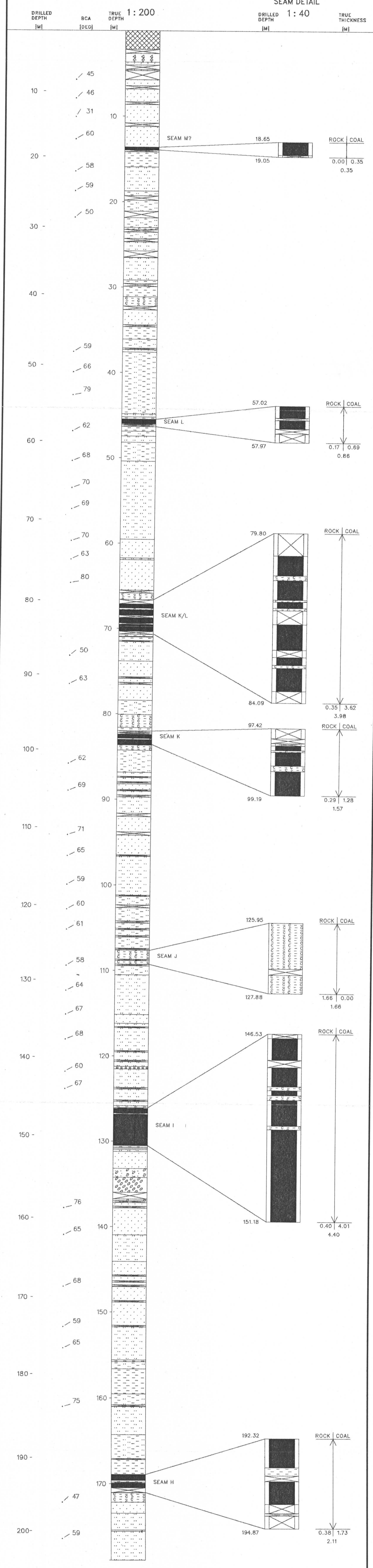


NORTHING: 6342937.0 N
 EASTING: 506557.3 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



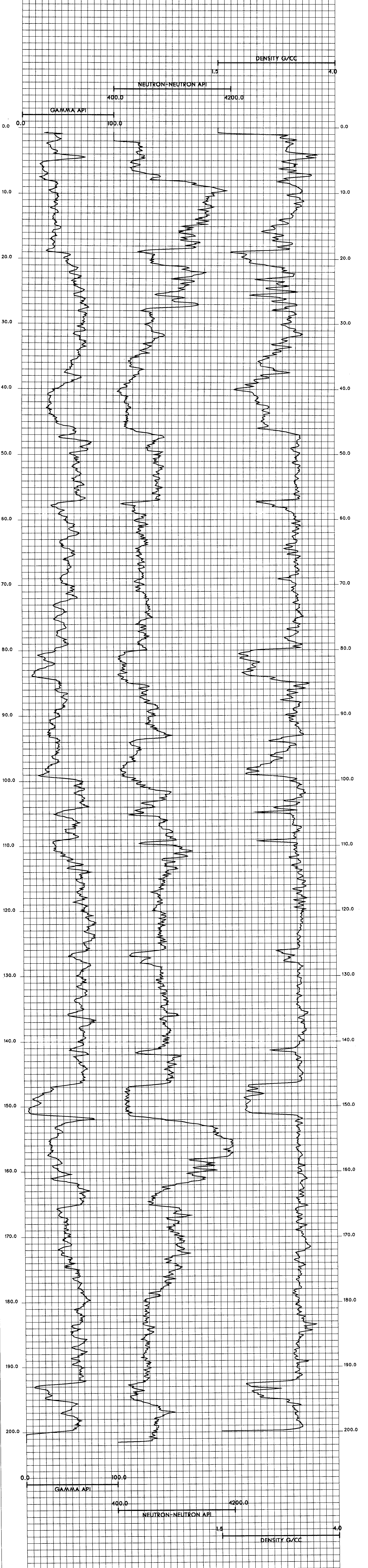
TOTAL: 204.18 TOTAL: 178.94

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88009 Log Date: 88-06-22 Company: CENTURY Geologist: KRAUS	Province: BC Northing: 6342940.00 Lat: 571353 Zone: 9 Easting: 506557.00 Long: 1285329 Measuring Point: GROUND LEVEL Elevation: 1637.9
Scale: 1 to 200.0 Depth Range: 0.0 to 206.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88010

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRBDH88010

DATE - 02/15/89

- HISTORY -

START DATE - 06/22/88
END DATE - 06/25/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - HEARN

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED: M, L, K/L, K, J, I, H.

- LOCATION -

PROVINCE - BC
ELEVATION - 1614.80

ZONE - 9
NORTHING - 6343278.35
EASTING - 507071.62

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571404
LONGITUDE - 1285258

- ORIENTATION -

LENGTH - 203.96
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DH88-010

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

M

4.12 m

L

2.85 m

K/L

4.80 m

K

2.13 m

J

0.50 m

I

4.12 m

H

4.24 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



GULF CANADA CORPORATION

COAL DIVISION

MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88010 SEAM : M INTERVAL(M) : 35.41 - 42.31 ELEVATION(M) : 1614.8
 GEOLOGIST : HEARN SCALE: 1:40 DATE : JAN 23/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG	
1, 2, 3, 4, 5, 6	35.41		0.18		48.8	8130	41	3.66 / 0.48	3.66 / 0.48	1.08	42.84	10.88	45.48	---	17.08	---
			0.13													
			0.13													
			0.20													
			0.42													
			0.27													
			(0.53)													
			0.18													
			0.20													
			0.27													
	40.07		(1.59)													
			0.13													
			(0.72)													
			0.18													
			0.27													
			(0.18)													
			(0.18)													
			(0.18)													
			(0.18)													
			(0.18)													
	42.31				48.8	8131	42	1.20 / 0.90	2.10	0.88	73.81	13.81	11.40	---	2.48	---

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	83			OVERBURDEN	CASING DEPTH.
1	4.57	4.93	0.36	83			SILTSTONE	CLYY, M-DK, GY, LAM, SSD, BRKN MUDDY SLTST WITH SMALL SCALE FRACTURES.
1	4.93	5.36	0.43	83			SILTSTONE	CLYY, M-DK, GY, SSD, YBRKN MUDDY SLTST WITH SMALL SCALE FRACTURES, QTZ VEIN FILL.
1	5.36	5.59	0.23	83			BRECCIA	M-DK, GY, LAM, SSD, SLD AS ABOVE.
1	5.59	6.54	0.95	83			SILTSTONE	M-DK, GY, SSD, YBRKN AS ABOVE.
2	6.54	6.83	0.29	83			SILTSTONE	CLYY, M-DK, GY, YBRKN MUDDY SLTST.
2	6.83	7.16	0.33	83			SILTSTONE	M-DK, GY, LAM, SSD, BRKN AS ABOVE.
2	7.16	7.30	0.14	83			SILTSTONE	M-DK, GY, SSD, YBRKN AS ABOVE.
2	7.30	7.35	0.05	83			BENTONITE	SSY, M-DK, GY, LAM, SLD
2	7.35	7.55	0.20	83			SILTSTONE	CLYY, M-DK, GY, YBRKN MUDDY SLTST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	7.55	8.24	0.69	83			SILTSTONE	M-DK, GY, LAM, SSD, BRKN AS ABOVE.
3	8.24	9.66	1.42	83			SILTSTONE	M-DK, GY, LAM, SSD, BRKN AS ABOVE WITH SMALL SCALE FRACTURES.
3	9.66	10.16	0.50	83			SANDSTONE	CLYY, MG, M, GY, LAM, SSD, BRKN MUDDY SS. WRMBUR. LOAD CASTS SHOW TOPS UP.
4	10.16	10.61	0.45	83			SANDSTONE	CLYY, MG, M, GY, SSD, BRKN MUDDY SS.
4	10.61	12.13	1.52	*83			SANDSTONE	MG, M, GY, LAM, SSD, BRKN LAMINATED MUDDY SLTST WITH THIN QTZ VEI N.
5	12.13	12.63	0.50	*76			SANDSTONE	MG, M, GY, LAM, SSD, BRKN AS ABOVE, WRMBUR.
5	12.63	13.76	1.13	76			SANDSTONE	MG, M, GY, LAM, SSD, YBRKN AS ABOVE, CENTER OF UNIT HAS MUD & QTZ FRACTURE FILL.
5	13.76	14.16	0.40	77			SILTSTONE	CLYY, M, GY, LAM, SSD, BRKN MUDDY SLTST.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	14.16	16.14	1.98	*77			SILTSTONE	CLYY, M. GY. LAM. SSD. BRKN MUDDY SLTST. 1CM CLAY INFILL OF FRACTURE. EXTENSIVE SLTST INTERBEDDED WITH FG SS WITH SSD.
7	16.14	16.94	0.80	*78			SILTSTONE	CLYY, M. GY. LAM. SSD. BRKN MUDDY SLTST. LOAD CASTS SHOWS TOPS UP. WRMBUR.
7	16.94	17.13	0.19	77			MUDSTONE	DK. GY. SMALL SCALE FRACTURES.
7	17.13	18.10	0.97	75			MUDSTONE	SEMI-CONSOLIDATED MUDST WITH BROKEN SLT ST ANGULAR CLASTS ON EITHER SIDE OF LARGE FRACTURE.
8	18.10	20.10	2.00	*72			SILTSTONE	CLYY, M-DK. GY. LAM. SSD. BRKN MUDDY SLTST. MINOR SSD.
9	20.10	20.33	0.23	66			SILTSTONE	CLYY, M-DK. GY. LAM. BRKN MUDDY SLTST. CLAYEY MUD FILLS A FEW FRACTURES. FEW QTZ VEINS (VERY THIN). LOAD CAST INDICATE TOPS UP.
9	20.33	21.88	1.55	*61			SILTSTONE	CLYY, LAM. MUDDY SLTST. 1CM QTZ VEIN. SMALL SCALE FAULTS ABUNDANT. LAMS OF MUD & FG SS. TRUNCATION OF DIPPING SLTST LAMELLAE WITH SHARP MUDSTONE CONTACT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	21.88	22.05	0.17	63			SANDSTONE	CLYY, FG. M. GY. LAM MUDDY SS WITH MUDSTONE WISPS & LAMELLAE
10	22.05	22.12	0.07	63			SANDSTONE	CLYY, MG. M. GY. LAM AS ABOVE.
10	22.12	22.92	0.80	64			SANDSTONE	CLYY, CG. M. GY. LAM AS ABOVE. ALSO SMALL SCALE FRACTURES.
10	22.92	23.09	0.17	66			MUDSTONE	SLTY, M-DK. GY. LAM CLAY & MUD INFILL IN SMALL SCALE FRACTURES. FEW VERY THIN QTZ VEINS.
10	23.09	23.41	0.32	66			SANDSTONE	CG, LT-M. GY. LAM SLTST LAMELLAE. RARE GREENISH WHITE FRACTURE FILL.
10	23.41	23.65	0.24	67			SANDSTONE	CG, LT-M. GY. TWIST-OFF; POSSIBLE CORE LOSS. BRECCIATED CG SS WITH CLAYEY FRACTURE FILL. ANGULAR CLASTS OF SLTST (UP TO 5CM PRESENT).
10	23.65	23.75	0.10	67			MUDSTONE	M-DK. GY. ANGULAR SLTST CLASTS (UP TO 2CM) IN UNCONSOLIDATED MUDSTONE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	23.75	23.94	0.19	68			MUDSTONE	SSY, M-DK. GY. LAM. SSD. BRKN GRADES INTO MG SANDSTONE.
10	23.94	24.05	0.11	68			SANDSTONE	CLYY. CG. LT-M. GY. LAM. BRKN MUDDY WISPS. SMALL SCALE FAULTS.
11	24.05	24.14	0.09	68			SANDSTONE	CG. LT-M. GY. SLD SMALL SCALE FAULTS.
11	24.14	24.24	0.10	68			SILTSTONE	CLYY. M-DK. GY. LAM. SSD. SLD SMALL SCALE FAULTS.
11	24.24	24.33	0.09	69			BENTONITE	M. GY. SLD
11	24.33	25.29	0.96	*70			SILTSTONE	CLYY. M-DK. GY. LAM. SSD. BRKN FAULTED WITH MUD INFILL & VERY THIN CG SS BED IN CENTER OF UNIT.
11	25.29	25.76	0.47	66			BRECCIA	M. GY. BRKN MUDDY SLTST BREC WITH QTZ VEINS. 2CM VE IN. OF QTZ. AT TOP OF UNIT.
11	25.76	26.11	0.35	63			SILTSTONE	CLYY. M. GY. LAM. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	26.11	26.41	0.30	*61			SANDSTONE	CLYY. MG. M. GY. LAM. SSD. BRKN MUDDY SS WITH VERY THIN SLTST BEDS & LAMELLAE WHICH GRADES INTO MUDDY SS WITH MUDSTONE WISPS & LAMELLAE. SSD AT TOP OF UNIT. FRACTURED UNIT. AQUA BLUE SOFT SHEET SILICATE INFILLS FRACTURES.
12	26.41	26.73	0.32	61			SANDSTONE	CG. LT-M. GY. BRKN FRACTURED.
12	26.73	28.13	1.40	63			SILTSTONE	M-DK. GY. LAM. SSD. BRKN MUDST & MG SS LAMELLAE WITH EXTENSIVE S SD. SOFT WHITE PASTE/SEMI CRYSTALLINE INFILLS FRACTURES. LOAD CASTS INDICATE TOPS UP.
13	28.13	29.38	1.25	65			SILTSTONE	M-DK. GY. LAM. SSD. BRKN AS ABOVE.
13	29.38	29.56	0.18	66			MUDSTONE	M-DK. GY. LAM. BRKN MUDST WITH MG SS LAMELLAE. FRACTURED.
13	29.56	29.69	0.13	66			BENTONITE	LT. GY. LAM. BRKN BENT WITH MUDST LAMELLAE.
13	29.69	29.84	0.15	66			SILTSTONE	M-DK. GY. LAM. SSD. SLD MUDST LAMELLAE AT BASAL UNIT GRADES INTO FG SS LAMELLAE AT TOP OF UNIT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	29.84	30.07	0.23	66		SANDSTONE	FG-M.GY.MAS SLTST CLASTS IMBEDDED IN SS AT BASAL UNIT. MASSIVE BEDDING GRADES INTO BIOTRB MUDDY SLTST AT TOP OF UNIT.
13	30.07	30.11	0.04	67		SILTSTONE	CLYY.M-DK.GY.LAM.SSD.SLD MUDST.LAMELLAE.
14	30.11	32.11	2.00	*68		MUDSTONE	M-DK.GY.LAM.SSD.BRKN FEH.HORM.BURROWS.
15	32.11	32.17	0.06	64		MUDSTONE	M-DK.GY.LAM.SSD.SLD SLTST.LAMELLAE.
15	32.17	32.49	0.32	63		SANDSTONE	MG.M-DK.GY MUDST.LOAD CASTS AT BASAL UNIT. THEN MA SSIVE SS BED SHOWS SHARP CONTACT INTO S S WITH MUDST.LAMELLAE & WISPS.
15	32.49	33.19	0.70	61		MUDSTONE	M-DK.GY.LAM.SSD.BRKN SLTST.LAMELLAE. FAULT WITH 4CM DISPLACE MENT AT BASE.
15	33.19	33.53	0.34	59		SANDSTONE	MG.LT-M.GY.LAM.SSD.SLD SLTST CLASTS AT BASE GRADE INTO SLTST.L AMELLAE AT TOP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.53	34.08	0.55	57		SILTSTONE	M-DK.GY.LAM.SSD.BRKN FG SS LAMELLAE AT BASE GRADE INTO SLTST LAMELLAE AT TOP OF UNIT. SOFT WHITE TO AQUA WHITE SEMI-CRYSTALLINE FRACTURE F ILL. SMALL SCALE FRACTURES.
16	34.08	34.38	0.30	56		SILTSTONE	SSY.DK.GY.LAM.SSD.SLD FG SS INTERBEDS IN MIDDLE OF UNIT 1-10W M THICK. LOAD CASTS INDICATE TOPS UP.
16	34.38	34.49	0.11	*55		SANDSTONE	SLTY.FG.LY.GY.LAM.SSD.SLD BIOTURBATED BEDDING. MINOR SLUMPING IND ICATES TOPS UP. THIN DK SLTST INTERLAM.
16	34.49	34.73	0.24	55		SILTSTONE	SSY.DK.GY.LAM.SSD.SLD FG SS INTERLAM. BEDDING CONTORTED FROM BIOTURBATION.
16	34.73	34.75	0.02	56		MUDSTONE	LY.GY.VSHRD SLIGHTLY BENTONITIC.
16	34.75	34.83	0.08	56		SILTSTONE	SSY.DK.GY.SSD.SLD LARGE SS LOAD CAST (3CM WIDE x 4CM LONG) INDICATES TOPS UP.
16	34.83	35.02	0.19	56		SILTSTONE	DK.GY.SLD HOMOGENOUS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.02	35.41	0.39	57	08129	M ROOF	SILTSTONE	DK. GY. THNB. BIOTR. SLD CONTORTED BEDDING LIKELY FROM BIOTURBATION. M SEAM ROOF ROCK. LOWER 25 CM SAMP LED.
16	35.41	35.49	0.08	57	08130	M	COAL	C-6. BLK. BRKN VERY ABUNDANT CALCITE VEINS. SLIGHTLY B RECCIATED.
16	35.49	35.62	0.13	57	08130	M	COAL	C-4. BLK. BRKN
16	35.62	35.69	0.07	58	08130	M	MUDSTONE	CARB. BLK. BRKN ABUNDANT CALCITE VEINS. POLISHED AND SH EARED ALONG BROKEN SURFACES.
16	35.69	35.73	0.04	58	08130	M	COAL	C-3. BLK. VBRKN
16	35.73	35.77	0.04	58	08130	M	COAL	C-5. BLK. PHRD CARB MUDST INTERMIXED.
16	35.77	35.81	0.04	58	08130	M	MUDSTONE	CARB. BLK. VBRKN
16	35.81	35.84	0.03	58	08130	M	COAL	C-5. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.84	35.89	0.05	58	08130	M	MUDSTONE	CARB. BLK. VSHRD INTERBEDDED C-6 BANDS.
16	35.89	35.93	0.04	58	08130	M	COAL	C-5. BLK. VBRKN INTERBEDDED CARB MUDST.
17	35.93	35.97	0.04	58	08130	M	COAL	C-3. BLK. VBRKN
17	35.97	36.01	0.04	58	08130	M	COAL	C-4. BLK. VBRKN
17	36.01	36.04	0.03	58	08130	M	COAL	C-5. BLK. SLD MUDST INTERBEDDING.
17	36.04	36.10	0.06	59	08130	M	MUDSTONE	CARB. BLK. SLD NUMEROUS COAL PARTINGS.
17	36.10	36.12	0.02	59	08130	M	COAL	C-5. BLK. SLD NUMEROUS MUDST PARTINGS.
17	36.12	36.14	0.02	59	08130	M	MUDSTONE	CARB. BLK. SLD NUMEROUS COAL PARTINGS.
17	36.14	36.21	0.07	59	08130	M	COAL	C-5. BLK. SLD NUMEROUS MUDST PARTINGS. ABUNDANT CALCITE VEINING. C-4 BANDS NEAR BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	36.21	36.24	0.03	59	08130	M	MUDSTONE	CARB. DK. GY. BRKN NUMEROUS COAL PARTINGS.
17	36.24	36.26	0.02	59	08130	M	COAL	C-4. BLK. SHRD
17	36.26	36.31	0.05	59	08130	M	MUDSTONE	CARB. BLK. BRKN NUMEROUS COAL STRINGERS.
17	36.31	36.34	0.03	59	08130	M	COAL	C-4. BLK. BRKN
17	36.34	36.40	0.06	59	08130	M	COAL	C-3. BLK. YBRKN ABUNDANT CALCITE VEINING.
17	36.40	37.01	0.61	60	08130	M	COAL LOSS	
17	37.01	37.12	0.11	61	08130	M	MUDSTONE	DK. GY. SLD HOMOGENEOUS, ABUNDANT CALCITE VEINING.
17	37.12	37.16	0.04	61	08130	M	COAL	C-4. BLK. BRKN
17	37.16	37.28	0.12	61	08130	M	COAL	C-3. BLK. BRKN
17	37.28	37.35	0.07	61	08130	M	COAL	C-4. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	37.35	37.39	0.04	61	08130	M	MUDSTONE	CARB. DK. GY. SLD
17	37.39	37.41	0.02	61	08130	M	COAL	C-4. BLK. BRKN
17	37.41	37.44	0.03	62	08130	M	COAL	C-5. BLK. SLD
17	37.44	37.48	0.04	62	08130	M	COAL	C-3. BLK. SLD INTERBANDED C-4 AND C-2.
17	37.48	37.55	0.07	62	08130	M	COAL	C-5. BLK. SLD SOME CARB MUDST INTERMIXED.
17	37.55	37.60	0.05	62	08130	M	COAL	C-3. BLK. BRKN
17	37.60	37.67	0.07	62	08130	M	COAL	C-4. BLK. SLD SOME C-3 BANDS PRESENT.
17	37.67	37.76	0.09	62	08130	M	COAL	C-3. BLK. SLD
17	37.76	37.79	0.03	62	08130	M	COAL	C-1. BLK. SLD
17	37.79	37.82	0.03	62	08130	M	COAL	C-4. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	37.82	37.86	0.04	62	08130	M	COAL	C-2, BLK, BRKN INTERBANDED C-1 AND C-3.
17	37.86	37.88	0.02	63	08130	M	MUDSTONE	CARB. DK. GY. SLD
17	37.88	37.91	0.03	63	08130	M	COAL	C-3, BLK, BRKN
17	37.91	37.98	0.07	63	08130	M	COAL	C-4, BLK, SLD MINOR C-3 AND C-5 BANDS.
17	37.98	38.02	0.04	63	08130	M	MUDSTONE	CARB. DK. GY. SLD
17	38.02	38.05	0.03	63	08130	M	COAL	C-4, BLK, SHRD HIGHLY POLISHED ON BROKEN SURFACES.
17	38.05	38.07	0.02	63	08130	M	COAL	C-1, BLK, SLD CORE TWIST-OFF AT BASE.
17	38.07	38.13	0.06	63	08130	M	COAL	C-5, BLK, SLD
17	38.13	38.16	0.03	63	08130	M	COAL	C-4, BLK, SLD
17	38.16	38.21	0.05	63	08130	M	COAL	C-1, BLK, SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	38.21	38.23	0.02	63	08130	M	COAL	C-4, BLK, SLD
17	38.23	38.25	0.02	63	08130	M	COAL	C-5, BLK, BRKN MINOR C-4 BANDS PRESENT.
17	38.25	38.30	0.05	63	08130	M	COAL	C-3, BLK, BRKN
17	38.30	38.32	0.02	63	08130	M	COAL	C-5, BLK, BRKN
18	38.32	40.07	1.75	65	08130	M	COAL LOSS	
18	40.07	40.21	0.14	67	08131	M	MUDSTONE	DK. GY. BRKN CORE TWIST-OFF AT BASE, POSSIBLE CORE LOSS.
18	40.21	40.98	0.77	68	08131	M	COAL LOSS	
18	40.98	41.02	0.04	69	08131	M	MUDSTONE	CARB. DK. GY. SLD
18	41.02	41.03	0.01	69	08131	M	COAL	C-4, BLK, SHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	41.03	41.06	0.03	69	08131 M	MUDSTONE	DK.GY.SSD.SLD CONTAINS NUMEROUS SLTY RIP-UP CLASTS 5 -15MM DIA.
18	41.06	41.09	0.03	70	08131 M	COAL	C-4.BLK.VSHRD ABUNDANT CALCITE VEINS 1-3MM THICK.
18	41.09	41.13	0.04	70	08131 M	MUDSTONE	DK.GY.LAM.SSD.BRKN LOAD CASTS INDICATE TOPS UP.
18	41.13	41.17	0.04	70	08131 M	COAL	C-6.BLK.LAM.VBRKN MUDST INTERLAMs, SOMEWHAT SHEARED.
18	41.17	41.22	0.05	70	08131 M	MUDSTONE	CARB.BLK.SHRD
18	41.22	41.28	0.06	70	08131 M	MUDSTONE	DK.GY.BRKN HOMOGENEOUS.
18	41.28	41.37	0.09	70	08131 M	MUDSTONE	CARB.BLK.VSHRD SOFT.
18	41.37	41.41	0.04	70	08131 M	MUDSTONE	DK.GY.BRKN
18	41.41	41.43	0.02	70	08131 M	MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED. NUMEROUS COAL FRAGME NTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	41.43	41.45	0.02	70	08131 M	MUDSTONE	DK.GY.BRKN
18	41.45	41.54	0.09	70	08131 M	MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED, COAL FRAGMENTS.
18	41.54	41.64	0.10	71	08131 M	MUDSTONE	SLTY.DK.GY.SLD CALCITE VEINING (RARE). CALCAREOUS.
18	41.64	41.69	0.05	71	08131 M	COAL	C-5.BLK.SHRD SOFT, UNLITHIFIED, NUMEROUS MUDST BANDS
18	41.69	41.75	0.06	71	08131 M	COAL	C-4.BLK.SHRD POLISHED BROKEN SURFACES, NUMEROUS MUDS T BANDS.
18	41.75	41.78	0.03	71	08131 M	COAL LOSS	
18	41.78	41.97	0.19	71	08131 M	ROCK LOSS	
18	41.97	42.13	0.16	72	08131 M	COAL LOSS	
18	42.13	42.20	0.07	72	08131 M	COAL	C-4.BLK.PHRD SOFT, EXTREMELY SHEARED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	42.20	42.22	0.02	72	08131	M	COAL	C-5, BLK, BRKN
18	42.22	42.24	0.02	72	08131	M	COAL	C-4, BLK, BRKN
18	42.24	42.29	0.05	72	08131	M	MUDSTONE	CARB. BLK, BRKN NUMEROUS THIN COAL PARTINGS.
18	42.29	42.31	0.02	72	08131	M	COAL	C-5, BLK, BRKN
18	42.31	42.44	0.13	72	08132	M FLOOR	MUDSTONE	DK, GY, LAM, SSD, SLD WISPY CALCITE STRINGERS. NUMEROUS WISPY COAL STRINGERS. M SEAM FLOOR ROCK. SAM PLED.
18	42.44	42.49	0.05	73	08132	M FLOOR	MUDSTONE	CARB. GY, SHRD M SEAM FLOOR ROCK. SAMPLED.
18	42.49	42.80	0.31	73	08132	M FLOOR	MUDSTONE	DK, GY, LAM, SLD TOP 7CM SAMPLED. M SEAM FLOOR ROCK.
18	42.80	42.93	0.13	73			MUDSTONE	DK, GY, VSHRD SOFT.
19	42.93	44.21	1.28	*75			MUDSTONE	M-DK, GY, BRKN COAL STRINGERS. 2CM CLAY BAND IN CENTER OF UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	44.21	45.03	0.82	76			MUDSTONE	SLTY, M-DK, GY, SSD, BRKN AS ABOVE BUT 4CM CLAY BAND IN CENTER.
20	45.03	46.36	1.33	*78			MUDSTONE	SLTY, M-DK, GY, LAM, SSD, BRKN SMALL SCALE FRACTURES. 9CM CLAY BAND IN CENTER OF UNIT. LOAD CAST NEAR BASE.
20	46.36	47.11	0.75	*82			SILTSTONE	CLYY, M-DK, GY, LAM, SSD, BRKN SPARSE COAL STRINGERS. LOAD CAST NEARBA SE. MRMBUR. S. COALIFIED PLANT MATERIAL.
20	47.11	47.15	0.04	80			ROCK LOSS	
21	47.15	47.37	0.22	79			SANDSTONE	FG, M-DK, GY, LAM, SSD, BRKN MUDDY SILTST & MUDST LAMELLAE. LOAD CAST SHOW TOPS UP.
21	47.37	49.06	1.69	*74			SANDSTONE	FG, M-DK, GY, LAM, SSD, BRKN AS ABOVE.
21	49.06	49.17	0.11	79			SANDSTONE	FG, M, GY, MAS, SLD
21	49.17	49.24	0.07	79			SANDSTONE	FG, M-DK, GY, LAM, SSD, SLD MUDDY SILTST & MUDST LAMELLAE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	49.24	50.36	1.12	*82			SANDSTONE	CG.LT-M.GY.LAM.BRKN MUDST WISPS. 4-5CM SLTST BAND NEAR TOP OF UNIT.
22	50.36	50.41	0.05	83			ROCK LOSS	
22	50.41	51.51	1.10	83			SANDSTONE	CG.LT-M.GY.LAM.BRKN MUDST WISPS. 3 CLAYEY FRACTURE FILLS (< 1CM) ABOUT 20CM APART AT BASE. SMALL SCALE QTZ FRACTURES AT CENTER OF UNIT.
23	51.51	53.51	2.00	85			SANDSTONE	CG.LT-M.GY.LAM.BRKN MUDST WISPS. FEW SOFT WHITE SEMI-CRYSTALLINE FRACTURE FILLS (SMALL SCALE FRACTURES). ABUNDANT RIP-UP SLTST CLASTS IN CENTER OF UNIT. 9.0CM BAND OF HEAVILY FRACTURED SS ABOUT 60CM FROM BASE OF UNIT.
23	53.51	53.61	0.10	86			SANDSTONE	CG.LT-M.GY.LAM.BRKN MUDST WISPS.
24	53.61	53.71	0.10	86			ROCK LOSS	
24	53.71	55.84	2.13	*87			SANDSTONE	CG.LT-M.GY.BRKN AS ABOVE WITH COAL STRINGERS. FEW SLTST RIP-UP CLASTS. SEVERAL SLTST AND MUDST VERY THIN BEDS ABOUT EVERY 25CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	55.84	55.94	0.10	87			ROCK LOSS	
25	55.94	56.39	0.45	88			SANDSTONE	CG.LT-M.GY.BRKN AS ABOVE.
25	56.39	56.82	0.43	88			SANDSTONE	CG.LT-M.GY.BRKN EXTENSIVE SMALL SCALE FRACTURES WITH CLAYEY FRACTURE INFILL.
25	56.82	57.65	0.83	*88			SANDSTONE	MG.LT-M.GY.BRKN SHARP BASAL CONTACT FROM SS TO VTHN SLTST BED AND FROM SLTST TO MG SS. SUBTLE LAMINATIONS IN BASAL 30CM OF UNIT WITH SSD. THIN QTZ VEINS THROUGHOUT.
26	57.65	57.70	0.05	87			ROCK LOSS	
26	57.70	59.04	1.34	86			SILTSTONE	CLYY.M-DK.GY.BRKN HEAVILY FRACTURED WITH CLAY INFILL. FEW VERY THIN QTZ VEINS.
26	59.04	59.51	0.47	85			SILTSTONE	CLYY.M-DK.GY.WRMBU.BRKN SSD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BDX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	59.51	59.54	0.03	85			ROCK LOSS	
26	59.54	59.73	0.19	85			MUDSTONE	M-DK.GY.SSD.SLD COAL STRINGERS.
27	59.73	60.81	1.08	84	08133	L ROOF	MUDSTONE	DK.GY.SLD HOMOGENEOUS. NUMEROUS PLANT FRAGMENTS INCLUDING SPHENOPTERIS. BROKEN SURFACE IN MIDDLE IS SLICKENSIDED. L SEAM ROOF ROCK. LOWER 25 CM SAMPLED.
27	60.81	61.97	1.16	82	08134	L	COAL LOSS	
27	61.97	62.01	0.04	82	08134	L	COAL	C-5.BLK.LAM.BRKN NUMEROUS MUDST INTERLAM.
27	62.01	62.09	0.08	81	08134	L	COAL	C-4.BLK.BRKN
27	62.09	62.32	0.23	81	08134	L	MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED. POSSIBLE FAULT ZONE.
27	62.32	62.67	0.35	81	08134	L	COAL LOSS	
27	62.67	62.69	0.02	81	08134	L	COAL	C-1.BLK.SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BDX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	62.69	62.71	0.02	81	08134	L	COAL	C-4.BLK.BRKN
27	62.71	62.91	0.20	80	08134	L	COAL	C-4.BLK.PHRD EXTREMELY POWDERED. POSSIBLE FAULT ZONE
27	62.91	63.04	0.13	80	08134	L	MUDSTONE	CARB.BLK.PHRD SOFT, UNLITHIFIED.
27	63.04	63.13	0.09	80	08134	L	COAL	C-4.BLK.PHRD EXTREMELY POWDERED.
28	63.13	63.25	0.12	80	08134	L	COAL	C-4.BLK.SHRD L SEAM FLOOR ROCK.
28	63.25	63.28	0.03	80	08134	L	MUDSTONE	CARB.BLK.VBRKN
28	63.28	63.40	0.12	80	08134	L	MUDSTONE	CARB.BLK.VSHRD SOFT, UNLITHIFIED.
28	63.40	63.51	0.11	80	08134	L	COAL	C-5.BLK.BRKN
28	63.51	63.57	0.06	79	08134	L	COAL	C-5.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	63.57	63.63	0.06	79	08134	L	MUDSTONE	CARB. BLK. SHRD
28	63.63	63.69	0.06	79	08134	L	COAL	C-5 BLK. BRKN INTERBEDDED C-4, C-5 AND CARB MUDST.
28	63.69	64.25	0.56	79	08135	L FLOOR	MUDSTONE	DK. GY. BRKN CRACKED. SHEARED ON BROKEN SURFACES. TA LC-LIKE MATERIAL ON FRACTURE SURFACES. TOP 25CM SAMPLED. L SEAM FLOOR ROCK.
28	64.25	65.12	0.87	78			MUDSTONE	SLTY. M. GY. SHRD CRACKED AND SHEARED. ABUNDANT PYRITE CUBES IN MIDDLE OF UNIT IN HIGHLY SHEARED AREA.
29	65.12	65.59	0.47	*77			SILTSTONE	CLY. M-DK. GY. LAM. BRKN HEAVILY FRACTURED.
29	65.59	66.49	0.90	77			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE WITH CLAY INFILL IN FRACTURES.
29	66.49	67.18	0.69	77			SANDSTONE	FG. LT-M. GY. LAM. BRKN MUDST WISPS & LAMELLAE.
30	67.18	67.86	0.68	76			SANDSTONE	FG. LT-M. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	67.86	68.11	0.25	76			SANDSTONE	S-P. GY. LAM. BRKN SPECKS OF PYRITE DISPersed THROUGHOUT.
30	68.11	68.70	0.59	76			SILTSTONE	CLY. M-DK. GY. LAM. BRKN MUDST LAMELLAE.
30	68.70	69.12	0.42	*76			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE.
31	69.12	71.08	1.96	*80			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE. LOAD CASTS SHOW TOPS UP.
31	71.08	71.19	0.11	82			SANDSTONE	M-DK. GY. LAM. SLD SLTST LAMELLAE.
32	71.19	73.33	2.14	*84			SANDSTONE	LT-M. GY. LAM. SLD AS ABOVE WITH SMALL SCALE FRACTURES. VE RY THIN SS BED IN CENTER IS NOT FRACTURED. SHEAR ZONE WITH QTZ & CLAY INFILL F OR 18CM AT BASE OF UNIT.
33	73.33	74.18	0.85	79			SILTSTONE	CLY. M-DK. GY. LAM. SSD. BRKN FEW QTZ FILLED FRACTURES (SMALL SCALE).
33	74.18	74.88	0.70	*77			SILTSTONE	CLY. M-DK. GY. LAM. BRKN COASTER LIKE; RHYTHMIC.
33	74.88	75.38	0.50	77			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: D0H8B010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	75.38	77.48	2.10	77		SILTSTONE	M-DK.GY.LAM.BRKN AS ABOVE.
35	77.48	77.87	0.39	77		SILTSTONE	M-DK.GY.LAM.BRKN AS ABOVE.
35	77.87	78.25	0.38	*77		SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE.
35	78.25	79.50	1.25	79		SILTSTONE	M-DK.GY.LAM.SSD AS ABOVE. HEAVILY FRACTURED WITH SMALL SCALE FRACTURES & MUDDY INFILL.
36	79.50	79.83	0.33	#80		SILTSTONE	CLYY.M-DK.GY.LAM.BRKN
36	79.83	80.70	0.87	80		SANDSTONE	HG.LT-M.GY.LAM.BRKN MUDST WISPS & LAMELLAE.
36	80.70	81.01	0.31	79		SILTSTONE	M.GY.SSD.BRKN
36	81.01	81.22	0.21	79		SILTSTONE	MUDST & FG SS LAMELLAE, FEW MUDST RIP-U P. CLASTS.
36	81.22	81.44	0.22	79		BENTONITE	LT.GY.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: D0H8B010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	81.44	81.49	0.05	79		SILTSTONE	LT-M.GY.BRKN
37	81.49	83.42	1.93	78 08136	K/L ROOF	SILTSTONE	M-DK.GY.LAM.SSD.BRKN SLTST WITH MUDST LAMELLAE. FAULTED WITH SOFT WHITE AQUA GREEN SEMI CRYSTALLINE INFILL IN FRACTURES. SHEAR ZONES. COAL STRINGERS. CLAY INFILL FAULTS AT BASE OF UNIT. K/L SEAM ROOF ROCK. SAMPLED TO MER 25CM.
37	83.42	83.52	0.10	77 08137	K/L	COAL	C-5.BLK.BRKN
37	83.52	83.64	0.12	77 08137	K/L	COAL	C-3.BLK.LAM.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	83.64	83.89	0.25	77	08137 K/L	COAL LOSS	
38	83.89	83.92	0.03	77	08137 K/L	COAL	C-5.BLK.BRKN CORE TWIST-OFF, POSSIBLE CORE LOSS.
38	83.92	83.95	0.03	77	08137 K/L	COAL	C-3.BLK.BRKN
38	83.95	84.09	0.14	77	08137 K/L	MUDSTONE	DK.BN.VSHRD SOFT, UNLITHIFIED MUD.
38	84.09	84.13	0.04	77	08137 K/L	COAL	C-5.BLK.BRKN
38	84.13	84.15	0.02	77	08137 K/L	COAL	C-2.BLK.BRKN
38	84.15	84.44	0.29	76	08137 K/L	COAL	C-5.BLK.PWRD EXTREMELY SHEARED.
38	84.44	84.47	0.03	76	08137 K/L	COAL	C-5.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	84.47	84.50	0.03	76	08137 K/L	MUDSTONE	CARB.BLK.VSHRD EXTREMELY SHEARED.
38	84.50	84.53	0.03	76	08137 K/L	COAL	C-5.BLK.BRKN
38	84.53	84.54	0.01	76	08137 K/L	COAL	C-3.BLK.BRKN
38	84.54	84.57	0.03	76	08137 K/L	COAL	C-4.BLK.BRKN
38	84.57	84.60	0.03	76	08137 K/L	COAL	C-3.BLK.BRKN
38	84.60	84.64	0.04	76	08137 K/L	COAL	C-4.BLK.BRKN
38	84.64	84.66	0.02	76	08137 K/L	COAL	C-2.BLK.BRKN
38	84.66	84.69	0.03	76	08137 K/L	COAL	C-3.BLK.BRKN
38	84.69	84.72	0.03	76	08137 K/L	COAL	C-1.BLK.BRKN
38	84.72	84.75	0.03	76	08137 K/L	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	84.75	84.82	0.07	76	08137	K/L	COAL	C-3.BLK.BRKN
38	84.82	84.84	0.02	76	08137	K/L	MUDSTONE	CARB.BLK.BRKN
38	84.84	85.10	0.26	76	08137	K/L	COAL LOSS	
38	85.10	85.14	0.04	76	08137	K/L	COAL	C-4.BLK.BRKN
38	85.14	85.30	0.16	76	08137	K/L	COAL	C-1.BLK.SLD
38	85.30	85.34	0.04	76	08137	K/L	COAL	C-5.BLK.SLD
38	85.34	85.36	0.02	76	08137	K/L	COAL	C-1.BLK.SLD
38	85.36	85.46	0.10	76	08137	K/L	COAL	C-5.BLK.SLD NUMEROUS THIN (3-5MM) C-1 PARTINGS.
38	85.46	85.49	0.03	76	08137	K/L	COAL	C-4.BLK.BRKN
38	85.49	85.53	0.04	76	08137	K/L	COAL	C-5.BLK.BRKN THIN (6MM) C-1 PARTINGS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	85.53	85.56	0.03	75	08137	K/L	COAL	C-2.BLK.BRKN
38	85.56	85.63	0.07	75	08137	K/L	COAL	C-3.BLK.BRKN NUMEROUS C-1 PARTINGS 3-6MM THICK. SOME C-6 PARTINGS 3-6CM THICK.
38	85.63	85.71	0.08	75	08137	K/L	COAL	C-5.BLK.BRKN NUMEROUS C-2 PARTINGS.
38	85.71	85.73	0.02	75	08137	K/L	COAL	C-3.BLK.BRKN
39	85.73	85.90	0.17	75	08137	K/L	MUDSTONE	CARB.DK.GY.LAM.VBRKN NUMEROUS COAL PARTINGS (C-4 - C-6). NUM EROUS PLANT FRAGMENTS PITYOPHYLLUM NORD ENSKIOLDII, CLADOPHLEBIS VIRGINIENSIS.
39	85.90	86.14	0.24	75	08137	K/L	ROCK LOSS	
39	86.14	86.17	0.03	75	08137	K/L	COAL LOSS	
39	86.17	86.21	0.04	75	08137	K/L	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	86.21	86.25	0.04	75	08137 K/L	COAL	C-5.BLK.BRKN NUMEROUS THIN (1-3MM) C-2 AND C-3 STRINGS.
39	86.25	86.27	0.02	75	08137 K/L	COAL	C-1.BLK.SLD
39	86.27	86.28	0.01	75	08137 K/L	COAL	C-5.BLK.SLD
39	86.28	86.34	0.06	75	08137 K/L	COAL	C-1.BLK.YBRKN
39	86.34	86.38	0.04	75	08137 K/L	COAL	C-2.BLK.BRKN NUMEROUS C-1 BANDS.
39	86.38	86.45	0.07	75	08137 K/L	COAL	C-1.BLK.BRKN
39	86.45	86.52	0.07	75	08137 K/L	COAL	C-3.BLK.BRKN NUMEROUS C-2 AND C-1 BANDS.
39	86.52	86.55	0.03	75	08137 K/L	COAL	C-4.BLK.BRKN NUMEROUS C-3 BANDS.
39	86.55	86.69	0.14	75	08137 K/L	COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	86.69	86.82	0.13	75	08137 K/L	ROCK LOSS	
39	86.82	87.13	0.31	74	08137 K/L	COAL LOSS	
39	87.13	87.32	0.19	74	08137 K/L	ROCK LOSS	
39	87.32	87.58	0.26	74	08137 K/L	COAL LOSS	
39	87.58	87.62	0.04	74	08137 K/L	MUDSTONE	DK.GY.VSHRD VERY SOFT, SHEARED & SLIGHTLY BENTONITIC.
39	87.62	87.65	0.03	74	08137 K/L	MUDSTONE	DK.GY.BRKN
39	87.65	87.68	0.03	74	08137 K/L	COAL	C-4.BLK.BRKN MINOR C-3 BANDS PRESENT.
39	87.68	87.73	0.05	74	08137 K/L	COAL	C-2.BLK.BRKN MINOR C-3 BANDS.
39	87.73	88.04	0.31	74	08137 K/L	COAL	C-5.BLK.PHRD INTERMIXED WITH CARB MUDST. C-3 FRAGMENTS QUITE COMMON.
39	88.04	88.10	0.06	74	08137 K/L	COAL	C-4.BLK.BRKN INTERBANDED C-3 AND C-5.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	88.10	88.12	0.02	74	08137	K/L	COAL	C-2. BLK. SLD
39	88.12	88.28	0.16	73	08137	K/L	COAL	C-5. BLK. VBRKN INTERBEDDED CARB MUDST 5-10MM THICK. IC M BAND OF PYRITE NODULES 3-6MM DIA IN M IDDLE OF UNIT.
39	88.28	88.37	0.09	73	08137	K/L	MUDSTONE	CARB. DK. GY. SHRD 1-2MM THICK. MISPY C-5 STRINGERS.
39	88.37	88.39	0.02	73	08137	K/L	COAL	C-1. BLK. VBRKN
39	88.39	88.58	0.19	73	08138	K/L FLOOR	MUDSTONE	CARB. BLK. LAM. BRKN NUMEROUS VERY THIN (<.5MM) MISPY COAL S. TRINGERS. K/L SEAM FLOOR ROCK. SAMPLED.
39	88.58	88.63	0.05	73	08138	K/L FLOOR	ROCK LOSS	SAMPLED. K/L SEAM FLOOR ROCK.
39	88.63	88.69	0.06	73	08138	K/L FLOOR	MUDSTONE	DK. GY. SHRD SHEARED. CORE TWIST-OFF AT TOP. POSSIBL E CORE LOSS. SAMPLED. K/L SEAM FLOOR RO CK.
39	88.69	88.73	0.04	73	08138	K/L FLOOR	MUDSTONE	CARB. BLK. BRKN ABUNDANT C-4 AND C-3 STRINGERS 1-3MM TH ICK. SAMPLED.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	88.73	88.75	0.02	73	08138	K/L FLOOR	COAL	C-5. BLK. VBRKN SAMPLED.
40	88.75	88.80	0.05	73	08138	K/L FLOOR	COAL	DK. GY. BRKN AS ABOVE. SAMPLED.
40	88.80	90.19	1.39	72	08138	K/L FLOOR	MUDSTONE	SLTY. M-DK. GY. LAM. BRKN COAL STRINGERS. FRACTURED. SAMPLED.
40	90.19	90.31	0.12	72			SILTSTONE	M-DK. GY. LAM. BRKN TWIST-OFF; POSSIBLE CORE LOSS.
40	90.31	90.79	0.48	72			MUDSTONE	SLTY. M-DK. GY. LAM. SLD COAL STRINGERS. FRACTURED.
41	90.79	92.03	1.24	*71			MUDSTONE	SLTY. M-DK. GY. LAM. BRKN
41	92.03	92.94	0.91	66			SILTSTONE	S-P. BRKN MUDSTONE LAMELLAE & MISPS GRADES FROM S LTST AT BASAL UNIT TO S-P FG SS AT TOP OF UNIT.
42	92.94	93.30	0.36	63			SANDSTONE	FG. LT-M. GY MUDSTONE LAMELLAE. MISPS & SS. LAMELLAE.
42	93.30	93.48	0.18	*62			SANDSTONE	FG. M-DK. GY. LAM. SSD. BRKN SLTST. RIP-UP CLASTS. MUDST LAMELLAE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	93.48	93.62	0.14	64			SANDSTONE	FG.LT-M.GY.BRKN FEW MUOBT WISPS IN MUDDY SS.
42	93.62	95.02	1.40	72			SANDSTONE	FG.LT-M.GY ABOVE SECTION REPEATS: MASSIVE FG MUDDY SS & LAMINATED SEQUENCE.
43	95.02	95.54	0.52	*82			SANDSTONE	FG.LT-M.GY.LAM.SSD.SLD AS ABOVE. LOAD CAST OF SLTST (UP TO 1CM) OCCURS IN WISPY SS UNIT.
43	95.54	96.39	0.85	81			SANDSTONE	FG.LT-M.GY.LAM.SSD.SLD AS ABOVE. SSD OCCURS IN LAMINATED MUOBT.
43	96.39	97.10	0.71	79			SANDSTONE	FG.LT-M.GY.LAM.SSD.SLD AS ABOVE.
44	97.10	97.34	0.24	78			SANDSTONE	FG.LT-M.GY.LAM.SLD AS ABOVE.
44	97.34	98.87	1.53	76			SANDSTONE	FG.LT-M.GY.MAS.SLD FEW RIP-UP CLASTS. FRACTURED WITH CLAYE Y INFILL.
44	98.87	99.11	0.24	74			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN VERY THIN MUOBT BEDS INTERBEDDED WITH S S.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	99.11	99.32	0.21	74			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN AS ABOVE.
45	99.32	99.48	0.16	73			SANDSTONE	MG.LT-M.GY
45	99.48	100.34	0.86	72			SANDSTONE	MG.LT-M.GY.VTHNB.BRKN THIN SS BEDS INTERBEDDED WITH VERY THIN SLTST. LAMINAE.
45	100.34	100.43	0.09	71			BENTONITE	LT.GY.SLD TUFFITE.
45	100.43	100.92	0.49	71			SANDSTONE	CLYY.CG.LT.GY.SLD
46	100.92	102.32	1.40	69			SANDSTONE	CG.LT.GY.BRKN HEAVILY FRACTURED WITH CLAYEY INFILL.
46	102.32	102.42	0.10	67			ROCK LOSS	
46	102.42	102.51	0.09	67			SANDSTONE	CG.LT-M.GY.BRKN AS ABOVE. TWIST-OFF; POSSIBLE CORE LOSS
46	102.51	102.71	0.20	67			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	102.71	103.02	0.31		66		SANDSTONE	CG.LT-M.GY.SLD
46	103.02	103.32	0.30		65		SANDSTONE	CG.LT-M.GY.SLD HEAVILY FRACTURED WITH CLAY INFILL.
47	103.32	104.12	0.80		64		SANDSTONE	CG.LT-M.GY.BRKN AS ABOVE.
47	104.12	105.37	1.25		*62		SILTSTONE	M.GY.LAM.SSD.BRKN MUDST LAMELLAE.
48	105.37	105.55	0.18		64		SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE.
48	105.55	106.06	0.51		66		SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE WITH MINOR SSD.
48	106.06	106.90	0.84		*68		MUDSTONE	M.GY.LAM.BRKN MUDST LAMELLAE.
48	106.90	107.00	0.10		68		ROCK LOSS	
48	107.00	107.15	0.15		68		MUDSTONE	M.GY.LAM.BRKN SHEARED MUDST.
48	107.15	107.25	0.10		68		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	107.25	107.59	0.34		68		MUDSTONE	M.GY.LAM.SSD.BRKN
49	107.59	108.37	0.78		69		MUDSTONE	DK.GY.BRKN HOMOGENEOUS. NUMEROUS PLANT FRAGMENTS.
49	108.37	108.72	0.35		69	08139 K ROOF	MUDSTONE	DK.GY.VBRKN MIXED WITH UNCONSOLIDATED MUD AND POWDE RED COAL FRAGMENTS. POSSIBLE CORE LOSS. K SEAM ROOF ROCK. LOWER 25CM SAMPLED.
49	108.72	108.75	0.03		69	08140 K	COAL	C-5.BLK.BRKN
49	108.75	108.81	0.06		69	08140 K	COAL	C-4.BLK.BRKN C-3 BANDS PRESENT.
49	108.81	108.88	0.07		69	08140 K	COAL	C-3.BLK.BRKN
49	108.88	108.93	0.05		69	08140 K	COAL	C-2.BLK.BRKN SOME C-1 AND C-3 INTERBANDING.
49	108.93	108.99	0.06		69	08140 K	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	108.99	109.03	0.04	69 08140	K	COAL	C-2.BLK.BRKN
49	109.03	109.09	0.06	69 08140	K	COAL	C-5.BLK.BRKN
49	109.09	109.13	0.04	69 08140	K	COAL	C-1.BLK.SLD
49	109.13	109.17	0.04	69 08140	K	COAL	C-2.BLK.SLD
49	109.17	109.26	0.09	69 08140	K	COAL	C-3.BLK.BRKN C-2 WITH C-5 PARTINGS.
49	109.26	109.28	0.02	69 08140	K	COAL	C-1.BLK.VBRKN
49	109.28	109.40	0.12	69 08140	K	COAL	C-4.BLK.VBRKN
50	109.40	109.47	0.07	69 08140	K	COAL	C-4.BLK.VBRKN
50	109.47	109.51	0.04	69 08140	K	COAL	C-5.BLK.BRKN
50	109.51	109.54	0.03	69 08140	K	COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	109.54	109.86	0.32	69 08140	K	COAL	C-4.BLK.PHRD MIXED WITH C-3, C-4, C-5 AND MUDST FRAG MENTS. EXTREMELY SHEARED.
50	109.86	109.93	0.07	69 08140	K	MUDSTONE	CARB.BLK.VSHRD
50	109.93	110.00	0.07	69 08140	K	ROCK LOSS	
50	110.00	110.03	0.03	69 08140	K	COAL	C-5.BLK.VBRKN
50	110.03	110.06	0.03	69 08140	K	COAL	C-2.BLK.BRKN
50	110.06	110.09	0.03	69 08140	K	COAL	C-4.BLK.BRKN
50	110.09	110.16	0.07	69 08140	K	MUDSTONE	CARB.BLK.SLD MINOR C-4 PARTINGS.
50	110.16	110.53	0.37	69 08140	K	ROCK LOSS	
50	110.53	110.55	0.02	69 08140	K	COAL	C-4.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	110.55	110.58	0.03	69	08140	K	COAL	C-5, BLK, VBRKN MUDST PARTINGS.
50	110.58	110.64	0.06	69	08140	K	COAL	C-5, BLK, VBRKN
50	110.64	110.81	0.17	69	08140	K	COAL	C-4, BLK, PHRD EXTREMELY SHEARED.
50	110.81	111.00	0.19	70	08140	K	COAL LOSS	
50	111.00	111.36	0.36	70	08141	K FLOOR	MUDSTONE	CARB. DK. GY. SHRD K SEAM FLOOR ROCK, SAMPLED UPPER 25 CM.
50	111.36	111.70	0.34	70			MUDSTONE	DK. GY. LAM. SHRD
50	111.70	111.81	0.11	70			MUDSTONE	M. GY. VSHRD SOFT, UNLITHIFIED.
50	111.81	111.94	0.13	70			MUDSTONE	DK. GY. LAM. SHRD
51	111.94	113.85	1.91	70			SILTSTONE	CLYY, M-DK. GY. LAM. SSD. BRKN
52	113.85	114.93	1.08	71			SILTSTONE	CLYY, M-DK. GY. LAM. BRKN MUDST. LAMELLAE, POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	114.93	115.47	0.54	71			SILTSTONE	CLYY, M-DK. GY. LAM. BRKN
52	115.47	115.84	0.37	71			SANDSTONE	MG. LT-M. GY. SLD
53	115.84	116.12	0.28	71			SILTSTONE	LT-M. GY. LAM. BRKN MUDST LAMELLAE.
53	116.12	116.50	0.38	71			SANDSTONE	MG. LT. GY. LAM. BRKN MUDST WISPS.
53	116.50	116.64	0.14	72			SILTSTONE	M. GY. LAM. BRKN HEAVILY FRACTURED SLTST WITH MUDDY INFIL.
53	116.64	118.13	1.49	72			SILTSTONE	CLYY, M. GY. LAM. SSD. VBRKN
54	118.13	118.28	0.15	72			SILTSTONE	CLYY, M. GY. LAM. SHRD FRACTURE INFILLED WITH 8CM THICK MUDST. NE FAULT GOUGE.
54	118.28	118.58	0.30	72			SILTSTONE	M. GY. LAM. SHRD AS ABOVE.
54	118.58	119.19	0.61	72			SILTSTONE	M. GY. LAM. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	119.19	120.19	1.00	73			SILTSTONE	CLYY.M.GY.LAM.VBRKN
55	120.19	120.65	0.46	73			SILTSTONE	M.GY.LAM.VBRKN AS ABOVE. COASTER LIKE.
55	120.65	120.76	0.11	*73			MUOSTONE	MG.LT-M.GY.SLD INTERBEDDED MUOSTONE & TUFFACEOUS LAMEL LAE WITH SS LENSES.
55	120.76	121.63	0.87	74			SANDSTONE	MG.LT-M.GY.SLD VERY NARROW QTZ VEINS (< 0.5CM) DISPERS ED.
55	121.63	122.14	0.51	74			SANDSTONE	MG.LT-M.GY.SLD AS ABOVE.
56	122.14	122.88	0.74	75			SANDSTONE	MG.LT-DK.GY.BRKN LT GREY & DK GREY ALTERNATING BANDS (AP PROX 12CM THICK). INVERTED LOAD CAST (5 CM)?
56	122.88	123.84	0.96	*76			SILTSTONE	M-DK.GY.LAM.BRKN LIGHT TUFFACEOUS-LIKE BANDS (1-7CM) IN A MUDDY SLTST. HEAVILY FRACTURED & BROK EN IN CENTER OF UNIT WITH QTZ & CLAYEY INFILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	123.84	124.23	0.39	75			SILTSTONE	CLYY.M-DK.GY.LAM.BRKN
57	124.23	124.75	0.52	74			SILTSTONE	M-DK.GY.LAM.BRKN VERY THIN TUFFACEOUS-LIKE BAND IN CENTE R OF UNIT.
57	124.75	126.27	1.52	73			SILTSTONE	M-DK.GY.LAM.BRKN VERY NARROW CARBONATE VEINS THROUGHOUT THE BASAL UNIT.
58	126.27	127.97	1.70	*70			SILTSTONE	M-DK.GY.LAM.BRKN CONTEMPORANEOUS FRACTURE FILL WITH MUO S LAMELLAE.
58	127.97	128.33	0.36	71			SILTSTONE	CLYY.M-DK.GY.LAM.BRKN
59	128.33	130.07	1.74	71			SILTSTONE	CLYY.M-DK.GY.LAM.BRKN
59	130.07	130.34	0.27	*72			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	130.34	131.06	0.72	72			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.
60	131.06	132.44	1.38	73			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.
61	132.44	134.05	1.61	73			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.
61	134.05	134.55	0.50	*74			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.
62	134.55	136.68	2.13	*76			SILTSTONE	M-DK.GY.LAM.BRKN COASTERS.
62	136.68	136.98	0.30	65			MUDSTONE	SLTY.DK.GY.LAM.VBRKN INTERLAMINATED SLTST AND MUDST. VERY TH IN (<5MM) CRACKS INFILLED WITH CALCITE MICRO-FAULTS 1-2MM ALONG CRACKS - DEX TRAL. SHEARED AND POLISHED.
63	136.98	137.07	0.09	64			MUDSTONE	DK.GY.SHRD VERY BROKEN UP. GRAVEL MIXED IN CORE. POSSIBLE CORE LOSS.
63	137.07	137.10	0.03	63			SANDSTONE	CLY. FG.LT.GY.VBRKN GRANULAR SS. VERY BROKEN UP - POSSIBLE FAULT ZONE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	137.10	137.28	0.18	62			ROCK LOSS	
63	137.28	138.10	0.82	*58			MUDSTONE	SLTY.DK.GY.LAM.SSD.BRKN LOAD CASTS INDICATE TOPS UP. SLTST INTE RLAMINAE IN MUDST.
63	138.10	138.16	0.06	57			MUDSTONE	LT.GY.SHRD TUFFACEOUS.
63	138.16	138.57	0.41	56			MUDSTONE	DK.GY.LAM.BRKN MINOR COAL PARTINGS.
63	138.57	138.71	0.14	55 99999 J			MUDSTONE	CARB.DK.GY.SHRD MINOR COAL STRINGERS.
63	138.71	138.76	0.05	55 99999 J			MUDSTONE	DK.GY.PHRD
63	138.76	138.82	0.06	55 99999 J			MUDSTONE	DK.GY.VBRKN PITYOPHYLLUM NORDENSKIOLDII AND OTHER P LANT.FRAGS.
64	138.82	138.99	0.17	54 99999 J			ROCK LOSS	
64	138.99	139.19	0.20	54 99999 J			MUDSTONE	M-DK.GY.BRKN COALIFIED MUDST - SHEARED.

* DENOTES MEASURED BCA

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	139.19	139.72	0.53	53			SILTSTONE	CLYY, LT-M. GY. LAM. BRKN EXTREMELY FRACTURED WITH CLAYEY INFILL.
64	139.72	140.32	0.60	51			SILTSTONE	LT-M. GY. BRKN FAULT GOUGE.
64	140.32	140.98	0.66	49			SILTSTONE	LT-M. GY. BRKN AS ABOVE.
65	140.98	142.88	1.90	*45			SILTSTONE	LT-M. GY. BRKN AS ABOVE WITH LARGER CLASTS OF BROKEN S LTST (SOME AT LEAST AS WIDE AS CORE) AN D. FEW WITH VERY THIN CARBONATE VEINS.
66	142.88	143.22	0.34	46			SILTSTONE	LT-M. GY. LAM EXTREMELY FRACTURED WITH CLAYEY INFILL, MUDDY SLTST. FRACTURE DISPLACEMENT (LE SS 1CM).
66	143.22	144.24	1.02	*46			SILTSTONE	CLYY, M. GY. LAM. BRKN FRACTURE DISPLACEMENT (< 1CM). 4CM THICK FAULT GOUGE AT BASE OF UNIT.
66	144.24	144.64	0.40	46			SANDSTONE	MG. LT-DK. GY. LAM. SSD. VBRKN SLTST. LAMELLAE, FRACTURE DISPLACEMENT (< < 1CM THICK). LOAD CASTS SHOW TOPS UP.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	144.64	145.16	0.52	*46			SILTSTONE	LT-M. GY. LAM BASAL UNIT BEGINS WITH 1CM CONSOLIDATED UNIT, GRADES INTO HEAVILY FRACTURED UN IT WITH CLAYEY INFILL (APPROX 15CM) THE N FAULT GOUGE (APPROX 15CM). TOPPED BY FRACTURED UNIT.
67	145.16	145.51	0.35	*71			SANDSTONE	MG. LT-M. GY. BRKN FRACTURED. VERY THIN QTZ VEIN.
67	145.51	146.06	0.55	68			SILTSTONE	M. GY. LAM. BRKN FRACTURED SLTST WITH CLAYEY INFILL AND FAULT GOUGE. TWIST-OFF AT BASE OF UNIT. POSSIBLE CORE LOSS.
67	146.06	146.54	0.48	*65			SILTSTONE	LT-M. GY. LAM. BRKN SEVERAL VERY THIN SS BANDS WITH SLTST R IP-UP CLASTS. FEW SS LENSES. SPARSE VER Y THIN CARBONATE VEINS AT BASE OF UNIT.
68	146.54	148.39	1.85	*67			SILTSTONE	CLYY, LT-M. GY. LAM. VBRKN EXTENSIVE FRACTURING & CLAY INFILL IN CE NTER OF THE UNIT (APPROX 35CM THICK).
69	148.39	148.87	0.48	*71			SILTSTONE	CLYY, LT-M. GY. LAM. VBRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	148.87	150.17	1.30	71			SILTSTONE	LT-M.GY.LAM.VBRKN AS ABOVE. POSSIBLE TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS.
70	150.17	150.37	0.20	70			SILTSTONE	CLYY.LT-H.GY.LAM.VBRKN
70	150.37	150.77	0.40	70			SILTSTONE	LT-M.GY.LAM.BRKN AS ABOVE. TWIST-OFF AT TOP OF UNIT; POSSIBLE CORE LOSS.
70	150.77	151.69	0.92	*70			SANDSTONE	CLYY.FG.LI-M.GY.LAM.BRKN EXTREMELY FRACTURED WITH CLAYEY INFILL (GRADES IN TO FAULT GOUGE) IN TOP HALF OF UNIT. POSSIBLE TWIST-OFF AT BASE OF UNIT; POSSIBLE CORE LOSS.
71	151.69	153.19	1.50	*72			MUDSTONE	CLYY.LI.GY.LAM.BRKN TUFFITE - THINLY INTERBEDDED & INTERLAMINATED MUDST & TUFFITE. MUDST BANDS SHOW SHARP CONTRAST AGAINST THE TUFFITE. WITH MIXING COMMON. MINOR SSD. FRACTURED & SLIGHTLY FAULTED AT CENTRE OF UNIT. RAPID GRADATIONAL CONTACT WITH UNDERLYING BENTONITE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	153.19	153.40	0.21	71	10388		BENTONITE	LT.GY.BRKN GRADES INTO OVERLYING FRACTURED TUFFITE (GOUGE). VERY ABRUPT LOWER CONTACT.
71	153.40	153.66	0.26	71			SILTSTONE	M.GY.LAM.BRKN SHEARED.
72	153.66	154.37	0.71	70			MUDSTONE	M.GY.VBRKN BRECCIATED - POSSIBLE FAULT ZONE.
72	154.37	154.41	0.04	70	08142	I ROOF	MUDSTONE	CARB.BLK.VSHRD VERY SOFT, UNCONSOLIDATED. NUMEROUS C-5 FRAGMENTS. I SEAM ROOF ROCK. SAMPLED.
72	154.41	154.57	0.16	70	08142	I ROOF	MUDSTONE	M.GY.VBRKN BRECCIATED - POSSIBLE FAULT ZONE. I SEAM ROOF ROCK. SAMPLED.
72	154.57	154.64	0.07	69	08142	I ROOF	MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED. ABUNDANT COAL PARTICLES. I SEAM ROOF ROCK. SAMPLED.
72	154.64	154.90	0.26	69	08143	I	COAL LOSS	
72	154.90	154.93	0.03	69	08143	I	COAL	C-4.BLK.PHRD EXTREMELY SHEARED. MIXED WITH CARB MUD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	154.93	155.01	0.08	69 08143	I	MUDSTONE	CARB. BLK. PHRD SOFT, EXTREMELY SHEARED, CONTAINS C-4 P ARTICLES.
72	155.01	155.08	0.07	69 08143	I	COAL	C-4. BLK. PHRD EXTREMELY SHEARED, MUDST, C-1, C-2, C-3 PARTICLES INTERMIXED.
72	155.08	155.11	0.03	69 08143	I	MUDSTONE	CARB. BLK. PHRD MINOR COAL INTERMIXING.
72	155.11	155.13	0.02	69 08143	I	COAL	C-4. BLK. VBRKN INTERBANDED C-5 AND C-2.
72	155.13	155.16	0.03	69 08143	I	COAL	C-2. BLK. VBRKN MINOR C-4 BANDS.
72	155.16	155.20	0.04	69 08143	I	COAL	C-3. BLK. PHRD ABUNDANT C-2 AND C-4 FRAGMENTS.
72	155.20	155.26	0.06	69 08143	I	COAL	C-4. BLK. PHRD
72	155.26	155.32	0.06	69 08143	I	COAL	C-5. BLK. PHRD SOFT, C-4 FRAGMENTS MIXED WITH CARB MUD ST.
72	155.32	155.78	0.46	68 08143	I	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	155.78	155.84	0.06	68 08144	I	ROCK LOSS	
72	155.84	155.95	0.11	68 08144	I	MUDSTONE	CARB. BLK. VSHRD MORE CARBONACEOUS TOWARDS BASE. SOFT, U NCONSOLIDATED.
72	155.95	155.99	0.04	68 08144	I	MUDSTONE	CARB. DK. GY. SHRD
72	155.99	156.02	0.03	68 08144	I	COAL	C-3. BLK. BRKN
72	156.02	156.13	0.11	68 08144	I	MUDSTONE	CARB. BLK. PHRD MUSH, SOFT.
73	156.13	156.19	0.06	68 08144	I	MUDSTONE	DK. GY. SHRD
73	156.19	156.75	0.56	67 08145	I	COAL	C-4. BLK. PHRD SOME MUDST INTERMIXING.
73	156.75	156.85	0.10	67 08145	I	COAL	C-3. BLK. PHRD SOME MUDST INTERMIXING.
73	156.85	157.89	1.04	66 08145	I	COAL	C-4. BLK. SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	157.89	158.29	0.40	65	08145	I	COAL	C-5.BLK.PHRD
73	158.29	158.86	0.57	65	08145	I	COAL LOSS	
73	158.86	159.01	0.15	64	08145	I	COAL	C-4.BLK.PHRD
73	159.01	159.12	0.11	64	08145	I	COAL LOSS	
73	159.12	159.19	0.07	64	08146	I FLOOR	MUDSTONE	CARB.BLK.SHRD I SEAM FLOOR ROCK. SAMPLED.
74	159.19	159.50	0.31	64			SANDSTONE	MG.M-DK.GY.SLD FAULT GOUGE WITH CLAYEY INFILL.
74	159.50	160.52	1.02	63			SANDSTONE	MG.M-DK.GY.SLD
74	160.52	160.60	0.08	62			SANDSTONE	MG.M-DK.GY.BRKN
74	160.60	161.19	0.59	62			BRECCIA	CG.LY-M.GY.BRKN CG SS, CARBONATE & QTZ.
75	161.19	162.46	1.27	*61			BRECCIA	CG.LY-M.GY.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	162.46	162.93	0.47	65			CONGLOMERATE	PBL.M-DK.GY.BRKN SLTST, CHERT, & QTZ ROUNDED TO SUBANGUL AR GRAINS IN A CONGLOMERATE TO PEBBLY F INE GRAINED SS.
75	162.93	163.13	0.20	66			CONGLOMERATE	PBL.PR.M-DK.GY.BRKN AS ABOVE.
76	163.13	163.43	0.30	67			SANDSTONE	MG.M.GY.VBRKN
76	163.43	163.53	0.10	68			ROCK LOSS	
76	163.53	163.73	0.20	68			CONGLOMERATE	PBL.PR.LT-DK.GY.BRKN SLTST, CHERT, & QTZ ROUNDED TO SUBANGUL AR GRAINS IN A CONGLOMERATE TO PEBBLY F INE GRAINED SS.
76	163.73	164.63	0.90	71			SANDSTONE	MG.M.GY.BRKN HEAVILY FRACTURED, FILLED WITH MUD AND QTZ.
76	164.63	165.30	0.67	*74			SILTSTONE	CLYY.W.GY.LAM.BRKN MUDST LAMELLAE HEAVILY FRACTURED WITH M UD & QTZ FRACTURE FILL.
77	165.30	166.28	0.98	*68			SILTSTONE	M.GY.LAM.BRKN MUDSTONE LAMELLAE HEAVILY FRACTURED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	166.28	167.20	0.92	69		SILTSTONE	M.GY.LAM.BRKN AS ABOVE, BUT LESS FRACTURED.
77	167.20	167.38	0.18	70		MUDSTONE	M.GY.LAM COALIFIED MUDST.
78	167.38	167.97	0.59	71		MUDSTONE	M.GY.LAM.BRKN AS ABOVE. SHEARED.
78	167.97	169.17	1.20	*72		SANDSTONE	FG.M.GY.BRKN HEAVILY FRACTURED WITH CLAYEY INFILL. V ERY FINE QTZ VEINS.
78	169.17	169.27	0.10	72		ROCK LOSS	
79	169.27	170.58	1.31	*72		SANDSTONE	FG.W.GY.BRKN FRACTURED.
79	170.58	171.21	0.63	76		SANDSTONE	FG.W.GY.VBRKN HEAVILY FRACTURED WITH MUD INFILL.
79	171.21	171.35	0.14	78		ROCK LOSS	
80	171.35	171.56	0.21	79		SANDSTONE	FG.LT-M.GY.LAM.BRKN FRACTURED. MUDST LAMELLAE.
80	171.56	172.43	0.87	*81		SILTSTONE	LAM.SSD.BRKN MUDST LAMELLAE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	172.43	172.83	0.40	81		ROCK LOSS	
80	172.83	173.63	0.80	81		SANDSTONE	FG.LT-M.GY.LAM.BRKN THIST-OFF AT TOP OF UNIT; POSSIBLE CORE LOSS. FRACTURED. VTHIN CARBONATE VEINS
81	173.63	175.80	2.17	*81		SANDSTONE	FG.LT-M.GY.LAM.BRKN SLTST LAMELLAE.
82	175.80	175.97	0.17	79		SANDSTONE	FG.LT-M.GY.LAM.BRKN AS ABOVE. PLANT HASH IN LAMELLAE.
82	175.97	177.01	1.04	78		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDST LAMELLAE WITH VERY THIN FG SS BED IN CENTER OF UNIT.
82	177.01	177.79	0.78	*76		SILTSTONE	M-DK.GY.LAM.SSD.VBRKN MUDST LAMELLAE. HEAVILY FRACTURED WITH MUD INFILL.
82	177.79	177.89	0.10	77		ROCK LOSS	
83	177.89	178.20	0.31	78		SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE. SHEAR ZONE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	178.20	178.99	0.79	*79			MUDSTONE	DK.GY.BRKN SPARSE SLTST LAMELLAE. BIVALVE (< 1CM). PYRITIZED BIVALVES.
83	178.99	180.09	1.10	79			MUDSTONE	DK.GY FEW FRACTURES WITH UP TO 1CM MUD INFILL & BIVALVE (< 1CM).
84	180.09	181.68	1.59	80			MUDSTONE	DK.GY.MAS.BRKN FEW FRACTURES WITH MUD INFILL. PLANT HA SH. BIVALVES.
84	181.68	182.14	0.46	80			MUDSTONE	DK.GY.MAS.BRKN HEAVILY FRACTURED WITH MUD & OTZ INFILL & BIVALVES (UP TO 4CM).
85	182.14	184.27	2.13	*81			MUDSTONE	DK.GY.LAM.BRKN MUDDY SLTST LAMELLAE. MINOR SSD. TWIST- OFF. POSSIBLE CORE LOSS AT TOP OF UNIT.
86	184.27	185.14	0.87	*70			MUDSTONE	DK.GY.LAM.BRKN MUDDY SLTST LAMELLAE. MINOR SSD. PYRITE CRYSTALS. FEW SS LENSES (< 1CM).
86	185.14	186.34	1.20	67			MUDSTONE	DK.GY.MAS.BRKN HEAVILY FRACTURED. MUD INFILL OF FRACTU RES AT BASE OF UNIT. PYRITE CRYSTALS. PL ANT HASH.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	186.34	186.44	0.10	65			ROCK LOSS	
87	186.44	186.88	0.44	64			MUDSTONE	DK.GY.MAS.BRKN PLANT HASH. PYRITE CRYSTALS.
87	186.88	188.26	1.38	*61			MUDSTONE	DK.GY.MAS.BRKN HEAVILY FRACTURED. MUD INFILL OF FRACTU RES. FEW LARGE PYRITE BLSRS. PLANT HASH
87	188.26	188.46	0.20	60			MUDSTONE	DK.GY.VBRKN COALIFIED MUDST. SHEARED.
87	188.46	188.56	0.10	60			ROCK LOSS	
88	188.56	190.55	1.99	*59			MUDSTONE	N-DK.GY.MAS.BRKN AS ABOVE. COAL STRINGERS. PLANT HASH.
89	190.55	191.48	0.93	*75	08126	H ROOR	MUDSTONE	DK.GY.BRKN BIVALVES. LOWER 13CM SAMPLED. H SEAM RO OF ROCK.
89	191.48	191.60	0.12	74	08126	H ROOR	MUDSTONE	DK.GY SAMPLED. H SEAM ROOF ROCK.
89	191.60	191.67	0.07	74	08127	H	COAL	C-5.BLK.PHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	191.67	191.70	0.03	74	08127	H	COAL	C-3.BLK.PHRD C-2 AND C-4 FRAGMENTS.
89	191.70	191.74	0.04	74	08127	H	COAL	C-2.BLK.VBRKN
89	191.74	191.87	0.13	73	08127	H	COAL	C-4.BLK.PHRD C-3 AND C-5 FRAGMENTS MIXED IN WITH C-4
89	191.87	192.38	0.51	73	08127	H	COAL LOSS	
89	192.38	192.40	0.02	72	08127	H	MUDSTONE	CARB.BLK.VSHRD SOFT, UNCONSOLIDATED.
89	192.40	192.45	0.05	72	08127	H	COAL	C-3.BLK.PHRD MINOR C-2 AND C-4 FRAGMENTS.
89	192.45	192.55	0.10	72	08127	H	COAL	C-4.BLK.PHRD C-3 BANDS PRESENT (1-10MM THICK).
89	192.55	192.58	0.03	72	08127	H	COAL	C-2.BLK.VBRKN
89	192.58	192.61	0.03	72	08127	H	COAL	C-3.BLK.BRKN MINOR CALCITE VEINS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	192.61	192.65	0.04	72	08127	H	COAL	C-4.BLK
90	192.65	192.69	0.04	72	08127	H	COAL	C-2.BLK.VBRKN
90	192.69	192.72	0.03	72	08127	H	COAL	C-4.BLK.BRKN MINOR C-3 BANDS.
90	192.72	192.77	0.05	72	08127	H	COAL	C-4.BLK.BRKN MINOR C-1 BANDING.
90	192.77	192.81	0.04	71	08127	H	COAL	C-5.BLK.VBRKN
90	192.81	192.91	0.10	71	08127	H	MUDSTONE	BLK.SHRD
90	192.91	192.97	0.06	71	08127	H	COAL	C-4.BLK.BRKN C-1 BANDS (1-5MM THICK).
90	192.97	193.07	0.10	71	08127	H	COAL	C-2.BLK.BRKN C-1 AND C-3 INTERBANDING.
90	193.07	193.14	0.07	71	08127	H	COAL	C-4.BLK.BRKN ABUNDANT C-2 BANDING.
90	193.14	193.17	0.03	71	08127	H	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	193.17	193.22	0.05	71	08127 H	MUDSTONE	CARB. BLK. SHRD
90	193.22	193.28	0.06	71	08127 H	COAL	C-4. BLK. BRKN MINOR C-3 BANDS.
90	193.28	193.34	0.06	70	08127 H	COAL	C-3. BLK. BRKN INTERBEDDED C-2 AND C-4.
90	193.34	193.36	0.02	70	08127 H	COAL	C-5. BLK. SLD
90	193.36	193.40	0.04	70	08127 H	COAL	C-1. BLK. BRKN
90	193.40	193.45	0.05	70	08127 H	MUDSTONE	CARB. BLK. SLD
90	193.45	193.48	0.03	70	08127 H	COAL	C-5. BLK. SLD
90	193.48	193.51	0.03	70	08127 H	COAL	C-3. BLK. SLD
90	193.51	193.57	0.06	70	08127 H	COAL	C-5. BLK. SLD
90	193.57	193.62	0.05	70	08127 H	MUDSTONE	CARB. BLK. SLD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	193.62	193.70	0.08	70	08127 H	COAL	C-5. BLK. BRKN MINOR C-4 BANDS.
90	193.70	193.74	0.04	70	08127 H	MUDSTONE	CARB. BLK. SHRD SOFT, UNCONSOLIDATED.
90	193.74	193.78	0.04	70	08127 H	COAL	C-5. BLK. BRKN
90	193.78	193.85	0.07	69	08127 H	COAL	C-2. BLK. BRKN
90	193.85	194.03	0.18	69	08127 H	COAL	C-1. BLK. BRKN
90	194.03	194.16	0.13	69	08127 H	COAL	C-3. BLK. BRKN INTERBANDED WITH C-2 AND C-4.
90	194.16	194.26	0.10	69	08127 H	COAL	C-2. BLK. BRKN C-1 WITH C-3 INTERBANDED.
90	194.26	194.31	0.05	68	08127 H	COAL	C-1. BLK. BRKN
90	194.31	194.36	0.05	68	08127 H	COAL	C-2. BLK. BRKN
91	194.36	194.56	0.20	68	08127 H	COAL	C-2. BLK. BRKN INTERBANDED C-1 AND C-3.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA TO	SEAM ID	LITHOLOGY	DESCRIPTION
91	194.56	194.71	0.15	68	08127 H	COAL	C-3. BLK. BRKN INTERBANDED C-2 AND C-3.
91	194.71	194.99	0.28	67	08127 H	COAL	C-2. BLK. BRKN INTERBANDED C-1 AND C-3.
91	194.99	195.04	0.05	67	08127 H	MUDSTONE	CARB. BLK. SHRD NUMEROUS C-4 FRAGMENTS.
91	195.04	195.08	0.04	67	08127 H	COAL	C-3. BLK. YBRKN INTERBANDED C-2 AND C-4.
91	195.08	195.21	0.13	67	08127 H	COAL	C-4. BLK. YBRKN NUMEROUS C-3 BANDS.
91	195.21	195.25	0.04	67	08127 H	MUDSTONE	CARB. BLK. BRKN C-5 BANDS ARE PREVALENT.
91	195.25	195.45	0.20	66	08127 H	COAL	C-4. BLK. PNRD CARB MUDST AND C-3 FRAGMENTS PREVALENT.
91	195.45	195.93	0.48	66	08127 H	COAL LOSS	
91	195.93	196.14	0.21	65	08127 H	COAL	C-5. BLK. PNRD INTERMIXED WITH C-3 FRAGMENTS AND CARB MUDST.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA TO	SEAM ID	LITHOLOGY	DESCRIPTION
91	196.14	196.44	0.30	64	08128 H FLOOR	MUDSTONE	DK. GY. SHRD HOMOGENEOUS. H SEAM FLOOR ROCK. UPPER 2 5 CM SAMPLED.
91	196.44	196.54	0.10	64		MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN SILTY MUDST WITH BLACK MISPY MUDST INTE RLAMS.
92	196.54	197.71	1.17	63		MUDSTONE	SLTY. M-DK. GY. MAS. YBRKN AS ABOVE.
92	197.71	198.38	0.67	61		ROCK LOSS	
92	198.38	198.68	0.30	*60		SANDSTONE	MG. M. GY. LAM. BRKN MUDST LAMELLAE.
93	198.68	199.45	0.77	62		SANDSTONE	CG. M. GY. LAM. BRKN AS ABOVE.
93	199.45	199.69	0.24	64		SANDSTONE	CG. W. GY. LAM. RIPMK. BRKN SLTST RIP-UP CLASTS FROM 2MM - 5.0CM.
93	199.69	200.59	0.90	*66		SANDSTONE	CG. W. GY. LAM. RIPMK. BRKN WIDE QTZ VEIN (< 3CM). SLTST MISPS.
94	200.59	200.98	0.39	66		SANDSTONE	MG. M. GY. LAM. SLD SLTST LAMELLAE.

* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH88010

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	200.98	201.96	0.98	*66			SANDSTONE	MG. M. GY. LAM. RIPMK. BRKN SLTST LAMELLAE. COAL STRINGERS. COALIFIED PLANT MATERIAL. RIP-UP CLASTS 0.5 - 4.0CM.
94	201.96	202.17	0.21	69			SANDSTONE	CG. M. GY. LAM. SSD. BRKN SLTST LAMELLAE. WHITE ANGULAR GRAINS GIVE APPEARANCE OF MILKY WAY. PLANT FRAGMENTS.
94	202.17	202.56	0.39	70			SANDSTONE	CG. M. GY. BRKN FEW VERY THIN QTZ VEINS.
95	202.56	203.08	0.52	72			SANDSTONE	CG. M. GY. RIPMK. BRKN RIP-UPS (UP TO 4CM).
95	203.08	203.96	0.88	*75			SILTSTONE	M-DK. GY. BRKN MUDST LAMELLAE. MUD INFILLS. FRACTURES. PLANT FRAGMENTS. END OF HOLE. TD = 203.96.

* DENOTES MEASURED BCA NEWPAGE

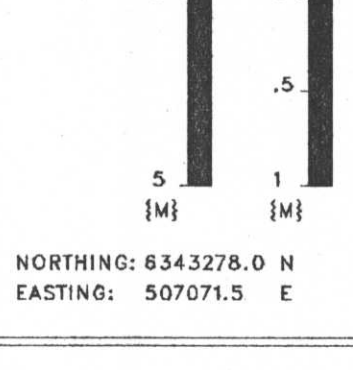
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88010

GEOLOGIST : HEARN

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

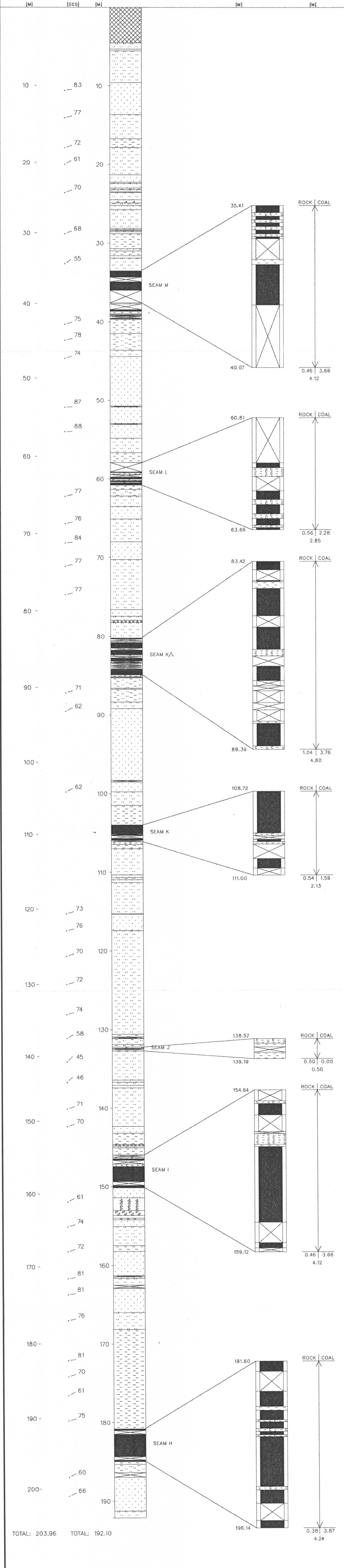


NORTHING: 6343278.0 N
 EASTING: 507071.5 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



748

Gulf Canada Resources Limited Coal Division

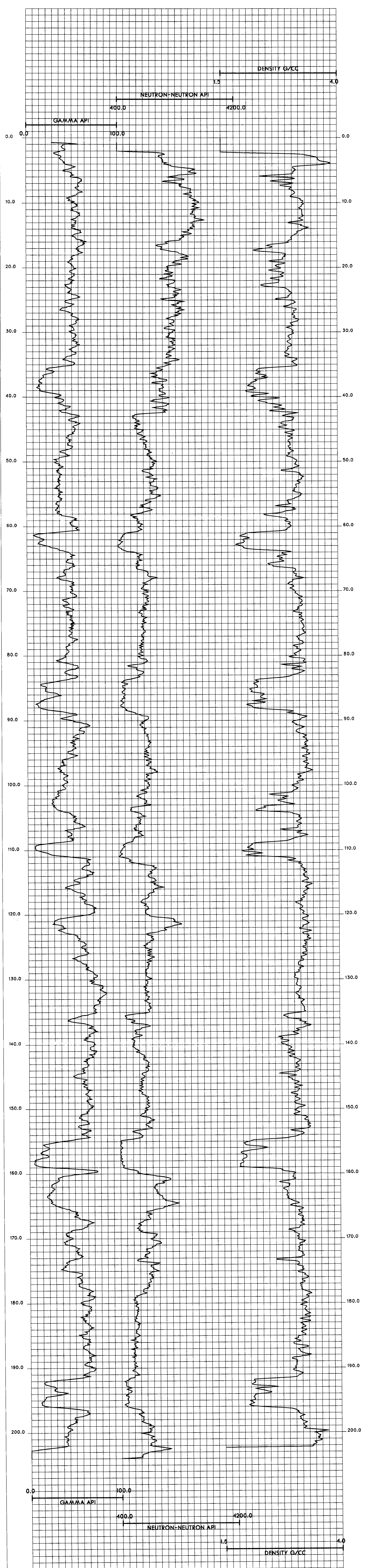
Geophysical Log

Datasource: KPNLRDDH88010	Province: BC	Northing: 6343280.00	Lat: 571404
Log Date: 88-06-23	Zone: 9	Easting: 507072.00	Long: 1285258
Company: CENTURY	Measuring Point: GROUND LEVEL	Elevation: 1614.8	
Geologist: HEARN			

Scale: 1 to 200.0
Depth Range: 0.0 to 208.0
True Thickness: NO

Comments:
1. LOGGED THROUGH RODS
2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88011

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88011

DATE - 02/15/89

- HISTORY -

START DATE - 06/22/88

END DATE - 06/25/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - ETMANSKI

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - EIGHT SEAMS INTERSECTED: H,I,J,K,K/L,?,?,L.

- LOCATION -

PROVINCE - BC
ELEVATION - 1519.94

ZONE - 9
NORTHING - 6344372.61
EASTING - 507948.54

LICENCE/LEASE NUMBER - 7145

LATITUDE - 571439
LONGITUDE - 1285206

- ORIENTATION -

LENGTH - 243.68

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 12.19
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-011

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

L

0.79 m

?

2.94 m

?

6.62 m

K/L

1.72 m

K

6.52 m

J

0.66 m

I

4.89 m

H

3.94 m



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	12.19	12.19	12			OVERBURDEN	CASING DEPTH.
1	12.19	12.39	0.20	12			OVERBURDEN	OVERBURDEN.
1	12.39	13.06	0.67	*12			SANDSTONE	CLYY.MG.MOD.M.GY.VTHNB.SSD.BRKN THIN WHISPS OF MUDST BEDS. SSD NEAR BEG INNING OF SECTION. SLUMP FEATURE.
1	13.06	14.02	0.96	14			SANDSTONE	CLYY.MG.MOD.M.GY.VBRKN QTZ FILLED FRACTURES. BANDS OF BROKEN S S AND MUD 1.0-5.0CM THICK, CARBONATED M UDST.
1	14.02	14.11	0.09	15			SANDSTONE	CLYY.MG.MOD.M.GY.VTHNB.SLD VERY THIN WHISPS FO MUDST.
2	14.11	16.06	1.95	*17			SANDSTONE	CLYY.MG.MOD.LT-M.GY.VTHNB.SSD.BRKN VERY THIN LAMINATED BEDS. BANDS OF CLAY & SS (VERY SOFT AND CRUMBLY). RIP UP C LASTS BREAKS VERY EASY. SLICKENSIDES OF ZONE FRACTURES. ODD QTZ FILLED FRACTUR ES.
3	16.06	17.06	1.00	*31			SANDSTONE	CLYY.MG.MOD.LT-M.GY.VTHNB.BRKN AS ABOVE.
3	17.06	17.52	0.46	35			SANDSTONE	CLYY.MG.MOD.LT-M.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	17.52	17.95	0.43	*37			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.SSD.VBRKN HIGH CONTENT OF MUDST. VERY CHURNED UP SSD. SHEAR ZONE FRACTURES. RIP-UP CLAST S.
4	17.95	19.45	1.50	*46			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE.
4	19.45	19.85	0.40	*34			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.BRKN VERY FRACTURED AREA WITH QTZ & CARBONAT ED MUD FILL. SHEAR ZONE FRACTURES.
5	19.85	20.84	0.99	*44			SANDSTONE	CLYY.MG.MOD.LT.GY.VTHNB.BRKN QTZ FILLED FRACTURE 4CM THICK, 7CM FROM FRONT OF SECTION. YOU CAN SEE THE CRYST ALS. CLAY AND SS MIXED TOGETHER TO FOR M BANDS. SHEAR ZONE SURFACES.
5	20.84	21.81	0.97	*62			SANDSTONE	CLYY.MG.LT.GY.LAM.BRKN QTZ FILLED FRACTURES. CLAY & SS MIXTURE FILLED FRACTURES. SHEAR ZONE SURFACES.
6	21.81	23.04	1.23	*48			SANDSTONE	CLYY.MG.MOD.LT.GY.LAM.BRKN VEIN LIKE QTZ FILLED FRACTURES. LOAD CA STS. SOME FRACTURES ARE SHEAR ZONE SURF ACES. BANDS OF CLAY WHISPIER THAN BANDS OF MUDST. FINER GRAIN SS IN PLACES.

* DENOTES MEASURED BCA

FORM
4001

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	23.04	23.84	0.80	*34			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, BRKN AS ABOVE.
7	23.84	25.94	2.10	*60			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, SLD AS ABOVE.
8	25.94	26.21	0.27	*59			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, SLD AS ABOVE.
8	26.21	27.98	1.77	*52			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, SLD AS ABOVE.
9	27.98	29.01	1.03	*32			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, SLD AS ABOVE.
9	29.01	29.24	0.23	*35			SANDSTONE	CLYY, FG, LT, GY, LAM, SLD AS ABOVE. FINER GRAINED SS.
9	29.24	30.10	0.86	*48			SANDSTONE	CLYY, MG, MOD, LT, GY, LAM, SLD AS ABOVE. LOAD CASTS. BANDS OF CLAY. LAMINATED BANDS OF MUDST.
10	30.10	31.45	1.35	*34	08167	L ROOF	SANDSTONE	MG, MOD, LT, GY, LAM, SLD QTZ FILLED FRACTURES. SLTST MISPS. LOWE R 25 CM SAMPLED. L SEAM ROOF ROCK.
10	31.45	31.54	0.09	36	08168	L	COAL	C-3, DK, GY, BRKN C-2 INTERLAM WITH C-4.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	31.54	31.59	0.05	37	08168	L	COAL	C-3, DK, GY, BRKN C-3 INTERLAM WITH C-4.
10	31.59	31.64	0.05	37	08168	L	COAL	C-3, DK, GY, YBRKN
10	31.64	31.67	0.03	37	08168	L	COAL	C-2, DK, GY, YBRKN
10	31.67	31.71	0.04	37	08168	L	MUDSTONE	CARB, DK, GY, SHRD QTZ VEIN. INTERLAM C-4.
10	31.71	31.79	0.08	37	08168	L	MUDSTONE	DK, GY, SHRD SOME COAL FRAG.
10	31.79	31.81	0.02	37	08168	L	COAL	C-5, DK, GY, SHRD C-4 & MUDST LAMS.
10	31.81	31.87	0.06	37	08168	L	COAL	C-3, DK, GY, SHRD
10	31.87	32.01	0.14	38	08168	L	COAL	C-4, DK, GY, SHRD
10	32.01	32.15	0.14	38	08168	L	COAL	C-4, DK, GY, SHRD WITH MUDST LAMELLAE.
11	32.15	32.18	0.03	38	08168	L	COAL	C-5, DK, GY, VSHRD WITH C-3 LAMELLAE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	32.18	32.25	0.07	39	08168	L	COAL	C-4, DK. GY. SHRD WITH C-3 LAMELLAE.
11	32.25	32.30	0.05	39	08168	L	COAL	C-3, DK. GY. SHRD WITH C-4 LAMELLAE.
11	32.30	32.36	0.06	39	08168	L	COAL	C-3, DK. GY. SHRD WITH C-2 LAMELLAE.
11	32.36	32.40	0.04	39	08168	L	COAL	C-3, DK. GY. BRKN WITH C-4 LAMELLAE.
11	32.40	32.45	0.05	39	08168	L	COAL	C-5, DK. GY. BRKN CALCAREOUS.
11	32.45	32.55	0.10	40	08168	L	COAL	C-4, DK. GY. VBRKN MINOR C-3 LAMELLAE.
11	32.55	32.72	0.17	40	08168	L	COAL LOSS	
11	32.72	32.81	0.09	40	08169	L FLOOR	MUDSTONE	CARB. DK. GY. BRKN THIST-OFF. POSSIBLE CORE LOSS. L SEAM FLOOR ROCK. SAMPLED.
11	32.81	33.00	0.19	41	08169	L FLOOR	MUDSTONE	M. DK. GY. BRKN OTZ FRACTURE FILL. UPPER 16CM SAMPLED. L SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	33.00	33.17	0.17	41			MUDSTONE	M. GY. BRKN UNCONSOLIDATED MUD WITH CARBONATE INFIL L. SSD.
11	33.17	33.22	0.05	42			MUDSTONE	M. GY. BRKN C-2 LAMELLAE.
11	33.22	33.26	0.04	42			MUDSTONE	CLYY. M. GY. BRKN
11	33.26	33.27	0.01	42			MUDSTONE	M. GY. BRKN
11	33.27	33.37	0.10	42			MUDSTONE	M. GY. SLD PLANT HASH, THIST-OFF AT TOP.
11	33.37	33.57	0.20	43			ROCK LOSS	
11	33.57	33.65	0.08	43			MUDSTONE	CLYY. M. GY. BRKN
11	33.65	33.80	0.15	44			MUDSTONE	DK. GY. BRKN
11	33.80	34.39	0.59	45			MUDSTONE	DK. GY. BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	34.39	35.20	0.81	*47			MUDSTONE	SSY. VFG. MOD. M. GY. LAM. SSD. BRKN HEAVILY BANDED WITH SS. SHEAR ZONE SURFACES (LISTRIC). VERY BROKEN IN SECTION. MINOR SSD IN AREAS.
12	35.20	36.42	1.22	*35			MUDSTONE	SSY. VFG. M. GY. VTHNB AS ABOVE.
13	36.42	37.10	0.68	*38			MUDSTONE	SSY. M. GY. VTHNB AS ABOVE.
13	37.10	37.86	0.76	*38			SANDSTONE	SLTY. MG. PR. LT. GY. VTHNB. BRKN MANY CARB. VEINS UP TO 2CM THICK. SOME VEINS ARE OFFSET. VEINS RUN OPPOSITE TO BEDDING. SOME SECTIONS VERY BROKEN CORE CRUMBLES EASILY.
13	37.86	38.25	0.39	*39			SANDSTONE	SLTY. MG. MOD. LT. GY. VTHNB. BRKN LARGE AMOUNT OF CARBONATE VEINS FILLING FRACTURES. SHEAR ZONE SURFACES (LISTRIC), VERY SOFT CRUMBLES. GOOD SLTST CLAST S.
13	38.25	38.27	0.02	37			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	38.27	40.38	2.11	*28			SANDSTONE	SLTY. MG. MOD. LT. GY. VTHNB. BRKN AS ABOVE. IN PLACES A GROUND UP POST (S) IN FRACTURES. HAS NO INNER STRENGTH. BREAK ANY WHERE.
15	40.38	40.66	0.28	*44			SANDSTONE	SLTY. MG. MOD. LT. GY. VTHNB. BRKN AS ABOVE. VERY LARGE SLTST CLASTS.
15	40.66	41.57	0.91	*33			SANDSTONE	SLTY. MG. MOD. LT. GY. VTHNB. BRKN AS ABOVE.
15	41.57	42.35	0.78	38			MUDSTONE	SSY. FG. M. GY. VTHNB. VBRKN HEAVY SHEAR ZONE. CARBONATE VEINS. UP TO 0.1CM IN THICKNESS. COAL STRINGERS AND CARBONIZED MUD THROUGHOUT. PYRITE. PLANT FOSSILS.
15	42.35	42.40	0.05	41			ROCK LOSS	
16	42.40	43.91	1.51	*46			MUDSTONE	SSY. FG. M. GY. VTHNB. VBRKN AS ABOVE. NEWLY CARBONIZED MUD.
16	43.91	44.17	0.26	46			ROCK LOSS	
16	44.17	44.63	0.46	46			MUDSTONE	SSY. FG. M. GY. VTHNB. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	44.63	44.66	0.03	46			ROCK LOSS	
17	44.66	46.51	1.85	*46			MUDSTONE	SSY.FG.M.GY.VTHNB.VBRKN AS ABOVE. (2) TWIST-OFFS. POSSIBLE CORE LOSS. SOME SECTIONS YSHRD TO PHRD. NOT AS MANY CARBONATE VEINS.
17	46.51	46.77	0.26	47			ROCK LOSS	
18	46.77	46.89	0.12	47			MUDSTONE	SSY.VFG.M.GY.VBRKN SHEARED SURFACES. COAL STRINGERS. BADLY BROKEN, CAN'T FIT PIECES TOGETHER.
18	46.89	46.91	0.02	47			ROCK LOSS	
18	46.91	48.31	1.40	*47			MUDSTONE	SSY.VFG.DK.GY.VTHNB.VBRKN SHEAR ZONE. LISTRIC SURFACES. CARBONATE VEINS. COAL STRINGERS, CARBONATE MUD T HROUGHOUT. PLANT FOSSILS.
18	48.31	48.51	0.20	39			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	48.51	48.81	0.30	*36			SANDSTONE	SLTY.MG.MOD.LT.GY.VTHNB.BRKN VERY THIN BEDS OF SLTY, QUITE HARD TO BREAK.
19	48.81	49.32	0.51	36			MUDSTONE	LT-M.GY.BRKN
19	49.32	49.45	0.13	36			MUDSTONE	LT-M.GY.BRKN
19	49.45	50.19	0.74	36			MUDSTONE	M-DK.GY.BRKN CARBONACEOUS MUDST. COAL STRINGERS.
19	50.19	50.23	0.04	36			COAL	C-3.DK.GY.BRKN C-3 WITH C-5 LAMELLAE.
19	50.23	50.32	0.09	36			MUDSTONE	DK.GY.BRKN CARBONACEOUS.
19	50.32	50.36	0.04	36			MUDSTONE	DK.GY.BRKN SHEARED.
19	50.36	50.46	0.10	36			MUDSTONE	DK.GY.BRKN COALIFIED & SHEARED.
19	50.46	50.61	0.15	37			MUDSTONE	DK.GY.BRKN SHEARED (MINOR COAL WISPS).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	50.61	50.66	0.05	37		COAL	C-4, BLK, BRKN
19	50.66	50.89	0.23	37		MUDSTONE	DK, GY, BRKN SHEARED CARBONACEOUS MUDST. COAL STRINGERS, PLANT FRAGMENTS.
20	50.89	51.11	0.22	37		MUDSTONE	DK, GY, BRKN CARBONACEOUS MUDST WITH MULTIPLE COAL STRINGERS OF C-3, PLANT HASH ABUNDANT, SHEARED.
20	51.11	51.13	0.02	37		COAL	C-4, DK, GY, BRKN WITH C-2 LAMELLAE.
20	51.13	51.16	0.03	37		COAL	C-2, DK, GY, BRKN
20	51.16	51.23	0.07	37		COAL	C-2, DK, GY, BRKN WITH C-4 LAMELLAE.
20	51.23	51.31	0.08	37		COAL	C-4, DK, GY, BRKN C-5 WITH C-2 LAMELLAE.
20	51.31	51.58	0.27	37		MUDSTONE	SLTY, M-DK, GY, BRKN TWIST-OFF AT TOP OF UNIT, POSSIBLE COAL LOSS, VERY THIN QTZ VEINS (LESS 0.5CM)

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	51.58	51.69	0.11	37 08351	? ROOF	MUDSTONE	SLTY, M-DK, GY, BRKN AS ABOVE WITH PLANT HASH, VERY FINE COAL VEINS WITH POWDERED COAL, ? SEAM ROOF ROCK, SAMPLED.
20	51.69	51.86	0.17	37 08352	?	COAL LOSS	
20	51.86	51.95	0.09	37 08352	?	COAL	C-4, DK, GY, BRKN C-5 WITH C-3 LAMELLAE, SHEARED.
20	51.95	51.96	0.01	37 08352	?	COAL	C-3, BLK, BRKN
20	51.96	51.98	0.02	37 08352	?	COAL	C-5, DK, GY, BRKN SHEARED, PLANT HASH.
20	51.98	52.11	0.13	37 08352	?	COAL	C-5, DK, GY, BRKN SHEARED & C-4 LAMELLAE.
20	52.11	52.14	0.03	37 08352	?	COAL	C-4, BLK, BRKN SHEARED, QTZ VEINS (LESS 0.5CM).
20	52.14	52.19	0.05	37 08352	?	COAL	C-3, BLK, SHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	52.19	52.21	0.02	37	08352	?	MUDSTONE	DK.GY. SHRD SHEARED. QTZ VEINS (LESS 0.5CM) & POWDER RED COAL STRINGERS.
20	52.21	52.27	0.06	37	08352	?	COAL	C-5.BLK.VSHRD SHEARED.
20	52.27	52.33	0.06	37	08352	?	MUDSTONE	SLTY.DK.GY.SLD SLTY CARBONACEOUS SHEARED MUDST. PARASITIC QTZ FOLDS?
20	52.33	52.46	0.13	37	08352	?	COAL	C-5.BLK.VSHRD SHEARED C-5 WITH C-2 LAMELLAE.
20	52.46	52.48	0.02	37	08352	?	MUDSTONE	CARB.DK.GY.SLD CARBONACEOUS MUDST WITH SHEARED C-4 LAMELLAE.
20	52.48	52.71	0.23	37	08352	?	COAL	C-4.BLK.VSHRD
20	52.71	52.75	0.04	37	08352	?	MUDSTONE	CARB.DK.GY C-3 LAMELLAE.
20	52.75	52.79	0.04	37	08352	?	COAL	C-4.BLK.VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	52.79	52.85	0.06	37	08352	?	COAL	C-5.DK.GY.BRKN C-4 LAMELLAE.
20	52.85	52.89	0.04	37	08352	?	MUDSTONE	DK.GY.SLD QTZ VEINS.
20	52.89	52.92	0.03	37	08352	?	COAL	C-4.BLK.SLD WITH C-2 LAMELLAE.
20	52.92	53.29	0.37	37	08352	?	COAL LOSS	
21	53.29	53.34	0.05	37	08352	?	COAL	C-3.BLK.VBRKN
21	53.34	53.40	0.06	37	08352	?	COAL	C-4.BLK.VBRKN
21	53.40	53.65	0.25	37	08353	?	MUDSTONE	CARB.BLK.VBRKN
21	53.65	53.74	0.09	37	08353	?	COAL	C-4.BLK.VBRKN
21	53.74	53.77	0.03	37	08353	?	MUDSTONE	CARB.BLK.VBRKN PYRTIC BLESS.
21	53.77	53.82	0.05	37	08353	?	COAL	C-4.BLK.VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	53.82	53.99	0.17	37	08353	?	MUDSTONE	CARB. DK. GY. BRKN
21	53.99	54.08	0.09	38	08353	?	SILTSTONE	DK. GY. BRKN
21	54.08	54.19	0.11	38	08353	?	MUDSTONE	CARB. DK. GY. BRKN
21	54.19	54.23	0.04	38	08353	?	COAL	C-3. BLK. BRKN 1.0CM QTZ VEIN.
21	54.23	54.25	0.02	38	08353	?	COAL	C-5. BLK. YBRKN
21	54.25	54.35	0.10	38	08353	?	MUDSTONE	CARB. BLK. YSHRD
21	54.35	54.45	0.10	38	08353	?	COAL	C-3. BLK. YBRKN
21	54.45	54.80	0.35	38	08353	?	MUDSTONE	CARB. DK. GY. YBRKN
22	54.80	54.98	0.18	38	08353	?	MUDSTONE	CARB. DK. GY. BRKN FEW COAL STRINGERS.
22	54.98	55.21	0.23	38	08354	?	COAL	C-5. DK. GY. BRKN FEW COAL STRINGERS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	55.21	55.23	0.02	38	08354	?	COAL	C-4. DK. GY. BRKN
22	55.23	55.24	0.01	38	08354	?	COAL	C-1. BLK. BRKN
22	55.24	55.25	0.01	38	08354	?	MUDSTONE	M. GY. BRKN
22	55.25	55.27	0.02	38	08354	?	MUDSTONE	CARB. DK. GY. BRKN FEW COAL STRINGERS.
22	55.27	55.30	0.03	38	08354	?	COAL	C-4. DK. GY. BRKN
22	55.30	55.32	0.02	38	08354	?	COAL	C-5. DK. GY. BRKN
22	55.32	55.35	0.03	38	08354	?	COAL	C-2. BLK. BRKN
22	55.35	55.36	0.01	38	08354	?	COAL	C-5. DK. GY. BRKN COAL STRINGERS.
22	55.36	55.42	0.06	38	08354	?	COAL	C-5. DK. GY. BRKN
22	55.42	55.45	0.03	38	08354	?	MUDSTONE	DK. GY. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	55.45	55.47	0.02	38	08354	?	COAL	C-1.BLK.BRKN
22	55.47	55.49	0.02	38	08354	?	MUDSTONE	
22	55.49	55.50	0.01	38	08354	?	COAL	C-5
22	55.50	55.60	0.10	38	08354	?	MUDSTONE	CARB.DK.GY.BRKN
22	55.60	55.65	0.05	38	08354	?	COAL	C-5.DK.GY.BRKN PLANT.HASH.FINE COAL STRINGERS.
22	55.65	55.67	0.02	38	08354	?	MUDSTONE	CARB.DK.GY.BRKN
22	55.67	55.68	0.01	38	08354	?	COAL	C-5.DK.GY.BRKN
22	55.68	55.69	0.01	38	08354	?	MUDSTONE	DK.GY.BRKN
22	55.69	55.70	0.01	38	08354	?	MUDSTONE	CARB.DK.GY.BRKN
22	55.70	55.72	0.02	38	08354	?	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	55.72	55.74	0.02	38	08354	?	MUDSTONE	CARB.DK.GY.BRKN
22	55.74	55.77	0.03	38	08354	?	COAL	C-5.DK.GY.BRKN
22	55.77	55.80	0.03	38	08354	?	COAL	C-2.BLK.BRKN
22	55.80	55.96	0.16	38	08354	?	COAL	C-5.DK.GY.BRKN
22	55.96	56.03	0.07	38	08354	?	COAL	C-5.DK.GY C-1 LAMELLAE.
22	56.03	56.05	0.02	38	08354	?	COAL	C-1
22	56.05	56.06	0.01	38	08354	?	COAL	C-5
22	56.06	56.08	0.02	38	08354	?	COAL	C-2
22	56.08	56.11	0.03	38	08354	?	COAL	C-4.DK.GY.BRKN
22	56.11	56.14	0.03	38	08354	?	COAL	C-5.DK.GY.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	56.14	56.17	0.03	38	08354	?	MUDSTONE	DK. GY. BRKN COAL LAMINATIONS. FINE CARBONATE VEINS.
22	56.17	56.30	0.13	38	08354	?	COAL	C-6. DK. GY. BRKN TWIST-OFF AT TOP OF UNIT. C-2 BANDS.
22	56.30	56.39	0.09	38	08354	?	COAL	C-4. DK. GY. BRKN C-1 BANDS.
22	56.39	56.40	0.01	38	08354	?	COAL	C-3. DK. GY. BRKN
22	56.40	56.42	0.02	38	08354	?	COAL	C-4. DK. GY. BRKN
22	56.42	56.43	0.01	38	08354	?	COAL	C-3. DK. GY. BRKN
22	56.43	56.53	0.10	38	08354	?	COAL	C-5. DK. GY. BRKN
22	56.53	56.58	0.05	38	08355	? FLOOR	MUDSTONE	CARB. DK. GY. BRKN C-1 BANDS. SAMPLED 25.0CM FLOOR ROCK. ? SEAM FLOOR ROCK.
22	56.58	56.64	0.06	38	08355	? FLOOR	MUDSTONE	CARB. M. GY. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	56.64	56.68	0.04	38	08355	? FLOOR	MUDSTONE	CARB. M. GY. BRKN CARBONATE VEINS & C-2 LAMELLAE.
23	56.68	56.80	0.12	38	08355	? FLOOR	MUDSTONE	CARB. M. GY. SLD PLANT FOSSILS. DISSEMINATED PYRITE.
23	56.80	56.85	0.05	38			MUDSTONE	CARB. M. GY. BRKN SHEARED WHITE TALC-LIKE INFILL.
23	56.85	56.93	0.08	38			MUDSTONE	CARB. M. GY. VBRKN SHEARED, BROKEN, POWDERED.
23	56.93	57.00	0.07	38			MUDSTONE	CARB. DK. GY. SLD C-1 LAMELLAE.
23	57.00	57.09	0.09	38			MUDSTONE	CARB. DK. GY. SLD SHEARED WITH COAL STRINGERS.
23	57.09	57.27	0.18	38			MUDSTONE	CARB. DK. GY. SLD COAL LAMELLAE.
23	57.27	57.31	0.04	38			MUDSTONE	CARB. DK. GY. BRKN
23	57.31	57.47	0.16	38			MUDSTONE	CARB. DK. GY. SHEARED WITH COAL STRINGERS.
23	57.47	57.48	0.01	38			COAL	C-1. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H8B011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	57.48	57.54	0.06	38			MUDSTONE	CARB. DK. GY. COAL LAMELLAE, SHEARED, TALC LIKE INFIL L.
23	57.54	57.63	0.09	39			MUDSTONE	CARB. DK. GY. VBRKN SHEARED.
23	57.63	57.69	0.06	39			MUDSTONE	CARB. DK. GY. BRKN SHEARED.
23	57.69	57.77	0.08	39			MUDSTONE	CARB. DK. GY. BRKN SHEARED WITH COAL STRINGERS.
23	57.77	57.94	0.17	39			MUDSTONE	CARB. DK. GY. BRKN AS ABOVE WITH COAL LAMELLAE.
23	57.94	58.07	0.13	39			MUDSTONE	CARB. DK. GY. VBRKN AS ABOVE.
23	58.07	58.09	0.02	39			COAL	C-2. BLK. BRKN
23	58.09	58.16	0.07	39			MUDSTONE	CARB. GY. VBRKN
23	58.16	58.18	0.02	39			COAL	C-2. DK. GY. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H8B011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	58.18	58.33	0.15	39			MUDSTONE	CARB. DK. GY. SLD PLANT HASH.
24	58.33	58.45	0.12	39			SILTSTONE	CLYY. DK. GY. SLD CARB. MUD. COAL STRINGERS, PLANT FOSSILS, SHEAR ZONE SURFACES (LISTRIC).
24	58.45	60.16	1.71	*39			SILTSTONE	CLYY. VFG. DK. GY. LAM. VBRKN VERY SHEARED, LISTRIC SURFACES, CARBONATE VEINS, VEIN LIKE COAL STRINGERS, PLANT FOSSILS, HEAVILY FRACTURED. PYRITE.
24	60.16	60.22	0.06	39			ROCK LOSS	
25	60.22	62.04	1.82	*40			SILTSTONE	CLYY. VFG. DK. GY. LAM. SSD. VBRKN AS ABOVE. CARBONATE & COAL STRINGERS, TOGETHER AS ONE INTERMIXED VEIN. MINOR S. SD.
25	62.04	62.11	0.07	46			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	62.11	63.97	1.86	*52			SILTSTONE	VFG. DK. GY. LAM. BIOTR. VBRKN AS ABOVE. MUD PARTINGS UP TO 6CM THROUGHOUT. LAST 26CM BADLY SHEARED ALSO POWD ERED. TWIST-OFF. POSSIBLE CORE LOSS. SM ALL CLASTS. BIOTRB.
26	63.97	64.18	0.21	52			ROCK LOSS	
27	64.18	64.22	0.04	52			MUDSTONE	CARB. DK. GY. SHRD
27	64.22	64.24	0.02	52			ROCK LOSS	
27	64.24	64.43	0.19	52			MUDSTONE	CARB. DK. GY. SLD PLANT FRAGMENTS & COAL STRINGERS.
27	64.43	64.47	0.04	52			MUDSTONE	CARB. DK. GY. BRKN SHEARED SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	64.47	64.54	0.07	52			MUDSTONE	CARB. DK. GY. SHRD COAL LAMELLAE.
27	64.54	64.56	0.02	52			ROCK LOSS	
27	64.56	64.65	0.09	52			MUDSTONE	CARB. DK. GY. SHRD SHRD TO POWDERED; SEMI CONSOLIDATED.
27	64.65	64.67	0.02	52			ROCK LOSS	
27	64.67	64.75	0.08	52			MUDSTONE	CARB. DK. GY. SHRD AS ABOVE.
27	64.75	64.77	0.02	52			ROCK LOSS	
27	64.77	64.86	0.09	52			MUDSTONE	CARB. DK. GY. SHRD AS ABOVE WITH QTZ VEINS.
27	64.86	64.88	0.02	52			ROCK LOSS	
27	64.88	64.98	0.10	52	08347	? ROOF	MUDSTONE	CARB. DK. GY. PHRD SEMI CONSOLIDATED. FINE COAL & QTZ VEIN S. SAMPLE UPPER 25.0CM (ROOF).
27	64.98	65.00	0.02	52	08347	? ROOF	ROCK LOSS	
27	65.00	65.05	0.05	52	08348	?	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	65.05	65.08	0.03	52 08348 ?		COAL	C-4, DK, GY, VBRKN
27	65.08	65.11	0.03	52 08348 ?		COAL	C-5, DK, GY, VBRKN
27	65.11	65.16	0.05	52 08348 ?		MUDSTONE	CARB, DK, GY, VBRKN COAL LAMELLAE.
27	65.16	65.21	0.05	52 08348 ?		MUDSTONE	CARB, DK, GY, VBRKN C-3 LAMELLAE.
27	65.21	65.22	0.01	52 08348 ?		MUDSTONE	CARB, DK, GY, VBRKN
27	65.22	65.45	0.23	52 08348 ?		COAL LOSS	
27	65.45	65.59	0.14	52 08348 ?		COAL	C-3, DK, GY, SLD C-4 WITH C-2 LAMELLAE.
27	65.59	65.61	0.02	52 08348 ?		MUDSTONE	CARB, DK, GY, SLD SHEARED SURFACES.
27	65.61	65.63	0.02	52 08348 ?		MUDSTONE	CARB, DK, GY, SLD C-2 STRINGERS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	65.63	65.69	0.06	52 08348 ?		MUDSTONE	CARB, DK, GY, SLD COAL LAMELLAE.
27	65.69	65.72	0.03	52 08348 ?		MUDSTONE	CARB, DK, GY, PHRD SEMI CONSOLIDATED.
27	65.72	65.81	0.09	52 08348 ?		MUDSTONE	CARB, DK, GY, SLD SHRD.
27	65.81	65.96	0.15	52 08348 ?		MUDSTONE	CARB, DK, GY, SLD COAL STRINGERS.
27	65.96	66.06	0.10	52 08348 ?		MUDSTONE	CARB, DK, GY, PHRD SEMI CONSOLIDATED.
27	66.06	66.08	0.02	52 08348 ?		COAL	C-4, DK, GY, BRKN
27	66.08	66.11	0.03	52 08348 ?		COAL	C-5, DK, GY, BRKN
27	66.11	66.27	0.16	52 08348 ?		COAL	C-5, SLD C-5 WITH C-4 & C-3 LAMELLAE.
27	66.27	66.45	0.18	52 08348 ?		COAL LOSS	
27	66.45	66.60	0.15	52 08348 ?		MUDSTONE	CARB, VBRKN C-3 LAMELLAE & STRINGERS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	66.60	66.65	0.05	52 08349	?	COAL	C-3, BRKN
27	66.65	66.66	0.01	52 08349	?	MUDSTONE	CARB. BRKN COAL LAMELLAE.
28	66.66	66.72	0.06	52 08349	?	COAL	C-4, SLD
28	66.72	66.77	0.05	52 08349	?	COAL	C-5, SLD SHEARED SURFACES. TALC-LIKE.
28	66.77	66.79	0.02	52 08349	?	COAL	C-5 C-3 LAMELLAE.
28	66.79	66.82	0.03	52 08349	?	COAL	C-6, BRKN SHEARED SURFACES.
28	66.82	66.86	0.04	52 08349	?	COAL	C-5, BRKN SHEARED WITH C-4 STRINGERS.
28	66.86	66.88	0.02	52 08349	?	COAL	C-4, BRKN
28	66.88	66.90	0.02	52 08349	?	MUDSTONE	CARB. SLD COAL STRINGERS.
28	66.90	66.92	0.02	52 08349	?	COAL	C-2, SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	66.92	66.95	0.03	52 08349	?	COAL	C-3, SLD
28	66.95	67.01	0.06	52 08349	?	SILTSTONE	CARB. BRKN PYRITE BLEBS, QTZ VEINS, COAL STRINGERS
28	67.01	67.05	0.04	52 08349	?	COAL	C-4, BRKN WITH C-1 BANDS.
28	67.05	67.09	0.04	52 08349	?	COAL	C-3, BRKN
28	67.09	67.10	0.01	52 08349	?	COAL	C-1, SLD WITH QTZ VEIN.
28	67.10	67.14	0.04	52 08349	?	COAL	C-4, SLD CARB MUDST WITH C-1 BANDS.
28	67.14	67.17	0.03	52 08349	?	MUDSTONE	CARB
28	67.17	67.30	0.13	52 08349	?	COAL	C-5, DK. GY. SLD COAL STRINGERS.
28	67.30	67.40	0.10	52 08349	?	COAL	C-5, DK. GY. SLD COAL STRINGERS, QTZ VEIN, SHEARED SURFA CE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	67.40	67.50	0.10	52 08349	?	COAL	C-5.DK.GY.BRKN
28	67.50	67.82	0.32	52 08349	?	COAL LOSS	
28	67.82	67.95	0.13	52 08349	?	MUDSTONE	DK.GY.VBRKN SHEARED.
28	67.95	67.98	0.03	52 08349	?	MUDSTONE	DK.GY.VBRKN
28	67.98	67.99	0.01	52 08349	?	COAL	C-2.BLK.VBRKN
28	67.99	68.03	0.04	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN
28	68.03	68.04	0.01	52 08349	?	COAL	C-2.BLK.VBRKN
28	68.04	68.06	0.02	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN
28	68.06	68.07	0.01	52 08349	?	COAL	C-2.BLK.VBRKN WITH QTZ VEINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	68.07	68.08	0.01	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN
28	68.08	68.10	0.02	52 08349	?	COAL	C-2.BLK.VBRKN
28	68.10	68.20	0.10	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN C-1 BANDS. FINE QTZ VEIN AT TOP OF UNIT.
28	68.20	68.25	0.05	52 08349	?	MUDSTONE	CARB.GY.VBRKN FINE QTZ VEIN AT TOP OF UNIT.
28	68.25	68.26	0.01	52 08349	?	COAL	C-5.DK.GY.VBRKN
28	68.26	68.30	0.04	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN
28	68.30	68.31	0.01	52 08349	?	COAL	C-5.DK.GY.VBRKN C-1 BANDS & QTZ VEIN.
28	68.31	68.32	0.01	52 08349	?	COAL	C-5.DK.GY.VBRKN C-1 BANDS.
28	68.32	68.35	0.03	52 08349	?	MUDSTONE	CARB.DK.GY.VBRKN COAL LAMELLAE.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
28	68.35	68.37	0.02	52	08349 ?	MUDSTONE	CARB. DK. GY. VBRKN
28	68.37	68.39	0.02	52	08349 ?	COAL	C-4. DK. GY. VBRKN C-5 WITH C-1 BANDS.
28	68.39	68.41	0.02	52	08349 ?	MUDSTONE	CARB. DK. GY. VBRKN COAL LAMELLAE.
28	68.41	68.44	0.03	52	08349 ?	COAL	C-2. BLK. VBRKN
28	68.44	68.45	0.01	52	08349 ?	MUDSTONE	CARB. DK. GY. VBRKN
28	68.45	68.46	0.01	52	08349 ?	MUDSTONE	CARB. DK. GY. VBRKN C-1 BAND & QTZ VEIN.
28	68.46	68.50	0.04	52	08349 ?	MUDSTONE	CARB. DK. GY. VBRKN C-1 BANDS.
28	68.50	70.57	2.07	53	08349 ?	COAL LOSS	
28	70.57	70.60	0.03	53	08349 ?	COAL	C-5. DK. GY. VBRKN
28	70.60	70.61	0.01	53	08349 ?	COAL	C-3. BLK. VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
28	70.61	70.62	0.01	53	08349 ?	COAL	C-5
28	70.62	70.68	0.06	53	08349 ?	COAL	C-4. DK. GY. BRKN WITH QTZ VEIN.
28	70.68	70.71	0.03	53	08349 ?	COAL	C-2. BLK. BRKN
28	70.71	70.74	0.03	53	08349 ?	COAL	C-5. DK. GY. BRKN
28	70.74	70.75	0.01	53	08349 ?	COAL	C-4. DK. GY. BRKN
28	70.75	70.77	0.02	53	08349 ?	MUDSTONE	CARB. DK. GY. SLD SHEARED.
28	70.77	70.81	0.04	53	08349 ?	COAL	C-4. DK. GY. VBRKN
28	70.81	70.88	0.07	53	08349 ?	COAL	C-5. DK. GY. SLD
29	70.88	70.89	0.01	53	08349 ?	MUDSTONE	CARB. DK. GY. BRKN
29	70.89	70.91	0.02	53	08349 ?	MUDSTONE	CARB. DK. GY. BRKN QTZ VEINS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	70.91	70.96	0.05	53 08349 ?			COAL	C-5.DK.GY.BRKN
29	70.96	70.98	0.02	53 08349 ?			COAL	C-3.DK.GY.BRKN
29	70.98	71.09	0.11	53 08349 ?			MUDSTONE	SLTY.DK.GY.SLD SHEARED. QTZ & CARBONATE VEINS. C-3 GRADES IN OR LEFT SIDE OF CORE.
29	71.09	71.11	0.02	53 08349 ?			SILTSTONE	DK.GY.SLD SILICIOUS SILTSTONE.
29	71.11	71.12	0.01	53 08349 ?			COAL	C-2.BLK.BRKN
29	71.12	71.16	0.04	53 08349 ?			COAL	C-5.DK.GY.BRKN
29	71.16	71.18	0.02	53 08349 ?			COAL	C-5.DK.GY.BRKN
29	71.18	71.21	0.03	53 08349 ?			COAL	C-3.DK.GY.BRKN
29	71.21	71.26	0.05	53 08349 ?			COAL	C-5.DK.GY.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	71.26	71.31	0.05	53 08349 ?			COAL	C-5.DK.GY.BRKN C-3 BANDS.
29	71.31	71.34	0.03	53 08349 ?			COAL	C-5.DK.GY.BRKN
29	71.34	71.36	0.02	53 08349 ?			COAL	C-5.DK.GY.BRKN C-5 WITH C-1 BANDS.
29	71.36	71.37	0.01	53 08349 ?			MUDSTONE	CARB.DK.GY.BRKN COAL LAMELLAE.
29	71.37	71.38	0.01	53 08349 ?			COAL	C-4.DK.GY.BRKN
29	71.38	71.57	0.19	53 08349 ?			COAL LOSS	
29	71.57	71.60	0.03	53 08349 ?			MUDSTONE	CARB.DK.GY.BRKN COAL LAMELLAE.
29	71.60	71.65	0.05	53 08349 ?			MUDSTONE	CARB.DK.GY.BRKN SHEARED.
29	71.65	71.67	0.02	53 08349 ?			MUDSTONE	CARB.DK.GY.BRKN COAL LAMELLAE.
29	71.67	71.71	0.04	53 08349 ?			MUDSTONE	CARB.DK.GY.BRKN SHEARED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	71.71	71.73	0.02	53	08349	?	MUDSTONE	CARB. DK. GY. BRKN COAL LAMELLAE.
29	71.73	71.77	0.04	53	08349	?	MUDSTONE	CARB. DK. GY. BRKN COAL LAMELLAE & SHEARED.
29	71.77	71.90	0.13	53	08349	?	COAL LOSS	
29	71.90	72.04	0.14	53	08349	?	COAL	C-4. DK. GY. VSHRD SHEARED C-2, C-5 AND MUDST.
29	72.04	72.06	0.02	53	08349	?	COAL	C-3. MH. SLD QTZ. VEIN (.02CM).
29	72.06	72.09	0.03	53	08349	?	COAL	C-5. DK. GY. VSHRD SHEARED C-3, C-5 & MUDST.
29	72.09	72.11	0.02	53	08349	?	COAL	C-5. DK. GY. BRKN SHEARED.
29	72.11	72.13	0.02	53	08349	?	MUDSTONE	CARB. DK. GY. BRKN SHEARED.
29	72.13	72.18	0.05	53	08349	?	MUDSTONE	DK. GY. BRKN SILICIOUS MUDST WITH QTZ VEINS.
29	72.18	72.22	0.04	53	08349	?	COAL	C-4. DK. GY. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	72.22	72.24	0.02	53	08349	?	SILTSTONE	SLD MUDDY SLTST.
29	72.24	72.25	0.01	53	08349	?	COAL	C-4. DK. GY. BRKN
29	72.25	72.44	0.19	53	08349	?	COAL LOSS	
29	72.44	72.47	0.03	53	08349	?	MUDSTONE	CARB. DK. GY. BRKN
29	72.47	72.51	0.04	53	08349	?	MUDSTONE	CARB. DK. GY. BRKN SHEARED.
29	72.51	72.57	0.06	53	08349	?	SILTSTONE	DK. GY. SLD MUDDY SLTST.
29	72.57	72.64	0.07	53	08349	?	COAL	C-5. DK. GY. BRKN
29	72.64	72.69	0.05	53	08349	?	MUDSTONE	DK. GY. SLD
29	72.69	72.71	0.02	53	08349	?	COAL	C-4. DK. GY. SLD
29	72.71	72.73	0.02	53	08349	?	COAL	C-2. BLK

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	72.73	72.74	0.01	53	08349	?	MUDSTONE	DK.GY.VBRKN
29	72.74	72.81	0.07	53	08349	?	COAL LOSS	
29	72.81	72.93	0.12	53	08349	?	COAL	C-4,DK.GY.SLD THIST-OFF AT TOP OF UNIT, POSSIBLE CORE LOSS. C-1 BANDS.
29	72.93	73.01	0.08	53	08349	?	COAL	C-4,DK.GY.SLD C-1 BANDS.
29	73.01	73.10	0.09	53	08349	?	COAL	C-5,DK.GY.SLD
29	73.10	73.17	0.07	53	08349	?	MUDSTONE	CARB.DK.GY.BRKN
29	73.17	73.21	0.04	53	08349	?	MUDSTONE	CARB.DK.GY.BRKN
29	73.21	73.24	0.03	53	08349	?	COAL	C-3,DK.GY.SLD MUDST WITH C-1 BANDS, COAL LAMELLAE.
29	73.24	73.32	0.08	53	08349	?	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	73.32	73.89	0.57	53	08350	?	FLOOR SILTSTONE	CLYY,DK.GY.VBRKN SHEARED ZONE, LISTRIC SURFACES, MANY CO AL STRINGERS, CARBONIZED MUD, ODD CARBO NATE VEIN, CORE STATE VSHRD IN PLACES. SAMPLE LOWER 25.0CM (FLOOR).
30	73.89	74.55	0.66	53			MUDSTONE	SLTY,DK.GY.SHRD BADLY SHEARED, COAL STRINGERS, CARBONIZ ED MUD, LISTRIC SURFACES.
30	74.55	75.04	0.49	*53			MUDSTONE	SLTY,FG,DK.GY.VBRKN AS ABOVE.
31	75.04	75.79	0.75	*62			SILTSTONE	CLYY,VFG,M.GY.BIOTR.BRKN COAL STRINGERS, SHEAR ZONE, LISTRIC SUR FACES, PYRITE, CARBONATED MUD.
31	75.79	76.80	1.01	*60			SILTSTONE	CLYY,VFG,M.GY.BIOTR.BRKN AS ABOVE, TOP 20.0CM MAJOR BIOTRB.
32	76.80	77.58	0.78	*65	08170	K/L ROOF	SILTSTONE	M.GY.LAM.SSD.BRKN AT TOP INTERLAMINATED WITH VFG SS, GRAD ES TOWARDS BASE TO INTERLAMINATED MUDST . MANY SILMP AND BIOTRB. STRUCTURES LIS TRIC SURFACES THROUGHOUT, PLANT FRAGS I THROUGHOUT. (LOWER 8.0CM SAMPLED). K/L S EAM ROOF ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	77.58	77.72	0.14	64	08170	K/L ROOF MUDSTONE	DK.GY.LAM.BRKN PLANT FRAGS, LISTRIC SURFACES THROUGHOUT T. CALCAREOUS FRACTURE FILL. K/L SEAM ROOF ROCK.
32	77.72	77.75	0.03	64	08170	K/L ROOF MUDSTONE	CARB.BLK.LAM.BRKN CALCAREOUS STRINGERS THROUGHOUT, LISTRIC SURFACES.K/L SEAM ROOF ROCK. SAMPLED.
32	77.75	77.80	0.05	64	08171	K/L COAL LOSS	
32	77.80	77.96	0.16	63	08171	K/L COAL	C-3.BLK.VBRKN
32	77.96	78.06	0.10	63	08171	K/L MUDSTONE	CARB.BLK.BRKN NUMEROUS C-3 PARTINGS THROUGHOUT.
32	78.06	78.11	0.05	63	08171	K/L COAL	C-4.BLK.VBRKN
32	78.11	78.14	0.03	63	08171	K/L MUDSTONE	CARB.BLK.BRKN
33	78.14	78.40	0.26	63	08171	K/L COAL	C-3.BLK.BRKN LISTRIC SURFACES THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	78.40	78.45	0.05	62	08171	K/L COAL	C-5.BLK.SHRD AS ABOVE.
33	78.45	78.83	0.38	62	08171	K/L COAL	C-4.BLK.SHRD AS ABOVE.
33	78.83	79.11	0.28	61	08171	K/L COAL LOSS	
33	79.11	79.21	0.10	61	08171	K/L COAL	C-5.BLK.VBRKN AS ABOVE.
33	79.21	79.24	0.03	60	08171	K/L MUDSTONE	CARB.BLK.VBRKN AS ABOVE.
33	79.24	79.38	0.14	60	08171	K/L COAL LOSS	
33	79.38	79.46	0.08	60	08171	K/L COAL	C-3.BLK.SHRD AS ABOVE.
33	79.46	79.50	0.04	60	08171	K/L COAL	C-2.BLK.SHRD AS ABOVE.
33	79.50	79.62	0.12	60	08171	K/L COAL	C-4.BLK.SHRD AS ABOVE.
33	79.62	79.71	0.09	59	08171	K/L COAL	C-5.BLK.VBRKN LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DMH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	79.71	79.86	0.15	59	08172	K/L	MUDSTONE	CARB. BLK. BRKN
33	79.86	79.88	0.02	59	08172	K/L	COAL	C-5. BLK. VBRKN
33	79.88	79.92	0.04	59	08172	K/L	COAL LOSS	
33	79.92	80.07	0.15	59	08172	K/L	MUDSTONE	CARB. BLK. BRKN
34	80.07	80.20	0.13	58	08172	K/L	COAL	C-4. BLK. VBRKN
34	80.20	80.26	0.06	58	08172	K/L	COAL LOSS	
34	80.26	80.54	0.28	58	08172	K/L	ROCK LOSS	
34	80.54	80.86	0.32	57	08172	K/L	COAL LOSS	
34	80.86	80.98	0.12	57	08172	K/L	MUDSTONE	CARB. BLK. VBRKN LISTRIC SURFACES THROUGHOUT.
34	80.98	81.04	0.06	56	08172	K/L	COAL	C-3. BLK. BRKN
34	81.04	81.15	0.11	56	08172	K/L	MUDSTONE	CARB. BLK. BRKN LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DMH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	81.15	81.30	0.15	56	08172	K/L	COAL	C-3. BLK. BRKN C-2 AND C-5 WITHIN.
34	81.30	81.70	0.40	55	08172	K/L	ROCK LOSS	
34	81.70	81.95	0.25	55	08172	K/L	MUDSTONE	CARB. BLK. BRKN NUMEROUS BANDS OF C-2 AND C-5. LISTRIC SURFACES.
34	81.95	82.07	0.12	54	08172	K/L	COAL LOSS	
34	82.07	82.21	0.14	54	08172	K/L	ROCK LOSS	
34	82.21	82.70	0.49	53	08172	K/L	COAL LOSS	
34	82.70	82.79	0.09	52	08172	K/L	COAL	C-5. BLK. BRKN
34	82.79	83.45	0.66	52	08173	K/L FLOOR	MUDSTONE	PYR. DK. GY. LAM. BRKN COALY PARTINGS WITHIN LISTRIC SURFACES. CALCAREOUS AND CLAY FRACTURE FILL. 2.0 CM PYRITE BAND AT TOP FLOOR. (UPPER 25. CM SAMPLED). K/L SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	83.45	83.56	0.11	51			MUDSTONE	VFG.DK.GY.SHRD VERY SHEARED. COAL STRINGERS. LISTRIC SURFACES. CARBONIZED MUD.
35	83.56	83.67	0.11	50			SILTSTONE	CLYY.FG.M.GY.BIOTR.SLD MAJOR BIOTRB. CHURNED UP PYRITE.
35	83.67	84.01	0.34	50			MUDSTONE	SLTY.VFG.M-DK.GY.SHRD COAL STRINGERS. SHEAR ZONE. LISTRIC SURFACES. MUD PARTINGS. PLACES SHEARED TO ALMOST A POWDER.
35	84.01	84.41	0.40	49			SILTSTONE	CLYY.FG.LT-M.GY.BIOTR.BRKN NO REAL BEDDING PLANES VISIBLE. REALLY CHURNED UP, SHEAR SURFACES, TOP 8CM HAVE HALO LIKE FIGURES. COULD POSSIBLE BE SLUMP ZONE BUT LOOKS MORE TO BE CHEMICALLY COMPOSED DUE TO LIGHT-DARK LIGHT COMPOSITION.
35	84.41	85.01	0.60	*48			SILTSTONE	CLYY.FG.LT-M.GY.BRKN SHEAR ZONE. LISTRIC SURFACES. ODD CARBONATE VEINS. BREAK ANYWHERE WITH LISTRIC SURFACE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	85.01	85.23	0.22	68			SILTSTONE	CLYY.FG.LT-M.GY.SLD HALO LIKE FIGURES - COULD POSSIBLE BE SHEARED FEATURES. BUT LOOKS MORE TO BE NORMALLY COMPOSED. DUE TO LIGHT-DARK-LIGHT COMPOSITION. COULD ALSO BE DEWATERING ZONE?
35	85.23	85.49	0.26	*79			SILTSTONE	SSY.FG.PR.LT-M.GY.VTHNB.SLD LISTRIC SURFACES WITH SS BEDS.
36	85.49	85.58	0.09	79			SILTSTONE	CLYY.VFG.LT-M.GY.BIOTR.SLD BIVALVE - BIOTRB.
36	85.58	85.99	0.41	*80			SILTSTONE	SSY.FG.LT-M.GY.SSD.SLD INTERBEDDED SLTST & SS. HALO LIKE FEATURES AS BEFORE. SOME SSD.
36	85.99	87.36	1.37	*74			SILTSTONE	SSY.FG.LT-M.GY.SSD.SLD TOPS UP INDICATES. ALTERNATING BEDS SS & SLTST. MINOR SSD NEAR TOP OF SECTION FOR 21.0CM.
37	87.36	88.44	1.08	*75			MUDSTONE	SLTY.VFG.LT-M.GY.VTHNB.BRKN BEDS OF SLTST THROUGHOUT. A FEW CLASTS. CARBONATE VEIN FILL FRACTURE. LISTRIC SURFACES. SHEARED MUDST SECTION. VERY SOFT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	88.44	88.52	0.08		68	10444	BENTONITE	YFG.LT.GY.LAM.BRKN BENTONITE, VERY THIN LAYER, QUITE HARD.
37	88.52	88.99	0.47	*64			MUDSTONE	SLTY.VFG.LT-M.GY.VTHNB.BRKN CARBONATE VEIN, VERY CHURNED UP, SHEAR ZONE, LISTRIC SURFACES - VERY SOFT, MUD LIKE, BIOTRS NEAR TOP OF SECTION.
37	88.99	89.47	0.48	*71			SILTSTONE	SSY.FG.LT-M.GY.VTHNB.SSD.SLD TOPS UP, MINOR SSD, A FEW DISCONTINUING BEDS.
38	89.47	90.35	0.88	*78			SILTSTONE	SSY.FG.MOD.LT-M.GY.SSD.BRKN MULTIPLE TOPS UP INDICATED AS SSD, DISC ONTINUING BEDS, CARBONATE VEINS, LISTRI C. SURFACES.
38	90.35	90.46	0.11	72	10445		BENTONITE	YFG.LT.GY.LAM.BRKN LAMINATED LAYERS OF BENTONITE, VERY THI N LAYERS OF SLTST DIVIDE AS 6.0CM OF TH E SECTION.
38	90.46	91.40	0.94	*65			SILTSTONE	SSY.FG.MOD.LT-M.GY.BIOTR.BRKN CARBONATE VEIN IN SHEAR ZONE SECTION. T HIST-OFF - POSSIBLE CORE LOSS.
38	91.40	91.56	0.16	67			SILTSTONE	CLYY.FG.MOD.M.GY.VTHNB.BRKN THIN BEDS OF SS, CONCORDIAL FRACTURE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	91.56	93.56	2.00	*72			MUDSTONE	SSY.FG.MOD.DK.GY.VTHNB.BRKN ODD CARBONATE VEIN, SHEARED SURFACES, S OFT MUDST IN SHEAR ZONE.
40	93.56	94.32	0.76	*70			MUDSTONE	SSY.VFG.MOD.LT-DK.GY.VTHNB.BRKN AS ABOVE.
40	94.32	95.30	0.98	*72			MUDSTONE	SSY.VFG.LT-DK.GY.VTHNB.BRKN AS ABOVE, RIP-UP CLASTS.
40	95.30	95.39	0.09	71	10446		BENTONITE	LT.GY.LAM.VBRKN BENTONITE, SHEARED SURFACES.
40	95.39	95.60	0.21	*71			MUDSTONE	SSY.VFG.LT-DK.GY.VTHNB.BRKN VERY THIN SS BANDS, SHEAR SURFACES.
41	95.60	97.12	1.52	*63			MUDSTONE	SSY.VFG.MOD.LT-DK.GY.VTHNB.BRKN CORE IS VERY FRACTURED BUT NOT BRKN IN TD PIECES, RIP-UP CLASTS IN PLACES IT L OOKS LIKE MASSIVE BEDDING, ODD CARBONAT E FILLED FRACTURE.
41	97.12	97.58	0.46	*65			MUDSTONE	SSY.VFG.MOD.LT-DK.GY.VTHNB.BRKN AS ABOVE.
42	97.58	98.48	0.90	*67			MUDSTONE	SSY.VFG.MOD.LT-DK.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	98.48	99.68	1.20	*64		MUDSTONE	SSY, VFG, MOD, LT-DK, GY, VTHNB, YBRKN VERY FRACTURED CORE, SHEAR ZONE, LISTRI C SURFACES IN PLACES, CARBONATE VEINS U P TO 2.0CM THICK IN HEAVILY SHEARED ZON E & WHERE MUDST IS QUITE SOFT.
43	99.68	100.22	0.54	*47		MUDSTONE	SSY, VFG, MOD, LT-DK, GY, VTHNB, YBRKN AS ABOVE.
43	100.22	101.50	1.28	54		MUDSTONE	SSY, VFG, MOD, DK, GY, VTHNB, SHRD AS ABOVE.
44	101.50	103.28	1.78	*65		MUDSTONE	SSY, VFG, MOD, DK, GY, VTHNB, BRKN AS ABOVE. PLANT FOSSILS.
44	103.28	103.51	0.23	*61		MUDSTONE	SSY, VFG, MOD, DK, GY, VTHNB, BRKN AS ABOVE. PLANT FRAGMENTS.
45	103.51	105.46	1.95	*62		MUDSTONE	SSY, VFG, MOD, DK, GY, LAM, YBRKN AS ABOVE. PLANT FOSSILS.
46	105.46	106.25	0.79	*68		MUDSTONE	SSY, VFG, MOD, DK, GY, LAM, YBRKN VERY FRACTURED CORE, SHEAR ZONE, FEATUR ES IN PLACES. LAMINATED SS BEDS IN SECT ION. IT ALMOST LOOKS LIKE MASSIVE MUDST. BEDDING. PLANT FOSSILS (FRAGMENTS).
46	106.25	107.56	1.31	*69		MUDSTONE	SSY, VFG, DK, GY, LAM, YBRKN AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	107.56	109.04	1.48	*66		MUDSTONE	SSY, VFG, DK, GY, LAM, YBRKN AS ABOVE.
47	109.04	109.59	0.55	*69		MUDSTONE	SSY, VFG, DK, GY, LAM, YBRKN AS ABOVE.
48	109.59	111.59	2.00	*67		MUDSTONE	SSY, VFG, DK, GY, LAM, YBRKN AS ABOVE. CLADOPHLEBIS VIRGINIENSIS FIS HERI, TO BE SAMPLED. ODD CARBONATE VEIN
49	111.59	111.83	0.24	66		MUDSTONE	DK, GY, YBRKN MINOR CARBONACEOUS, PLANT FRAGMENTS.
49	111.83	113.41	1.58	66	08174 K ROOF	MUDSTONE	CARB, BLK, YBRKN AS ABOVE. PLANT HASH BECOMES ABUNDANT M EAR BASE. (LOWER 25.0CM SAMPLED). X SEA M ROOF ROCK.
49	113.41	113.48	0.07	65	08175 K	COAL	C-6, BLK, BRKN
49	113.48	113.53	0.05	65	08175 K	COAL	C-3, BLK, BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	113.53	113.55	0.02	65	08175	K	COAL	C-3.BLK.VBRKN
50	113.55	113.77	0.22	65	08175	K	COAL LOSS	
50	113.77	113.87	0.10	65	08175	K	MUDSTONE	CARB.BLK.VBRKN VERY THIN COAL STRINGERS.
50	113.87	114.73	0.86	65	08175	K	COAL	C-3.BLK.VSHRD POWDERED IN SOME PLACES.
50	114.73	115.01	0.28	65	08175	K	COAL LOSS	
50	115.01	115.09	0.08	65	08175	K	COAL	C-5.BLK.PHRD
51	115.09	115.25	0.16	65	08175	K	COAL	C-4.BLK.PHRD LISTRIC SURFACES.
51	115.25	115.38	0.13	64	08175	K	COAL	C-3.BLK.VBRKN LISTRIC SURFACES.
51	115.38	115.66	0.28	64	08175	K	COAL	C-2.BLK.VSHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	115.66	115.71	0.05	64	08175	K	COAL	C-1.BLK.BRKN
51	115.71	115.81	0.10	64	08175	K	COAL	C-2.BLK.BRKN FAIRLY COMPETENT.
51	115.81	115.90	0.09	64	08175	K	COAL	C-1.BLK.BRKN AS ABOVE.
51	115.90	115.94	0.04	64	08175	K	COAL	C-2.BLK.BRKN AS ABOVE.
51	115.94	115.98	0.04	64	08175	K	MUDSTONE	CARB.BLK.BRKN PARTING.
51	115.98	116.05	0.07	64	08175	K	COAL	C-2.BLK.BRKN
51	116.05	116.13	0.08	64	08175	K	COAL	C-2.BLK.VSHRD NUMEROUS LISTRIC SURFACES.
51	116.13	117.77	1.64	64	08175	K	COAL LOSS	
52	117.77	117.84	0.07	63	08175	K	COAL	C-1.BLK.BRKN
52	117.84	117.88	0.04	63	08175	K	COAL	C-1.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	117.88	117.91	0.03	63	08175	K	COAL	C-5.BLK.BRKN
52	117.91	118.00	0.09	63	08175	K	COAL	C-1.BLK.BRKN
52	118.00	118.02	0.02	63	08175	K	COAL	C-3.BLK.BRKN
52	118.02	118.08	0.06	63	08175	K	COAL	C-2.BLK.BRKN
52	118.08	118.10	0.02	63	08175	K	COAL	C-3.BLK.BRKN
52	118.10	118.15	0.05	63	08175	K	COAL	C-5.BLK.BRKN BECOMES PONDERED NEAR BASE.
52	118.15	119.93	1.78	63	08175	K	COAL LOSS	
52	119.93	119.98	0.05	62	08176	K	MUDSTONE	SLTY.DK.GY.BRKN CARBONACEOUS PLANT FRAGMENTS. POSSIBLE CORE LOSS ABOVE AND BELOW.
52	119.98	120.04	0.06	62	08176	K	MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE. CORE TWIST-OFF AT TOP OF THIS INTERVAL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	120.04	120.18	0.14	62	08176	K	MUDSTONE	SLTY.H.GY.BRKN MINOR BIVALVE FRAGMENTS. ABUNDANT SHRED DED CARB PLANT FRAGMENTS (<2.0MM).
52	120.18	120.32	0.14	62	08176	K	MUDSTONE	CARB.BLK.VBRKN NUMEROUS LISTRIC SURFACES.
52	120.32	120.53	0.21	62	08177	K	COAL LOSS	
52	120.53	120.57	0.04	62	08177	K	COAL	C-5.BLK.VSHRD
52	120.57	120.59	0.02	62	08177	K	COAL	C-3.BLK.VSHRD
52	120.59	120.61	0.02	62	08177	K	COAL	C-5.BLK.VBRKN
52	120.61	120.62	0.01	62	08177	K	MUDSTONE	CARB.BLK.BRKN
52	120.62	120.70	0.08	62	08177	K	COAL	C-6.BLK.BRKN SOFT.
52	120.70	121.02	0.32	62	08178	K FLOOR	MUDSTONE	SLTY.DK.GY.VBRKN CARBONACEOUS AT TOP OF INTERVAL. SILTY TOWARD BASE (UPPER 25.0CM SAMPLED). K S EAM FLOOR ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	121.02	121.10	0.08		61		SILTSTONE	M.GY.VBRKN
53	121.10	122.68	1.58	*61			SILTSTONE	SSY.FG.LT-M.GY.SSD.BRKN MAINLY SLTST BUT DOES ALTERNATE WITH SS BEDS UP TO 7CM THICK, BADLY SHEARED UN ABLE TO PUT PIECES TOGETHER. LISTRIC SU RFACES IN PLACES ALMOST POWDERED, VERY FINE CARBONATE VEINS, WHERE IT CAN BE S EEN SSD.
54	122.68	122.92	0.24		63		SILTSTONE	SSY.FG.LT-M.GY.SHRD AS ABOVE.
54	122.92	124.33	1.41		64		SANDSTONE	FG.LY.GY.MAS.BRKN MASSIVE BEDDING OF SS, LARGE CARBONATE VEINS, UP TO 3CM THICK, SOME VEINS OFFS ET, SHEAR ZONE SURFACES, SLICKENSIDES.
55	124.33	125.08	0.75		66		SANDSTONE	FG.LY.GY.MAS.BRKN AS ABOVE.
55	125.08	125.98	0.90		68		SANDSTONE	FG.LY.GY.MAS.BRKN AS ABOVE. BRECCIA WITHIN THE CARBONATE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	125.98	126.19	0.21	*69			SILTSTONE	SSY.VFG.LT-M.GY.VTHNB.BRKN BEDS OFFSET BY MICRO FAULT, CARBONATE V EINS, SHEAR ZONE - LISTRIC SURFACE.
56	126.19	127.05	0.86	*64			SILTSTONE	SSY.VFG.MOD.LT-M.GY.VTHNB.BRKN CARBONATE VEINS UP TO 1CM THICK - OFFSE T IN PLACES, ALTERNATING, PARALLEL CLEA RANCE IN PLACES. SHEAR SURFACES - LISTR IC.
56	127.05	128.08	1.03	*62			SILTSTONE	SSY.VFG.MOD.LY-M.GY.VTHNB.BRKN AS ABOVE.
57	128.08	128.74	0.66	*62			SILTSTONE	SSY.VFG.MOD.LT-M.GY.VTHNB.BRKN AS ABOVE.
57	128.74	129.96	1.22	*63			MUDSTONE	SLTY.VFG.DK.GY.VTHNB.BRKN COASTER ZONE, RAMED MUDST CARBONATE VEI NS IN PLACES UP TO 1.0CM THICK, SHEAR S URFACES.
58	129.96	131.72	1.76	*63			MUDSTONE	SLTY.VFG.DK.GY.VTHNB.VBRKN AS ABOVE.
58	131.72	132.01	0.29	64			MUDSTONE	SLTY.VFG.DK.GY.VTHNB.SHRD AS ABOVE. BADLY SHEARED.
59	132.01	133.12	1.11	*64			MUDSTONE	SLTY.VFG.DK.GY.VTHNB.VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	133.12	133.40	0.28	*64			MUDSTONE	SLTY. VFG. DK. GY. VTHNB. BRKN AS ABOVE.
60	133.40	134.83	1.43	*63			MUDSTONE	SLTY. VFG. DK. GY. VTHNB. VBRKN AS ABOVE.
60	134.83	135.54	0.71	63			MUDSTONE	SLTY. VFG. DK. GY. VTHNB. BRKN AS ABOVE. TWIST-OFF; POSSIBLE CORE LOSS
61	135.54	137.54	2.00	*64			MUDSTONE	SLTY. VFG. DK. GY. VTHNB. VBRKN AS ABOVE. LAST 40.0CM COAL STRINGERS, VERY THINLY BEDDED.
62	137.54	137.83	0.29	64			MUDSTONE	DK. GY. LAM. BRKN LISTRIC SURFACES. MINOR PLANT FRAGS. J SEAM ROOF. NOT SAMPLED.
62	137.83	137.86	0.03	64	99999	J	COAL	C-4. BLK. BRKN VERY THIN C-2 AND MUDST LAMS WITHIN.
62	137.86	137.91	0.05	64	99999	J	COAL	C-3. BLK. BRKN
62	137.91	137.97	0.06	64	99999	J	COAL LOSS	
62	137.97	138.17	0.20	64	99999	J	MUDSTONE	CARB. BLK. LAM. BRKN NUMEROUS COALIFIED PLANT FRAGS AND VERY THIN C-2 LAMINATIONS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	138.17	138.36	0.19	64	99999	J	MUDSTONE	DK. GY. BRKN VERY FOSSILIFEROUS. MINOR COALIFIED PLANT FRAGS.
62	138.36	138.40	0.04	64	99999	J	COAL	C-3. BLK. BRKN MINOR CALCITE VEINING AT BASE.
62	138.40	138.56	0.16	64	99999	J	COAL LOSS	
62	138.56	138.81	0.25	64			MUDSTONE	CARB. BLK. LAM. SLD NUMEROUS COALIFIED PLANT FRAGS AND THIN C-2 TO C-3 LAMINATIONS. J SEAM FLOOR ROCK. NOT SAMPLED.
62	138.81	139.30	0.49	64			MUDSTONE	DK. GY. SLD NUMEROUS PLANT FRAGS THROUGHOUT. MINOR COALIFIED PLANT FRAGS.
62	139.30	139.65	0.35	64			MUDSTONE	DK. GY. SLD AS ABOVE. COALY IN PARTS.
62	139.65	140.29	0.64	*64			SILTSTONE	CLY. M. GY. LAM. SSD. SLD VERY THIN COAL STRINGERS ALONG WITH CARBONATE VEINS. MINOR SSD IN SOME AREAS.
63	140.29	141.03	0.74	*68			SANDSTONE	SLTY. FG. LT-M. GY. VTHNB. SLD INTERBANDED SSSY SLTST. CARBONATE VEINS. SHEAR SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	141.03	141.67	0.64	*38			SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.BRKN AS ABOVE. TWIST-OFF. POSSIBLE CORE LOSS
63	141.67	142.17	0.50	45			ROCK LOSS	
64	142.17	142.63	0.46	50			SANDSTONE	SLTY.FG.LT.GY.LAM.BRKN CARBONATE VEINS, WHISPS THIN SLTST BAND S. 2 TWIST-OFFS. POSSIBLE CORE LOSS SHE AR ZONE - LISTRIC SURFACES.
64	142.63	143.13	0.50	56			ROCK LOSS	
64	143.13	143.89	0.76	*63			SANDSTONE	SLTY.FG.LT.GY.VTHNB.SLD MUDST BEDS ARE VERY THIN 1-5CM THICK WI TH THE OLD ONE, ABOUT 12CM THICK, TOPS UP. BEDS ARE ALTERNATE BETWEEN SS & SLT ST.
64	143.89	144.81	0.92	*72			SILTSTONE	CLYY.LT-M.GY.VTHNB.SSD.SLD MINOR SSD AREAS. ALTERNATING BEDS OF SL TST & SS.
65	144.81	145.89	1.08	*69			SILTSTONE	CLYY.MOD.LT-DK.GY.VTHNB.SLD GRADUAL BEDDING BETWEEN SLTY & MUDST. C OAL STRINGER WITH QTZ WITHIN THE VEIN.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	145.89	146.89	1.00	*67			SILTSTONE	CLYY.MOD.LT-DK.GY.VTHNB.SLD AS ABOVE.
66	146.89	148.99	2.10	*64			SILTSTONE	CLYY.MOD.LT-DK.GY.VTHNB.BIOTR.SLD AS ABOVE.
67	148.99	150.75	1.76	*70			SILTSTONE	CLYY.MOD.LT-DK.GY.VTHNB.BIOTR.SLD AS ABOVE.
67	150.75	151.07	0.32	*64			SANDSTONE	SLTY.YFG.MOD.LT-M.GY.LAM.SSD.SLD FINE GRAINED SS INTERBEDDED WITH LAMINA TED BEDS OF SLTST. VEIN LIKE CARBONATE VEINS THROUGHOUT. IN PLACES GOES TO A Y FG SS.
68	151.07	151.83	0.76	*67			SANDSTONE	SLTY.YFG.MOD.LT-M.GY.LAM.SSD.SLD AS ABOVE. MICRO FAULTING OF CARBONATE V EINS.
68	151.83	153.17	1.34	*66			SANDSTONE	SLTY.FG.MOD.LT-M.GY.LAM.SSD.SLD AS ABOVE. TOPS UP INDICATORS.
69	153.17	155.00	1.83	*69			SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN AS ABOVE. GRAIN SIZE OF SS CHANGING A B IT IN PLACES.
69	155.00	155.10	0.10	67			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	155.10	155.30	0.20	*67		SANDSTONE	SLTY.FG.LT-M.GY.LAM.BRKN AS ABOVE.
69	155.30	155.32	0.02	67		ROCK LOSS	
70	155.32	157.32	2.00	*65		SANDSTONE	SLTY.FG.LT.GY.VTHNB.BRKN SS WITH SLTST & ODD MUDST BED THROUGHOUT. MAJOR CARBONATE VEINS. SOME BEDS ARE WHISPIER THIN. SS CHANGES GRAIN SIZE IN PLACES.
71	157.32	158.14	0.82	*63		SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.SLD AS ABOVE. SOME DISPLACEMENT OF CARB VEINS.
71	158.14	159.39	1.25	*67		SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.SLD AS ABOVE. AT 95.0CM IN THE SECTION THERE IS A CARBONATE VEIN 3.0CM THICK IT IS SOLID.
72	159.39	160.60	1.21	*61		SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.BRKN AS ABOVE. ALSO GRADED BEDDING.
72	160.60	160.63	0.03	63		ROCK LOSS	
72	160.63	161.12	0.49	*64		SILTSTONE	CLYY.M.GY.VTHNB.BIOTR.BRKN SLTST LAMINATED WITH MUDST WITH BIOTRB & WORM BURROWS THROUGHOUT. ODD CARBONATE VEINS TOPS UP INDICATOR.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	161.12	163.01	1.89	*71		SILTSTONE	CLYY.M.GY.VTHNB.BIOTR.BRKN AS ABOVE.
73	163.01	163.11	0.10	73		ROCK LOSS	
74	163.11	164.37	1.26	*75		SILTSTONE	CLYY.M.GY.VTHNB.BIOTR.BRKN AS ABOVE. IN SECTION AT 87.0CM THERE IS A CARBONATE VEIN 16.0CM THICK THAT HAS BEEN BRECCIATED.
74	164.37	164.47	0.10	71		ROCK LOSS	
74	164.47	165.17	0.70	*69		SILTSTONE	CLYY.M.GY.VTHNB.WRMBU.BRKN AS ABOVE.
75	165.17	167.27	2.10	*71		SILTSTONE	CLYY.MOD.M.GY.VTHNB.BIOTR.SLD AS ABOVE.
76	167.27	167.53	0.26	*73		SILTSTONE	CLYY.MOD.M.GY.VTHNB.BIOTR.SLD AS ABOVE.
76	167.53	169.28	1.75	*72		SILTSTONE	CLYY.MOD.M.GY.VTHNB.BIOTR.SLD AS ABOVE. ALONG WITHIN FECAL PELLETS.
77	169.28	170.44	1.16	*70		SILTSTONE	CLYY.MOD.M.GY.VTHNB.SLD AS ABOVE. FECAL PELLETS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	170.44	171.44	1.00	*70			SILTSTONE	CLYY, MOD. LT-M. GY. VTHNB. SLD AS ABOVE. FECAL PELLETS.
78	171.44	173.51	2.07	*77			SILTSTONE	CLYY, LT-M. GY. VTHNB. SSD. SLD SLTST GRADUAL SPECKLING WITH MUDST. NO DEFINITE STARTING OR STOPPING OF BEDS - ONE BED SHADES INTO THE NEXT. CARBONATE VEINS. COULD BE TUFFACEOUS MATERIAL LO OKS ALMOST LIKE A SS.
79	173.51	175.57	2.06	*73			SILTSTONE	CLYY, LT-M. GY. LAM. SSD. SLD AS ABOVE.
80	175.57	176.51	0.94	*71			SILTSTONE	CLYY, LT. GY. LAM. XBDG. SLD AS ABOVE.
80	176.51	176.67	0.16	*71			SILTSTONE	LT. GY. LAM. SLD AS ABOVE.
80	176.67	177.61	0.94	*68			SILTSTONE	CLYY, M. GY. VTHNB. BRKN CARBONATE VEINS - OFFSET. IN PLACES BAN DS OF TUFFACEOUS LIKE MATERIAL. DEFINIT E LAYERS.
81	177.61	177.70	0.09	66	10448		BENTONITE	LT. GY. LAM. YBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	177.70	178.27	0.57	*64			SILTSTONE	LT-M. GY. LAM. BRKN INTERLAMINATED WITH MUDST. POLISHED BED DING SURFACES. MINOR COALY STRINGER HIGH ANGLE CALCITE FRACTURE FILL.
81	178.27	179.03	0.76	*66	08179	I ROOF	MUDSTONE	DK. GY. LAM. BRKN NUMEROUS PLANT FRAGS. SOME OF WHICH ARE COALIFIED. CALCITE FRACTURE FILL. LIST RIC SURFACES. ROOF. (LOWER 20.0CM SAMPL ED). I SEAM ROOF ROCK.
81	179.03	179.08	0.05	67	08179	I ROOF	MUDSTONE	CARB. BLK. LAM. SLD NUMEROUS PLANT FRAGS. COALY PARTINGS TH ROUGHOUT. I SEAM ROOF ROCK. SAMPLED.
81	179.08	179.27	0.19	67	08180	I	COAL	C-2. BLK. LAM. SLD CALCITE STRINGERS THROUGHOUT. SOME C-1 AND C-5 LAMS.
81	179.27	179.30	0.03	67	08180	I	MUDSTONE	CARB. BLK. LAM. SLD LISTRIC SURFACES.
81	179.30	179.37	0.07	67	08180	I	COAL	C-2. BLK. LAM. SLD C-1 LAMS.
81	179.37	179.72	0.35	67	08180	I	COAL LOSS	
81	179.72	179.79	0.07	68	08180	I	COAL	C-3. BLK. LAM. YBRKN WITH C-2 LAMS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	179.79	179.87	0.08	68	08180	I	COAL	C-2.BLK.LAM.BRKN
82	179.87	180.10	0.23	68	08180	I	COAL	C-2.BLK.LAM.VSHRD WITH C-1 AND C-5 LAMS.
82	180.10	180.37	0.27	69	08180	I	COAL	C-3.BLK.LAM.VSHRD WITH C-2 AND C-5. MINOR MUDST LAMS.
82	180.37	180.43	0.06	69	08180	I	COAL	C-5.BLK.LAM.BRKN FAIRLY HARD WITH LISTRIC SURFACES.
82	180.43	180.59	0.16	69	08180	I	COAL	C-3.BLK.LAM.SHRD
82	180.59	180.81	0.22	69	08180	I	MUDSTONE	CARB.BLK.LAM.BRKN
82	180.81	181.00	0.19	70	08181	I	COAL LOSS	
82	181.00	181.03	0.03	70	08181	I	COAL	C-4.BLK.LAM.VBRKN
82	181.03	181.06	0.03	70	08181	I	COAL	C-1.BLK.LAM.BRKN
82	181.06	181.16	0.10	70	08181	I	COAL	C-2.BLK.LAM.SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	181.16	181.25	0.09	70	08181	I	COAL	C-1.BLK.BRKN
82	181.25	181.35	0.10	70	08181	I	COAL	C-2.BLK.LAM.SHRD WITH NUMEROUS C-1 LAMS, GOOD CLEAT.
82	181.35	181.61	0.26	70	08181	I	COAL	C-1.BLK.BRKN CONCHOIDAL FRACTURES WITH MINOR C-3.
83	181.61	181.69	0.08	71	08181	I	COAL	C-1.BLK.BRKN AS ABOVE.
83	181.69	181.75	0.06	71	08181	I	COAL	C-5.BLK.VBRKN NUMEROUS C-1 PARTINGS.
83	181.75	182.36	0.61	71	08181	I	COAL LOSS	
83	182.36	182.61	0.25	72	08182	I	COAL	C-1.BLK.BRKN GOOD CLEAT. CONCHOIDAL FRACTURE. BANDED.
83	182.61	182.71	0.10	72	08182	I	COAL	C-3.BLK.VSHRD MOSTLY POWDER. SMALL RESISTIVE CHUNKS & C-1 THROUGHOUT.
83	182.71	182.98	0.27	73	08182	I	COAL	C-1.BLK.SLD CONCHOIDAL FRACTURE. MINOR C-2 BANDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	182.98	183.05	0.07	73	08182	I	COAL	C-1, BLK. SHRD GOOD CLEAT, CONCHOIDAL FRACTURE.
83	183.05	183.18	0.13	73	08182	I	COAL	C-1, BLK. SLD AS ABOVE.
83	183.18	183.60	0.42	74	08182	I	COAL	C-1, BLK. VBRKN AS ABOVE.
83	183.60	183.78	0.18	74	08182	I	COAL	C-1, BLK. SHRD
84	183.78	184.26	0.48	75	08182	I	COAL	C-1, BLK. SHRD AS ABOVE. VERY WELL DEVELOPED CLEAT, CONCHOIDAL FRACTURE.
84	184.26	185.67	1.41	76	08183	I FLOOR	MUDSTONE	DK. GY. SSD NUMEROUS PLANT FRAGS THROUGHOUT. MINOR COALY PARTINGS, LISTRIC SURFACES THROUGHOUT WITH SLICKENSIDES. AT TOP ARE NUMEROUS VERY THIN COALY QTZ STRINGERS. BECOMES SLTY AT BASE. FLOOR (UPPER 25.0CM SAMPLED). I SEAM FLOOR ROCK.
85	185.67	186.77	1.10	*78			SILTSTONE	CLY. M. GY. VTHNB, SSD, SLD VERY THIN BEDS OF MUDST. MINOR SSD. SOME BEDS WHISPIER THIN PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	186.77	187.04	0.27	*70			SANDSTONE	SLTY. FG. LT-M. GY. LAM. SLD LAMINATED BEDS THROUGHOUT. ODD CLASTS OF SLTST & CHERT. IN PLACES BANDS CLASTS
85	187.04	187.64	0.60	*56			SANDSTONE	SLTY. MG. LT-M. GY. MAS. SLD ODD WHISPIER THIN BED OF SLTST AND CHERT & SLTST CLASTS THROUGH - BANDS (BEDS) OF CLASTS. CARBONATE VEINS. CLASTS ARE RANDOM PLACED.
86	187.64	188.80	1.16	*62			SANDSTONE	SLTY. MG. LT-M. GY. MAS. SLD AS ABOVE.
86	188.80	189.71	0.91	*63			SANDSTONE	SLTY. MG. MOD. LT. GY. MAS. SLD AS ABOVE.
87	189.71	191.64	1.93	*70			SANDSTONE	SLTY. MG. LT. GY. MAS. SLD AS ABOVE.
88	191.64	191.80	0.16	*72			SANDSTONE	SLTY. MG. PR. LT. GY. VTHNB. SLD AS ABOVE. SHEAR SURFACES.
88	191.80	192.42	0.62	*66			SANDSTONE	SLTY. MG. PR. LT-M. GY. VTHNB. SLD AS ABOVE. TWIST-OFF - POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	192.42	193.20	0.78	*66		SANDSTONE	SLTY. MG. PR. LT-M. GY. SSD. SLD MAINLY SS WITH VERY THIN BEDS OF SLTST. GRADED BEDDING WITHIN SS.
88	193.20	193.69	0.49	*68		SILTSTONE	SSY. FG. MOD. LT-M. GY. SLD ALTERNATING BEDS OF SLTST & FG SS. DISC ONTINUING BEDS OF SS.
89	193.69	194.87	1.18	*71		SILTSTONE	SSY. M. GY. LAM. SSD. SLD ALTERNATING LAMINATED BEDS OF SLTST & S S. SSD IN PLACES, PLANT FRAGMENTS. ODD CARBONATE VEIN. MUDST BAND IN ODD PLACE
89	194.87	195.73	0.86	*66		MUDSTONE	SLTY. MEL. DK. GY. YTHNB. SLD INTERBEDDED MUDST & SLTST. ODD CARBONAT E VEINS. SHEAR ZONE SURFACES.
90	195.73	197.81	2.08	*65		MUDSTONE	SLTY. DK. GY. YTHNB. SLD AS ABOVE.
90	197.81	197.89	0.08	*58		MUDSTONE	SSY. LT-DK. GY. YTHNB. SLD INTERBEDDED SS & MUDST. IN MANY PLACES SSD. A FER DISCONTINUING BEDS.
91	197.89	199.99	2.10	*64		MUDSTONE	SSY. LT-DK. GY. YTHNB. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	199.99	200.94	0.95	*69		MUDSTONE	SSY. M. GY. YTHNB. SLD AS ABOVE. ALONG WITH FECAL PELLETS. LIS TRIC SURFACES IN PLACES.
92	200.94	202.05	1.11	*73		SANDSTONE	CLYY. FG. LT-M. GY. YTHNB. BRKN ALTERNATING BEDS OF SS & MUDST. RANGING FROM 1-5CM THICK. IN PLACES SS IS GRAD ED BEDDING UP TO COARSE GRAINED. TOPS U P INDICATORS.
92	202.05	202.15	0.10	71		ROCK LOSS	
93	202.15	203.96	1.81	*69		SANDSTONE	CLYY. MG. LT-M. GY. YTHNB. BRKN AS ABOVE. NORM BURROWS.
93	203.96	204.06	0.10	72		ROCK LOSS	
93	204.06	204.37	0.31	*73		SANDSTONE	CLYY. MG. LT-M. GY. YTHNB. SSD. BRKN AS ABOVE.
94	204.37	206.39	2.02	*69		SANDSTONE	CLYY. MG. LT-M. GY. YTHNB. BRKN ALTERNATING BEDS OF SS & MUDST. RANGING FROM 1-5CM THICK IN PLACES. SS IS GRAD ED BEDDING UP TO COARSE GRAINED IN PLAC ES. CARBONATE VEINS. CLASTS. TOPS UP. S HEARED MUDST PARTINGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	206.39	206.75	0.36	*79		SANDSTONE	CLYY.MG.PR.LT-M.GY.VTHNB.BRKN AS ABOVE.
95	206.75	206.96	0.21	*71		SANDSTONE	CLYY.GRAN.PR.LT-M.GY.MAS.SLD GRANULE GRAVEL - MASSIVE BEDDING SS. MUDST, SLTST MAKE UP THE GRAVEL. ONE BAND OF SLTST.
95	206.96	207.08	0.12	*70		MUDSTONE	SSY.M.GY.VTHNB.BRKN SHEARED MUDST - VERY CRUMBLY. LAMINATED BEDS OF SS THROUGHOUT.
95	207.08	208.43	1.35	*74		SANDSTONE	CLYY.FG.PR.LT-M.GY.VTHNB.WRMBU.VBRKN ALTERNATING BEDS OF SS & MUDST. DISCONTINUING IN PLACES. WORM BURROWS THROUGHOUT. CARBONATE VEINS. SS GO TO GRANULAR IN PLACES.
96	208.43	210.11	1.68	*81		SANDSTONE	CLYY.CG.PR.LT-M.GY.VTHNB.WRMBU.BRKN ALTERNATING BEDS - UP TO 5CM THICK IN PLACES. DISCONTINUING BEDS. MAJOR WORM BURROWS. CLASTS GRADED BEDDING IN SOME SS BEDS. SHEAR SURFACES, CARBONATE VEINS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
96	210.11	210.18	0.07	73		ROCK LOSS	
96	210.18	210.47	0.29	*71		SANDSTONE	CLYY.CG.PR.LT-M.GY.VTHNB.WRMBU.BRKN AS ABOVE.
96	210.47	210.51	0.04	70		ROCK LOSS	
97	210.51	212.52	2.01	*67		SANDSTONE	CLYY.MG.PR.M.GY.VTHNB.BIOTR.BRKN AS ABOVE.
98	212.52	213.63	1.11	*74		SANDSTONE	CLYY.MG.PR.M.GY.VTHNB.WRMBU.BRKN AS ABOVE. PLANT FRAGMENTS.
98	213.63	213.70	0.07	73		ROCK LOSS	
98	213.70	214.63	0.93	*73		MUDSTONE	SSY.MUD.DK.GY.VTHNB.BRKN MUDST WITH PLANT FRAGMENTS THROUGHOUT. SHEARED SURFACES. BIVALVES. DISCONTINUING SS BEDS. MUDST APPEARS MASSIVE BEDDING IN PLACES.
98	214.63	214.68	0.05	73		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
99	214.68	216.35	1.67	73			MUDSTONE	MOD. DK. GY. MAS. VBRKN MUDST APPEARS TO BE MASSIVE BEDDING, SHEAR ZONE - MANY LISTRIC SURFACES, COAL STRINGERS, PLANT FRAGMENTS.
99	216.35	216.43	0.08	73			ROCK LOSS	
99	216.43	216.64	0.21	73			MUDSTONE	MOD. DK. GY. MAS. SHRD AS ABOVE.
99	216.64	216.67	0.03	73			ROCK LOSS	
100	216.67	218.74	2.07	73			MUDSTONE	MOD. DK. GY. MAS. BRKN AS ABOVE.
101	218.74	219.63	0.89	73			MUDSTONE	MOD. DK. GY. MAS. BRKN AS ABOVE.
101	219.63	219.68	0.05	73			ROCK LOSS	
101	219.68	220.88	1.20	73			MUDSTONE	MOD. DK. GY. MAS. BRKN AS ABOVE.
101	220.88	220.99	0.11	73			ROCK LOSS	
102	220.99	222.67	1.68	73			MUDSTONE	MOD. DK. GY. MAS. BRKN AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
102	222.67	222.78	0.11	73			ROCK LOSS	
102	222.78	223.16	0.38	73			MUDSTONE	DK. GY. MAS. BRKN MASSIVE MUDST BEDDING, PLANT FRAGMENTS, SHEAR SURFACES, ODD MUD PARTING. TOP 1'S VERY FRACTURED.
102	223.16	223.21	0.05	73			ROCK LOSS	
103	223.21	225.40	2.19	73			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
104	225.40	226.00	0.60	73			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
104	226.00	226.02	0.02	73			ROCK LOSS	
104	226.02	227.46	1.44	73			MUDSTONE	DK. GY. MAS. VBRKN AS ABOVE.
104	227.46	227.57	0.11	73			ROCK LOSS	
105	227.57	229.65	2.08	73			MUDSTONE	DK. GY. MAS. VBRKN AS ABOVE. NILSSONIA TENUCAULIS.
106	229.65	231.82	2.17	73			MUDSTONE	DK. GY. MAS. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
107	231.82	233.83	2.01	73			MUDSTONE	DK.GY.MAS.VBRKN AS ABOVE.
108	233.83	234.60	0.77	*73			MUDSTONE	DK.GY.MAS.VBRKN BCA ESTIMATED. NILSSONIA NIGRACOLLENSIS
108	234.60	234.90	0.30	73	08184	H ROOF	MUDSTONE	CARB.DK.GY.MAS.SHRD ABUNDANT LISTRIC SURFACES AND PLANT FRAGMENTS. (LOWER 21.0CM SAMPLED). H SEAM ROOF ROCK.
108	234.90	234.94	0.04	72	08184	H ROOF	MUDSTONE	CARB.DK.GY.MAS.SHRD AS ABOVE. H SEAM ROOF ROCK. SAMPLED.
108	234.94	235.00	0.06	72	08185	H	COAL	C-4.BLK.SLD
108	235.00	235.03	0.03	72	08185	H	MUDSTONE	CARB.BLK.BRKN
108	235.03	235.07	0.04	72	08185	H	COAL	C-4.BLK.SHRD BANDING SLIGHTLY CONVORTED.
108	235.07	235.12	0.05	72	08185	H	COAL	C-3.BLK.BRKN
108	235.12	235.16	0.04	72	08185	H	COAL	C-3.BLK.SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
108	235.16	235.21	0.05	72	08185	H	COAL	C-3.BLK.SLD
108	235.21	235.22	0.01	72	08185	H	MUDSTONE	CARB.BLK.SLD VERY THIN PARTING.
108	235.22	235.24	0.02	72	08185	H	COAL	C-4.BLK.VSHRD
109	235.24	235.34	0.10	72	08185	H	COAL	C-3.BLK.PHRD
109	235.34	235.38	0.04	72	08185	H	MUDSTONE	CARB.BLK.VSHRD MINOR STRINGERS.
109	235.38	235.53	0.15	72	08185	H	COAL	C-4.BLK.SHRD
109	235.53	235.91	0.38	72	08185	H	COAL LOSS	
109	235.91	236.03	0.12	72	08185	H	ROCK LOSS	
109	236.03	236.17	0.14	71	08185	H	COAL	C-6.BLK.VSHRD
109	236.17	236.24	0.07	71	08185	H	MUDSTONE	CARB.BLK.VBRKN MUD PARTING, LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
109	236.24	236.34	0.10	71	08185	H	COAL	C-4. BLK. VSHRD
109	236.34	236.40	0.06	71	08185	H	COAL	C-2. BLK. VBRKN
109	236.40	236.43	0.03	71	08185	H	COAL	C-3. BLK. YBRKN
109	236.43	236.62	0.19	71	08185	H	COAL LOSS	
109	236.62	236.71	0.09	71	08185	H	ROCK LOSS	
109	236.71	236.74	0.03	71	08185	H	MUDSTONE	CARB. BLK. VBRKN LITRIC SURFACES.
109	236.74	236.90	0.16	71	08185	H	COAL	C-3. BLK. VSHRD
109	236.90	237.27	0.37	71	08186	H	COAL LOSS	
110	237.27	238.01	0.74	70	08186	H	COAL	C-2. BLK. PHRD
110	238.01	238.40	0.39	70	08186	H	COAL	C-2. BLK. BRKN WELL CLEATED, HARD. SOME DISSEMINATED PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
111	238.40	238.52	0.12	69	08186	H	MUDSTONE	CARB. BLK. BRKN PARTING.
111	238.52	238.95	0.43	69	08186	H	COAL	C-2. BLK. VBRKN SHARP LOWER CONTACT BOTTOM OF SEAM.
111	238.95	239.12	0.17	69	08186	H	COAL LOSS	
111	239.12	239.28	0.16	69	08187	H	MUDSTONE	PYR. BLK. SLD FLOOR ROCK, VERY DENSE, DISSEMINATED, M UMEROUS CALCIUM COATED COAL STRINGERS, SAMPLED, H SEAM FLOOR ROCK.
111	239.28	240.26	0.98	68	08187	H FLOOR	MUDSTONE	PYR. BLK. SLD DISSEMINATED PYRITE THROUGHOUT, LOCALIZ ED ZONES WITH A HIGH CONTENT OF PYRITE (1-2CM BANDS), MINOR COAL STRINGERS, CA RBONACEOUS. (UPPER 9.0CM SAMPLED), H SE AM FLOOR ROCK.
111	240.26	240.43	0.17	68			COAL	C-5. BLK. SLD LOCALIZED BANDS OF C-4, MINOR PYRITE.
112	240.43	240.52	0.09	68			COAL	C-5. DK. BLK. BRKN C-5 WITH BANDS OF C-4.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88011

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
112	240.52	241.13	0.61	67			MUDSTONE	DK.GY.MAS.BRKN MUDST MASSIVE BEDDING. PYRITE, PLANT FRAGMENTS. CORE HEAVILY FRACTURED. SHEAR ZONE SURFACES - LISTRIC.
112	241.13	242.39	1.26	67			MUDSTONE	DK.GY.MAS.BRKN AS ABOVE.
112	242.39	242.54	0.15	*66			MUDSTONE	SSY.LT-DK.GY.YTHNB.SLD INTERBEDDED MUDST & SS, DISCONTINUOUS BEDS - CLASTS. SHEARED IN PLACES.
113	242.54	243.68	1.14	*69			MUDSTONE	SSY.LT-DK.GY.YTHNB.BIOTR.SLD AS ABOVE. MAJOR BIOTRB. END OF HOLE. TD = 243.68M.

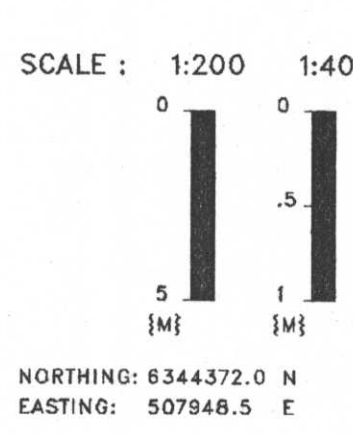
* DENOTES MEASURED BCA NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88011

GEOLOGIST : ETMANSKI

DATE : FEB 21/89

DRAWING NO. :

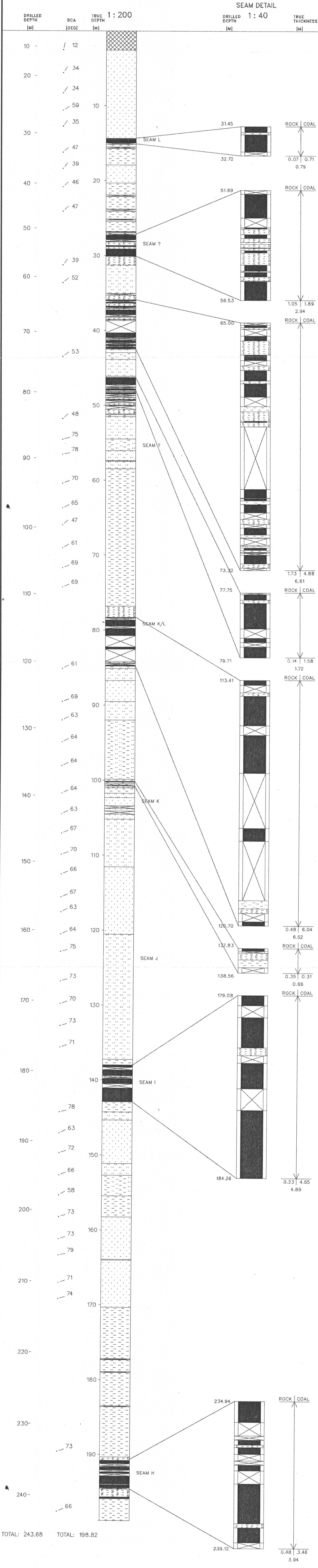


NORTHING: 8344372.0 N
 EASTING: 507948.5 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED



TOTAL: 243.68 TOTAL: 198.82

Gulf Canada Resources Limited Coal Division

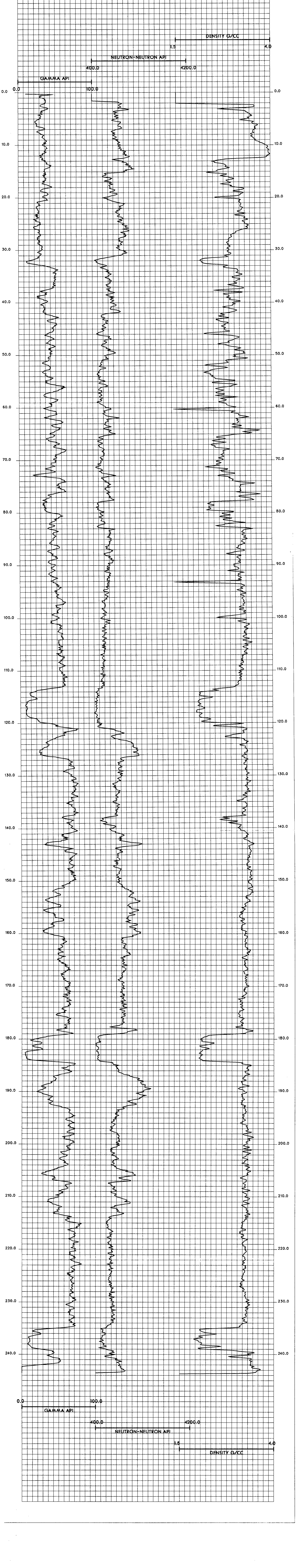
Geophysical Log

Datasource: KPNLRDDH88011	Province: BC	Northing: 6344370.00	Lat: 571439
Log Date: 88-06-24	Zone: 9	Easting: 507949.00	Long: 1285206
Company: CENTURY	Measuring Point: GROUND LEVEL		Elevation: 1519.9
Geologist: ETMANSKI			

Scale: 1 to 200.0
 Depth Range: 0.0 to 248.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS
 2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88012

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88012

DATE - 02/15/89

- HISTORY -

START DATE - 06/23/88

END DATE - 06/25/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MATTHEWS

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED: I, K/L?, K, J, I, I(OVT).

- LOCATION -

PROVINCE - BC
ELEVATION - 1654.96

LICENCE/LEASE NUMBER - 7151

ZONE - 9
NORTHING - 6343219.55
EASTING - 506484.41

LATITUDE - 571402
LONGITUDE - 1285333

- ORIENTATION -

LENGTH - 175.04
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.05
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

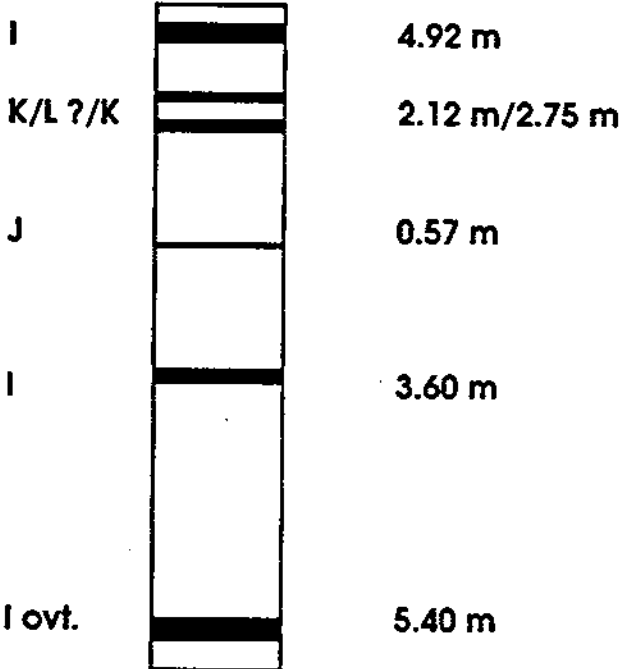
MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-012

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000



Gulf Canada Resources Limited

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	61			OVERBURDEN	
1	3.05	3.57	0.52	*61			MUDSTONE	SLTY. M. GY. LAM. SSD. YBRKN ALT LAM OF LT GREY & M GREY MUDST. OXID IZED, CORE TWIST-OFF. POSSIBLE CORE LOS S. WORM PELLETS.
1	3.57	4.29	0.72	*63			MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
1	4.29	4.51	0.22	63			MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
2	4.51	4.60	0.09	63	08147	I ROOF	MUDSTONE	DK. GY. BRKN MINOR PLANT FRAGS. PRESENT. I SEAM ROOF ROCK. SAMPLED.
2	4.60	4.62	0.02	63	08147	I ROOF	MUDSTONE	BLK. YSHRD SOFT, UNCONSOLIDATED. I SEAM ROOF ROCK. SAMPLED.
2	4.62	4.77	0.15	63	08148	I	COAL LOSS	
2	4.77	4.79	0.02	63	08148	I	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	4.79	4.81	0.02	63	08148	I	COAL	C-5. BLK. BRKN
2	4.81	4.83	0.02	63	08148	I	COAL	C-3. BLK. BRKN
2	4.83	4.85	0.02	62	08148	I	COAL	C-1. BLK. BRKN
2	4.85	4.89	0.04	62	08148	I	COAL	C-3. BLK. PHRD. ABUNDANT C-2 FRAGMENTS.
2	4.89	4.92	0.03	62	08148	I	COAL	C-5. BLK. VTHNB. BRKN INTERBEDDED C-4 AND MUDST.
2	4.92	5.41	0.49	62	08148	I	COAL LOSS	
2	5.41	5.60	0.19	62	08148	I	MUDSTONE	CARB. BLK. YSHRD SOFT, UNLITHIFIED.
2	5.60	6.22	0.62	62	08148	I	COAL LOSS	
2	6.22	6.25	0.03	62	08148	I	COAL	C-5. BLK. BRKN MINOR C-4 LAMS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	6.25	6.40	0.15	62	08148 I	COAL	C-3.BLK.PMRD
2	6.40	6.43	0.03	62	08148 I	COAL	C-3.BLK.VBRKN
2	6.43	6.45	0.02	62	08148 I	COAL	C-3.BLK.PHRD
2	6.45	6.48	0.03	62	08148 I	COAL	C-3.BLK.BRKN
2	6.48	7.21	0.73	62	08148 I	COAL LOSS	
2	7.21	7.25	0.04	61	08148 I	COAL	C-4.BLK.VTHNB.VBRKN INTERBEDDED C-3 AND CARB. MUDST.
2	7.25	7.26	0.01	61	08148 I	COAL	C-2.BLK.VBRKN
2	7.26	7.29	0.03	61	08148 I	COAL	C-4.BLK.PHRD
2	7.29	7.38	0.09	61	08148 I	COAL	C-2.BLK.BRKN MINOR C-3 AND C-1 BANDS.
2	7.38	7.48	0.10	61	08148 I	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	7.48	7.51	0.03	61	08148 I	COAL	C-5.BLK.PHRD ABUNDANT CARB MUDST INTERMIXED.
2	7.51	7.55	0.04	61	08148 I	COAL	C-4.BLK.VBRKN
2	7.55	7.58	0.03	61	08148 I	MUDSTONE	CARB.BLK.PHRD EXTREMELY SHEARED, SOFT.
2	7.58	7.63	0.05	61	08148 I	COAL	C-1.BLK.VBRKN
2	7.63	7.65	0.02	61	08148 I	COAL	C-4.BLK.VBRKN
2	7.65	7.69	0.04	60	08148 I	COAL	C-2.BLK.VBRKN
2	7.69	7.76	0.07	60	08148 I	COAL	C-4.BLK.VTHNB.VBRKN INTERBANDED C-5 AND C-2.
2	7.76	7.80	0.04	60	08148 I	MUDSTONE	CARB.BLK.PHRD SOFT.
2	7.80	7.85	0.05	60	08148 I	COAL	C-6.BLK.BRKN VERY HARD.
2	7.85	7.93	0.08	60	08148 I	MUDSTONE	CARB.BLK.VSHRD SOFT, UNLITHIFIED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	7.93	7.96	0.03	60	08148	I	COAL	C-3.BLK.BRKN
2	7.96	8.01	0.05	60	08148	I	COAL	C-5.BLK.PHRD MIXED WITH CARB MUDST.
2	8.01	8.11	0.10	60	08148	I	COAL LOSS	
2	8.11	8.26	0.15	60	08148	I	ROCK LOSS	
2	8.26	8.30	0.04	59	08148	I	MUDSTONE	CARB.BLK.PHRD SOFT.
3	8.30	8.54	0.24	59	08148	I	COAL	C-4.BLK.VBRKN ALTERNATING BANDS OF C-4 & C-5.
3	8.54	10.26	1.72	59	08148	I	COAL LOSS	
3	10.26	10.49	0.23	59	08149	I FLOOR	MUDSTONE	DK.BLK.VBRKN CARBONACEOUS, POSSIBLE CORE LOSS. I SEA M FLOOR ROCK. SAMPLED.
3	10.49	10.64	0.15	59	08149	I FLOOR	MUDSTONE	DK.BLK.VBRKN CRUMBLY IN PLACES, CARBONACEOUS. I SEAM FLOOR ROCK. SAMPLED UPPER 2CM.
3	10.64	10.72	0.08	59			MUDSTONE	M.GY.VTHNB.BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 6

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	10.72	10.81	0.09	59			MUDSTONE	M.GY.VTHNB.SHRD
3	10.81	10.93	0.12	58			MUDSTONE	M.GY.VTHNB.BRKN
3	10.93	10.99	0.06	58			MUDSTONE	M.GY.VTHNB.SHRD
3	10.99	11.07	0.08	58			MUDSTONE	M.GY.VTHNB.BRKN
3	11.07	11.26	0.19	58			MUDSTONE	M.GY.VTHNB.SHRD
3	11.26	12.06	0.80	58			ROCK LOSS	
3	12.06	12.61	0.55	58			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN SHEARED IN SOME PLACES. POSSIBLE CORE LOSS.
4	12.61	13.00	0.39	58			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	13.00	13.30	0.30	57			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN POSSIBLE CORE LOSS.
4	13.30	14.12	0.82	57			ROCK LOSS	
4	14.12	14.89	0.77	57			MUDSTONE	SLTY.M-DK.GY.THKB.VBRKN CARBONACEOUS. SHEARED ZONE NEAR END OF BOX.
5	14.89	16.05	1.16	57			MUDSTONE	SLTY.M.GY.THKB.WRMBU.VBRKN PYRITE. SHEARING IN PLACES.
5	16.05	16.32	0.27	57			MUDSTONE	SLTY.M.GY.THKB.VBRKN AS ABOVE.
5	16.32	16.88	0.56	56			ROCK LOSS	
5	16.88	17.02	0.14	56			SANDSTONE	FG.WEL.LT.GY.VTHKB.VBRKN QTZ & CALCITE FRACTURE FILLS.
6	17.02	18.48	1.46	56			SANDSTONE	FG.WEL.LT.GY.VTHKB.VBRKN AS ABOVE. FRACTURE DISPLACEMENT. POSSIBLE CORE LOSS.
7	18.48	19.09	0.61	56			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN AS ABOVE.
7	19.09	19.34	0.25	55			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	19.34	19.86	0.52	*55			SANDSTONE	FG.WEL.LT-M.GY.THKB.SSD.VBRKN ARGILLACEOUS LAMS & MISPS. SHEARING IN LAMS. QTZ & CALCITE FRACTURE FILL. RIP-UP P. CLASTS.
8	19.86	21.38	1.52	55			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN CORE TWIST-OFF. QTZ & CALCITE FRACTURE FILLS. POSSIBLE CORE LOSS. RIP-UP CLAST S.
9	21.38	21.48	0.10	55			SANDSTONE	FG.WEL.M.GY.BRKN TALC PRESENT ON BROKEN SURFACES.
9	21.48	21.52	0.04	55			SANDSTONE	FG.WEL.M.GY.VBRKN BRECCIATED, ABUNDANT TALC.
9	21.52	21.55	0.03	56			SANDSTONE	FG.WEL.M.GY.PWRD FAULT GOUGE - POSSIBLE FAULT ZONE.
9	21.55	21.69	0.14	56			SANDSTONE	FG.WEL.M.GY.BRKN ABUNDANT CALCITE VEINING.
9	21.69	21.84	0.15	56			BRECCIA	SSY.FG.WEL.M.GY.VBRKN BRECCIATED, MIXED WITH MUD.
9	21.84	22.56	0.72	56			MUDSTONE	DK.GY.VSHRD SOFT. LITHIFIED MUDST BRECCIA, CLASTS P RESENT THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DMH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	22.56	22.63	0.07	56			MUDSTONE	DK. GY. LAM. BRKN RARE THIN FG SS LAMINAE (APPROX = 1MM).
9	22.63	22.84	0.21	56	08151	K/L ? ROOF	MUDSTONE	DK. GY. VSHRD SOFT. (LOWER 18.0CM SAMPLED). ? SEAM ROOF ROCK.
9	22.84	22.91	0.07	56	08151	K/L ? ROOF	MUDSTONE	CARB. BLK. PHRD ABUNDANT COAL FRAGS (C-5, C-4). ? SEAM ROOF ROCK. SAMPLED.
9	22.91	23.65	0.74	57	08152	K/L ?	COAL LOSS	
9	23.65	23.80	0.15	57	08152	K/L ?	ROCK LOSS	
9	23.80	24.29	0.49	57	08152	K/L ?	COAL LOSS	
9	24.29	24.74	0.45	57	08152	K/L ?	ROCK LOSS	
9	24.74	25.11	0.37	57	08152	K/L ?	COAL LOSS	
9	25.11	25.22	0.11	57	08152	K/L ?	ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DMH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	25.22	25.40	0.18	57	08152	K/L ?	COAL LOSS	
9	25.40	25.51	0.11	58	08152	K/L ?	COAL	C-4. BLK. PHRD MINOR MUD INTERMIXED WITH COAL FRAGMENT S.
10	25.51	25.57	0.06	58	08152	K/L ?	COAL	C-3. BLK. PHRD
10	25.57	25.59	0.02	58	08152	K/L ?	MUDSTONE	CARB. BLK. BRKN
10	25.59	26.02	0.43	58	08152	K/L ?	COAL	C-3. BLK. PHRD EXTREMELY SHEARED, SLIGHTLY MUDDY.
10	26.02	26.14	0.12	58	08152	K/L ?	MUDSTONE	SLTY. DK. GY. BRKN MINOR QTZ VEINS <1MM THICK.
10	26.14	26.16	0.02	58	08152	K/L ?	COAL	C-2. BLK. VBRKN
10	26.16	26.43	0.27	59	08152	K/L ?	COAL	C-4. BLK. PHRD EXTREMELY SHEARED.
10	26.43	27.07	0.64	59	08152	K/L ?	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	27.07	27.21	0.14	59	08152	K/L ?	ROCK LOSS	
10	27.21	27.71	0.50	59	08152	K/L ?	COAL LOSS	
10	27.71	27.80	0.09	59	08153	K ROOF	MUDSTONE	CARB. BLK. PHRD ? SEAM FLOOR ROCK. SAMPLED.
10	27.80	28.23	0.43	59	08153	K ROOF	MUDSTONE	DK. GY. VSHRD
10	28.23	28.34	0.11	60	08153	K ROOF	MUDSTONE	SLTY. DK. GY. LAM. SLD ABUNDANT SLTST INTERLAM.
10	28.34	28.68	0.34	60	08153	K ROOF	MUDSTONE	DK. GY. VSHRD
11	28.68	28.84	0.16	60	08153	K ROOF	MUDSTONE	DK. GY. LAM. BRKN VERY MINOR DISSEMINATED PYRITE BANDS.
11	28.84	29.89	1.05	60	08153	K ROOF	MUDSTONE	DK. GY. SHRD VERY BROKEN. ABUNDANT CALCITE VEINING I N. MIDDLE OF UNIT. LOWER 22 CM SAMPLED. K SEAM ROOF ROCK.
11	29.89	29.92	0.03	60	08153	K ROOF	MUDSTONE	DK. GY. VSHRD SOFT, UNLITHIFIED. K SEAM ROOF ROCK. SA MPLED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	29.92	30.10	0.18	61	08153	K ROOF	ROCK LOSS	
11	30.10	30.13	0.03	61	08154	K	COAL	C-6. BLK. BRKN VERY HARD.
11	30.13	30.15	0.02	61	08154	K	COAL	C-3. BLK. BRKN
11	30.15	30.21	0.06	61	08154	K	COAL	C-1. BLK. VBRKN
11	30.21	30.23	0.02	61	08154	K	COAL	C-5. BLK. BRKN
11	30.23	30.28	0.05	62	08154	K	COAL	C-2. BLK. VBRKN C-1 WITH ABUNDANT C-4 INTERBANDS.
11	30.28	30.34	0.06	62	08154	K	COAL	C-3. BLK. BRKN
11	30.34	30.38	0.04	62	08154	K	COAL	C-4. BLK. PHRD EXTREMELY SHEARED, MUDST INTERMIXED.
11	30.38	30.41	0.03	62	08154	K	COAL	C-3. BLK. VBRKN C-4 AND C-5 WITH ABUNDANT C-1 BANDS.
11	30.41	30.53	0.12	62	08154	K	COAL	C-2. BLK. VBRKN C-1 WITH MINOR C-3 BANDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	30.53	30.55	0.02	63	08154	K	MUDSTONE	CARB. BLK. PHRD EXTREMELY SHEARED, SOFT.
11	30.55	30.61	0.06	63	08154	K	COAL	C-3. BLK. BRKN C-4 WITH ABUNDANT C-1 BANDS.
12	30.61	30.65	0.04	63	08154	K	COAL	C-3. BLK. BRKN AS ABOVE.
12	30.65	30.66	0.01	63	08154	K	COAL	C-1. BLK. BRKN
12	30.66	30.76	0.10	63	08154	K	COAL	C-5. BLK. BRKN MINOR C-2 LAMS.
12	30.76	30.80	0.04	63	08154	K	COAL	C-3. BLK. BRKN ABUNDANT C-2 BANDS.
12	30.80	30.83	0.03	64	08154	K	MUDSTONE	M. GY. PHRD SOFT.
12	30.83	30.87	0.04	64	08154	K	COAL LOSS	
12	30.87	30.94	0.07	64	08154	K	COAL	C-4. BLK. BRKN MINOR C-4 AND MUDST LAMS.
12	30.94	31.00	0.06	64	08154	K	COAL	C-3. BLK. BRKN MINOR C-4 BANDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	31.00	31.02	0.02	64	08154	K	COAL	C-1. BLK. BRKN
12	31.02	31.08	0.06	65	08154	K	COAL	C-3. BLK. BRKN C-4 AND C-1 INTERBANDED.
12	31.08	31.10	0.02	65	08154	K	COAL	C-2. BLK. BRKN
12	31.10	31.12	0.02	65	08154	K	COAL	C-1. BLK. BRKN
12	31.12	31.28	0.16	65	08154	K	COAL LOSS	
12	31.28	31.32	0.04	65	08154	K	COAL	C-5. BLK. PHRD
12	31.32	31.39	0.07	66	08154	K	COAL	C-2. BLK. BRKN
12	31.39	31.43	0.04	66	08154	K	COAL	C-1. BLK. BRKN
12	31.43	31.65	0.22	66	08154	K	COAL LOSS	
12	31.65	31.79	0.14	66	08154	K	ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	31.79	31.91	0.12	66	08155 K	MUDSTONE	DK.GY. BRKN HOMOGENEOUS, SLIGHTLY SHEARED ON BROKEN SURFACES.
12	31.91	32.12	0.21	67	08155 K	MUDSTONE	OK.GY. BRKN AS ABOVE.
12	32.12	32.16	0.04	67	08156 K	COAL	C-2. BLK. PWRD
12	32.16	33.07	0.91	67	08156 K	COAL LOSS	
12	33.07	33.12	0.05	67	08156 K	COAL	C-6. BLK. SLD HARD.
12	33.12	33.15	0.03	67	08157 K FLOOR	MUDSTONE	DK. GY. SHRD K SEAM FLOOR ROCK. SAMPLED.
12	33.15	33.34	0.19	68	08157 K FLOOR	MUDSTONE	M. GY. PWRD EXTREMELY SHEARED, SOFT. K SEAM FLOOR ROCK. SAMPLED.
12	33.34	33.91	0.57	68	08157 K FLOOR	MUDSTONE	M. GY. SHRD HOMOGENEOUS. (UPPER 2CM SAMPLED).
13	33.91	34.53	0.62	68		MUDSTONE	CARB. M. BLK. THKB. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	34.53	34.64	0.11	68		MUDSTONE	CARB. M. BLK. VTHNB. SHRD UNLITHIFIED.
13	34.64	35.23	0.59	69		MUDSTONE	LT. BLK. THKB. BRKN
13	35.23	36.18	0.95	69		ROCK LOSS	
13	36.18	36.65	0.47	69		MUDSTONE	LT. BLK. THKB. VBRKN
14	36.65	37.43	0.78	69		MUDSTONE	DK. GY. LAM. SSD. BRKN ALT. LAMS. OF. LT. & DK. GREY MUDST.
14	37.43	37.89	0.46	70		ROCK LOSS	
14	37.89	38.87	0.98	70		SANDSTONE	FG. WEL. M. GY. THKB. VBRKN ARGILLACEOUS LAMS & WISPS. POSSIBLE CORE LOSS.
15	38.87	39.23	0.36	*70		MUDSTONE	LT. GY. LAM. BRKN ALT. LAMS. OF. LT. & DK. GREY MUDST. POSSIBLE CORE LOSS.
15	39.23	40.54	1.31	*70		MUDSTONE	LT. GY. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
15	40.54	40.60	0.06	70		SANDSTONE	FG. WEL. LT. GY. THNB. BRKN ARGILLACEOUS LAM.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	40.60	41.17	0.57	70			SANDSTONE	FG.WEL.LT.GY.THNB.BRKN ARGILLACEOUS WISPS & LAMS.
16	41.17	42.28	1.11	70			ROCK LOSS	
16	42.28	42.83	0.55	*70			MUDSTONE	LT.GY.THNB.BRKN ALT SLTY & SSY LAMS. LT GREY.
16	42.83	43.09	0.26	70			MUDSTONE	LT.GY.LAM.BRKN ALT LAMS OF LT & DK GREY MUDST. COASTER S.
17	43.09	43.49	0.40	70			MUDSTONE	LT.GY.LAM.BRKN ALT LAMS OF LT & DK MUDST. POSSIBLE CORE LOSS.
17	43.49	43.69	0.20	70			MUDSTONE	LT.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
17	43.69	43.78	0.09	70			ROCK LOSS	
17	43.78	44.73	0.95	70			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.BRKN ARGILLACEOUS LAMS & WISPS, DECREASING I N ABUNDANCE NEAR END OF BOX. POSSIBLE C ORE LOSS.
18	44.73	45.33	0.60	70			SANDSTONE	FG.WEL.LT.GY.VTHKB.SLD ARGILLACEOUS WISPS.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	45.33	45.99	0.66	71			SANDSTONE	FG.WEL.LT.GY.VTHKB.BRKN AS ABOVE.
18	45.99	46.40	0.41	71			SANDSTONE	FG.WEL.LT.GY.VTHKB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
18	46.40	47.10	0.70	71			ROCK LOSS	
19	47.10	48.38	1.28	71			SANDSTONE	FG.WEL.LT.GY.VTHKB.BRKN AS ABOVE.
19	48.38	48.57	0.19	71			SANDSTONE	FG.WEL.LT.GY.VTHKB.BRKN AS ABOVE.
19	48.57	48.72	0.15	*71			SANDSTONE	FG.WEL.LT-M.GY.THKB.SLD ARGILLACEOUS WISPS & LAMS.
20	48.72	49.01	0.29	71			MUDSTONE	SLTY.LT.GY.THNB.SLD ALT LAMS OF LT GREY SLTY MUDST. & DK GRE Y MUDST. CARBONACEOUS.
20	49.01	49.27	0.26	71			SANDSTONE	FG.WEL.LT.GY.THNB.SLD
20	49.27	49.57	0.30	70			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	49.57	50.58	1.01	*70			MUDSTONE	SLTY. LT. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.
21	50.58	51.17	0.59	70			MUDSTONE	SLTY. LT. GY. LAM. BRKN ALT LAMS OF LT GREY SLTY MUDST & DK GREY MUDST.
21	51.17	51.72	0.55	69			MUDSTONE	M. GY. VSHRD SHRD FRAGMENTED CLYY MUDST. FAULT GOUGE
21	51.72	52.68	0.96	69			MUDSTONE	SLTY. LT. GY. LAM. BRKN ALT LAMS OF DK GREY MUDST & LT GREY SLTY MUDST.
22	52.68	52.75	0.07	69			MUDSTONE	SLTY. LT. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS.
22	52.75	53.03	0.28	69			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN
22	53.03	53.25	0.22	68			MUDSTONE	SLTY. LT. GY. LAM. BRKN AS ABOVE.
22	53.25	53.38	0.13	68			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN ARGILLACEOUS WISPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	53.38	54.33	0.95	68			MUDSTONE	SLTY. LT. GY. THKB. BRKN ALT LAMS OF DK GREY MUDST & LT GREY SLTY MUDST. POSSIBLE CORE LOSS.
22	54.33	54.47	0.14	68			MUDSTONE	SLTY. LT. GY. THKB. BRKN AS ABOVE.
23	54.47	55.07	0.60	67			MUDSTONE	SLTY. LT. GY. THKB. BRKN AS ABOVE.
23	55.07	55.82	0.75	67			MUDSTONE	SLTY. LT. GY. THKB. BRKN ALT LAMS OF SLTY MUDST & DK GREY MUDST. COASTERS.
23	55.82	56.03	0.21	67			MUDSTONE	SLTY. LT. GY. THKB. VBRKN AS ABOVE. UNCONSOLIDATED FAULT GOUGE. POSSIBLE CORE LOSS.
23	56.03	57.12	1.09	67			ROCK LOSS	
24	57.12	57.27	0.15	66			MUDSTONE	SLTY. LT. GY. THKB. VBRKN AS ABOVE. CORE TWIST-OFF.
24	57.27	57.38	0.11	66			MUDSTONE	LT. GY. LAM. SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	57.38	58.45	1.07	66			MUDSTONE	M.GY.LAM.BRKN AS ABOVE, (STILL COASTERS). POSSIBLE CORE LOSS.
24	58.45	58.92	0.47	65			ROCK LOSS	
25	58.92	60.42	1.50	65			MUDSTONE	M.GY.LAM.SLD AS ABOVE. POSSIBLE CORE LOSS.
25	60.42	60.69	0.27	65			MUDSTONE	M.GY.LAM.SLD AS ABOVE.
26	60.69	62.12	1.43	64			MUDSTONE	M.GY.LAM.BRKN AS ABOVE. POSSIBLE CORE LOSS.
27	62.12	62.30	0.18	64			MUDSTONE	M.GY.LAM.SLD AS ABOVE (COASTERS).
27	62.30	62.93	0.63	64	99999	J	COAL LOSS	
27	62.93	63.06	0.13	64			MUDSTONE	CARB.DK.BLK.YTHNB.BRKN QTZ & CALCITE WISPS - 1.0 TO 2.0CM.
27	63.06	63.15	0.09	64			MUDSTONE	DK.BLK.THNB.SHRD BRKN - VERY CRUMBLY. QTZ & CALCITE LAME LLAE AT END. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DCH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	63.15	63.47	0.32	63			ROCK LOSS	
27	63.47	63.57	0.10	63			MUDSTONE	CARB.DK.BLK.THNB.BRKN SHRD IN PLACES.
27	63.57	63.89	0.32	63			ROCK LOSS	
27	63.89	64.11	0.22	62			MUDSTONE	DK.BLK.THNB.BRKN SHRD. MORE ARGILLACEOUS THAN MUDST. ABOVE. QTZ & CALCITE LAMELLAE.
27	64.11	64.55	0.44	62			MUDSTONE	DK.GY.LAM.SSD.SLD ALT LAMS OF LT GREY & DK GREY MUDST. CARBONACEOUS COAL STRINGERS.
27	64.55	65.15	0.60	62			MUDSTONE	DK.GY.LAM.SSD.SLD MORE COAL STRINGERS AND FEWER LAMS OF LT GREY MUDST. QTZ & CALCITE FRACTURE FILL.
28	65.15	66.52	1.37	62			MUDSTONE	DK.BLK.YTHNB.SSD.SLD QTZ & CALCITE FRACTURE FILL. COAL C-4 & STRINGERS. PYRITE. PLANT WASH. FEW LT GR. FEW WISPS OF CARBONACEOUS MUDST.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	66.52	67.04	0.52	62		MUDSTONE	M.GY.VTHKB.SSD.SLD
29	67.04	68.07	1.03	63		MUDSTONE	M.GY.VTHKB.SSD.SLD LT.GREY.ARGILLACEOUS.WISPS.
29	68.07	68.09	0.02	63		BRECCIA	M.GY.BRKN SMALL.FAULT.ZONE.
29	68.09	69.00	0.91	63		MUDSTONE	SLTY.LT.GY.LAM.SSD.SLD ALT.LAMS.OF.LT.GREY.MUDST & DK.GREY.MUD ST.
30	69.00	69.30	0.30	63		MUDSTONE	DK.GY.LAM.SLD ALT.LAMS.AS.ABOVE & SMALL.FAULT 7.0MM T HK.NEAR.END.
30	69.30	70.18	0.88	63		MUDSTONE	DK.GY.LAM.SLD AS.ABOVE.
30	70.18	70.21	0.03	63		BRECCIA	DK.GY.BRKN SMALL.FAULT.ZONE.
30	70.21	70.86	0.65	64		MUDSTONE	DK.GY.LAM.SLD AS.ABOVE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	70.86	71.17	0.31	64		MUDSTONE	DK.GY.LAM.SLD ALT.LAMS.OF.DK.GREY.MUDST & LT.GREY.SLT Y.MUDST.
31	71.17	71.84	0.67	64		SANDSTONE	FG.WEL.LT.GY.THKB.SLD ARGILLACEOUS.WISPS. HEAVILY BRECCIATED & FAULTED. FRACTURE DISPLACEMENT.
31	71.84	72.11	0.27	64		MUDSTONE	DK.GY.LAM.SLD ALT.LAMS.OF.DK.GREY.MUDST & LT.GREY.SLT Y.MUDST. FRACTURE DISPLACEMENT. QTZ AND CALCITE FRACTURE FILL.
31	72.11	72.79	0.68	64		MUDSTONE	DK.GY.LAM.SLD AS.ABOVE. SLIGHT BRECCIATION IN AREAS.
32	72.79	72.86	0.07	64		MUDSTONE	DK.GY.LAM.SLD AS.ABOVE.
32	72.86	72.90	0.04	64		BRECCIA	SMALL BRECCIATED FAULT ZONE.
32	72.90	73.11	0.21	65		SANDSTONE	LT.GY.THNB.SLD VERY ARGILLACEOUS LAMS & WISPS. FRACTUR ED.
32	73.11	73.47	0.36	65		MUDSTONE	DK.GY.THNB.SLD FRACTURED. ALT LAM OF DK GREY MUDST & L T GREY SLTYMUDST.

* DENOTES MEASURED BCA

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	73.47	74.80	1.33	65			MUDSTONE	DK.GY.LAM.SSD.SLD FEWER ARGILLACEOUS LAMS & WISPS. FRACTURE DISPLACEMENT. QTZ & CALCITE FRACTURE FILLS.
33	74.80	74.95	0.15	65			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. POSSIBLE CORE LOSS.
33	74.95	76.75	1.80	65			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE.
34	76.75	77.73	0.98	65			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE (INCREASE IN SLTY LAMS).
34	77.73	78.37	0.64	66			MUDSTONE	DK.GY.LAM.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS.
34	78.37	78.74	0.37	66			ROCK LOSS	
35	78.74	80.03	1.29	66			MUDSTONE	DK.GY.LAM.SSD.BRKN AS ABOVE.
35	80.03	80.58	0.55	66			MUDSTONE	DK.GY.LAM.SSD.BRKN AS ABOVE. FEWER SLTY LAMS & WISPS. POSSIBLE CORE LOSS. FEW PELLETS.
35	80.58	81.69	1.11	66			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	81.69	81.87	0.18	67			MUDSTONE	DK.GY.LAM.VBRKN ALT LAMS OF DK MUDST & LT MUDST. POSSIBLE CORE LOSS.
36	81.87	82.04	0.17	67			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE.
36	82.04	82.84	0.80	67			ROCK LOSS	
36	82.84	82.99	0.15	67			MUDSTONE	DK.GY.LAM.SLD AS ABOVE.
36	82.99	83.05	0.06	67			MUDSTONE	DK.GY.LAM.BRKN AS ABOVE. SLIGHT SHEARING.
36	83.05	83.20	0.15	67			MUDSTONE	DK.GY.LAM.SLD AS ABOVE (NOT SHRD).
36	83.20	83.89	0.69	68			SANDSTONE	FG.WEL.LT.GY.YTHKB.SSD.BRKN ARGILLACEOUS WISPS. X-886.
37	83.89	84.92	1.03	68			SANDSTONE	FG.WEL.LT.GY.YTHKB.BRKN AS ABOVE.
37	84.92	85.65	0.73	*68			SANDSTONE	FG.WEL.LT.GY.YTHKB.SLD AS ABOVE.
38	85.65	85.78	0.13	68			SANDSTONE	FG.WEL.LT.GY.THNB.SLD ARGILLACEOUS WISPS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	85.78	86.01	0.23	68			MUDSTONE	LT.GY.THNB.SLD PORCELLANEOUS TUFFITE. THNB SANDY DARK LAMINAE.
38	86.01	86.35	0.34	68			SANDSTONE	FG.MEL.M.GY.THNB.SLD
38	86.35	87.08	0.73	68			MUDSTONE	LT.GY.THKB.XBDG.SLD PORCELLANEOUS TUFFITE.
38	87.08	87.72	0.64	68			MUDSTONE	LT.GY.THKB.BRKN PORCELLANEOUS TUFFITE. SANDY DARK LAM.
39	87.72	87.84	0.12	68			MUDSTONE	LT.GY.THNB.BRKN ARGILLACEOUS LAM. PORCELLANEOUS TUFFITE
39	87.84	88.19	0.35	68			MUDSTONE	LT.GY.THKB.BRKN PORCELLANEOUS TUFFITE.
39	88.19	88.21	0.02	68			BENTONITE	LT.GY.VTHNB.BRKN TUFFITE, UNLITHIFIED.
39	88.21	88.26	0.05	68			MUDSTONE	LT-M.GY.THNB.BRKN DARK ARGILLACEOUS WISPS.
39	88.26	88.27	0.01	68			BENTONITE	LT.GY.VTHNB.BRKN UNCONSOLIDATED TUFFITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	88.27	88.87	0.60	68			MUDSTONE	DK.GY.THKB.SLD SOME LT GREY LAMINATIONS. PELLETS.
39	88.87	89.02	0.15	68			ROCK LOSS	
40	89.02	90.04	1.02	68			MUDSTONE	DK.GY.VTHKB.SSD.SLD LAM OF POSSIBLY TUFFACEOUS HORIZONS. PELLETS.
40	90.04	90.99	0.95	68			MUDSTONE	DK.GY.VTHKB.SSD.SLD AS ABOVE. PELLETS.
40	90.99	92.09	1.10	68			ROCK LOSS	
41	92.09	94.11	2.02	68			MUDSTONE	DK.GY.VTHKB.SSD.SLD AS ABOVE. PELLETS.
42	94.11	94.78	0.67	68			MUDSTONE	DK.GY.VTHKB.SSD.SLD AS ABOVE. PELLETS.
42	94.78	95.10	0.32	68			MUDSTONE	DK.GY.VTHKB.SSD.BRKN AS ABOVE. PLANT HASH. PELLETS.
42	95.10	95.32	0.22	68			ROCK LOSS	
43	95.32	95.48	0.16	68	08158	I ROOF	MUDSTONE	CARB.DK.GY.THNB.SLD QTZ & CALCITE FRAC FILLS. PLANT HASH. S AMPLED LOWER 15CH. I SEAM ROOF ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	95.48	95.60	0.12	68	08158	I ROOF	ROCK LOSS	
43	95.60	95.70	0.10	68	08158	I ROOF	MUDSTONE	CARB. DK. BLK. THNB. SLD C-3 COAL PARTINGS, QTZ & CALCITE FRACTURE FILLS. SAMPLED. I SEAM ROOF ROCK.
43	95.70	95.82	0.12	68	08159	I	COAL LOSS	
43	95.82	95.83	0.01	68	08159	I	COAL	C-4. BLK. BRKN
43	95.83	95.85	0.02	68	08159	I	COAL	C-4. BLK. SLD
43	95.85	95.86	0.01	68	08159	I	COAL	C-5. BLK. SLD
43	95.86	95.88	0.02	68	08159	I	COAL	C-3. BLK. BRKN
43	95.88	95.90	0.02	68	08159	I	COAL	C-5. BLK. SLD INTERBEDDED WITH C-4. LAMS. CALCAREOUS I N PARTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	95.90	95.94	0.04	68	08159	I	COAL	C-4. BLK. YBRKN FRAGMENTS OF C-5, C-4 & C-3. POSSIBLE C ORE LOSS.
43	95.94	95.95	0.01	68	08159	I	COAL	C-3. BLK. SLD CALCAREOUS.
43	95.95	95.96	0.01	68	08159	I	COAL	C-5. BLK. SLD CALCAREOUS.
43	95.96	95.98	0.02	68	08159	I	COAL	C-5. BLK. SLD CALCAREOUS. INTERBANDED C-5 & C-4.
43	95.98	96.03	0.05	68	08159	I	COAL	C-5. BLK. SHRD SOME C-4 INTERBANDED WITH C-6. POSSIBLE CORE LOSS.
43	96.03	96.04	0.01	68	08159	I	MUDSTONE	CARB. BLK. YTHNB. SHRD UNCONSOLIDATED.
43	96.04	96.48	0.44	68	08159	I	COAL LOSS	
43	96.48	96.49	0.01	68	08159	I	COAL	C-2. BLK
43	96.49	96.60	0.11	68	08159	I	COAL	C-5. BLK

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	96.60	96.64	0.04	68 08159 I		COAL	C-5.BLK UNCONSOLIDATED PARTICLES OF C-4 & C-5 MIXED WITH A CARBONACEOUS MUD.
43	96.64	96.68	0.04	68 08159 I		COAL	C-5.BLK.VBRKN INTERBEDDED PIECES OF C-4, C-5 & C-6.
43	96.68	96.69	0.01	68 08159 I		COAL	C-4.BLK.BRKN INTERBEDDED C-3, C-4 & C-5.
43	96.69	96.70	0.01	68 08159 I		COAL	C-2.BLK
43	96.70	96.74	0.04	68 08159 I		COAL	C-4.BLK INTERBEDDED WITH FEW C-2, C-4 & C-5.
43	96.74	96.77	0.03	68 08159 I		COAL	C-5.BLK INTERBEDDED C-2, C-3, C-4 & C-5.
43	96.77	96.87	0.10	68 08159 I		MUDSTONE	CARB.BLK.THNB.SHRD
43	96.87	96.88	0.01	68 08159 I		COAL	C-2.BLK
43	96.88	96.89	0.01	68 08159 I		COAL	C-4.BLK INTERBEDDED WITH CARBONACEOUS MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	96.89	96.91	0.02	68 08159 I		COAL	C-3.BLK BANDS OF C-2 WITH SMALL C-4 BANDS.
43	96.91	96.92	0.01	68 08159 I		COAL	C-5.BLK C-4 & C-5 INTERBEDDED.
43	96.92	96.95	0.03	68 08159 I		COAL	C-5.BLK C-5 & C-4 & FEW C-3 BANDS.
43	96.95	96.98	0.03	68 08159 I		COAL	C-6.BLK BONE COAL.
43	96.98	97.01	0.03	68 08159 I		COAL	C-4.BLK.SHRD C-4 & C-5 INTERBEDDED.
43	97.01	97.07	0.06	68 08159 I		COAL	C-5.BLK.SHRD C-4 & C-5 INTERBEDDED.
43	97.07	97.10	0.03	68 08159 I		MUDSTONE	CARB.BLK.THNB.SHRD UNCONSOLIDATED.
43	97.10	97.14	0.04	68 08159 I		COAL	C-4 UNCONSOLIDATED PARTICLES INTERMIXED WITH UNCONSOLIDATED CARBONACEOUS MUD, C-5 AND C-4. POSSIBLE CORELOSS.
43	97.14	97.18	0.04	68 08159 I		COAL	C-5.BLK.SHRD C-4 & C-5.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	97.18	97.23	0.05	68 08159	I	COAL	C-4.BLK.SHRD C-3 & C-4 INTERBANDED.
43	97.23	97.26	0.03	68 08159	I	COAL	C-3.BLK.SHRD C-3, C-4 & C-2.
43	97.26	97.35	0.09	68 08159	I	COAL	C-4.BLK.SHRD C-3 & C-4.
44	97.35	97.41	0.06	68 08159	I	COAL	C-4.BLK.SHRD C-4 & C-3 INTERBANDED.
44	97.41	97.45	0.04	68 08159	I	COAL	C-4.BLK.SHRD C-2 & C-3 & C-4 INTERBANDED.
44	97.45	98.97	1.52	68 08159	I	COAL LOSS	
44	98.97	99.01	0.04	68 08159	I	COAL	C-3.BLK C-3 & C-4 INTERBANDED.
44	99.01	99.03	0.02	68 08159	I	COAL	C-2.BLK
44	99.03	99.05	0.02	68 08159	I	COAL	C-3.BLK C-2 & C-3 INTERBANDED.
44	99.05	99.09	0.04	68 08159	I	COAL	C-3.BLK C-2, C-3 & C-5 INTERBANDED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	99.09	99.12	0.03	68 08159	I	COAL	C-5.BLK.SHRD C-4 & C-5.
44	99.12	99.15	0.03	68 08159	I	COAL	C-3.BLK.SHRD C-2 & C-3.
44	99.15	99.19	0.04	68 08159	I	COAL	C-4.BLK.SHRD C-4 & C-5.
44	99.19	99.25	0.06	68 08159	I	COAL	C-5.BLK.SHRD C-4 & C-5.
44	99.25	99.38	0.13	68 08159	I	COAL	C-5.BLK.SHRD C-5, C-4 & CARBONACEOUS UNCONSOLIDATED MUD.
44	99.38	99.56	0.18	68 08159	I	COAL	C-5.BLK UNCONSOLIDATED PARTICLES OF C-3, C-4 & C-5 IN UNCONSOLIDATED CARBONACEOUS MUD.
44	99.56	99.58	0.02	68 08159	I	COAL	C-6.BLK BONE COAL. INTERBEDDED WITH SMALL BANDS OF C-4.
44	99.58	99.60	0.02	68 08160	I FLOOR	MUDSTONE	CARB.BLK.SHRD CARBONACEOUS MUDST INTERBEDDED WITH SMALL C-4 BANDS. I SEAM FLOOR ROCK. SAMPLE D.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	99.60	100.49	0.89	68	08160	I FLOOR	MUDSTONE	CARB. LT. BLK. THKB. SHRD CARBONACEOUS MUDST. POSSIBLE CORE LOSS. (UPPER 23CM SAMPLED). I SEAM FLOOR ROC K.
45	100.49	100.55	0.06	68			MUDSTONE	CARB. BLK. SHRD
45	100.55	101.03	0.48	68			MUDSTONE	SLTY. LT. BLK. THKB. BRKN SOME SANDY LAMS & SLTY MISPS.
45	101.03	101.63	0.60	68			SANDSTONE	FG. MEL. LT. GY. THKB. SLD ARGILLACEOUS MISPS.
45	101.63	101.94	0.31	68			SANDSTONE	FG. MEL. LT. GY. THKB. BRKN AS ABOVE. POSSIBLE CORE LOSS.
45	101.94	102.10	0.16	68			SANDSTONE	FG. MEL. LT. GY. THKB. BRKN AS ABOVE.
45	102.10	103.06	0.96	68			ROCK LOSS	
46	103.06	104.46	1.40	68			SANDSTONE	FG. MEL. LT. GY. VTHKB. VBRKN ARGILLACEOUS MISPS. POSSIBLE CORE LOSS.
47	104.46	105.09	0.63	68			SANDSTONE	FG. MEL. LT. GY. THKB. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	105.09	105.38	0.29	68			SANDSTONE	FG. MEL. LT. GY. THKB. VBRKN AS ABOVE.
47	105.38	107.05	1.67	68			ROCK LOSS	
47	107.05	107.07	0.02	68			MUDSTONE	DK. GY. VTHNB. BRKN IRREGULAR SHAPE IN SMALL DISTORTED FRAG MENTED ZONE.
47	107.07	107.19	0.12	68			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN AS ABOVE.
47	107.19	107.59	0.40	68			SANDSTONE	PHRD POSSIBLE FAULT ZONE. CRUSHED SANDY & AR GILLACEOUS MATERIAL.
47	107.59	107.82	0.23	68			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN AS ABOVE.
47	107.82	107.94	0.12	68			SANDSTONE	PHRD FRACTURED. POSSIBLE FAULT GOUGE OF SS & ARGILLACEOUS MATERIAL. POSSIBLE CORE L OSS.
48	107.94	108.03	0.09	68			SILTSTONE	M. GY. THNB. BRKN HEAVILY FRACTURED. ARGILLACEOUS MATERIA L FILLING FRACTURE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	108.03	108.11	0.08	68			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN ARGILLACEOUS LAMS.
48	108.11	108.13	0.02	68			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN QTZ & CALCITE FRACTURE FILLS.
48	108.13	108.53	0.40	68			SANDSTONE	FG. MEL. LT. GY. THNB. SLD FRACTURE WITH ARGILLACEOUS MATERIAL FILLING FRACTURE. FAULT GOUGE - 3CM THICK.
48	108.53	108.67	0.14	68			MUDSTONE	SLTY. LT. GY. THNB. SLD MUDST LAM.
48	108.67	108.75	0.08	68			MUDSTONE	M. GY. THNB. SLD FRACTURE MUDST & CLAY. POSSIBLE FAULT GOUGE.
48	108.75	109.74	0.99	68			MUDSTONE	DK. GY. VTHKB. SLD PYRITE, LT. GREY. SLTY. ARGILLACEOUS MISPS.
48	109.74	109.83	0.09	68			MUDSTONE	DK. GY. THKB. SLD AS ABOVE.
49	109.83	110.48	0.65	68			MUDSTONE	DK. GY. THKB. SLD
49	110.48	110.63	0.15	68			MUDSTONE	SLTY. DK. GY. THNB. SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	110.63	110.91	0.28	68			SILTSTONE	M. GY. THNB. BRKN MUDDY SLTST.
49	110.91	111.48	0.57	*68			SANDSTONE	LT. GY. THKB. BRKN SOME ARGILLACEOUS LAMS. POSSIBLE CORE LOSS. RIP-UP CLASTS.
50	111.48	111.99	0.51	67			SANDSTONE	LT. GY. THKB. VBRKN FEW ARGILLACEOUS MISPS.
50	111.99	113.78	1.79	66			ROCK LOSS	
50	113.78	113.79	0.01	65			BRECCIA	POSSIBLE FAULT GOUGE.
50	113.79	114.10	0.31	63			SANDSTONE	FG. MEL. M. GY. THKB. VBRKN ARGILLACEOUS MISPS.
50	114.10	114.40	0.30	62			SANDSTONE	FG. MEL. M. GY. THKB. SSD. VBRKN QTZ & CALCITE FILLED FRACTURE. POSSIBLE CORE LOSS.
51	114.40	114.80	0.40	*61			SANDSTONE	FG. MEL. M. GY. THKB. VBRKN ARGILLACEOUS MISPS & LAMS.
51	114.80	116.38	1.58	64			ROCK LOSS	
51	116.38	116.43	0.05	67			BRECCIA	VBRKN FAULT GOUGE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	116.43	117.36	0.93	71		SANDSTONE	FG.WEL.M.GY.THKB.SSD.VBRKN ARGILLACEOUS WISPS & LAMS. POSSIBLE CORE LOSS.
52	117.36	117.84	0.48	*74		SANDSTONE	FG.WEL.M.GY.THKB.SSD.BRKN AS ABOVE.
52	117.84	118.90	1.06	*76		SANDSTONE	FG.WEL.LT.GY.THKB.SSD.BRKN FEWER ARGILLACEOUS WISPS & LAMS.
53	118.90	119.10	0.20	74		SANDSTONE	FG.WEL.M.GY.THNB.SSD.VBRKN ARGILLACEOUS SANDST. CALCITE FRACTURE FILLS. POSSIBLE CORE LOSS.
53	119.10	119.40	0.30	72		SANDSTONE	FG.WEL.LT.GY.THNB.VBRKN FEW ARGILLACEOUS WISPS.
53	119.40	119.69	0.29	70		SANDSTONE	FG.WEL.M.GY.THKB.SSD.VBRKN MORE ARGILLACEOUS LAM.
53	119.69	120.09	0.40	*68		SANDSTONE	FG.WEL.M.GY.THKB.SSD.BRKN POSSIBLE CORE LOSS. AS ABOVE.
54	120.09	120.66	0.57	*70		SANDSTONE	FG.WEL.M.GY.THKB.SSD.BRKN ARGILLACEOUS LAM.
54	120.66	121.15	0.49	65		MUDSTONE	SLTY.LT.GY.THKB.SSD.BRKN ALT LAMS OF SLTY MUDST & DK MUDST. SHARP CONTACT BETWEEN THIS & THE SS BELOW.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	121.15	121.50	0.35	*60		SANDSTONE	FG.WEL.LT.GY.THNB.BRKN FEW ARGILLACEOUS WISPS & LAMS.
54	121.50	121.73	0.23	58		MUDSTONE	DK.GY.THNB.VBRKN ALT LAMS OF SLTY MUDST & DK MUDST. POSSIBLE CORE LOSS.
55	121.73	122.70	0.97	57		MUDSTONE	DK.GY.THKB.SSD.SLD LT SLTY ARGILLACEOUS WISPS.
55	122.70	122.99	0.29	55		MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. FEW ARGILLACEOUS WISPS. FAULTED IN TWO PLACES.
55	122.99	123.13	0.14	54		MUDSTONE	CARB.DK.GY.VTHNB.SLD SHRD. PLANT MATERIAL.
55	123.13	123.16	0.03	52		BRECCIA	LARGE QTZ AND CALCITE FRACTURE FILLS. BRECCIATED.
55	123.16	123.42	0.26	50		SANDSTONE	FG.WEL.M.GY.THNB.BRKN ARGILLACEOUS LAMS & WISPS.
55	123.42	124.59	1.17	49		ROCK LOSS	
56	124.59	124.86	0.27	*47		MUDSTONE	DK.GY.LAM.SSD.SLD ALT LAMS OF SS & MUDST. FAULT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	124.86	125.14	0.28	47			MUDSTONE	DK.GY.THKB.SSD.BRKN SLTY LT GREY LAMS & WISPS.
56	125.14	125.34	0.20	47			MUDSTONE	DK.GY.THNB.BRKN VERY FEW SLTY WISPS OR LAMS.
56	125.34	125.75	0.41	47			MUDSTONE	DK.GY.THKB.BRKN CALCAREOUS & SHRD.
56	125.75	126.06	0.31	47			MUDSTONE	SLTY,DK.GY.THKB.BRKN AS ABOVE. VERY SMALL COAL STRINGERS.
56	126.06	126.10	0.04	47			MUDSTONE	DK.GY.THNB.BRKN AS ABOVE. LITTLE SHEARING.
57	126.10	126.31	0.21	47			MUDSTONE	DK.GY.THNB.BRKN FEW LT GREY WISPS OF MUDST.
57	126.31	126.41	0.10	*47			MUDSTONE	DK.GY.LAM.BRKN MUDST LAM WITH QTZ & CALCITE.
57	126.41	126.59	0.18	45			MUDSTONE	DK.GY.THNB.SLD CARBONACEOUS & SHEAR FRACTURED IN PLACE S.
57	126.59	126.74	0.15	43			MUDSTONE	SLTY,DK.GY.LAM.SSD.SLD ALT LAMS OF LT GREY SLTY MUDST & DK GRE Y MUDST.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	126.74	127.01	0.27	41			MUDSTONE	CARB,DK.GY.THNB.BRKN
57	127.01	127.13	0.12	38			MUDSTONE	DK.GY.THNB.SLD SHEARED.
57	127.13	127.58	0.45	36			MUDSTONE	DK.GY.THKB.SLD
57	127.58	127.80	0.22	34			MUDSTONE	LT.GY.THKB.SLD SHEAR. POSSIBLE CORE LOSS.
57	127.80	128.00	0.20	32			ROCK LOSS	
58	128.00	128.80	0.80	30			MUDSTONE	DK.GY.THKB.SSD.BRKN LT GREY ARGILLACEOUS WISPS.
58	128.80	129.58	0.78	28			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. SHEARING IN LAST 40CM OF BOX. CORE TWIST-OFF.
59	129.58	129.92	0.34	25			MUDSTONE	M.GY.THKB.BRKN SOME SHEARING.
59	129.92	131.10	1.18	23			MUDSTONE	M.GY.THKB.BRKN SHEARED. FEW CALCITE & QTZ FRACTURE FIL LS. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	131.10	131.38	0.28	21			ROCK LOSS	
60	131.38	131.43	0.05	19			MUDSTONE	M.GY.THKB.BRKN
60	131.43	131.53	0.10	17			MUDSTONE	M.GY.THNB.BRKN SHEARED.
60	131.53	131.60	0.07	14			BRECCIA	M.GY.THNB.BRKN BRECCIATED SS & MUDST.
60	131.60	131.85	0.25	12			MUDSTONE	M.GY.THKB.BRKN SHEARED. POSSIBLE CORE LOSS.
60	131.85	132.01	0.16	10			MUDSTONE	DK.GY.THNB.SLD SHEARED.
60	132.01	132.33	0.32	08			MUDSTONE	DK.GY.THKB.SLD
60	132.33	132.69	0.36	05			MUDSTONE	DK.GY.THKB.SLD SHEARED. POSSIBLE CORE LOSS.
61	132.69	132.84	0.15	03			MUDSTONE	SLTY.M.GY.THNB.SLD CONTACT CORE ANGLE NEAR 0 DEGREE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	132.84	132.99	0.15	*01			MUDSTONE	SLTY.M.GY.THNB.SLD SHEARED, AS ABOVE.
61	132.99	133.66	0.67	19			ROCK LOSS	
61	133.66	134.43	0.77	*38			MUDSTONE	SLTY.LT.GY.LAM.SSD.BRKN ALT LAMS OF DK GREY MUDST & LT GREY SLT Y MUDST.
61	134.43	134.90	0.47	33			MUDSTONE	DK.GY.THKB.SSD.BRKN QTZ FRACTURE FILL, LT GREY SLTY ARGILLA CEOUS WISPS & LAMS.
61	134.90	135.15	0.25	29			MUDSTONE	DK.GY.THKB.SSD.SLD POSSIBLE HELMINTHOPSIS. SHEARED, QTZ & ALCITE ON SHEAR PLANE, DK GREY ARGILLAC EOUS WISPS. BDG BECOMING OVERTURNED.
62	135.15	136.16	1.01	24			MUDSTONE	DK.GY.THKB.SLD FRACTURED. PYRITE. SHEAR IN SEVERAL PLACES. GRADING FROM LT GREY TO DK GREY IN PLACES.
62	136.16	136.95	0.79	19			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	136.95	137.45	0.50	15			MUDSTONE	DK. GY. LAM. SSD. BRKN SHEARED IN PLACES. ALT LAMS OF LT GREY & DK GREY MUDST. PYRITE. QTZ & CALCITE FRACTURE FILLS. POSSIBLE CORE LOSS.
63	137.45	137.70	0.25	*10			MUDSTONE	DK. GY. THNB. SSD. SLD CORE CONTACT 10 DEGREE.
63	137.70	137.95	0.25	*10			MUDSTONE	SLTY. LT. GY. THNB. SSD. SLD CORE CONTACT 10 DEGREE. FRACTURE DISPLACEMENT. FAULT, WITH QTZ & CALCITE & TALC INFILL.
63	137.95	138.53	0.58	14			MUDSTONE	LT. GY. THNB. SLD TALC & CALCITE FRACTURE FILL. SLIGHT BR ECCIATION. SHEARED.
63	138.53	138.73	0.20	18			MUDSTONE	M. GY. THNB. BRKN SLIGHTLY SLTY. FRACTURE WITH ARGILLACEOUS MATERIAL FILLING FRACTURE.
63	138.73	138.78	0.05	22			BRECCIA	LT. GY. THNB. SLD BRECCIATED SLTY MUDST. QTZ & CALCITE VE INLETS WITH MUD MATRIX.
63	138.78	139.65	0.87	26			MUDSTONE	M. GY. THNB. BRKN SLIGHTLY SLTY. HEAVILY FRACTURED WITH A ARGILLACEOUS FRACTURE FILL. SHEARED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	139.65	139.74	0.09	28			ROCK LOSS	
64	139.74	140.53	0.79	30			MUDSTONE	M. GY. THNB. BRKN SHEARED. PYRITE. FRACTURED.
64	140.53	141.03	0.50	35			ROCK LOSS	
64	141.03	141.06	0.03	39			MUDSTONE	LT. GY. THNB. VBRKN SHEARED MUDST WITH QTZ VEINLETS & LAMS.
64	141.06	141.36	0.30	43			MUDSTONE	M. GY. THNB. BRKN SHEARED. QTZ & CALCITE FRACTURE FILLS. LARGE CARBONATE ZONE WITH ARGILLACEOUS LAMELLAE & MINOR AMOUNTS OF DISPERSED D IAGENETIC QTZ.
64	141.36	141.66	0.30	47			MUDSTONE	M. GY. THNB. BRKN HEAVILY FRACTURED. SLIGHTLY SLTY. POSSIBLE HELMINTHOPSIS. SHEARED LAM IN THE FIRST 10.0CM.
64	141.66	141.87	0.21	51			MUDSTONE	M. GY. THNB. BRKN AS ABOVE (NO LAM).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	141.87	142.40	0.53	55		MUDSTONE	DK. GY. THKB. BRKN LT GREY SLTY MUDST LAMS & WISPS. FRACTURE DISPLACEMENT. LARGE CARBONATE WITH ARGILLACEOUS LAM & DISPERSED DIAGENETIC QTZ.
65	142.40	142.77	0.37	59		MUDSTONE	DK. GY. THKB. BRKN LT GREY SLTY MUDST LAMS & WISPS. QTZ & CALCITE FRACTURE FILLS. MINOR SHEAR. LARGE CARBONATE WITH ARGILLACEOUS LAM & DISPERSED DIAGENETIC QTZ.
65	142.77	142.94	0.17	64		MUDSTONE	DK. GY. THNB. SLD INCREASE IN SLTY LT GREY LAMS & WISPS. QTZ & CALCITE FRACTURE FILLS.
65	142.94	143.26	0.32	68		MUDSTONE	SLTY. LT. GY. LAM. BRKN ALT LAMS OF LT GREY SLTY MUDST & DK GREY MUDST.
65	143.26	143.68	0.42	*72		SILTSTONE	LT. GY. LAM. SLD ALT LAMS OF SILTST & MUDST. SSS IN SOME AREAS. POSSIBLE O/T BEDDING.
66	143.68	143.83	0.15	68		SILTSTONE	LT. GY. THNB. VBRKN ARGILLACEOUS WISPS & LAMS.
66	143.83	144.22	0.39	63		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	144.22	144.60	0.38	59		SANDSTONE	FG. WEL. LT. GY. THKB. BRKN ARGILLACEOUS WISPS & LAMS. POSSIBLE CORE LOSS.
66	144.60	145.02	0.42	*54		SANDSTONE	FG. WEL. LT. GY. THKB. BRKN AS ABOVE.
66	145.02	145.40	0.38	49		SANDSTONE	FG. WEL. LT. GY. THKB. VBRKN AS ABOVE. POSSIBLE CORE LOSS. POSSIBLE O/T BEDDING.
67	145.40	145.93	0.53	*43		SANDSTONE	FG. WEL. LT. GY. LAM. BRKN ALT LAMS OF SS & DK GREY MUDST. POSSIBLE O/T BEDDING. PYRITE.
67	145.93	146.21	0.28	43		SANDSTONE	FG. WEL. LT. GY. THNB. BRKN
67	146.21	146.31	0.10	43		SANDSTONE	FG. WEL. LT. GY. LAM. BRKN ALT LAMS OF SS & DK GREY MUDST.
67	146.31	146.57	0.26	43		SANDSTONE	FG. WEL. LT. GY. THNB. BRKN
67	146.57	146.84	0.27	43		ROCK LOSS	
67	146.84	146.90	0.06	44		BRECCIA	QTZ & CALCITE FILLED ZONE WITH BRECCIATED MUDST.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	146.90	147.39	0.49	44		SANDSTONE	FG.WEL.LT.GY.THNB.BRKN
68	147.39	147.65	0.26	44		SANDSTONE	FG.WEL.LT.GY.THNB.SSD.BRKN ARGILLACEOUS WISPS & LAMS.
68	147.65	148.08	0.43	44		SANDSTONE	FG.WEL.LT.GY.THKB.BRKN QTZ & CALCITE FRACTURE FILLS. FEW ARGIL LACEOUS WISPS.
68	148.08	148.53	0.45	44		SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN POSSIBLE CORE LOSS.
68	148.53	148.68	0.15	44		SANDSTONE	FG.WEL.LT.GY.THNB.VBRKN ALT ARGILLACEOUS LAMS & SS. TALC FRACTU RE FILL.
68	148.68	149.60	0.92	44		ROCK LOSS	
69	149.60	150.00	0.40	44		SILTSTONE	LT.GY.LAM.VBRKN ALT LAMS OF LT GREY SLTST & DK GREY MUO ST. QTZ & CALCITE & TALC FRACTURE FILL.
69	150.00	150.13	0.13	45		SANDSTONE	FG.WEL.LT.GY.THKB.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	150.13	150.23	0.10	45		BRECCIA	LT.GY.THNB.BRKN BRECCIATED SS WITH SLTY ARGILLACEOUS MA TRIX.
69	150.23	150.35	0.12	45		SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN
69	150.35	150.70	0.35	45		SANDSTONE	FG.WEL.LT.GY.THKB.SLD ARGILLACEOUS WISPS.
69	150.70	151.18	0.48	**45		SANDSTONE	FG.WEL.LT.GY.THKB.SLD AS ABOVE, INCREASE IN ARGILLACEOUS MATE RIAL NEAR END OF CORE.
70	151.18	151.77	0.59	45		MUDSTONE	DK.GY.THKB.SLD ARGILLACEOUS WISPS. GRADING OF LT GREY TO DK GREY. PYRITE, SHEARED.
70	151.77	152.39	0.62	45		MUDSTONE	DK.GY.THKB.BRKN AS ABOVE.
70	152.39	153.04	0.65	45		MUDSTONE	DK.GY.THKB.SLD AS ABOVE. CALCITE & QTZ INTERBEDDED WIT H ARGILLACEOUS LAM - 1.5CM THK. POSSIBL E HELMINTHOPSIS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	153.04	153.54	0.50	45			MUDSTONE	DK.GY.THKB.BRKN PYRITE, FRACTURED, SHEARED. SLTY LT GRE Y WISPS & AMELLAE.
71	153.54	153.75	0.21	45			ROCK LOSS	
71	153.75	153.91	0.16	45			MUDSTONE	DK.GY.THKB.BRKN AS ABOVE.
71	153.91	154.02	0.11	45			BRECCIA	DK.GY.THNB.BRKN MUDST CLASTS & FRAGMENTS IN ARGILLACEOU S. MATRIX.
71	154.02	156.12	2.10	45			ROCK LOSS	
71	156.12	156.26	0.14	45			MUDSTONE	DK.GY.THNB.VBRKN LT GREY ARGILLACEOUS WISPS. SHEAR WITH TALC DEPOSITS ON SHEAR PLANE.
71	156.26	156.66	0.40	*45			MUDSTONE	DK.GY.LAM.BRKN ALT LAMS OF LT GREY MUDST & DK GREY MUD ST. QTZ & CALCITE FRACTURE FILL.
72	156.66	157.16	0.50	*45			SILTSTONE	LY.GY.LAM.SSD.BRKN ALT LAMS OF SLTST & DK GREY MUDST. CALC ITE & QTZ FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	157.16	157.35	0.19	45			SANDSTONE	FG.WEL.LT.GY.LAM.BRKN CALCITE & QTZ FRACTURE FILL. ALT LAMS O F SS & DK GREY MUDST.
72	157.35	157.95	0.60	45			SANDSTONE	FG.WEL.LT.GY.THKB.BRKN DK GREY ARGILLACEOUS WISPS. SHEARED.
72	157.95	158.48	0.53	45			SANDSTONE	FG.WEL.LT.GY.THKB.VBRKN FEW WISPS.
73	158.48	159.33	0.85	46			SANDSTONE	FG.WEL.LT.GY.THKB.BRKN
73	159.33	159.43	0.10	46			SANDSTONE	FG.WEL.LT.GY.THNB.BRKN
73	159.43	159.49	0.06	46			SANDSTONE	FG.WEL.LT.GY.LAM.BRKN ALT LAMS OF DK GREY MUDST & SS.
73	159.49	159.54	0.05	46			SANDSTONE	CLYY.FG.WEL.LT.GY.THNB.BRKN
73	159.54	159.89	0.35	46			ROCK LOSS	
73	159.89	160.02	0.13	46			BRECCIA	M.GY.THNB.BRKN ARGILLACEOUS SLTST FRAGMENTS & CLASTS, WITH ARGILLACEOUS MATRIX.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	160.02	160.27	0.25	46			MUDSTONE	DK.GY. THKB. BRKN FRACTURE WITH ARGILLACEOUS MATERIAL FILLING FRACTURE.
74	160.27	160.97	0.70	46			MUDSTONE	DK.GY CORE TWIST-OFF NEAR BOTTOM. POSSIBLE CORE LOSS. MINOR THIN (<.5MM) COAL PARTINGS. WISPY CALCITE VEINS LESS THEN .5MM THK. PLANT MASH.
74	160.97	161.57	0.60	47	08161	I OVT FLOOR	MUDSTONE	DK.GY MINOR THIN (<.5MM) COAL PARTINGS AND CALCITE VEINS. ABUNDANT PLANT MASH. (LOWER 9CM SAMPLED). I (OVT) FLOOR ROCK.
74	161.57	161.65	0.08	47	08161	I OVT FLOOR	MUDSTONE	DK.GY. PHRD SOFT, UNCONSOLIDATED. POSSIBLE CORE LOSS. I (OVT) FLOOR ROCK. SAMPLED.
74	161.65	161.73	0.08	47	08161	I OVT FLOOR	MUDSTONE	CARB. BLK. VSHRD VERY POLISHED ON BROKEN SURFACES. POSSIBLE FAULT ZONE. I (OVT) FLOOR ROCK. SAMPLED.
74	161.73	163.21	1.48	47	08162	I OVT	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	163.21	163.24	0.03	47	08162	I OVT	COAL	C-3. BLK. BRKN
74	163.24	163.28	0.04	47	08162	I OVT	COAL	C-2. BLK. VBRKN APPROACHES C-1 TOWARDS BASE.
74	163.28	163.38	0.10	47	08162	I OVT	COAL	C-4. BLK. SHRD MINOR C-3. AND C-5. BANDS.
74	163.38	163.43	0.05	47	08162	I OVT	COAL	C-2. BLK. BRKN
74	163.43	163.50	0.07	48	08162	I OVT	COAL	C-3. BLK. PHRD C-2. FRAGMENTS PRESENT.
75	163.50	163.65	0.15	48	08162	I OVT	COAL	C-2. BLK. VBRKN
75	163.65	163.91	0.26	48	08162	I OVT	COAL	C-3. BLK. VBRKN
75	163.91	164.01	0.10	48	08162	I OVT	COAL	C-3. BLK. PHRD
75	164.01	164.14	0.13	48	08162	I OVT	COAL	C-3. BLK. VBRKN ABUNDANT C-2. AND C-4. FRAGMENTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	164.14	164.18	0.04	48	08162 I OVT	COAL	C-2.BLK.VBRKN
75	164.18	164.58	0.40	48	08163 I OVT	COAL	C-5.BLK.PHRD
75	164.58	164.76	0.18	49	08163 I OVT	COAL	C-2.BLK.VBRKN VERY ABUNDANT C-1 BANDS.
75	164.76	164.78	0.02	49	08163 I OVT	COAL	C-2.BLK.VBRKN VERY ABUNDANT C-1 BANDS.
75	164.78	165.03	0.25	49	08163 I OVT	COAL	C-4.BLK.VBRKN ABUNDANT C-3 BANDS.
75	165.03	165.06	0.03	49	08163 I OVT	COAL	C-5.BLK.BRKN
75	165.06	165.08	0.02	49	08163 I OVT	MUDSTONE	CARB.BLK.BRKN
75	165.08	165.12	0.04	49	08163 I OVT	COAL	C-4.BLK.VBRKN
76	165.12	165.14	0.02	49	08163 I OVT	COAL	C-5.BLK.BRKN
76	165.14	165.19	0.05	49	08163 I OVT	MUDSTONE	CARB.DK.GY.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	165.19	165.22	0.03	50	08163 I OVT	COAL	C-4.BLK.PHRD EXTREMELY SHEARED.
76	165.22	165.37	0.15	50	08163 I OVT	COAL	C-5.BLK.PHRD ABUNDANT MUD MIXED IN.
76	165.37	165.69	0.32	50	08163 I OVT	COAL	C-4.BLK.PHRD EXTREMELY SHEARED.
76	165.69	165.79	0.10	50	08163 I OVT	COAL	C-4.BLK.VBRKN
76	165.79	165.84	0.05	50	08163 I OVT	COAL	C-2.BLK.VBRKN ABUNDANT C-1 FRAGMENTS.
76	165.84	165.93	0.09	50	08163 I OVT	COAL	C-4.BLK.PHRD EXTREMELY SHEARED.
76	165.93	165.97	0.04	50	08163 I OVT	COAL	C-6.BLK.SLD VERY HARD.
76	165.97	166.09	0.12	51	08163 I OVT	COAL	C-3.BLK.BRKN
76	166.09	166.23	0.14	51	08164 I OVT	MUDSTONE	CARB.DK.GY.SLD ABUNDANT COAL STRINGERS.
76	166.23	166.32	0.09	51	08164 I OVT	MUDSTONE	CARB.DK.GY.PHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	166.32	166.52	0.20	51	08164	I OVT	MUDSTONE	CARB. DK. GY. BRKN POLISHED (SHEARED) BROKEN SURFACES.
77	166.52	166.59	0.07	51	08164	I OVT	MUDSTONE	DK. GY. BRKN AS ABOVE.
77	166.59	166.71	0.12	51	08165	I OVT	COAL	C-5. BLK. PHRD
77	166.71	166.94	0.23	51	08165	I OVT	COAL	C-4. BLK. VBRKN MUDST INTERBEDS PRESENT 5-15MM THICK.
77	166.94	166.96	0.02	51	08165	I OVT	MUDSTONE	CARB. DK. GY. BRKN
77	166.96	167.02	0.06	52	08165	I OVT	COAL	C-4. BLK. PHRD
77	167.02	167.07	0.05	52	08165	I OVT	COAL	C-5. BLK. BRKN ABUNDANT MUDST INTERLAMS.
77	167.07	167.26	0.19	52	08165	I OVT	COAL LOSS	
77	167.26	167.31	0.05	52	08165	I OVT	COAL	C-3. BLK. PHRD EXTREMELY SHEARED.
77	167.31	167.35	0.04	52	08165	I OVT	COAL	C-4. BLK. BRKN INTERBANDED C-2 AND C-5.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	167.35	167.49	0.14	52	08165	I OVT	COAL	C-2. BLK. BRKN INTERBANDED C-1 AND C-3.
77	167.49	167.59	0.10	52	08165	I OVT	COAL	C-4. BLK. BRKN INTERBANDED C-2 AND C-5.
77	167.59	167.67	0.08	53	08165	I OVT	COAL	C-3. BLK. BRKN ABUNDANT C-2 AND C-4 BANDS.
77	167.67	167.70	0.03	53	08165	I OVT	COAL	C-1. BLK. BRKN
77	167.70	167.79	0.09	53	08165	I OVT	COAL	C-3. BLK. BRKN
77	167.79	167.83	0.04	53	08165	I OVT	COAL	C-4. BLK. BRKN
77	167.83	167.85	0.02	53	08165	I OVT	COAL	C-3. BLK. BRKN
77	167.85	167.87	0.02	53	08165	I OVT	MUDSTONE	DK. GY. BRKN
77	167.87	167.91	0.04	53	08165	I OVT	COAL	C-2. BLK. BRKN ABUNDANT C-1 BANDS.
77	167.91	167.96	0.05	53	08165	I OVT	COAL	C-4. BLK. BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	167.96	167.98	0.02	54	08165 I OVT	MUDSTONE	GY. VSHRD SOFT, UNLITHIFIED.
77	167.98	168.05	0.07	54	08165 I OVT	COAL	C-4.BLK.YBRKN
78	168.05	168.13	0.08	54	08165 I OVT	COAL	C-4.BLK.YBRKN
78	168.13	168.80	0.67	54	08165 I OVT	COAL LOSS	
78	168.80	169.36	0.56	54	08166 I OVT ROOF	MUDSTONE	DK.GY.LAM.BRKN VERY RARE THIN (<1MM) MISPY COAL STRING ERS NEAR TOP. MINOR COALIFIED PLANT FRA GMENTS. (UPPER 25CM SAMPLED). I(OVT) RO OF ROCK.
78	169.36	169.73	0.37	54		MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD MUDST WITH ABUNDANT M GREY SLTST LAMS. RARE PLANT AND WOOD FRAGMENTS.
78	169.73	169.75	0.02	54		SILTSTONE	LT.GY TUFACEOUS.
78	169.75	170.09	0.34	55		MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD ABUNDANT SLTST LAMS. RARE PLANT WOOD FR AGS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	170.09	170.15	0.06	55		SILTSTONE	LT.GY TUFACEOUS.
78	170.15	170.17	0.02	55		MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD AS ABOVE MUDST.
78	170.17	170.64	0.47	*55		MUDSTONE	SLTY.DK.GY.LAM.SSD.SLD AS ABOVE. LOAD CASTS INDICATES TOPS UP.
79	170.64	172.57	1.93	*48		MUDSTONE	DK.GY.LAM.SLD ALT LAM OF DK GREY MUDST & LT GREY MUDS T. MANY OF THE LAMINATIONS GRADE INTO O NE ANOTHER.
80	172.57	173.08	0.51	*39		MUDSTONE	DK.GY.LAM.SLD AS ABOVE.
80	173.08	174.23	1.15	40		MUDSTONE	DK.GY.LAM.SLD AS ABOVE.
81	174.23	174.64	0.41	42		MUDSTONE	DK.GY.LAM.SLD AS ABOVE.
81	174.64	174.86	0.22	43		MUDSTONE	DK.GY.LAM.YBRKN AS ABOVE. QTZ & CALCITE FRACTURE FILLS. POSSIBLE CORE LOSS.
81	174.86	175.00	0.14	*45		MUDSTONE	DK.GY.LAM.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88012

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	175.00	175.04	0.04	45		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE. POSSIBLE CORE LOSS. END OF HO LE. TD = 175.04M.

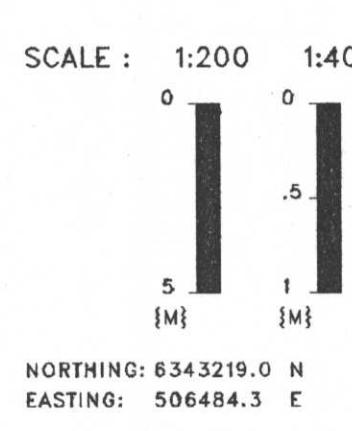
* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88012

GEOLOGIST : MATTHEWS

DATE : FEB 21/89

DRAWING NO. :

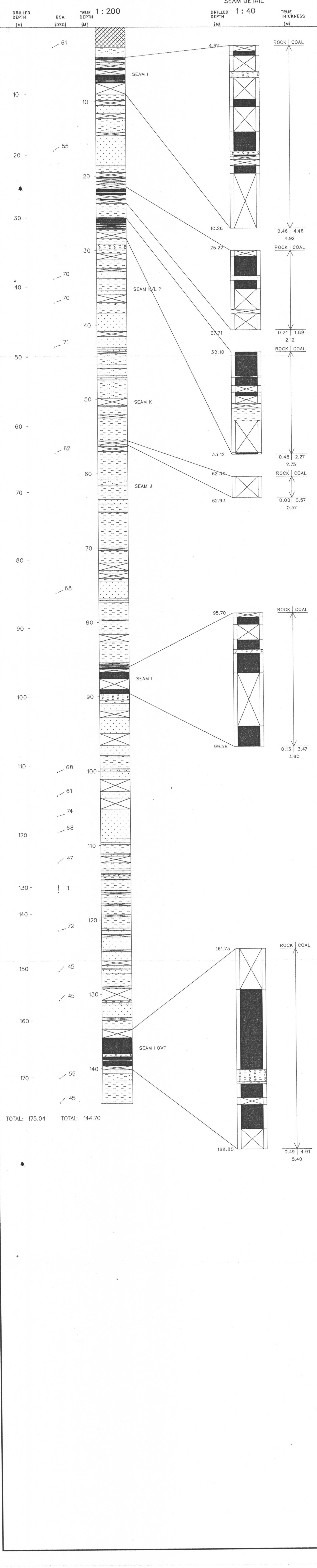


NORTHING: 6343219.0 N
 EASTING: 506484.3 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED



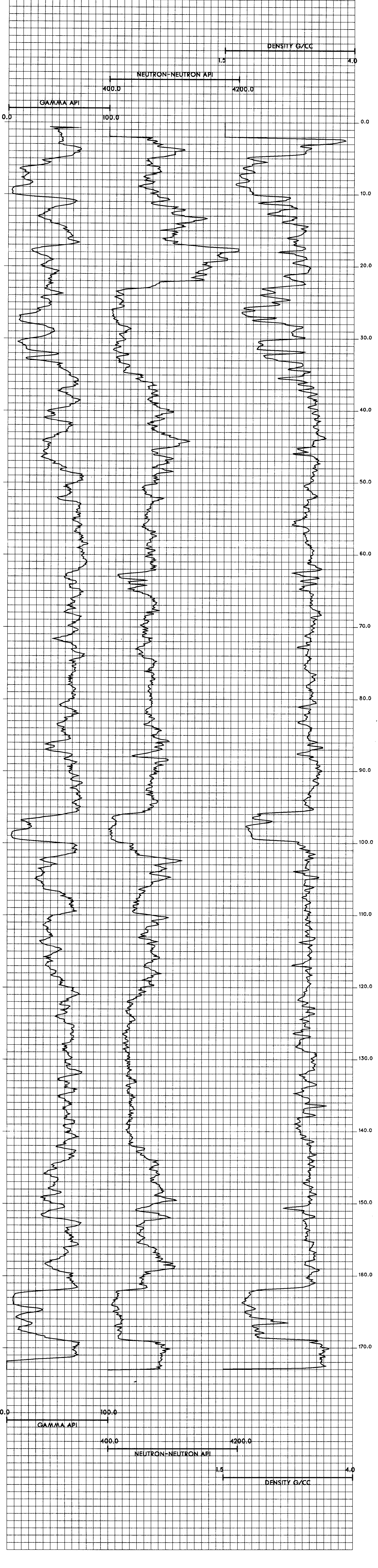
Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88012 Log Date: 88-06-25 Company: CENTURY Geologist: MATTHEWS	Province: BC Northing: 6343220.00 Lat: 571402 Zone: 9 Easting: 506484.00 Long: 1285333 Measuring Point: GROUND LEVEL Elevation: 1654.9	
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Scale: 1 to 200.0 Depth Range: 0.0 to 178.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.
--	---

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88013

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88013

DATE - 02/15/89

- HISTORY -

START DATE - 06/24/88
END DATE - 06/27/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTS L, K/L, K, J, I, AND H. BCA AVERAGE 80
DEGREES THROUGHOUT.

- LOCATION -

PROVINCE - BC
ELEVATION - 1557.42

ZONE - 9
NORTHING - 6344116.66
EASTING - 507700.10

LICENCE/LEASE NUMBER - 7145

LATITUDE - 571431
LONGITUDE - 1285221

- ORIENTATION -

LENGTH - 223.50

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 6.10
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-013

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

L

2.60 m

K/L

1.04 m

K

4.25 m

J

0.50 m

I

4.33 m

H

4.86 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000



Gulf Canada Resources Limited

GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88013 SEAM: J INTERVAL(M): 126.77 - 127.28 ELEVATION(M): 1557.4
 GEOLOGIST: MURRAY SCALE: 1:40 DATE: JAN 23/89 DRAWING NO.:

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.							
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG		
	126.77	↑															
	127.28	↓		0.50	100.0	8198	78	0.50/0.00	0.50/0.00	0.64	48.68	6.18	48.50	0.34	18.75	—	

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	6.10	6.10	84			OVERBURDEN	CASING DEPTH.
1	6.10	6.27	0.17	84			MUDSTONE	OVERBURDEN.
1	6.27	6.39	0.12	84			ROCK LOSS	
1	6.39	8.28	1.89	*84			SANDSTONE	CLYY.MG.PR.LT-M.GY.VTHNB.SLD MINOR SILT AND CLAY LAMS. MINOR FE STAINING AT TOP. VERY SOFT. MINOR LITRICK SURFACES.
2	8.28	10.41	2.13	*85			SANDSTONE	CLYY.MG.PR.LT.GY.VTHNB.SLD AS ABOVE. MUD FILLED FRACTURES. MINOR PLANT FRAGS WITHIN SILTY BANDS.
3	10.41	11.29	0.88	*86			SANDSTONE	CLYY.MG.PR.LT-M.GY.VTHNB.SLD AS ABOVE. MINOR CARB MUDSTONE PARTINGS. AT BASE SMALL PEBBLES UP TO 8MM ARE COMMON.
3	11.29	11.54	0.25	86			SANDSTONE	CLYY.CG.PR.M.GY.VTHNB.SLD AS ABOVE WITH COALY QTZ STRINGERS. MUDST RIP-UPS. SHARP BASAL CONTACT WITH SILTY MUDST. SCOUR SURFACE INDICATES TOPS UP. RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	11.54	12.31	0.77	*87			MUDSTONE	M-DK.GY.LAM.BRKN INTERLAMINATED MUDST AND SLTST. MINOR PLANT FRAGS. SOME OF WHICH ARE COALIFIED
4	12.31	14.01	1.70	87			MUDSTONE	M-DK.GY.LAM.BRKN AS ABOVE.
4	14.01	14.22	0.21	*86			MUDSTONE	M-DK.GY.LAM.SSD.SLD INTERLAMINATED MUDST AND SLTST. SCOUR SURFACE INDICATES TOPS UP.
5	14.22	16.07	1.85	85			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.SLD AS ABOVE WITH NUMEROUS FG SS LENSES AND THIN CLAY BANDS 1-2CM THICK. SCOUR SURFACE INDICATES TOPS UP. MUD IS POORLY CONSOLIDATED IN PARTS.
6	16.07	16.21	0.14	85			MUDSTONE	DK.GY.SLD POORLY CONSOLIDATED. VERY SOFT.
6	16.21	16.79	0.58	*84			MUDSTONE	DK.GY.BRKN VERY MINOR SILT LAMS AND UNCONSOLIDATED MUD BANDS UP TO 1CM THICK.
6	16.79	18.03	1.24	80			MUDSTONE	DK.GY.BRKN AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: ODH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	18.03	18.35	0.32	*75		MUDSTONE	SLTY. DK. GY. VTHNB. BRKN SILTY MUDSTONE BECOMING LESS SILTY TOWARDS THE BASE.
7	18.35	18.80	0.45	75	08188 L ROOF	MUDSTONE	DK. GY. VTHNB. BRKN VERY BROKEN NEAR BASE OF THE INTERVAL. WEAKLY SHEARED. LOWER 25CM. SAMPLED. L.S. EAM ROOF ROCK.
7	18.80	18.85	0.05	75	08189 L	COAL LOSS	
7	18.85	18.98	0.13	76	08189 L	COAL	C-3. BLK. VBRKN BORDERLINE C-2.
7	18.98	19.08	0.10	76	08189 L	COAL	C-4. BLK. VBRKN MODERATELY CLEATED.
7	19.08	19.63	0.55	76	08189 L	COAL LOSS	
7	19.63	19.64	0.01	76	08189 L	COAL	C-6. BLK. BRKN
7	19.64	19.79	0.15	77	08189 L	COAL	C-3. BLK. BRKN MODERATELY CLEATED WITH MINOR C-1 BANDS

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: ODH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	19.79	19.91	0.12	77	08189 L	COAL	C-6. BLK. BRKN VERY HARD.
7	19.91	20.01	0.10	77	08189 L	COAL	C-3. BLK. BRKN MODERATELY CLEATED.
7	20.01	20.05	0.04	77	08189 L	MUDSTONE	CARB. BLK. SLIGHTLY SANDY.
7	20.05	20.11	0.06	78	08189 L	COAL	C-2. BLK. BRKN MODERATELY CLEATED, CORE TWIST-OFF.
7	20.11	20.15	0.04	78	08189 L	MUDSTONE	CARB. BLK. BRKN SLIGHTLY SANDY.
7	20.15	20.20	0.05	78	08189 L	COAL	C-1. BLK. BRKN WELL CLEATED.
7	20.20	20.24	0.04	78	08189 L	COAL	C-2. BLK. WELL CLEATED.
7	20.24	20.27	0.03	79	08189 L	MUDSTONE	CARB. BLK. BRKN
7	20.27	20.32	0.05	79	08189 L	COAL	C-4. BLK. VBRKN
8	20.32	20.34	0.02	79	08189 L	MUDSTONE	BLK. BRKN WEAKLY CARBONACEOUS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	20.34	20.36	0.02	79	08189	L	COAL	C-3.BLK.BRKN WEAKLY CLEATED.
8	20.36	20.39	0.03	80	08189	L	COAL	C-5.BLK.BRKN VERY HARD.
8	20.39	20.52	0.13	80	08189	L	COAL LOSS	
8	20.52	20.56	0.04	80	08189	L	COAL	C-2.BLK.VBRKN MODERATELY CLEATED.
8	20.56	20.59	0.03	80	08189	L	COAL	C-1.BLK.BRKN
8	20.59	20.66	0.07	81	08189	L	COAL	C-2.BLK.VBRKN TWIST-OFF.
8	20.66	20.70	0.04	81	08189	L	COAL	C-3.BLK.BRKN MODERATELY CLEATED.
8	20.70	20.80	0.10	81	08189	L	COAL	C-2.BLK.BRKN TWIST-OFF.
8	20.80	20.88	0.08	81	08189	L	COAL	C-3.BLK.BRKN BORDERLINE C-2.
8	20.88	21.05	0.17	82	08189	L	COAL	C-5.BLK.BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	21.05	21.07	0.02	82	08189	L	COAL	C-1.BLK.BRKN
8	21.07	21.15	0.08	82	08189	L	COAL	C-5.BLK.BRKN
8	21.15	21.17	0.02	82	08189	L	COAL	C-3.BLK.BRKN
8	21.17	21.18	0.01	83	08189	L	MUDSTONE	BLK.BRKN
8	21.18	21.21	0.03	83	08189	L	COAL	C-1.BLK.BRKN
8	21.21	21.36	0.15	83	08189	L	COAL	C-6.BLK.SLD TWIST-OFF.
8	21.36	21.42	0.06	83	08189	L	COAL	C-6.BLK.SLD VERY HARD.
8	21.42	21.45	0.03	84	08189	L	COAL	C-5.BLK.BRKN
8	21.45	21.53	0.08	84	08190	L FLOOR	MUDSTONE	CARB.BLK.SHRD WEAKLY SHEARED WITH SHINY LUSTRIC SURFACES. NUMEROUS PLANT FRAGMENTS. L SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	21.53	21.65	0.12	84	08190	L FLOOR	ROCK LOSS	
8	21.65	22.57	0.92	84	08190	L FLOOR	MUDSTONE	DK.GY.SHRD MINOR COAL LAMINATIONS IN PARTS. (UPPER 17CM SAMPLED), L SEAM FLOOR ROCK.
8	22.57	22.69	0.12	85			ROCK LOSS	
9	22.69	22.96	0.27	85			MUDSTONE	M.GY.BRKN
9	22.96	23.08	0.12	85			ROCK LOSS	
9	23.08	23.23	0.15	86			MUDSTONE	M.GY.LAM.BRKN PLANT FRAGS SOME OF WHICH ARE COALIFIED
9	23.23	23.35	0.12	86			ROCK LOSS	
9	23.35	23.54	0.19	86			SILTSTONE	M.GY.LAM.SLD SSD AND SUBANGULAR MUD RIP-UPS. FECAL P ELLETS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	23.54	23.69	0.15	86			MUDSTONE	M-DK.GY.LAM.BRKN COALIFIED PLANTS THROUGHOUT. BECOMES MO RE CARBONACEOUS TOWARDS BASE.
9	23.69	23.89	0.20	87			MUDSTONE	CARB.BLK.LAM.BRKN PLANT FRAGS THROUGHOUT. COALY PARTINGS. NILSSONIA CANADENSIS.
9	23.89	24.59	0.70	87			MUDSTONE	M-DK.GY.LAM.YBRKN PLANT FRAGS THROUGHOUT INCREASING TOMAR DS TOP. LISTRIC SURFACES. MINOR COALIFI ED PLANTS BECOMES SLTY AT BASE.
9	24.59	24.69	0.10	87			ROCK LOSS	
10	24.69	25.09	0.40	88			MUDSTONE	SLTY.M.GY.SLD PLANT FRAGS. GRADES INTO SLTST AT BASE. FUS. SLTST LAMS THROUGHOUT.
10	25.09	26.07	0.98	*88			SILTSTONE	SSY.LT-M.GY.VTHNB.SSD.SLD INTERBEDDED SLTST & YFG SS. TOPS APPEAR UP.
10	26.07	26.78	0.71	84			SILTSTONE	SSY.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. AMBIGUOUS TOPS INDICATORS. AP PEARS TO BE STILL UPRIGHT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	26.78	28.90	2.12	*80			SANDSTONE	FG. MOD. LT-M. GY. VTHNB. SSD. SLD INTERBEDDED WITH SLTST. AT 90CM IS A 2M M WHITE, SOAPY CLAY PARTING.
12	28.90	30.10	1.20	80			SANDSTONE	FG. MOD. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. MINOR SLTST RIP-UPS NEAR BASE. MINOR LITRIG SURFACES.
12	30.10	30.84	0.74	80			SANDSTONE	FG. MOD. LT-M. GY. THNB. SSD. SLD AS ABOVE WITH RIP-UPS UP TO 25MM LONG.
13	30.84	32.03	1.19	*80			SANDSTONE	FG. WEL. LT-M. GY. THNB. SLD AS ABOVE. FAINT CROSS-BEDDING. RIP-UP CLASTS.
13	32.03	32.87	0.84	79			SANDSTONE	FG. WEL. LT-M. GY. VTHNB. XBDG. BRKN AS ABOVE LAMINATED WITH SLTST AT TOP. V THNB BED AT BASE. CROSS-BEDS INDICATE TOPS UP.
13	32.87	32.99	0.12	79			ROCK LOSS	
14	32.99	35.03	2.04	*78			SANDSTONE	FG. WEL. LT-M. GY. THNB. XBDG. SLD LAMINATED WITH SLTST AT TOP. X-BEDS INDICATE TOPS UP. RIP-UPS THROUGHOUT. NUMEROUS THIN WHITE SOAPY CLAY PARTINGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.03	35.74	0.71	78			SANDSTONE	FG. WEL. LT. GY. THNB. BRKN FAIRLY MASSIVE AT TOP. NEAR BASE ARE NUMEROUS COALY QTZ STRINGERS AND RIP-UPS. SILT CONTENT INCREASES TOWARDS BASE.
15	35.74	35.86	0.12	79			ROCK LOSS	
15	35.86	36.64	0.78	79			SANDSTONE	SLTY. FG. MOD. M. GY. VTHNB. BRKN AS ABOVE. VERY COALY IN PARTS. NUMEROUS THIN WHITE SOAPY CLAY BANDS. QTZ STRINGERS. NUMEROUS PLANT FRAGS IN SILTY PARTS.
15	36.64	36.76	0.12	79			ROCK LOSS	
15	36.76	37.10	0.34	79			SILTSTONE	CLY. M. GY. BRKN WHITE SOAPY CLAY AND DK GREY CLAY PARTINGS. ABUNDANT PLANT FRAGS THROUGH OUT.
15	37.10	37.22	0.12	80			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	37.22	37.62	0.40	*80	08191	K/L ROOF	MUDSTONE	CARB. M. GY. LAM. BRKN MINOR AMOUNTS OF PYRITE. (LOWER 25CM SAMPLED). K/L SEAM ROOF ROCK.
16	37.62	38.07	0.45	80	08192	K/L	COAL	C-3. BLK. BRKN MODERATELY CLEATED. ABUNDANT QUARTZ VEINING.
16	38.07	38.26	0.19	80	08192	K/L	COAL LOSS	
16	38.26	38.28	0.02	79	08192	K/L	MUDSTONE	LT. GY. BRKN POORLY CONSOLIDATED.
16	38.28	38.31	0.03	79	08192	K/L	MUDSTONE	CARB. M. BN. BRKN POORLY CONSOLIDATED.
16	38.31	38.41	0.10	79	08192	K/L	COAL	C-4. BLK. BRKN ABUNDANT QUARTZ VEINING. PYRITE.
16	38.41	38.68	0.27	79	08192	K/L	COAL	C-5. BLK. BRKN
16	38.68	39.17	0.49	79	08193	K ROOF	MUDSTONE	CARB. BLK. BRKN MORE CARBONACEOUS TOWARDS THE TOP OF THE INTERVAL. (UPPER 25CM SAMPLED). K/L SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	39.17	39.22	0.05	79			ROCK LOSS	
17	39.22	40.02	0.80	78			SILTSTONE	M. GY. SLD NUMEROUS PLANT FRAGS THROUGHOUT, LISTRI C SURFACES, COALY PARTINGS, AND MUD PAR TINGS. GRADES IN AND OOF A VFG SS.
17	40.02	40.06	0.04	78			COAL	C-3. BLK. SLD QTZ THROUGHOUT.
17	40.06	40.16	0.10	78			MUDSTONE	CARB. BLK. BRKN QTZ AND PLANT FRAGS THROUGHOUT.
17	40.16	40.21	0.05	78			ROCK LOSS	
17	40.21	40.59	0.38	78			MUDSTONE	DK. GY. LAM. BRKN PLANT FRAGS.
17	40.59	40.64	0.05	78			ROCK LOSS	
17	40.64	40.75	0.11	77			MUDSTONE	CARB. BLK. BRKN COALIFIED PLANT FRAGS THROUGHOUT. SHEAR ED. SURFACES.
17	40.75	40.80	0.05	77			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	40.80	41.31	0.51	77			MUDSTONE	DK. GY. LAM. BRKN PLANT FRAGS THROUGHOUT.
17	41.31	41.36	0.05	77			ROCK LOSS	
18	41.36	43.34	1.98	77			SILTSTONE	M-DK. GY. LAM. BRKN GRADES INTO YFG SS IN PARTS. PLANT FRAG S THROUGHOUT.
18	43.34	43.47	0.13	76			ROCK LOSS	
19	43.47	44.41	0.94	76			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE.
19	44.41	44.86	0.45	76			ROCK LOSS	
19	44.86	45.60	0.74	76			SILTSTONE	M-DK. GY. LAM. BRKN AS ABOVE. LISTRIC SURFACES AT TOP. MINO R WHITE SOAPY FRACTURE FILL.
19	45.60	46.02	0.42	76			ROCK LOSS	
20	46.02	47.45	1.43	75			SILTSTONE	M-DK. GY. LAM. SSD. SLD INTERLAMINATED WITH YFG SS. MINOR SSD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	47.45	48.11	0.66	75			SILTSTONE	M. GY. LAM. SLD SANDY IN PARTS. MINOR PLANT FRAGS THROU GHOUT. GRADES INTO YFG SS AT BASE.
21	48.11	50.12	2.01	*75			SANDSTONE	YFG. MEL. M. GY. LAM. SLD INTERLAMINATED SS AND SLTST. MINOR PLAM T FRAGS. LISTRIC SURFACES IN SLTY AREAS . WHITE SOAPY CLAY FRACTURE FILL. LOAD CAST INDICATE TOPS UP. RIP-UP CLASTS.
22	50.12	51.07	0.95	*80			SANDSTONE	YFG. MEL. M. GY. LAM. SLD AS ABOVE. SOAPY FRACTURE FILL. LISTRIC SURFACES. GRADES INTO SILTSTONE AT BASE . SHARP BASAL CONTACT WITH MG SS. RIP-U P CLASTS.
22	51.07	51.12	0.05	80			SANDSTONE	MG. MOD. LT. GY. VTHNB. SLD MINOR SLTST LAMS AND MUDST. RIP-UPS.
22	51.12	52.02	0.90	81			SANDSTONE	MG. MOD. LT. GY. VTHNB. SLD AS ABOVE WITH SLTST BANDS UP TO 3CM THI CK. HIGH ANGLE CALCAREOUS FRACTURE FILL . WHITE SOAPY CLAY MINERAL IS ASSOCIATE D WITH SLTST BANDS. RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	52.02	53.92	1.90	81			SANDSTONE	CLYY.CG.MOD.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE. VERY SILTY IN AREAS. CALCAREOUS FRACTURE FILL. COALY IN PARTS. LISTRIC SURFACES.
24	53.92	55.17	1.25	81			SANDSTONE	CLYY.CG.MOD.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE. WITHOUT LISTRIC SURFACES. FINES TO MG AT BASE.
24	55.17	55.88	0.71	82			SANDSTONE	MG.MEL.LT.GY.THNB.SLD AS ABOVE. RIP-UP CLASTS.
25	55.88	56.86	0.98	82			SANDSTONE	MG.MEL.LT.GY.THNB.BRKN MG SS WITH VERY MINOR SLTST LAMINATIONS MINOR CALCAREOUS FRACTURE FILL. RIP-UP CLASTS.
25	56.86	56.88	0.02	82			ROCK LOSS	
25	56.88	57.88	1.00	83			SANDSTONE	MG.MEL.LT.GY.MAS.BRKN AS ABOVE. FAIRLY MASSIVE. RIP-UP CLASTS
25	57.88	57.90	0.02	83			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	57.90	59.03	1.13	83			SANDSTONE	MG.MEL.LT.GY.MAS.BRKN AS ABOVE. RIP-UP CLASTS.
26	59.03	59.07	0.04	84			ROCK LOSS	
26	59.07	59.90	0.83	84			SANDSTONE	MG.MEL.LT.GY.MAS.BRKN AS ABOVE. RIP-UP CLASTS.
26	59.90	60.42	0.52	84			ROCK LOSS	
27	60.42	62.29	1.87	85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE. RIP-UP CLASTS.
28	62.29	63.32	1.03	*85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE. RIP-UP CLASTS.
28	63.32	64.33	1.01	85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE. RIP-UP CLASTS.
29	64.33	66.30	1.97	85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE. VERY MINOR SLTST LAMS. RIP-UP CLASTS.
29	66.30	66.36	0.06	85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE.
30	66.36	68.23	1.87	85			SANDSTONE	MG.MEL.LT.GY.MAS.SLD AS ABOVE. VERY MINOR SLTST LAMS. RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	68.23	69.01	0.78	85			SANDSTONE	MG. MEL. LT. GY. MAS. AS ABOVE.
31	69.01	69.34	0.33	86			SANDSTONE	MG. MEL. LT. GY. MAS. BRKN MINOR HIGH ANGLE CALCAREOUS FRACTURE FILL.
31	69.34	69.37	0.03	86			ROCK LOSS	
31	69.37	70.55	1.18	86			SANDSTONE	MG. MEL. LT. GY. MAS. BRKN CALCAREOUS FRACTURE FILL. LARGE MUD RIP-UPS. MINOR SLTST LAMINATIONS.
32	70.55	72.24	1.69	86			SANDSTONE	MG. MEL. LT. GY. MAS. SLD AS ABOVE. RIP-UP CLASTS.
32	72.24	72.26	0.02	86			SILTSTONE	LT-M. GY. LAM. BRKN
32	72.26	72.36	0.10	*86			MUDSTONE	DK. GY. LAM. SLD SOME SLTST LAMINATIONS.
32	72.36	72.38	0.02	86			SANDSTONE	MG. MEL. LT. GY. THNB. SLD NUMEROUS RIP-UPS.
32	72.38	72.57	0.19	85			SANDSTONE	MG. MOD. LT-M. GY. YTHNB. BRKN GRADES QUICKLY INTO SLTST. AT BASE. RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	72.57	72.65	0.08	85			ROCK LOSS	
33	72.65	74.15	1.50	85			SILTSTONE	M. GY. LAM. SLD MINOR THIN CLAY PARTINGS. BOTH WHITE & BROWN. NUMEROUS PLANT FRAGMENTS ALSO BI VALVES.
33	74.15	74.41	0.26	85			MUDSTONE	BLK. LAM. SLD LISTRIC SURFACES. NUMEROUS PLANT FRAGS.
33	74.41	74.75	0.34	84			SANDSTONE	CARB. CG. PR. LT-M. GY. THNB. SLD LISTRIC SURFACES. CARBONACEOUS MATERIAL WITHIN. RIP-UP CLASTS.
34	74.75	75.35	0.60	84			SANDSTONE	CLYY. CG. PR. LT-M. GY. THNB. BRKN HIGH ANGLE CALCAREOUS FRACTURE FILL. MINOR SLTST LAMINATIONS. RIP-UP CLASTS.
34	75.35	75.43	0.08	84			ROCK LOSS	
34	75.43	76.91	1.48	83			SANDSTONE	CLYY. CG. PR. LT-M. GY. THNB. BRKN AS ABOVE. MINOR CARBONACEOUS MATERIAL GRADES TO MG. SS. AT BASE. RIP-UP CLASTS.
34	76.91	77.02	0.11	83			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	77.02	78.22	1.20	83			SANDSTONE	MG. PR. M. GY. YTHNB. SLD RIP-UPS AND MINOR SLTST LAMINATIONS. LO AD CAST INDICATES TOPS UP.
35	78.22	78.40	0.18	83			SILTSTONE	M-DK. GY. LAM. SLD NUMEROUS PLANT FRAGS. MILSSONIA TENUICA ULIS.
35	78.40	78.88	0.48	82			SILTSTONE	M-DK. GY. LAM. SLD AS ABOVE. SPHENOPTERIS. MINOR CLAY PART INGS.
35	78.88	79.12	0.24	82			MUDSTONE	DK. GY. SLD NUMEROUS PLANT FRAGS.
36	79.12	80.91	1.79	82			MUDSTONE	DK. GY. BRKN AS ABOVE. VERY BROKEN AT BASE.
36	80.91	81.01	0.10	81			ROCK LOSS	
36	81.01	81.25	0.24	81			MUDSTONE	DK. GY. BRKN AS ABOVE.
36	81.25	81.30	0.05	81			ROCK LOSS	
37	81.30	83.31	2.01	80			MUDSTONE	DK. GY. BRKN NUMEROUS PLANT FRAGS THROUGHOUT. MILSSO NIA TENUICAULIS. SPHENOPTERIS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	83.31	83.36	0.05	80			ROCK LOSS	
38	83.36	83.57	0.21	80			MUDSTONE	DK. GY. BRKN AS ABOVE.
38	83.57	83.62	0.05	79			ROCK LOSS	
38	83.62	85.45	1.83	79			MUDSTONE	DK. GY. BRKN AS ABOVE. MINOR WHITE SOAPY FRACTURE FI LL.
39	85.45	86.58	1.13	79			MUDSTONE	DK. GY. BRKN NUMEROUS PLANT FRAGS. SOME MINOR BIVALV ES.
39	86.58	87.28	0.70	78			MUDSTONE	DK. GY. BRKN AS ABOVE.
39	87.28	87.32	0.04	78			ROCK LOSS	
39	87.32	87.47	0.15	78			MUDSTONE	DK. GY. BRKN AS ABOVE.
39	87.47	87.50	0.03	77			ROCK LOSS	
40	87.50	89.61	2.11	77			MUDSTONE	DK. GY. BRKN PLANT FRAGS THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	89.61	89.63	0.02	77			ROCK LOSS	
41	89.63	90.33	0.70	76			MUDSTONE	DK.GY.BRKN AS ABOVE.
41	90.33	90.38	0.05	76			ROCK LOSS	
41	90.38	91.79	1.41	76			MUDSTONE	DK.GY.BRKN AS ABOVE. MINOR CALCAREOUS FRACTURE FIL L AND CLAY PARTINGS.
41	91.79	91.82	0.03	75			ROCK LOSS	
42	91.82	92.89	1.07	75			MUDSTONE	DK.GY.BRKN PLANT FRAGS THROUGHOUT.
42	92.89	92.91	0.02	75			ROCK LOSS	
42	92.91	93.89	0.98	74			MUDSTONE	DK.GY.BRKN AS ABOVE.
43	93.89	95.52	1.63	*74	08193 K	ROOF	MUDSTONE	BLK.MAS.BRKN SLIGHTLY SILTIER IN UPPER HALF. WEAK LAMS IN UPPER HALF. COALIFIED PLANTS. (LOWER 15.0CM SAMPLED). K SEAM ROOF ROCK.
43	95.52	95.62	0.10	74	08193 K	ROOF	MUDSTONE	BLK.VSHRD SAMPLED. K SEAM ROOF ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	95.62	95.95	0.33	74	08194 K		COAL LOSS	
43	95.95	96.04	0.09	74	08194 K		COAL	C-3.BLK.VSHRD
43	96.04	96.06	0.02	74	08194 K		COAL	C-1.BLK.BRKN MOD. CLEATED.
43	96.06	96.23	0.17	74	08194 K		COAL	C-3.BLK.VBRKN
44	96.23	96.43	0.20	74	08194 K		COAL	C-3.BLK.VBRKN TWIST-OFF. QTZ FILLED YUG.
44	96.43	96.51	0.08	74	08194 K		MUDSTONE	CARB.BLK.BRKN
44	96.51	96.56	0.05	74	08194 K		COAL	C-4.BLK.BRKN
44	96.56	96.58	0.02	73	08194 K		COAL	C-1.BLK.BRKN POORLY CLEATED.
44	96.58	96.64	0.06	73	08194 K		COAL	C-3.BLK.BRKN
44	96.64	96.74	0.10	73	08194 K		COAL	C-2.BLK.SLD HARD. INTERLAMINATED C-1 & C-3.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	96.74	96.77	0.03	73 08194	K	COAL	C-1.BLK.BRKN
44	96.77	96.79	0.02	73 08194	K	COAL	C-2.BLK.BRKN
44	96.79	96.81	0.02	73 08194	K	MUDSTONE	DK.GY.BRKN TWIST-OFF.
44	96.81	96.84	0.03	73 08194	K	COAL	C-6.BLK.VBRKN HARD.
44	96.84	96.89	0.05	73 08194	K	COAL	C-3.BLK.BRKN
44	96.89	97.19	0.30	73 08194	K	COAL	C-2.BLK.BRKN HARD. BANDED.
44	97.19	97.22	0.03	73 08194	K	COAL	C-1.BLK.SLD
44	97.22	97.40	0.18	73 08194	K	COAL	C-2.BLK.BRKN
44	97.40	97.50	0.10	73 08194	K	COAL LOSS	
44	97.50	97.64	0.14	73 08194	K	ROCK LOSS	
44	97.64	97.66	0.02	73 08194	K	MUDSTONE	CARB.BLK.VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	97.66	97.89	0.23	73 08194	K	COAL	C-2.BLK.BRKN
44	97.89	97.91	0.02	73 08194	K	COAL	C-5.BLK.BRKN
44	97.91	98.11	0.20	73 08194	K	COAL	C-2.BLK.BRKN
44	98.11	98.15	0.04	72 08194	K	COAL	C-4.BLK.BRKN
44	98.15	98.17	0.02	72 08194	K	COAL	C-2.BLK.BRKN
44	98.17	98.22	0.05	72 08194	K	COAL	C-3.BLK.BRKN
45	98.22	98.31	0.09	72 08194	K	COAL	C-3.BLK.BRKN
45	98.31	98.35	0.04	72 08194	K	COAL	C-2.BLK.BRKN
45	98.35	98.39	0.04	72 08194	K	MUDSTONE	CARB.BLK.BRKN
45	98.39	98.42	0.03	72 08194	K	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	98.42	98.47	0.05	72	08194	K	COAL	C-3.BLK.BRKN
45	98.47	98.51	0.04	72	08194	K	MUDSTONE	DK.BN.YBRKN
45	98.51	98.76	0.25	72	08194	K	COAL LOSS	
45	98.76	98.81	0.05	72	08194	K	COAL	C-3.BLK.BRKN
45	98.81	98.84	0.03	72	08194	K	COAL	C-4.BLK.BRKN
45	98.84	98.86	0.02	72	08194	K	COAL	C-3.BLK.BRKN
45	98.86	98.90	0.04	72	08194	K	COAL	C-5.BLK.BRKN
45	98.90	98.93	0.03	72	08194	K	COAL	C-3.BLK.YBRKN
45	98.93	98.95	0.02	72	08194	K	COAL	C-1.BLK.BRKN
45	98.95	99.12	0.17	72	08194	K	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	99.12	99.16	0.04	71	08194	K	COAL	C-4.BLK.BRKN
45	99.16	99.63	0.47	71	08195	K	MUDSTONE	SLTY.DK.GY.BRKN SILTY BLEBS. SILTY REGIONS ARE CALCAREO US.
45	99.63	99.73	0.10	71	08195	K	SILTSTONE	H.GY.SLD MOTTLED WITH MUD.
45	99.73	99.74	0.01	71	08195	K	COAL	C-1.BLK.BRKN
45	99.74	99.97	0.23	71	08195	K	MUDSTONE	DK.GY.BRKN
45	99.97	100.03	0.06	71	08195	K	MUDSTONE	CARB.BLK.BRKN
45	100.03	100.09	0.06	71	08195	K	SILTSTONE	LY-H.GY.SLD
45	100.09	100.18	0.09	71	08196	K	COAL	C-2.BLK.BRKN MOD CLEATED.
45	100.18	100.19	0.01	71	08196	K	COAL	C-4.BLK.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	100.19	100.25	0.06	71	08196	K	COAL	C-2.BLK.BRKN WELL CLEATED.
46	100.25	100.40	0.15	71	08196	K	COAL	C-2.BLK.BRKN VERY WELL CLEATED.
46	100.40	100.41	0.01	71	08196	K	COAL	C-3.BLK.BRKN
46	100.41	100.43	0.02	71	08196	K	COAL	C-1.BLK.BRKN
46	100.43	100.45	0.02	71	08196	K	COAL	C-5.BLK.SLD PYRITE BLEBS.
46	100.45	100.47	0.02	71	08196	K	COAL	C-1.BLK.BRKN
46	100.47	100.48	0.01	71	08196	K	COAL	C-4.BLK.BRKN
46	100.48	100.56	0.08	71	08196	K	COAL	C-2.BLK.BRKN
46	100.56	100.60	0.04	70	08196	K	COAL	C-5.BLK.BRKN ALMOST CARB MUDST.
46	100.60	100.62	0.02	70	08196	K	COAL	C-2.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	100.62	100.72	0.10	70	08196	K	COAL	C-3.BLK.VSHRD
46	100.72	100.75	0.03	70	08196	K	COAL	C-4.BLK.VSHRD
46	100.75	100.84	0.09	70	08196	K	MUDSTONE	CARB.BLK.SHRD
46	100.84	100.89	0.05	70	08196	K	COAL	C-2.BLK.VBRKN
46	100.89	101.00	0.11	70	08196	K	COAL LOSS	
46	101.00	101.12	0.12	70	08197	K FLOOR	MUDSTONE	CARB.BLK.SLD CARB. PLANT FOSSILS. K SEAM FLOOR ROCK. SAMPLED.
46	101.12	101.52	0.40	*70	08197	K FLOOR	SILTSTONE	SSY.LT-M.GY.MAS.SLD UPPER 3CM CALCAREOUS. (UPPER 13CM SAMPL ED). K SEA M FLOOR ROCK.
46	101.52	102.02	0.50	71			SILTSTONE	LT-M.GY.SLD LARGE LT GREY CALCAREOUS SLTST LENS (33 CM LONG) IN M-DK GREY SLTST. PYRITE BLE BS. SOME HAIRLINE QTZ FILLED FRACTURES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	102.02	102.32	0.30		73		SANDSTONE	FG.LT.GY.MAS.SLD VFG WITH SLTST LAMS AT TOP OF UNIT. QTZ FILLED FRACTURES (1MM) PARALLEL TO COR E AXIS. PYRITE SPECKS.
47	102.32	102.79	0.47		74		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED WITH M.GREY SLTST. BIOTU RBATION. MINOR HIGH ANGLE FRACTURE.
47	102.79	103.03	0.24		76		ROCK LOSS	
47	103.03	104.49	1.46		77		SANDSTONE	VFG.WEL.LT-M.GY.LAM.BIOTR.SLD INTERLAMINATED SS AND SLTST. APPEARS HO TTLED IN PLACES. SSD.
48	104.49	105.82	1.33		*79		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. AMBIGUOUS TOPS INDICATORS. PO SSIBLE SLUMP STRUCTURES.
48	105.82	106.07	0.25		79		ROCK LOSS	
48	106.07	106.58	0.51		79		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
48	106.58	106.83	0.25		80		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	106.83	108.90	2.07		*80		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD INTERLAMINATED SS AND M.GREY SLTST. BID TRB AND SSD THROUGHOUT. HIGH ANGLE FRAC TURES.
50	108.90	109.02	0.12		80		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE.
50	109.02	110.88	1.86		80		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE. TOPS ARE UP. FECAL PELLETS. M INOR CALCAREOUS FRACTURE FILL.
51	110.88	112.26	1.38		79		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. SLTST LAMS BECOME RARER NEAR BASE.
51	112.26	113.00	0.74		79		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SLD OCCASIONAL FAINT SILT LAMINATIONS.
52	113.00	113.87	0.87		79		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. SILT LAMINATIONS INCREASE TOW ARDS BASE.
52	113.87	115.07	1.20		79		SILTSTONE	WEL.LT-M.GY.LAM.SLD INTERLAMINATED SLTST AND VFG SS. POSSIB LE BEGINNING OF COASTER LITHOLOGY.
53	115.07	115.26	0.19		78		SILTSTONE	WEL.LT-M.GY.LAM.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	115.26	117.13	1.87	*78		SILTSTONE	M.GY.LAM.SLD FINES TOWARD BASE TO A INTERLAMINATED'S LTST AND MUDST. COASTER LITHOLOGY.
54	117.13	118.05	0.92	78		MUDSTONE	M.GY.LAM.SLD AS ABOVE. COASTERS.
54	118.05	119.25	1.20	79		MUDSTONE	M.GY.LAM.SLD AS ABOVE.
55	119.25	121.14	1.89	*79		MUDSTONE	M.GY.LAM.SLD AS ABOVE.
55	121.14	121.40	0.26	80		MUDSTONE	M.GY.LAM.SLD AS ABOVE.
56	121.40	123.49	2.09	81		MUDSTONE	M.GY.LAM.SLD AS ABOVE.
57	123.49	124.18	0.69	82		MUDSTONE	M.GY.LAM.SLD AS ABOVE.
57	124.18	125.59	1.41	83		MUDSTONE	M.GY.LAM.SLD COASTERS AS ABOVE.
58	125.59	126.08	0.49	*84		MUDSTONE	SLTY.DK.GY.LAM.SLD COASTER ZONE - EXTREMELY FISSILE MUDSTO NE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	126.08	126.53	0.45	83 08198	J ROOF	MUDSTONE	DK.GY.LAM.VSHRD NUMEROUS SHINY LISTRIC SURFACES IN CORE (LOWER 1.0CM SAMPLED). J SEAM ROOF RO CK.
58	126.53	126.77	0.24	*81 08198	J ROOF	MUDSTONE	SLTY.M.GY.LAM.SHRD MINOR AMOUNTS OF SHINY LISTRIC SURFACES SOME PLANT FRAGMENTS. MINOR CARBONATE VEINING. J SEAM ROOF ROCK. SAMPLED.
58	126.77	126.79	0.02	81 08199	J	COAL	C-2.BLK.BRKN
58	126.79	126.82	0.03	81 08199	J	COAL	C-4.BLK.BRKN
58	126.82	126.86	0.04	80 08199	J	COAL	C-3.BLK.BRKN MODERATELY CLEATED.
58	126.86	126.87	0.01	80 08199	J	COAL	C-6.BLK.SLD VERY HARD. ABUNDANT PYRITE BLEBS.
58	126.87	126.90	0.03	80 08199	J	COAL	C-2.BLK.BRKN MODERATELY CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	126.90	126.91	0.01	80	08199 J	COAL	C-5.BLK.BRKN
58	126.91	127.12	0.21	80	08199 J	COAL	C-2.BLK.SLD WELL CLEATED.
58	127.12	127.15	0.03	79	08199 J	COAL	C-1.BLK.SLD
58	127.15	127.28	0.13	79	08199 J	COAL	C-5.BLK.BRKN ABUNDANT PLANT FRAGMENTS.
58	127.28	127.66	0.38	79	08200 J FLOOR	MUDSTONE	CARB.BLK.BRKN ABUNDANT PLANT FRAGMENTS. J SEAM FLOOR ROCK. (UPPER 25.0CM SAMPLED).
59	127.66	127.73	0.07	79		MUDSTONE	DK.GY.SLD NUMEROUS PLANT FRAGS, SOME COALIFIED.
59	127.73	127.80	0.07	79		COAL	C-5.BLK.SLD
59	127.80	128.18	0.38	79		MUDSTONE	CARB.BLK.SLD NUMEROUS PLANT FRAGS & COALY PARTINGS.
59	128.18	128.35	0.17	78		COAL	C-3.BLK.SLD INTERMIXED WITH MINOR C-1 AND C-2. NUME ROUS QTZ STRINGERS THROUGHOUT. MUDST PA RTINGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	128.35	129.67	1.32	78		MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN INTERLAMINATED SLTST AND MUDST. NUMEROU S PLANT FRAGMENTS WITHIN. MINOR CALCARE OUS STRINGERS. MINOR VFG SS GRADES TO P REDOMINATELY SLTST AT BASE. LITRIC SUR FACES.
59	129.67	129.77	0.10	78		ROCK LOSS	
60	129.77	130.33	0.56	78		SILTSTONE	M.GY.LAM.SSD.SLD INTERLAMINATED WITH VFG SS. MINOR PLANT WASH AND FEEDING TRACES. FEW LITRIC S URFACES.
60	130.33	131.82	1.49	78		SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE.
61	131.82	133.28	1.46	77		SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE. GRADES INTO VFG SS IN PARTS.
61	133.28	133.93	0.65	77		SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	133.93	136.00	2.07	*77			SILTSTONE	M.GY.LAM.XBDG.SLD INTERLAMINATED VFG SS AND SLTST. SSD TH ROUGHOUT. MINOR PLANT HASH. TRUNCATIONS INDICATE TOPS UP.
63	136.00	136.24	0.24	77			SILTSTONE	M.GY.LAM.SLD AS ABOVE. FECAL PELLETS.
63	136.24	138.15	1.91	*76			SILTSTONE	M.GY.LAM.XBDG.SLD AS ABOVE. TOPS UP. SAND CONTENT INCREASES TOWARDS BASE.
63	138.15	138.24	0.09	76			ROCK LOSS	
64	138.24	139.33	1.09	76			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD INTERLAMINATED SS AND SLTST. BIOTURBATION AND SSD ALSO PRESENT. X-BEDS INDICATED TOPS UP.
64	139.33	139.42	0.09	76			ROCK LOSS	
64	139.42	140.44	1.02	77			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD AS ABOVE. MINOR CALCAREOUS FRACTURE FILLS. RIP-UP CLASTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	140.44	140.53	0.09	77			ROCK LOSS	
65	140.53	142.53	2.00	77			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD AS ABOVE. BIOTURB. FECAL PELLETS.
65	142.53	142.62	0.09	77			ROCK LOSS	
65	142.62	142.79	0.17	77			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD AS ABOVE.
66	142.79	144.94	2.15	77			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE. BIOTURB. TOPS UP.
67	144.94	145.68	0.74	78			SANDSTONE	FG.WEL.LT-M.GY.LAM.BIOTR.SLD INTERLAMINATED SS AND SLTST. VERY SANDY IN PARTS. RIP-UP CLASTS. HIGH ANGLE FRACTURES ARE CALCAREOUS FILLED. X-BEDDING. TOPS UP.
67	145.68	147.10	1.42	78			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE.
68	147.10	148.72	1.62	*78			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD AS ABOVE. TOPS UP.
68	148.72	149.13	0.41	78			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

FORM
40001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	149.13	151.27	2.14	79			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE.
70	151.27	151.68	0.41	79			SANDSTONE	FG.WEL.LT-M.GY.LAM.BIOTR.SLD AS ABOVE. APPEARS MOTTLED IN AREAS.
70	151.68	153.27	1.59	80			SANDSTONE	FG.WEL.LT-M.GY.LAM.BIOTR.SLD AS ABOVE. MINOR HIGH ANGLE FRACTURES. FE CAL PELLETS.
71	153.27	154.70	1.43	*80			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE WITH BURROWS X-BEDDING. FECAL PELLETS.
71	154.70	155.28	0.58	*79			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD AS ABOVE.
72	155.28	157.42	2.14	*78			SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD AS ABOVE. SILT LAMS DECREASE TOWARDS BASE. MINOR RIP-UPS TOWARDS BASE. X-BEDS.
73	157.42	157.62	0.20	79			SANDSTONE	FG.WEL.LT.GY.LAM.XBDG.SLD LAMINATED MG AND VFG SS. TOPS UP.
73	157.62	157.79	0.17	80			SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD AS ABOVE. VERY SILTY IN PARTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	157.79	159.35	1.56	80			SILTSTONE	LT-M.GY.LAM.SLD INTERBEDDED VFG SS AND SLTST. NUMEROUS VERY THIN ASH LAYERS THROUGHOUT. TUFFIT E.
73	159.35	159.45	0.10	81	10352		BENTONITE	LT.GY.LAM.SLD SAMPLE TAKEN. SOFT AND WAXY.
73	159.45	159.97	0.52	*82			SILTSTONE	LT-M.GY.LAM.SLD INTERBEDDED SLTST AND VFG SS. MINOR MUD ST LAMINATIONS.
74	159.97	160.86	0.89	*75			SILTSTONE	LT-M.GY.LAM.SSD.SLD SLTST LAMINATED WITH MUDDIER REGIONS. SOME VTHN BEDS. SOFT SED. NORMAL FAULT (MAY HAVE AN ASSOCIATED DOWATERING FEATURE).
74	160.86	161.11	0.25	75	08201	I ROOF	MUDSTONE	SLTY.M-DK.GY.MAS.BRKN SLIGHTLY CARB. CARB PLANT FRAGS. BECOME S MORE CARB DOWN UNIT. (LOWER 7CM SAMPLED). I SEAM ROOF ROCK.
74	161.11	161.29	0.18	75	08201	I ROOF	MUDSTONE	SLTY.DK.GY.MAS.BRKN CARBONACEOUS. I SEAM ROOF ROCK. SAMPLED
74	161.29	161.33	0.04	75	08202	I	COAL	C-5.BLK.VBRKN 1CM QTZ VEIN.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	161.33	161.39	0.06	75	08202 I	COAL	C-3, BLK, BRKN
74	161.39	161.44	0.05	76	08202 I	COAL	C-1, BLK, SLD HELL CLEATED.
74	161.44	161.53	0.09	76	08202 I	COAL	C-2, BLK, BRKN
74	161.53	161.58	0.05	76	08202 I	MUDSTONE	CARB, BLK, YBRKN
74	161.58	161.66	0.08	76	08202 I	COAL	C-3, BLK, YBRKN
74	161.66	161.68	0.02	76	08202 I	COAL	C-1, BLK, BRKN
74	161.68	161.69	0.01	76	08202 I	MUDSTONE	CARB, BLK, SLD
74	161.69	161.85	0.16	76	08202 I	COAL	C-3, BLK, YBRKN
74	161.85	161.95	0.10	76	08202 I	COAL	C-2, BLK, BRKN
74	161.95	161.98	0.03	76	08202 I	COAL	C-1, BLK, BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	161.98	162.05	0.07	76	08202 I	COAL	C-2, BLK, BRKN
74	162.05	162.07	0.02	77	08202 I	COAL	C-3, BLK, BRKN
75	162.07	162.47	0.40	77	08202 I	COAL	C-1, BLK, BRKN BANDED WITH C-2 & MINOR C-3.
75	162.47	162.54	0.07	77	08202 I	COAL	C-2, BLK, BRKN
75	162.54	162.59	0.05	77	08202 I	COAL	C-3, BLK, BRKN
75	162.59	162.67	0.08	77	08202 I	COAL	C-2, BLK, BRKN
75	162.67	162.74	0.07	77	08202 I	COAL	C-1, BLK, SLD
75	162.74	162.77	0.03	77	08202 I	COAL	C-3, BLK, SLD
75	162.77	162.80	0.03	77	08202 I	COAL	C-2, BLK, SLD
75	162.80	162.91	0.11	77	08202 I	COAL	C-3, BLK, BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	162.91	162.95	0.04	77	08202	I	COAL	C-6. BLK. SLD VERY HARD.
75	162.95	163.10	0.15	78	08202	I	COAL	C-2. BLK. BRKN WEAKLY CLEATED. BANDED WITH C-1.
75	163.10	163.52	0.42	78	08202	I	COAL	C-2. BLK. SHRD BORDERLINE WITH C-3 IN PLACES.
75	163.52	163.55	0.03	78	08202	I	COAL	C-3. BLK. VSHRD.
75	163.55	163.57	0.02	78	08202	I	COAL	C-1. BLK. VSHRD.
75	163.57	163.77	0.20	78	08202	I	COAL LOSS	
75	163.77	163.79	0.02	78	08202	I	MUDSTONE	CARB. BLK. VSHRD
75	163.79	163.87	0.08	78	08202	I	COAL	C-3. BLK. VSHRD VERY SOFT & POWDERY WHEN BROKEN.
75	163.87	163.90	0.03	78	08202	I	MUDSTONE	CARB. BLK. VSHRD
75	163.90	163.92	0.02	78	08202	I	COAL	C-4. BLK. VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	163.92	163.98	0.06	78	08202	I	COAL	C-2. BLK. PHRD
76	163.98	164.16	0.18	79	08202	I	COAL	C-2. BLK. BRKN
76	164.16	164.47	0.31	79	08202	I	COAL LOSS	
76	164.47	164.51	0.04	79	08203	I	COAL	C-1. BLK. BRKN
76	164.51	164.86	0.35	79	08203	I	COAL	C-1. BLK. BRKN BORDERLINE WITH C-2.
76	164.86	164.89	0.03	79	08203	I	COAL	C-3. BLK. BRKN
76	164.89	164.93	0.04	79	08203	I	COAL	C-3. BLK. BRKN
76	164.93	164.98	0.05	79	08203	I	COAL	C-2. BLK. VBRKN
76	164.98	165.68	0.70	79	08203	I	COAL	C-1. BLK. VBRKN
76	165.68	165.70	0.02	79	08203	I	COAL	C-3. BLK. SLD

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	165.70	165.73	0.03	79	08203	I	COAL	C-5. BLK. SLD DENSE.
76	165.73	165.87	0.14	80	08204	I FLOOR	MUDSTONE	CARB. BLK. SLD I SEAM FLOOR ROCK. SAMPLED.
77	165.87	166.84	0.97	80			SILTSTONE	M-DK. GY. LAM. SSS. SLD INTERLAMINATED WITH VFG SS. NUMEROUS PLANT FRAGS THROUGHOUT SAND CONTENT. INCREASES TOWARDS BASAL SS. CONTACT.
77	166.84	167.05	0.21	80			SANDSTONE	FG. MEL. LT-M. GY. VTHNB. BRKN MINOR SLTST LAMS AND RIP-UPS. MINOR. CAL CAREOUS FILLED HIGH ANGLE FRACTURE.
77	167.05	167.10	0.05	80			ROCK LOSS	
77	167.10	167.85	0.75	*80			SANDSTONE	FG. MEL. LT. GY. VTHNB. SLD FAIRLY CLEAN SS WITH MINOR SLTY LAMS. MINOR HIGH ANGLE FRACTURES.
78	167.85	168.97	1.12	80			SANDSTONE	MG. MEL. LT. GY. VTHNB. SLD AS ABOVE. IN AREAS CHERT AND MUDST PEBBLES UP TO 1CM IN DIAMETER.
78	168.97	169.01	0.04	81			SANDSTONE	MG. MEL. LT. GY. VTHNB. VBRKN NUMEROUS TWIST-OFFS. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	169.01	169.04	0.03	81			ROCK LOSS	
78	169.04	169.91	0.87	81			SANDSTONE	PBLY. MG. MEL. LT. GY. VTHNB. SLD GRADES INTO CONGLOMERATE IN PARTS. CLASTS ARE SUB-ROUNDED. HIGH ANGLE CALCAREOUS FILLED FRACTURES THROUGHOUT.
79	169.91	170.28	0.37	82			SANDSTONE	PBLY. MG. MEL. LT. GY. VTHNB. VBRKN AS ABOVE WITH MINOR PEBBLES.
79	170.28	170.33	0.05	82			ROCK LOSS	
79	170.33	171.61	1.28	82			SANDSTONE	MG. MEL. LT. GY. VTHNB. VBRKN AS ABOVE. GRADES INTO CGL AT BASE.
79	171.61	171.90	0.29	82			CONGLOMERATE	PBLY. MG. PR. LT-M. GY. VTHNB. SLD CLASTS OF SUB-ROUNDED MUDST, SLTST AND CHERT RIP-UPS THROUGHOUT. AVG SIZE OF CLASTS IS 1.0CM UP TO 4.5CM FOR MUD CLASTS.
79	171.90	171.95	0.05	83			SANDSTONE	MG. MEL. LT. GY. VTHNB. SLD GRADES TO SAND FROM CGL AT TOP.
80	171.95	172.94	0.99	83			SANDSTONE	MG. MEL. LT. GY. VTHNB. BRKN AS ABOVE. PEBBLES BECOME RARE. GRADES TO SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	172.94	173.20	0.26	83			SANDSTONE	MG. MEL. LT. GY. VTHNB. SLD MINOR SLTST LAMS AND MINOR RIP-UPS. SHA RP BASAL CONTACT WITH SLTST.
80	173.20	173.36	0.16	84			SILTSTONE	LT-M. GY. LAM. SLD VFG SS IN PARTS. FECAL PELLETS MUOST. F RACTURE FILL.
80	173.36	173.43	0.07	84			SANDSTONE	FG. MEL. LT. GY. VTHNB. SLD CALCAREOUS FRACTURE FILL. SLTST. RIP-UPS . MINOR SLTST LAMINATIONS.
80	173.43	173.68	0.25	84			SANDSTONE	FG. MEL. LT. GY. VTHNB. SLD AS ABOVE. RIP-UP CLASTS.
80	173.68	173.70	0.02	85			ROCK LOSS	
80	173.70	174.01	0.31	*85			SILTSTONE	LT-M. GY. LAM. SSD. SLD INTERLAMINATED WITH VFG SS. MINOR PLANT FRAGS.
80	174.01	174.03	0.02	85			ROCK LOSS	
81	174.03	176.16	2.13	85			SILTSTONE	LT-M. GY. LAM. SSD. SLD AS ABOVE. MINOR BIOTURB. TOPS ARE UP.
81	176.16	176.18	0.02	85			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	176.18	176.45	0.27	85			SILTSTONE	PYR. M. GY. LAM. SSD. SLD INTERLAMINATED WITH VFG SS AND MINOR MU DST. PYRITE BLEBS. FECAL PELLETS. BIOTU RBATION. PLANT FRAGS. ARE TOPS. UP.
82	176.45	176.47	0.02	85			ROCK LOSS	
82	176.47	178.34	1.87	85			SILTSTONE	PYR. M. GY. LAM. SSD. SLD AS ABOVE.
83	178.34	179.44	1.10	85			SILTSTONE	PYR. M. GY. LAM. SSD. SLD AS ABOVE.
83	179.44	180.42	0.98	85			SILTSTONE	PYR. M. GY. LAM. SSD. BRKN AS ABOVE.
84	180.42	181.12	0.70	85			SILTSTONE	PYR. M. GY. LAM. SSD. BRKN AS ABOVE.
84	181.12	181.43	0.31	85			SILTSTONE	M. GY. SLD CONTAINS WHITE CRYSTALLIZED SUB-ANGULAR QTZ CLASTS UP TO 2MM IN DIAMETER. RESE MBLES MILKY WAY. EXCEPT FOR THE SLTST. MAT RIX.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	181.43	182.38	0.95	*85		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.SLD INTERLAMINATED WITH SLTY MUOST. LISTRIC SURFACES. PLANT FRAGS AND MINOR COALIFIED PLANT MATERIAL.
84	182.38	182.54	0.16	84		SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD AS ABOVE.
85	182.54	183.78	1.24	84		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE. LOW ANGLE CALCAREOUS FRACTURE FILL. MINOR MUOST PARTINGS. HELMINTHOP SIS THROUGHOUT.
85	183.78	183.80	0.02	83		ROCK LOSS	
85	183.80	184.65	0.85	83		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.SLD INTERBEDDED WITH M-DK GREY SLTST WHICH OFTEN CONTAIN NUMEROUS PLANT FRAGS.
85	184.65	184.67	0.02	82		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	184.67	185.35	0.68	81		SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD INTERLAMINATED SS AND SLTST. FREQUENT WORM BURROWS. RECRYSTALLIZED QTZ CLASTS COMMON IN THE SANDSTONE BEDS. CALCITE FRACTURE FILL. LISTRIC SURFACES.
86	185.35	185.37	0.02	81		ROCK LOSS	
86	185.37	186.26	0.89	*80		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.SLD INTERLAMINATED WITH SLTST. MINOR BURROW S. TOPS UP.
86	186.26	186.31	0.05	80		ROCK LOSS	
86	186.31	186.47	0.16	80		SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD MINOR SLTST LAMS. RECRYSTALLIZED WHITE QTZ CLASTS.
86	186.47	186.52	0.05	81		ROCK LOSS	
86	186.52	186.91	0.39	81		SANDSTONE	VFG.WEL.LT-M.GY.VTHNB.SSD.SLD INTERLAMINATED WITH SLTST. HELMINTHOP SIS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
86	186.91	186.96	0.05	81			ROCK LOSS	
87	186.96	187.05	0.09	81			SANDSTONE	VFG.WEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE.
87	187.05	187.10	0.05	81			ROCK LOSS	
87	187.10	187.12	0.02	81			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SLD
87	187.12	187.17	0.05	82			ROCK LOSS	
87	187.17	188.63	1.46	82			SANDSTONE	FG.WEL.LT-M.GY.LAM.BIOTR.SLD INTERLAM. OF SLTST. QTZ FRACTURE FILL I N SOME AREAS. INTENSE BIOTR. FECAL PEL LETS AND POSSIBLE BIVALVE SHELLS.
87	188.63	188.70	0.07	82			ROCK LOSS	
87	188.70	189.20	0.50	82			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE.
87	189.20	189.22	0.02	82			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	189.22	190.20	0.98	83			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE. BIVALVES, FECAL PELLETS.
88	190.20	190.22	0.02	83			ROCK LOSS	
88	190.22	190.25	0.03	83	10353		BENTONITE	LT-M.GY.LAM.SLD
88	190.25	190.27	0.02	83			ROCK LOSS	
88	190.27	191.43	1.16	83			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE. FECAL PELLETS, MINOR RIP-UP C LASTS.
88	191.43	191.45	0.02	83			ROCK LOSS	
89	191.45	191.69	0.24	84			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.SLD SLTST.LAMS..BURROHS.. FECAL PELLETS. TOP S UP.
89	191.69	191.71	0.02	84			ROCK LOSS	
89	191.71	193.57	1.86	*84			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE WITH X-BEDS AND QTZ VEINS PARALLEL TO BEDDING.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	193.57	194.76	1.19	85			SANDSTONE	FG.MEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE WITH NUMEROUS WORM BURROWS. MI NOR QTZ FRACTURE FILL.
90	194.76	195.68	0.92	85			SANDSTONE	FG.MEL.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE.
90	195.68	195.72	0.04	86			ROCK LOSS	
91	195.72	197.73	2.01	*87			SANDSTONE	FG.MEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. DEMATERING FEATURES, BURROWS AND PELLETS THROUGHOUT.
91	197.73	197.79	0.06	87			ROCK LOSS	
91	197.79	197.91	0.12	87			SANDSTONE	PYR.FG.MEL.LT-M.GY.VTHNB.SSD.SLD AS ABOVE. 1CM THICK PYRITE BAND WITHIN. SILT CONTENT INCREASES TOWARDS BASE. P. LANT FRAGS.
91	197.91	197.98	0.07	87			ROCK LOSS	
92	197.98	200.12	2.14	87			SILTSTONE	PYR.M.GY.LAM.SSD.SLD INTERLAMINATED WITH VFG SS. BECOMES INC REASINGLY MUDDY TOWARDS BASE. NUMEROUS PYRITE NODULES WITHIN PLANT FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	200.12	200.25	0.13	86			ROCK LOSS	
93	200.25	200.77	0.52	86			MUDSTONE	DK.GY.SLD NUMEROUS PLANT FRAGS.
93	200.77	200.84	0.07	86			ROCK LOSS	
93	200.84	202.42	1.58	86			MUDSTONE	DK.GY.BRKN AS ABOVE. MINOR VERY THIN COALY LAMINATIONS.
93	202.42	202.49	0.07	86			ROCK LOSS	
94	202.49	204.38	1.89	86			MUDSTONE	PYR.DK.GY.BRKN LARGE PYRITE BLEB AT BASE. MINOR QTZ FRACTURE FILL. PLANT FRAGMENTS.
94	204.38	204.43	0.05	86			ROCK LOSS	
94	204.43	204.52	0.09	86			BRECCIA	WH.SHRD QTZ AND MUDSTONE, MUCH OF WHICH IS POWDERIZED. LISTRIC SURFACES.
94	204.52	204.57	0.05	86			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	204.57	206.69	2.12	85			MUDSTONE	PYR. DK. GY. SLD PLANT FRAGS THROUGHOUT. SOME MINOR COAL Y LAMS. PYRITE BLEBS.
96	206.69	206.73	0.04	85			MUDSTONE	DK. GY. BRKN MINOR PLANT FRAGMENTS.
96	206.73	207.33	0.60	85			MUDSTONE	DK. GY. BRKN AS ABOVE.
96	207.33	207.38	0.05	85			ROCK LOSS	
96	207.38	208.40	1.02	*85	08205	H ROOF	MUDSTONE	DK. GY. SHRD AS ABOVE WITH SMALL COAL STRINGERS. (LO MER 25CM SAMPLED). H SEAM ROOF ROCK.
96	208.40	208.52	0.12	85	08206	H	COAL	C-4. BLK. SHRD VERY THIN BANDS OF C-1. ABUNDANT PYRITE
96	208.52	208.63	0.11	86	08206	H	MUDSTONE	CARB. BLK. SHRD NUMEROUS SHINY LISTRIC SURFACES.
96	208.63	208.77	0.14	86	08206	H	COAL LOSS	
96	208.77	208.79	0.02	87	08206	H	COAL	C-2. BLK. SHRD MODERATELY CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
96	208.79	208.90	0.11	87	08206	H	COAL	C-4. BLK. SHRD
96	208.90	208.92	0.02	88	08206	H	COAL	C-3. BLK. SHRD MODERATELY TO POORLY CLEATED.
97	208.92	209.02	0.10	88	08206	H	COAL	C-3. BLK. BRKN WELL CLEATED, BORDERLINE WITH C-2.
97	209.02	209.33	0.31	89	08206	H	COAL	C-2. BLK. SLD WELL CLEATED.
97	209.33	209.35	0.02	89	08206	H	MUDSTONE	BLK. BRKN
97	209.35	209.47	0.12	90	08206	H	COAL	C-3. BLK. SLD MODERATELY CLEATED.
97	209.47	209.49	0.02	*90	08206	H	MUDSTONE	CARB. BLK. BRKN MINOR COAL STRINGERS.
97	209.49	209.52	0.03	89	08206	H	COAL	C-3. BLK. SLD POORLY CLEATED WITH VERY THIN BANDS OF C-6.
97	209.52	209.55	0.03	89	08206	H	COAL	C-1. BLK. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
97	209.55	209.67	0.12	88	08206	H	COAL	C-4. BLK. SLD VERY THIN BANDS OF C-1 AND SOME C-6 BUT OVERALL C-4.
97	209.67	209.87	0.20	88	08206	H	COAL	C-3. BLK. SLD MODERATELY CLEATED.
97	209.87	209.88	0.01	87	08206	H	COAL	C-1. BLK. SLD
97	209.88	209.93	0.05	87	08206	H	COAL	C-6. BLK. SLD VERY HARD.
97	209.93	209.99	0.06	*86	08207	H	MUDSTONE	SLTY. DK. GY. LAM. BRKN
97	209.99	210.03	0.04	84	08207	H	MUDSTONE	LT. GY. LAM. BRKN POORLY CONSOLIDATED AND VERY SOFT. RARE PLANT FRAGMENTS.
97	210.03	210.07	0.04	82	08207	H	COAL	C-6. BLK. BRKN VERY HARD.
97	210.07	210.08	0.01	80	08207	H	COAL	C-1. BLK. BRKN
97	210.08	210.22	0.14	78	08207	H	COAL	C-3. BLK. BRKN SMALL BANDS OF C-6 AND C-1 BUT PREDOMIN ANTLY C-3. MINOR QUARTZ VEINING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
97	210.22	210.24	0.02	76	08207	H	COAL	C-1. BLK. BRKN
97	210.24	210.27	0.03	74	08207	H	COAL	C-6. BLK. BRKN VERY HARD.
97	210.27	210.28	0.01	72	08207	H	COAL	C-1. BLK. BRKN
97	210.28	210.34	0.06	*70	08207	H	COAL	C-6. BLK. BRKN VERY HARD.
97	210.34	210.42	0.08	71	08207	H	COAL	C-2. BLK. SLD MODERATELY CLEATED.
97	210.42	210.47	0.05	72	08207	H	COAL	C-3. BLK. SHRD POORLY CLEATED.
97	210.47	210.50	0.03	72	08207	H	MUDSTONE	CARB. BLK. SHRD MINOR CARBONATE VEINING. NUMEROUS SHINY LIRTRIC SHAPED SURFACES ON CORE.
97	210.50	210.60	0.10	73	08207	H	COAL	C-3. BLK. SLD SMALL BANDS OF C-6 WITH C-3.
97	210.60	210.62	0.02	74	08207	H	COAL	C-1. BLK. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
97	210.62	210.69	0.07	75	08207	H	COAL	C-5. BLK. SLD NUMEROUS PLANT FRAGMENTS.
97	210.69	210.71	0.02	76	08207	H	COAL	C-3. BLK. SHRD MODERATELY CLEATED.
97	210.71	210.73	0.02	77	08207	H	COAL	C-6. BLK. SHRD VERY HARD.
97	210.73	210.75	0.02	77	08207	H	COAL	C-1. BLK. SHRD VERY THIN BANDS OF C-6 WITH C-1.
97	210.75	210.82	0.07	78	08207	H	MUDSTONE	SLTY. DK. GY. SHRD ABUNDANT PLANT FRAGMENTS.
98	210.82	210.93	0.11	79	08207	H	COAL	C-4. BLK. SHRD PREDOMINANTLY C-4 WITH SMALL BANDS OF C-3.
98	210.93	210.97	0.04	80	08207	H	MUDSTONE	CARB. BLK. VSHRD VERY SHINY LISTRIC SURFACES ON BROKEN F RAGMENTS. MINOR QUARTZ VEINING.
98	210.97	211.02	0.05	81	08207	H	COAL	C-6. BLK. SHRD VERY HARD.
98	211.02	211.07	0.05	82	08207	H	COAL	C-5. BLK. VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
98	211.07	211.14	0.07	82	08207	H	COAL	C-6. BLK. SHRD VERY HARD.
98	211.14	211.15	0.01	83	08207	H	COAL	C-1. BLK. SHRD MINOR QUARTZ VEINING.
98	211.15	211.19	0.04	*84	08207	H	MUDSTONE	CARB. BLK. VSHRD NUMEROUS SHINY LISTRIC SURFACES.
98	211.19	211.20	0.01	83	08207	H	COAL	C-1. BLK. BRKN
98	211.20	211.25	0.05	82	08207	H	MUDSTONE	CARB. BLK. BRKN
98	211.25	211.28	0.03	81	08207	H	COAL	C-2. BLK. BRKN MODERATELY CLEATED.
98	211.28	211.32	0.04	81	08207	H	COAL	C-6. BLK. SLD VERY HARD.
98	211.32	211.43	0.11	80	08207	H	COAL	C-2. BLK. BRKN WELL CLEATED.
98	211.43	211.48	0.05	79	08207	H	MUDSTONE	CARB. BLK. PHRD
98	211.48	211.73	0.25	78	08208	H	COAL	C-3. BLK. PHRD MODERATELY CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
98	211.73	212.04	0.31	77	08208 H	COAL	C-2.BLK.VBRKN WELL CLEATED.
98	212.04	212.06	0.02	76	08208 H	COAL	C-1.BLK.PWRD VERY BROKEN AND POWDERED C-1 BAND WITH C-2.
98	212.06	212.47	0.41	75	08208 H	COAL	C-2.BLK.VBRKN WELL CLEATED.
98	212.47	212.77	0.30	74	08208 H	COAL LOSS	
98	212.77	212.79	0.02	74	08208 H	COAL	C-4.BLK.VBRKN
98	212.79	212.89	0.10	73	08208 H	MUDSTONE	M.GY ABUNDANT FOSSIL FRAGMENTS. VERY SOFT.
98	212.89	213.15	0.26	72	08208 H	COAL LOSS	
99	213.15	213.37	0.22	71	08208 H	COAL	C-2.BLK.PWRD PREDOMINANTLY PIECES OF C-2 WITH ABUNDANT C-1 FRAGMENTS.
99	213.37	213.69	0.32	*70	08209 H FLOOR	MUDSTONE	CARB.M.GY.SHRD NUMEROUS CARBONATE FILLED FRACTURES AND COAL STRINGERS. (UPPER 25CM SAMPLED). H SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
99	213.69	214.98	1.29	72		MUDSTONE	SLTY.M.GY.VBRKN POSSIBLE ROCK LOSS. SHEARED IN PARTS. CARBONACEOUS IN PARTS WITH NUMEROUS COAL STRINGERS. ABUNDANT DISSEMINATED PYRIT E.
99	214.98	215.01	0.03	74		COAL	C-3.BLK.SHRD WELL CLEATED.
99	215.01	215.08	0.07	76		COAL	C-4.BLK.VSHRD
100	215.08	215.47	0.39	78		BRECCIA	MH.SHRD INTERMIXED VERY SHEARED CARB MUDST AND QTZ. SOME COALY ZONES.
100	215.47	216.36	0.89	79		ROCK LOSS	
100	216.36	217.76	1.40	80		MUDSTONE	DK.GY.LAM.SSD.VBRKN BECOMES SILTY IN PARTS.
101	217.76	219.70	1.94	*82		SILTSTONE	M.GY.LAM.SSD.VBRKN INTERLAMINATED WITH YFG SS. VERY SHEARED IN PARTS. LISTRIC SURFACES. QTZ VEINING.
102	219.70	219.83	0.13	82		SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. BECOMES SANDIER.

* DENOTES MEASURED BCA

PROJECT: KPH BLOCK: LR DATA SOURCE: DDH88013

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
102	219.83	221.71	1.88	82			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN SLYST BANDS UP TO 3CM WIDE BUT MOSTLY L AMINATED. QTZ BRECCIA THROUGH LOWER PAR T. LISTRIC SURFACES. RIP-UP CLASTS.
102	221.71	221.94	0.23	82			ROCK LOSS	
103	221.94	222.88	0.94	82			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN AS ABOVE. LISTRIC SURFACES THROUGHOUT. QTZ VEINS THROUGHOUT. RIP-UP CLASTS.
103	222.88	223.50	0.62	82			ROCK LOSS	END OF HOLE. TD = 223.50M.

* DENOTES MEASURED BCA
NEWPAGE

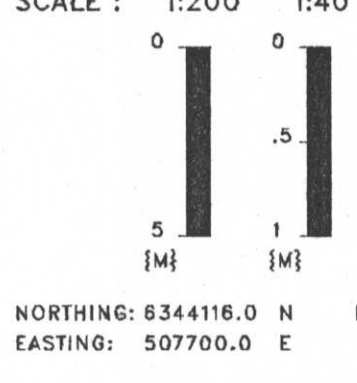
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88013

GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

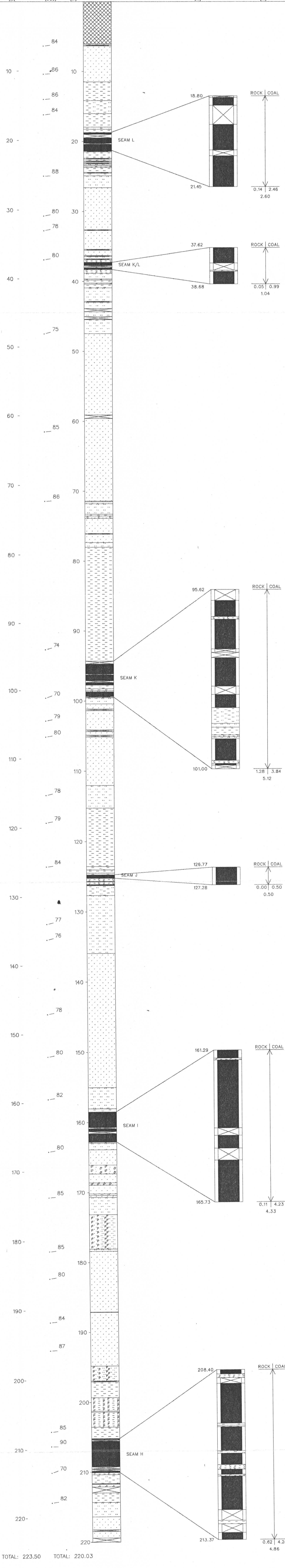


NORTHING: 6344116.0 N
 EASTING: 507700.0 E

INCLINATION: 90.0°

[Symbol]	SANDSTONE	[Symbol]	BENTONITE
[Symbol]	SILTSTONE	[Symbol]	BRECCIA
[Symbol]	COAL	[Symbol]	CARBONACEOUS
[Symbol]	OVERBURDEN	[Symbol]	QUARTZ
[Symbol]	MUDSTONE, CLAYSTONE	[Symbol]	PYRITE
[Symbol]	TUFF	[Symbol]	FERRUGINOUS
[Symbol]	LIMESTONE	[Symbol]	CONGLOMERATE
[Symbol]	CORE LOSS	[Symbol]	FOSSIL BED

SEAM DETAIL



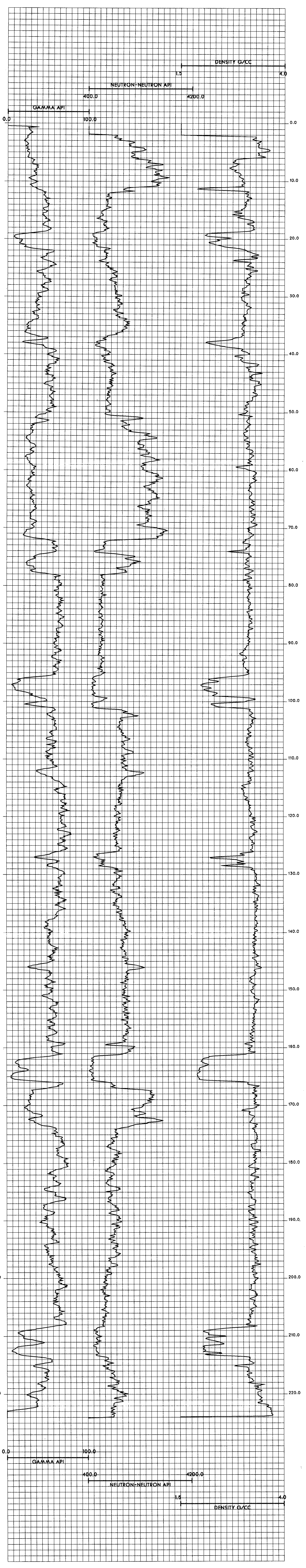
TOTAL: 223.50 TOTAL: 220.03

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88013 Log Date: 88-06-27 Company: CENTURY Geologist: MURRAY	Province: BC Northing: 6344120.00 Lat: 571431 Zone: 9 Easting: 507700.00 Long: 1285221 Measuring Point: GROUND LEVEL Elevation: 1557.4	
Scale: 1 to 200.0 Depth Range: 0.0 to 229.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88014

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88014

DATE - 02/15/89

- HISTORY -

START DATE - 06/26/88

END DATE - 06/27/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS: K, J, I, H.

- LOCATION -

PROVINCE - BC

ELEVATION - 1670.31

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343257.67

EASTING - 506380.31

LATITUDE - 571403

LONGITUDE - 1285340

- ORIENTATION -

LENGTH - 130.60

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-014

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

K

2.25 m

I

3.17 m

H

1.78 m



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



Gulf Canada Resources Limited

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.66	3.66	72			OVERBURDEN	CASING DEPTH.
1	3.66	6.66	3.00	72			ROCK LOSS	
1	6.66	7.25	0.59	72			SANDSTONE	FER. MG. VHEL. S-P. GY. MAS. VBRKN CORE LOSS PROBABLE.
1	7.25	7.81	0.56	72			SANDSTONE	SLTY. FG. VHEL. S-P. GY. VTHNB. SSD. VBRKN INTERBEDDED WITH SLTST. QUARTZ FRACTURE FILL. RIP-UPS IN SLTST.
2	7.81	8.14	0.33	72			SANDSTONE	MG. VHEL. S-P. GY. MAS. BRKN WITH SLTST MISPS.
2	8.14	9.56	1.42	72			SANDSTONE	MG. VHEL. S-P. GY. MAS. BRKN AS ABOVE. WITH QUARTZ FRACTURE FILL.
2	9.56	9.66	0.10	72			ROCK LOSS	
3	9.66	11.20	1.54	72			SANDSTONE	MG. VHEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE. BANDS OF INTERBEDDED SLTST 14 CM THICK EVERY 1.4M. WHERE SSD INDICATE S TOPS UP.
3	11.20	11.43	0.23	*72			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. SSD - TOPS UP.
3	11.43	12.49	1.06	71			ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	12.49	13.70	1.21	*69			SANDSTONE	SLTY. FG. VHEL. M-DK. GY. VTHNB. SSD VBRKN PROBABLE CORE LOSS. INTERBEDDED WITH SL TST. TOPS UP - LOAD CASTS. INCREASINGLY FINER GRAINED TO VFG SS AND INCREASING SLTST. QTZ VEINS.
5	13.70	14.06	0.36	69			SANDSTONE	SLTY. VFG. VHEL. M-DK. GY. VTHNB. SSD BRKN AS ABOVE. RIP-UPS & LOAD CASTS. FEATURED INCREASINGLY FINE GRAINED.
5	14.06	14.78	0.72	69			BRECCIA	CLYY. DK. GY. SLD NOT LITHIFIED (BRECCIATED). FEW PEBBLES <1.0CM SIZE OF SLTST.
5	14.78	15.35	0.57	69			SILTSTONE	VFG. VHEL. DK. GY. LAM. SLD HEAVILY FRACTURED WITH MUD INFILL.
6	15.35	16.55	1.20	68			SILTSTONE	SSY. VFG. VHEL. DK. GY. LAM. BRKN AS ABOVE. SILTSTONE INCREASINGLY COARSE
6	16.55	16.87	0.32	68			SANDSTONE	SLTY. MG. VHEL. DK. GY. VTHNB. SLD INTERBEDDED WITH SLTST. INCREASINGLY SS GRAINS. GRANULAR APPEARANCE.
6	16.87	17.04	0.17	68			SANDSTONE	MG. VHEL. DK. GY. VTHNB. SLD AS ABOVE. MUDDY.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	17.04	19.06	2.02	*68			SANDSTONE	SLTY. VFG. LT-DK. GY. VTHNB. SSD. BRKN A SLTST INTERBEDDED WITH LIGHTER COLOUR ED SS. MUDST LAMS. LOAD CAST - TOPS UP. COAL STRINGERS. PITTED SURFACE. BEDS S EPARATED BY YELLOWISH CLAY LIKE MATERIA L. QTZ STRINGERS. MUD FILL FRACTURE WIT H FRACTURE DISPLACEMENT.
8	19.06	19.75	0.69	69			SILTSTONE	SSY. VFG. VHCL. DK. GY. VTHNB. SSD. BRKN INTERBEDDED WITH VFG. SS. WITH PITTED SUR FACE. TOPS UP - LOAD CASTS. MUD FRACTUR E FILL. MUDST LAMS.
8	19.75	20.75	1.00	*70			SANDSTONE	CG. VHCL. M. GY. VTHNB. SSD. BRKN WITH MUDST & SLTST LAMS AND MISPS. PITT ED SURFACE ON SS. QTZ STRINGERS. MUD FI LL FRACTURE AND FRACTURE DISPLACEMENT. POSSIBLE CORE LOSS. INCREASING SLTST CO NTENT.
8	20.75	20.98	0.23	*71			SILTSTONE	SSY. VFG. VHCL. DK. GY. VTHNB. SSD. BRKN INTERBEDDED WITH FG. SS. WITH PITTED SURF ACE. MUDST LAMS. MUD FRACTURE FILL & FR ACTURE DISPLACEMENT.
9	20.98	22.68	1.70	71			SILTSTONE	SSY. VFG. VHCL. BLK. LAM. SSD. BRKN FEWER SS BEDS - PITTED. HEAVILY FRACTUR ED MUD FILL. MUDST LAMS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	22.68	23.00	0.32	71			MUDSTONE	SLTY. VFG. VHCL. BLK. LAM. BRKN POSSIBLE CORE LOSS. INTERLAM WITH SLTST . MUD FRAC FILL. PITTED SURFACE.
10	23.00	25.00	2.00	71			MUDSTONE	SLTY. VFG. VHCL. BLK. LAM. BRKN AS ABOVE. HEAVILY FRACTURED ALMOST BREC CIATED MUD. SHEAR SURFACE WITH TALC AND MUD.
11	25.00	25.53	0.53	71			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. XBDG. BRKN INTERLAM WITH MUDST AND VFG SS (PITTED) . TOPS UP. FRACTURED - SHEARING & MUD F ILL. SSD.
11	25.53	26.18	0.65	71			SILTSTONE	SSY. VFG. VHCL. DK. GY. LAM. SSD. BRKN AS ABOVE.
11	26.18	27.01	0.83	71			SILTSTONE	VFG. VHCL. BLK. LAM. BRKN AS ABOVE WITH LESS SS (PITTED). PYRITE. COAL STRINGERS.
12	27.01	28.44	1.43	71			SILTSTONE	VFG. VHCL. BLK. LAM. BRKN AS ABOVE.
12	28.44	28.94	0.50	71			SILTSTONE	VFG. VHCL. BLK. LAM. BRKN AS ABOVE. MANY FOSSIL FRAGS. PYRITIZATI ON COMMON. COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	28.94	29.47	0.53	71			SILTSTONE	CARB. BLK AS ABOVE. PYRITE ALTERATION. CALCAREOUS STRINGERS.
13	29.47	29.85	0.38	71	99999	K?	COAL LOSS	
13	29.85	29.92	0.07	71	99999	K?	COAL	C-5. BLK. PHRD SOFT, MIXED WITH CARB MUDST.
13	29.92	30.00	0.08	71	99999	K?	ROCK LOSS	
13	30.00	30.25	0.25	71	99999	K?	COAL LOSS	
13	30.25	30.39	0.04	71	99999	K?	MUDSTONE	CARB. BLK. VSHRD SOFT, UNCONSOLIDATED.
13	30.39	31.77	1.38	71	99999	K?	COAL LOSS	
13	31.77	31.80	0.03	71	99999	K?	COAL	C-5. BLK. VBRKN
13	31.80	31.85	0.05	71	99999	K?	COAL	C-4. BLK. PHRD MIXED WITH CARB MUDST, MINOR C-2 BANDS IN FRAGMENTS.
13	31.85	31.90	0.05	71			MUDSTONE	H. GY. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	31.90	32.03	0.13	71			MUDSTONE	CARB. BLK. PHRD EXTREMELY SHEARED, CONTAINS ABUNDANT C-4 FRAGMENTS.
13	32.03	32.35	0.32	71			SILTSTONE	VFG. VMEL. BLK. LAM. SSD. BRKN POSSIBLE CORE LOSS. INTERLAM WITH MUDST. HEAVILY FRACTURED WITH MUD FILL. ALSO ST BRECCIATED.
13	32.35	33.06	0.71	71			SANDSTONE	SLTY. FG. VMEL. S-P. GY. MAS. VBRKN FEW SLTST NISP. CORE LOSS PROBABLE. HEAVILY FRAC WITH MUD FILL. BRECCIATED MUD IN PLACES. GREEN SOAPY SUBSTANCE AS FRACTURE FILL VEINS.
14	33.06	34.15	1.09	71			BRECCIA	CLYY. H. GY. VBRKN CORE LOSS POSSIBLE. BRECCIATED MUD IN MOST PLACES. APPEARS TO HAVE BEEN FG SS WITH INTERBEDDED SLTST.
14	34.15	34.62	0.47	71			SANDSTONE	SLTY. FG. VMEL. S-P. GY. MAS. VBRKN CORE LOSS. INTERBEDDED WITH SLTST. QTZ VEINS. MUD FILL FRACTURES.
14	34.62	35.49	0.87	71			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.49	37.20	1.71	*71		SANDSTONE	SLTY. FG. VMEL. S-P. GY. MAS. VBRKN AS ABOVE. SLTST INTERBEDS FORM BANDS - 10CM THICK. MUD FILL FRACTURE. VERY FRACTURED (CLY). BRECCIATED IN PLACES.
16	37.20	37.46	0.26	72		SANDSTONE	SLTY. FG. VMEL. S-P. GY. VTMNB. BRKN AS ABOVE. NO MUD FRACTURING OR BRECCIATION.
16	37.46	37.58	0.12	72		SILTSTONE	YFG. VMEL. LT. GY. SLD
16	37.58	39.16	1.58	72		SILTSTONE	VMEL. M. GY. LAM. VBRKN INTERLAM WITH MUDST AND YFG SS. QTZ VEINING. MUD FRACTURE FILL (HIGHLY FRACTURED). BRECCIATED MUD IN PLACES. FRACTURE DISPLACEMENT.
16	39.16	39.48	0.32	73		ROCK LOSS	
17	39.48	39.73	0.25	73		SILTSTONE	SSY. YFG. VMEL. M. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	39.73	41.00	1.27	74		SILTSTONE	SSY. FG. VMEL. M. GY. LAM. VBRKN AS ABOVE. BRECCIATED BCA ANGLES ALMOST VERTICAL IN PLACES. MUD SHEARED LISTRIC SURFACES.
17	41.00	42.05	1.05	75		ROCK LOSS	
18	42.05	42.78	0.73	75		MUDSTONE	YFG. VMEL. DK. GY. LAM. PMRD INTERLAM WITH SLTST. VERY BRECCIATED. SHEARED, LISTRIC SURFACES.
18	42.78	43.23	0.45	76		BRECCIA	YFG. VMEL. DK. GY. LAM. VBRKN RHYTHMIC INTERLAM WITH SLTST. BRECCIATED (VERY). QTZ FRACTURE FILL. FRAC DISPLACEMENT. BCA'S CHANGE QUICKLY 21 DEGREE TO 78 DEGREE.
18	43.23	43.60	0.37	*76		MUDSTONE	YFG. VMEL. DK. GY. LAM. BRKN RHYTHMICS - SLTST & MUDST. COASTER ZONE. MUD FRACTURE FILL.
18	43.60	44.37	0.77	66		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	44.37	45.83	1.46	*47			MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. VBRKN RHYTHMITES - INTERLAM SLTST. COASTER TO NE. QTZ FRACTURE FILL. BRECCIATED IN PLACES. BCA SHOW DISPLACED BEDDING.
19	45.83	46.03	0.20	49			MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. VBRKN AS ABOVE. VERY BRECCIATED. SHEARED LITRISTIC SURFACES.
20	46.03	47.11	1.08	51			MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. VBRKN AS ABOVE. PYRITE NODULES. FRACTURE DISPLACEMENT. QTZ FRACTURE FILL.
20	47.11	47.22	0.11	52			BENTONITE	CLYY. M. GY. SLD WITH MUDST RIP-UP CLASTS.
20	47.22	47.91	0.69	53			MUDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. BIOTR BRKN POSSIBLE CORE LOSS. COAL STRINGERS. TOP S UP. FRACTURE DISPLACEMENT. PLANT HASH
21	47.91	48.04	0.13	55			MUDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. SSD. BRKN AS ABOVE.
21	48.04	48.11	0.07	55	99998	J	COAL	C-3. BLK QTZ VEINS & STRINGERS.
21	48.11	48.29	0.18	55	99998	J	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	48.29	48.34	0.05	55	99998	J	ROCK LOSS	
21	48.34	48.62	0.28	56	99998	J	COAL LOSS	
21	48.62	49.00	0.38	57			MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. BRKN INTERLAM WITH SLTST. POSSIBLE CORE LOSS. SHEARED LITRISTIC SURFACES.
21	49.00	49.46	0.46	58			SILTSTONE	VMEL. DK. GY. LAM. SSD. BRKN POSSIBLE CORE LOSS. MUD FRACTURE FILL. INTERLAM WITH MUDST. HEAVILY FRACTURED.
21	49.46	49.60	0.14	59			ROCK LOSS	
21	49.60	50.40	0.80	60			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERLAM WITH SLTST & MUDST. LOAD CASTS - TOPS UP. SLIGHTLY BIOTURBATED. LAM.
22	50.40	52.05	1.65	*63			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. MUD FRACTURE FILL, QTZ VEINS. BIOTR. LAM.
22	52.05	52.42	0.37	63			SILTSTONE	VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERLAM WITH MUDST & VFG SS. A. & QCM B AND OF MUD. FOSSILIZED NEED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	52.42	54.58	2.16	*62		MUDSTONE	SSY.VFG.VMEL.BLK.LAM.SSD.BRKN INTERLAM WITH VFG SS & SLTST. SOME BIOTURBATION. TOPS UP - LOAD CASTS. LOTS OF DISSEMINATED PYRITE. QTZ VEINING.
24	54.58	55.12	0.54	66		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.SLD INTERLAM WITH SLTST. LOAD CASTS - TOPS UP.
24	55.12	56.56	1.44	*69		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN INTERLAM WITH SLTST AND FEW VFG SS BEDS. LOAD CASTS - TOPS UP. SOME BIOTURBATION. QTZ VEINING.
25	56.56	58.02	1.46	67		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD INTERLAM WITH SLTST. MUD FRACTURE FILL - SOME QUARTZ. FEW INTERBEDS OF VFG SS. TOPS UP - LOAD CASTS. FECAL PELLETS.
25	58.02	58.17	0.15	66		ROCK LOSS	
25	58.17	58.79	0.62	*65		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE. AREAS OF BRECCIATED MUD. YTHNB.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	58.79	60.74	1.95	*64		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE.
26	60.74	60.96	0.22	66		ROCK LOSS	
27	60.96	61.36	0.40	66		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE WITH SOME FRACTURE DISPLACEMENT.
27	61.36	62.93	1.57	*68		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.BRKN AS ABOVE.
27	62.93	63.22	0.29	63		ROCK LOSS	
28	63.22	64.41	1.19	*59		SILTSTONE	VFG.VMEL.DK.GY.LAM.SSD.VBRKN POSSIBLE CORE LOSS. INTERLAM WITH MUDST. FECAL PELLETS. MUD FRACTURE FILL & QTZ VEINS.
28	64.41	64.89	0.48	60		SILTSTONE	VFG.VMEL.DK.GY.LAM.SSD.VBRKN AS ABOVE. X-BEDDING - TOPS UP.
29	64.89	66.54	1.65	*62		SILTSTONE	SSY.VFG.VMEL.W.GY.LAM.SSD.VBRKN POSSIBLE CORE LOSS. INTERBEDDED WITH VFG SS & MUDST. COARSENING IN SOME SS BEDS. QTZ VEINS. YTHNB.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	66.54	67.19	0.65	63			ROCK LOSS	
30	67.19	67.46	0.27	64			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. BRKN QTZ VEINS & FRACTURE FILL.
30	67.46	68.35	0.89	65			SANDSTONE	SLTY. VFG. VMEL. S-P. GY. VTHNB. BRKN SLTST WISPS. MUD FRACTURE FILL.
30	68.35	68.83	0.48	65			SANDSTONE	SLTY. VFG. VMEL. S-P. GY. VTHNB. SLD AS ABOVE. VERY FRACTURED. BRECCIATED (M UD).
30	68.83	69.21	0.38	66			MUDSTONE	VMEL. MH. LAM. SLD PORCELANEOUS TUFFITE. QTZ VEINS. INTERL AM WITH BLK MUDST.
31	69.21	69.93	0.72	67			MUDSTONE	VMEL. MH. LAM. VBRKN POSSIBLE CORE LOSS. AS ABOVE. MUD FILL FRACTURES.
31	69.93	70.17	0.24	67			ROCK LOSS	
31	70.17	70.25	0.08	67	10351		BENTONITE	LT. GY. SLD PETRIFIED WOOD. UNLITHIFIED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	70.25	70.36	0.11	67			MUDSTONE	CLYY. M. GY. SLD UNLITHIFIED.
31	70.36	70.61	0.25	68			SILTSTONE	VMEL. DK. GY. LAM. SSD. VBRKN CORE LOSS POSSIBLE. INTERLAM WITH MUDST . FEW VFG SS BEDS.
31	70.61	71.05	0.44	*68			SILTSTONE	VMEL. DK. GY. LAM. SSD. BRKN AS ABOVE. MUD FRACTURE FILL.
31	71.05	71.45	0.40	68			ROCK LOSS	
32	71.45	73.16	1.71	*67			SILTSTONE	VMEL. BLK. LAM. VBRKN INTERLAM WITH MUDST. CORE LOSS POSSIBLE . FRACTURED.
33	73.16	73.66	0.50	66			SILTSTONE	VMEL. BLK. LAM. VBRKN AS ABOVE. LOAD CASTS - TOPS UP.
33	73.66	74.95	1.29	*65			SILTSTONE	VMEL. BLK. LAM. SSD. VBRKN AS ABOVE. FECAL PELLETS. QTZ & MUD FRAC TURE FILL.
34	74.95	76.71	1.76	*65			SILTSTONE	VMEL. BLK. LAM. VBRKN AS ABOVE. WITH SLTST RIP-UPS. QTZ VEINS . BRECCIATED MUD PRESENT.
34	76.71	76.79	0.08	64			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	76.79	76.95	0.16	64		SILTSTONE	YHEL.BLK.LAM.SLD AS ABOVE.
34	76.95	77.88	0.93	63		ROCK LOSS	
35	77.88	78.51	0.63	*62	08210 I ROOF	MUDSTONE	SLTY.M-DK.GY.LAM.BRKN LAM TO YTHNB MUD & SLTST. ABUNDANT COALIFIED PLANT FOSSILS. SLIGHTLY BRECCIATED NEAR TOP OF UNIT. LOWER 5.0CM. (LOWER 25.0CM SAMPLED). I SEAM ROOF ROCK.
35	78.51	78.70	0.19	66	08211 I	COAL	C-2.BLK.BRKN BOARDERLINE C-3 NEAR BASE.
35	78.70	78.84	0.14	67	08211 I	COAL	C-4.BLK.BRKN
35	78.84	78.86	0.02	68	08211 I	COAL	C-2.BLK.BRKN POWDERY WHEN BROKEN.
35	78.86	78.90	0.04	68	08211 I	COAL	C-5.BLK.SHRD VERY MUDDY.
35	78.90	79.00	0.10	69	08211 I	COAL LOSS	
35	79.00	79.09	0.09	70	08211 I	COAL	C-3.BLK.VSHRD
35	79.09	79.14	0.05	71	08211 I	COAL	C-2.BLK.VBRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	79.14	79.19	0.05	71	08211 I	COAL	C-3.BLK.VBRKN
35	79.19	79.25	0.06	72	08211 I	COAL	C-5.BLK.VBRKN
35	79.25	79.45	0.20	73	08211 I	COAL LOSS	
35	79.45	79.51	0.06	74	08211 I	COAL	C-1.BLK.BRKN
35	79.51	79.63	0.12	75	08211 I	COAL	C-2.BLK.BRKN
35	79.63	79.76	0.13	76	08211 I	COAL	C-3.BLK.PHRD
35	79.76	79.82	0.06	77	08211 I	COAL	C-4.BLK.PHRD
35	79.82	79.92	0.10	78	08211 I	COAL	C-3.BLK.VBRKN
36	79.92	80.00	0.08	78	08211 I	COAL	C-3.BLK.VBRKN
36	80.00	80.04	0.04	79	08211 I	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	80.04	80.09	0.05	79	08212	I	MUDSTONE	CARB. BLK. BRKN
36	80.09	80.18	0.09	*80	08212	I	BENTONITE	LT. BN. SHRD MAXY CLAYSTONE.
36	80.18	80.22	0.04	80	08212	I	SANDSTONE	CLYY. VFG. PR. M. GY. SLD MAYBE MIXED WITH BENTONITE.
36	80.22	80.26	0.04	80	08213	I	COAL	C-3. BLK. BRKN
36	80.26	80.35	0.09	80	08213	I	COAL	C-2. BLK. VSHRD
36	80.35	80.50	0.15	80	08213	I	COAL	C-2. BLK. VBRKN
36	80.50	80.52	0.02	80	08213	I	COAL	C-3. BLK. VBRKN
36	80.52	80.66	0.14	80	08213	I	COAL	C-2. BLK. VBRKN
36	80.66	80.71	0.05	80	08213	I	COAL	C-3. BLK. VSHRD
36	80.71	80.80	0.09	79	08213	I	COAL	C-4. BLK. VSHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	80.80	80.85	0.05	79	08213	I	COAL	C-5. BLK. VSHRD MIXED WITH MUD.
36	80.85	80.87	0.02	79	08213	I	MUDSTONE	CARB. BLK. VSHRD
36	80.87	80.99	0.12	79	08213	I	COAL	C-5. BLK. VSHRD MIX WITH MUD.
36	80.99	81.04	0.05	79	08213	I	COAL	C-4. BLK. VSHRD
36	81.04	81.09	0.05	79	08213	I	COAL	C-3. BLK. VSHRD
36	81.09	81.54	0.45	79	08213	I	COAL	C-2. BLK. VSHRD
36	81.54	81.57	0.03	79	08213	I	COAL	C-4. BLK. VSHRD
36	81.57	81.82	0.25	79	08213	I	COAL LOSS	
36	81.82	81.93	0.11	78	08214	I FLOOR	MUDSTONE	CARB. BLK. VSHRD I SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	81.93	82.63	0.70	78			SILTSTONE	VNEL.BLK.LAM.SSD.SLD INTERLAM WITH MUDST. LOAD CASTS - TOPS UP. MUD FRACTURE FILL WITH SHEARED LIST RIC SURFACES. PLANT MASH. NILSSONIA TEN UICAUUS ETC.
37	82.63	83.84	1.21	77			SANDSTONE	SLTY.FG.VNEL.S-P.GY.MAS.BRKN WITH SLTST LENSES & WISPS. QTZ FRACTURE AND MUD FRACTURE FILL.
37	83.84	83.95	0.11	77			SANDSTONE	SLTY.FG.VNEL.S-P.GY.MAS.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
37	83.95	84.32	0.37	77			ROCK LOSS	
38	84.32	84.76	0.44	76			SANDSTONE	SLTY.FG.VNEL.M.GY.VTHNB.SSD.SLD INTERBEDDED WITH SLTST. MUD FRACTURE FILL. SOME FRACTURE DISPLACEMENT.
38	84.76	86.26	1.50	75			SANDSTONE	SLTY.FG.VNEL.M.GY.VTHNB.SSD.SLD QTZ FRACTURE FILL. SILTST LENSES. COARS ENING TO CONGL WITH CG MATRIX AND SLTST. , CHERT PEBBLES - 2.0CH.
39	86.26	86.89	0.63	74			SANDSTONE	FG.VNEL.S-P.GY.MAS SLTST WISPS. QTZ FRACTURE FILL. COARSEN ING TO MG SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	86.89	87.88	0.99	74			SANDSTONE	CG.VNEL.S-P.GY.MAS.BRKN SLTST LENSES & PEBBLES - 2.5CM. QTZ FRACTURE VEINS.
40	87.88	89.28	1.40	73			SANDSTONE	MG.VNEL.S-P.GY.MAS.VBRKN AS ABOVE. POSSIBLE CORE LOSS. BECOMES INCREASINGLY FG. BANDS OF SLTST.
40	89.28	89.44	0.16	72			ROCK LOSS	
40	89.44	89.94	0.50	72			SILTSTONE	SSY.VFG.VNEL.OK.GY.LAM.VBRKN INTERBEDDED WITH VFG SS. MUD FRACTURE FILL. POSSIBLE CORE LOSS.
41	89.94	91.18	1.24	71			MUDSTONE	SLTY.VNEL.OK.GY.LAM.SSD.BRKN INTERLAM WITH SLTST. DISSEMINATED PYRIT E. MUD FRACTURE FILL. HELMINTHOPSIS. POSSIBLE BIVALVES.
41	91.18	92.00	0.82	*70			SANDSTONE	SLTY.FG.VNEL.M.GY.LAM.BIOTR.BRKN INTERLAM WITH SLTST. COARSENING FROM SLTST. QTZ FRACTURE FILL. COARSENING TO MG SS.
42	92.00	93.10	1.10	69			SANDSTONE	SLTY.MG.VNEL.S-P.GY.VTHNB.VBRKN AS ABOVE. MUD FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	93.10	93.89	0.79	69			SANDSTONE	SLTY. MG. VHEL. S-P. GY. VTHNB. BIOTR BRKN INTERLAM WITH SLTST. NORM BURROW. QTZ & MUD FRACTURE FILL. CG.
42	93.89	93.97	0.08	69			ROCK LOSS	
43	93.97	95.84	1.87	*68			SANDSTONE	SLTY. MG. VHEL. S-P. GY. MAS. VBRKN POSSIBLE CORE LOSS, SHEARED SURFACES. Q TZ & MUD FRACTURE FILL. SOME FRAC DISPLACEMENT. MASSIVE MG SS ALTERNATES WITH INTERBEDDED YFG SS AND SLTST EVERY METR. E.
44	95.84	96.15	0.31	69			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. TOPS UP - LOAD CASTS.
44	96.15	97.38	1.23	*70			SANDSTONE	SLTY. VFG. VHEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE. MUD FILL FRACTURES. SOME OF T HESE ARE BRECCIATED. MUD FRACTURE FILL.
44	97.38	97.93	0.55	61			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	97.93	99.20	1.27	*51			SANDSTONE	SLTY. FG. VHEL. S-P. GY. VTHNB. SSD. VBRKN AS ABOVE. INCREASING SLTST BEDS. TOPS UP P - LOADING.
45	99.20	99.31	0.11	53			SANDSTONE	SLTY. VFG. VHEL. M. GY. VTHNB. SLD INTERLAM WITH SLTST. HEAVILY FRACTURED WITH MUD FILL.
46	99.31	99.91	0.60	54			SANDSTONE	SLTY. VFG. VHEL. DK. GY. LAM. SSD. SLD AS ABOVE. WITH MUDST LAMS.
46	99.91	100.08	0.17	55			ROCK LOSS	
46	100.08	101.42	1.34	57			SILTSTONE	VHEL. DK. GY. LAM. SSD. BRKN INTERLAM WITH YFG SS AND MUDST LAMS. DI SSEMINATED PYRITE. TOPS UP - LOAD CASTS. FOSSIL PLANT FRAGS. UNIDENTIFIABLE.
47	101.42	102.25	0.83	61			SILTSTONE	SLTY. VHEL. DK. GY. LAM. SSD. BRKN AS ABOVE. HEAVILY FRACTURED WITH MUD IN FILL. SHEARED LISTRIC SURFACES ALONG FR ACTURES.
47	102.25	103.36	1.11	63			MUDSTONE	SLTY. VHEL. BLK. LAM. SLD AS ABOVE. INTERLAM WITH SLTST. MANY SHE ARED SURFACES (LISTRIC).
48	103.36	104.06	0.70	66			MUDSTONE	SLTY. VHEL. BLK. LAM. SLD AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	104.06	104.11	0.05	67			ROCK LOSS	
48	104.11	105.33	1.22	69			SANDSTONE	VFG.VMEL.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST & MUDST. QTZ FRACTURE - MUD FRACTURE FILL. LOAD CASTS - TOPS UP. FRACTURE DISPLACEMENT. INCREASINGLY FRACTURED. ALMOST BRECCIATED.
48	105.33	105.52	0.19	71			SANDSTONE	VFG.VMEL.DK.GY.LAM.SLD AS ABOVE. LAMINATIONS OF MUDST. VERY FRACTURED.
49	105.52	106.52	1.00	73			SANDSTONE	VFG.VMEL.M.GY.VTHNB.SSD.SLD INTERBEDDED WITH SLTST AND MUDST. COAL STRINGERS. QTZ & MUD FRACTURE FILL. LOAD CASTS - TOPS UP. BAND OF MASSIVE FG S S 19.0CM THICK.
49	106.52	107.56	1.04	76			MUDSTONE	SLTY.VMEL.M.GY.LAM.BRKN BRECCIATED. LOTS QTZ FRACTURE FILL AND MUD. SHEARED SURFACES. GRADUALLY LESS BRECCIATION.
50	107.56	108.38	0.82	78			SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.BIOTR.BRKN INTERLAM WITH VFG SS & MUDST. VERY SHEARED - LISTRIC SURFACE. GRITTY SURFACE. PYRITE NODULES IN VFG SS. QTZ FRACTURE FILL & MUD.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	108.38	108.64	0.26	80			ROCK LOSS	
50	108.64	109.83	1.19	*82			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.SLD AS ABOVE. SOME BIOTR8. TOPS UP - LOAD CASTS.
51	109.83	111.43	1.60	80			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.BIOTR.SLD INTERBEDDED VFG SS & MUDST. SOME SSD - TOPS UP. PYRITE NODULES. SOME SHEARING. PITTED SURFACE. PLANT HASH - SLIGHTLY COALIFIED.
51	111.43	111.76	0.33	*79			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.SSD.BRKN AS ABOVE. NO PYRITE.
52	111.76	113.63	1.87	*78			SILTSTONE	SSY.VFG.VMEL.DK.GY.VTHNB.BIOTR.BRKN AS ABOVE. WITH PYRITE AND COAL STRINGERS. SLUMP FEATURE. FRACTURE DISPLACEMENT CHANGING BCA'S TO 46 DEGREE. PLANT HASH.
52	113.63	114.42	0.79	77			ROCK LOSS	

* DENOTES MEASURED BCA

FORM
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PROJECT: KPW BLOCK: LR DATA SOURCE: DDHB014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	114.42	114.48	0.06	76			MUDSTONE	SLTY. YFG. VHEL. BLK. LAM. SSD. SLD. INTERLAM WITH SLTST. PLANT WASH.
53	114.48	116.31	1.83	75			MUDSTONE	SLTY. YFG. VHEL. BLK. LAM. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS. POSSIBLE BAIERA FURCATA, OTHER FOSSIL FRAGMENTS.
53	116.31	116.41	0.10	74			ROCK LOSS	
54	116.41	117.56	1.15	73			MUDSTONE	SLTY. YFG. VHEL. BLK. LAM. YBRKN AS ABOVE. GRITTY SURFACE.
54	117.56	118.35	0.79	72			MUDSTONE	SLTY. YFG. VHEL. BLK. LAM. SLD AS ABOVE. WITH PYRITE NODULES. PLANT WASH (COALIFIED).
55	118.35	118.67	0.32	72	08215	H ROOF	MUDSTONE	DK. GY. MAS. BRKN VERY SLIGHTLY CARB. (LOWER 25.0CM. SAMPLED). H SEAM ROOF ROCK.
55	118.67	118.76	0.09	71	08216	H	COAL	C-3. BLK. YBRKN
55	118.76	118.82	0.06	71	08216	H	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH8014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	118.82	119.07	0.25	71	08216	H	MUDSTONE	CARB. BLK. MAS. SHRD WAXY LISTRIC SURFACES. SLIGHTLY CARB.
55	119.07	119.18	0.11	71	08217	H	COAL LOSS	
55	119.18	119.31	0.13	71	08217	H	COAL	C-3. BLK. VSHRD
55	119.31	119.71	0.40	71	08217	H	COAL	C-2. BLK. BRKN
55	119.71	119.79	0.08	70	08217	H	COAL	C-3. BLK. VSHRD
55	119.79	119.92	0.13	70	08217	H	COAL	C-2. BLK. BRKN
55	119.92	119.96	0.04	70	08217	H	COAL	C-3. BLK. VSHRD
55	119.96	120.11	0.15	70	08217	H	COAL	C-2. BLK. BRKN
55	120.11	120.14	0.03	70	08217	H	MUDSTONE	BLK. YBRKN
55	120.14	120.21	0.07	70	08217	H	COAL	C-3. BLK. VSHRD NO CLEATING VISIBLE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	120.21	120.28	0.07	70	08217 H	COAL	C-3.BLK.VBRKN CLEATING VISIBLE.
55	120.28	120.31	0.03	70	08217 H	COAL	C-3.BLK.VBRKN
55	120.31	120.43	0.12	70	08217 H	COAL LOSS	
56	120.43	120.54	0.11	70	08217 H	MUDSTONE	M-DK.BN.SHRD
56	120.54	120.64	0.10	69	08217 H	COAL	C-3.BLK.VBRKN
56	120.64	120.70	0.06	69	08217 H	COAL	C-3.BLK.VSHRD SOOTY.
56	120.70	120.95	0.25	69	08217 H	COAL LOSS	
56	120.95	121.04	0.09	69	08218 H FLOOR	MUDSTONE	BLK.VSHRD H SEAM FLOOR ROCK. SAMPLED.
56	121.04	122.78	1.74	*68	08218 H FLOOR	MUDSTONE	DK.GY.MAS.BRKN MIDDLE OF UNIT IS BRECCIATED. ABUNDANT PYRITE BLEBS 64CM FROM TOP OF UNIT. QTZ FILLED FRACTURES AND STRINGERS. MODERA TELY ABUNDANT. (UPPER 16CM SAMPLED). H SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	122.78	123.68	0.90	74		ROCK LOSS	
57	123.68	124.50	0.82	*78		SILTSTONE	SSY.VFG.VHEL.M.GY.VTHNB.SSD.BRKN INTERBEDDED VFG SS AND MUDSTONE. TOPS U P. QTZ & MUD FRACTURE FILL.
57	124.50	125.47	0.97	78		SILTSTONE	SSY.VFG.VHEL.DK.GY.VTHNB.SSD.BRKN AS ABOVE. LOTS OF DISSEMINATED PYRITE. SOME BIOTRB.
58	125.47	127.48	2.01	77		SILTSTONE	SSY.VFG.VHEL.DK.GY.VTHNB.SSD.BRKN AS ABOVE. TOPS UP - LOAD CASTS. INCREAS ING MUDST CONTENT. QTZ FRACTURE FILL.
58	127.48	127.50	0.02	76		ROCK LOSS	
59	127.50	129.60	2.10	*76		MUDSTONE	SSY.VHEL.BLK.LAM.BRKN INTERLAM WITH SLIST. PYRITE NODULES. QT Z VEIN & MUD FRACTURE. WITH SHEARED LIS TRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88014

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	129.60	130.60	1.00	*75			MUDSTONE	SSY. VHEL. BLK. LAM. BRKN AS ABOVE. SOME MUD FRACTURE FILL WITH S HEARED LISTRIC SURFACES. END OF HOLE. 7 D = 130.60 M.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88014

GEOLOGIST : KRAUS

DATE : FEB 21/89

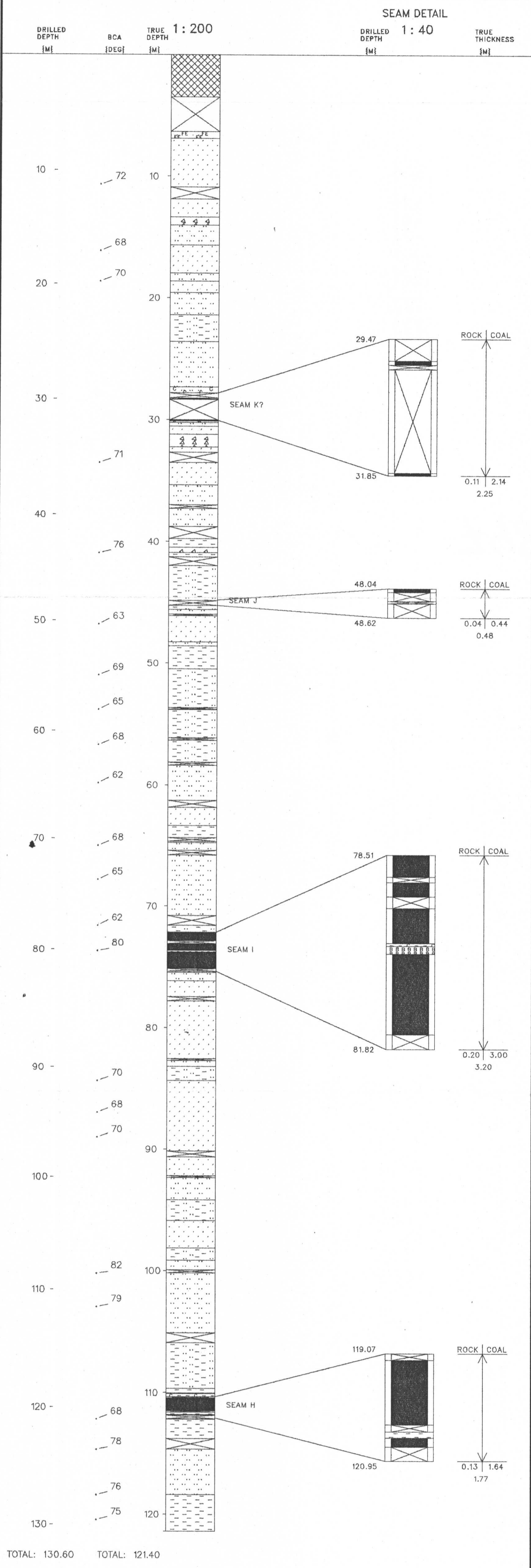
DRAWING NO. :

SCALE : 1:200 1:40

NORTHING: 6343257.0 N
 EASTING: 506380.2 E
 INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED



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Gulf Canada Resources Limited Coal Division

Geophysical Log

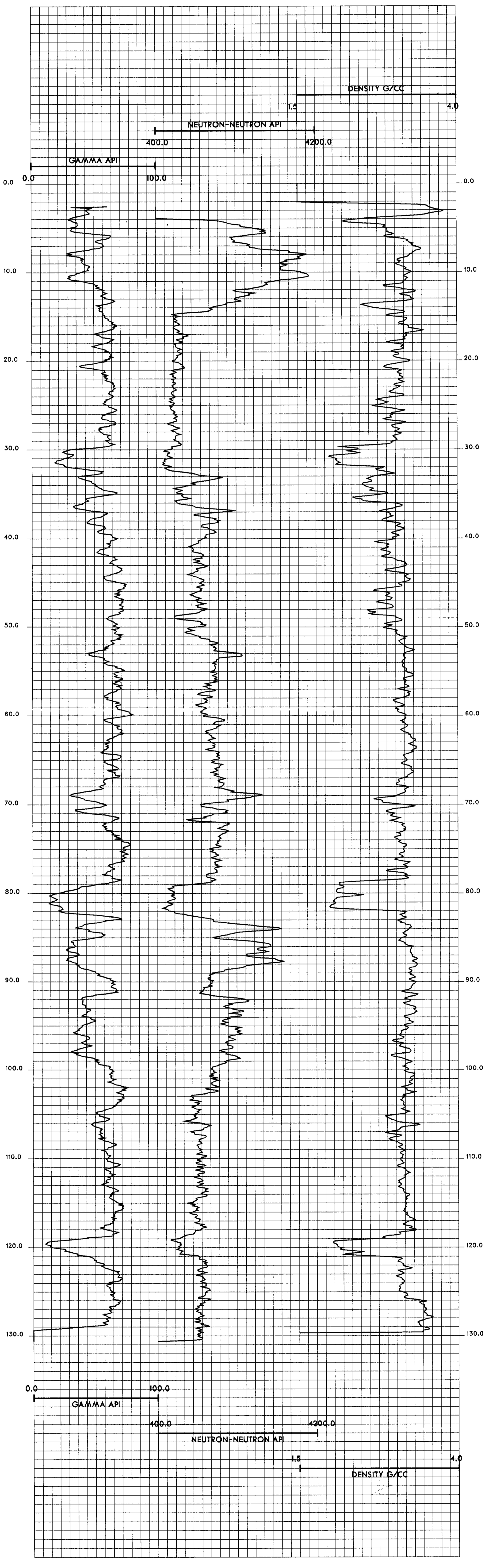
Datasource: **KPNLRDDH88014**
Log Date: 88-06-26
Company: CENTURY
Geologist: KRAUS

Province: BC Northing: 6343260.00 Lat: 571403
Zone: 9 Easting: 506380.00 Long: 1285340
Measuring Point: GROUND LEVEL Elevation: 1670.3

Scale: 1 to 200.0
Depth Range: 0.0 to 135.0
True Thickness: NO

Comments:
1. LOGGED THROUGH RODS
2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



MOUNT KLAPPAN ANTHRACITE PROJECT

GEOLOGICAL REPORT

1988

APPENDIX IV

DIAMOND DRILL HOLE DATA
VOLUME II

KPNLRDDH 88015
TO
KPNLRDDH 88029



GULF CANADA RESOURCES LIMITED
COAL DIVISION

748

MOUNT KLAPPAN ANTHRACITE PROJECT

1988

APPENDIX IV

DIAMOND DRILL HOLE DATA

VOLUME II

CONFIDENTIAL

748

KPNLRDDH88015

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88015

DATE - 02/15/89

- HISTORY -

START DATE - 06/27/88
END DATE - 06/29/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - ETMANSKI

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - SEAMS L? & K/L? CORED BUT NOT ON LOG. EXTRA CSG AD
DED DUE TO LOSS OF CIRC AT APPROX 30-35M. SEAMS IN
TERSECTED: L?,K/L?,K,J,I,H/I,&H.

- LOCATION -

PROVINCE - BC
ELEVATION - 1558.93

ZONE - 9
NORTHING - 6344416.52
EASTING - 507651.83

LICENCE/LEASE NUMBER - 7145

LATITUDE - 571441
LONGITUDE - 1285224

- ORIENTATION -

LENGTH - 222.74

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 35.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-015

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

L ?
K/L ?

2.25 m

2.11 m

K

4.01 m

J

1.06 m

I

4.33 m

H

3.62 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	20.42	20.42	81			OVERBURDEN	CASING DEPTH.
1	20.42	23.12	2.70	81			ROCK LOSS	
1	23.12	23.18	0.06	81			SILTSTONE	DK.GY.VBRKN OVERBURDEN. POSSIBLE CORE LOSS (RUBBLE)
1	23.18	23.35	0.17	81			SILTSTONE	DK.GY.MAS.VBRKN TWIST-OFF.
1	23.35	23.40	0.05	81			MUDSTONE	DK.GY.VBRKN PUDDY LIKE.
1	23.40	23.47	0.07	81			SILTSTONE	DK.GY.VBRKN VERY HARD. TWIST-OFF.
1	23.47	23.52	0.05	81	08326	L? ROOF	MUDSTONE	CLYY.BLK.VBRKN MUSH. L? SEAM ROOF ROCK. SAMPLED.
1	23.52	23.92	0.40	81	08326	L? ROOF	ROCK LOSS	
1	23.92	23.97	0.05	81	08326	L? ROOF	MUDSTONE	CARB.BLK.VBRKN L? SEAM ROOF ROCK. SAMPLED.
1	23.97	24.37	0.40	81	08326	L? ROOF	ROCK LOSS	
1	24.37	24.47	0.10	81	08325	L?	COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	24.47	24.55	0.08	81	08325	L?	MUDSTONE	
1	24.55	24.59	0.04	81	08325	L?	COAL	C-2.BLK.VBRKN
1	24.59	24.89	0.30	81	08325	L?	COAL LOSS	
1	24.89	24.92	0.03	81	08325	L?	MUDSTONE	CARB.BLK.VBRKN MUSH.
1	24.92	25.32	0.40	81	08325	L?	COAL LOSS	
1	25.32	25.37	0.05	81	08325	L?	COAL	C-3.BLK.VBRKN
1	25.37	25.77	0.40	81	08325	L?	COAL LOSS	
1	25.77	25.81	0.04	81	08325	L?	COAL	C-4.BLK.VBRKN
1	25.81	26.21	0.40	81	08325	L?	COAL LOSS	
1	26.21	26.31	0.10	81	08325	L?	COAL	C-3.BLK.VBRKN
1	26.31	26.52	0.21	81	08325	L?	COAL LOSS	
1	26.52	26.65	0.13	81	08325	L?	COAL	C-5.BLK.PWRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	26.65	26.85	0.20	81	08327 L? FLOOR	MUDSTONE	DK.GY.VBRKN L? SEAM FLOOR ROCK. SAMPLED.
1	26.85	26.93	0.08	81	08327 L? FLOOR	MUDSTONE	CARB.BLK.PHRD MUSH. SAMPLED.
1	26.93	27.05	0.12	81		MUDSTONE	DK.GY.VSHRD
2	27.05	27.18	0.13	81		MUDSTONE	CARB.BLK.MAS.BRKN
2	27.18	27.26	0.08	81		COAL	C-3.BLK.PHRD
2	27.26	27.31	0.05	81		MUDSTONE	CARB.BLK.VBRKN RUBBLE. PROBABLE CORE LOSS.
2	27.31	28.31	1.00	81		ROCK LOSS	
2	28.31	28.91	0.60	81		MUDSTONE	DK.BN.MAS.VBRKN
2	28.91	29.01	0.10	81		SILTSTONE	M.GY.SLD CALCAREOUS.
2	29.01	29.06	0.05	81		MUDSTONE	CARB.BLK.VBRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	29.06	29.56	0.50	81		ROCK LOSS	
2	29.56	29.94	0.38	81		MUDSTONE	DK.BN.MAS.BRKN
2	29.94	29.98	0.04	81		MUDSTONE	CLYY.LT.GY.SLD POSSIBLE BENTONITE.
2	29.98	30.07	0.09	81		SILTSTONE	M.GY.SLD CALCAREOUS.
2	30.07	30.30	0.23	81		SILTSTONE	M-DK.BN.MAS.VBRKN CORE THIST-OFF.
3	30.30	31.65	1.35	*81		SANDSTONE	CLYY.FG.M.GY.VTHNB.VBRKN BADLY SHEARED IN PLACES WITH MUD PARTIN GS. ALTERNATING BEDS OF SS & MUDST. LIS TRIC SURFACES IN PLACES ALSO BANDS OF C ARBONIZED MUD. PLANT FRAGMENTS. THIST-O FF - POSSIBLE CORE LOSS. ODD COAL STRIN GERS.
3	31.65	32.12	0.47	72		SANDSTONE	CLYY.FG.M.GY.VTHNB.SHRD AS ABOVE - ALONG WITH VERY FINE STRINGY QTZ VEINS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 5

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	32.12	34.18	2.06	*60		SANDSTONE	SLTY. MG. LT-M. GY. VBRKN SHEARED SS - MADE ALMOST INTO A POWDER IN PLACES. SLTST CLASTS FILLED WITH QTZ VEINS THROUGHOUT SS. SHEAR ZONE - LIST RIC SURFACES IN PLACES, CLASTS ALMOST MAKE UP A BRECCIA.
5	34.18	34.32	0.14	62		SANDSTONE	CLY. MG. PR. S-P. GY. MAS. SLD ARGILLACEOUS SS.
5	34.32	34.45	0.13	62		MUDSTONE	CARB. BLK. VBRKN
5	34.45	34.48	0.03	62		COAL	C-4. BLK. PWRD
5	34.48	34.52	0.04	62		MUDSTONE	CARB. BLK. VBRKN
5	34.52	34.55	0.03	62		COAL	C-5. BLK. VBRKN
5	34.55	34.59	0.04	62		MUDSTONE	CARB. BLK. VBRKN
5	34.59	34.71	0.12	63		SILTSTONE	DK. BN. VBRKN ABUNDANT CLAY.
5	34.71	34.93	0.22	63		SILTSTONE	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	34.93	34.96	0.03	63		MUDSTONE	DK. GY. VSHRD
5	34.96	35.46	0.50	64		ROCK LOSS	
5	35.46	35.57	0.11	64		MUDSTONE	CARB. BLK. BRKN K/L? SEAM. ROOF ROCK. NOT SAMPLED.
5	35.57	35.59	0.02	64	99998 K/L?	COAL	C-5. BLK. VBRKN
5	35.59	35.75	0.16	64	99998 K/L?	MUDSTONE	CARB. BLK. VSHRD MIXED WITH C-5.
5	35.75	36.25	0.50	65	99998 K/L?	MUDSTONE	DK. BN. VSHRD BECOMING CARB. NEAR BASE.
5	36.25	36.75	0.50	66	99998 K/L?	ROCK LOSS	
5	36.75	36.85	0.10	66	99998 K/L?	COAL	C-5. BLK. VSHRD
5	36.85	36.91	0.06	66	99998 K/L?	COAL	C-5. BLK. VBRKN
6	36.91	37.07	0.16	67	99998 K/L?	MUDSTONE	CARB. BLK. VSHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	37.07	37.14	0.07	67	99998 K/L?	SILTSTONE	M.GY.SLD VERY HARD. SLIGHTLY CALCAREOUS.
6	37.14	37.26	0.12	67	99998 K/L?	MUDSTONE	CARB.BLK.PHRD VERY SHRD.
6	37.26	37.70	0.44	67	99998 K/L?	ROCK LOSS	
6	37.70	37.73	0.03	68	99998 K/L?	COAL	C-5.BLK.PHRD
6	37.73	37.86	0.13	68	99998 K/L?	MUDSTONE	CARB.BLK.VBRKN
6	37.86	37.88	0.02	68	99998 K/L?	COAL	C-5.BLK.VBRKN
6	37.88	38.00	0.12	68		MUDSTONE	CARB.DK.GY.VSHRD K/L? SEAM FLOOR ROCK. NOT SAMPLED.
6	38.00	38.06	0.06	68		SILTSTONE	M.GY.VBRKN QTZ FRACTURE FILL.
6	38.06	38.31	0.25	69		MUDSTONE	M-DK.GY.SHRD
6	38.31	38.61	0.30	69		ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	38.61	38.69	0.08	69		SILTSTONE	LT-M.GY.SLD CALCAREOUS.
6	38.69	39.23	0.54	70		MUDSTONE	M-DK.GY.SHRD
6	39.23	39.31	0.08	71		ROCK LOSS	
6	39.31	39.41	0.10	71		SILTSTONE	M-DK.GY.BRKN FRACTURED.
6	39.41	39.48	0.07	71		MUDSTONE	M-DK.GY.SHRD
6	39.48	39.50	0.02	71		ROCK LOSS	
7	39.50	40.70	1.20	72		MUDSTONE	DK.GY.MAS.VBRKN MASSIVE BEDDED MUDST. VERY SHEARED IN P LACES - LISTRIC SURFACES. CORE IS BADLY FRACTURED.
7	40.70	40.90	0.20	73		ROCK LOSS	
7	40.90	40.94	0.04	73		BENTONITE	FG.LT.GY BENTONITE #10354.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	40.94	41.18	0.24	74			SILTSTONE	CLYY, LT-M. GY. BRKN LOOKS LIKE A HALO, LIKE STRUCTURE THAT COULD BE CAUSE BY SLUMPING. DEMATERING OR POSSIBLY BY A CHEMICAL CHANGE IN TH E ROCK ITSELF. GO FROM DK TO LT TO DK. PYRITE.
7	41.18	41.35	0.17	*74			SANDSTONE	CLYY, FG, LT-M. GY. VTHNB, SLD INTERBEDDED SS & MUDST CARBONATED VEINS GOING FROM A COARSER SAND TO A FINE S AND.
7	41.35	41.70	0.35	*74			MUDSTONE	SSY, LT-DK. GY. VTHNB, VBRKN VERY SHEARED - LISTRIC SURFACES IN PLAC ES ALMOST LIKE MUD.
8	41.70	43.15	1.45	74			MUDSTONE	DK. GY. MAS. BRKN MASSIVE BEDDED MUDST. CORE BADLY FRACTU RED. SLUMPED SURFACES - PLANT FRAGMENTS. ODD CARBONATE VEINS.
8	43.15	43.90	0.75	74			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. 2CM WIDE BY 13CM LONG CARBONA TE VEIN.
9	43.90	46.01	2.11	75			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. BIVALVES.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	46.01	47.70	1.69	75			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE. PITYOPHYLLUM NORDENSKIOLDII.
10	47.70	48.15	0.45	76			MUDSTONE	DK. GY. MAS. BRKN MASSIVE BEDDED MUDST. CORE HEAVILY FRAC TURED. PLANT FRAGMENTS. SHEARED IN PLAC ES TO A MUD. LISTRIC SURFACES - PITYOPH YLLUM NORDENSKIOLDII.
11	48.15	50.11	1.96	76			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
12	50.11	50.48	0.37	76			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
12	50.48	52.15	1.67	76			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
13	52.15	53.70	1.55	77			MUDSTONE	DK. GY. MAS. BRKN AS ABOVE.
13	53.70	54.27	0.57	*77			MUDSTONE	SSY, DK. GY. LAM. BRKN VERY FAINT SS BEDS. MUDST FRACTURED HEA VILY. PLANT FRAGMENTS. SHEAR SURFACES - LISTRIC. TWIST-OFF - POSSIBLE CORE LOS S.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	54.27	56.11	1.84	72			MUDSTONE	DK.GY.MAS.BRKN MASSIVE BEDDED MUDST. CORE HEAVILY FRACTURED. SHEAR ZONE SURFACE IN PLACE.
14	56.11	56.32	0.21	67			MUDSTONE	DK.GY.MAS.BRKN AS ABOVE.
15	56.32	58.48	2.16	61			MUDSTONE	DK.GY.MAS.BRKN AS ABOVE - CARBONATE VEIN IN PLACE. IN PLACES BADLY SHEARED.
16	58.48	59.27	0.79	55			MUDSTONE	DK.GY.MAS.BRKN AS ABOVE.
16	59.27	60.57	1.30	*50			MUDSTONE	SSY.DK.GY.VTHNB.SHRD BADLY SHEARED MUDST. LISTRIC SURFACES THROUGHOUT. HEAVILY FRACTURED CORE. CARBONATE VEINS. IN PLACES SHEARED ALMOST TO A MUD.
17	60.57	61.02	0.45	*61	08219	K ROOF	MUDSTONE	CARB.BLK.MAS.VBRKN (LOWER 19CM SAMPLED). K SEAM ROOF ROCK.
17	61.02	61.08	0.06	61	08219	K ROOF	MUDSTONE	M-DK.BN.BRKN K SEAM ROOF ROCK. SAMPLED.
17	61.08	61.14	0.06	61	08220	K	COAL	C-5.BLK.VBRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	61.14	61.17	0.03	61	08220	K	MUDSTONE	CARB.BLK.VBRKN
17	61.17	61.41	0.24	61	08220	K	COAL LOSS	
17	61.41	62.24	0.83	61	08220	K	COAL	C-3.BLK.VSHRD POWDERED. IN PLACES BECOMES C-2. LOCALLY.
18	62.24	62.32	0.08	61	08220	K	COAL	C-3.BLK.PHRD
18	62.32	62.35	0.03	61	08220	K	COAL	C-3.BLK.VBRKN
18	62.35	62.54	0.19	61	08220	K	COAL LOSS	
18	62.54	62.67	0.13	61	08220	K	COAL	C-5.BLK.VSHRD
18	62.67	62.80	0.13	61	08220	K	COAL	C-4.BLK.VSHRD SOOTY.
18	62.80	62.85	0.05	61	08220	K	COAL	C-3.BLK.VSHRD SOOTY.
18	62.85	62.87	0.02	61	08220	K	COAL	C-6.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	62.87	63.23	0.36	61	08221	K	COAL	C-2.BLK.VSHRD MIXED WITH C-3 (BOARDERLINE C-2/C-3) POWDERED IN PLACES.
18	63.23	63.26	0.03	61	08221	K	MUDSTONE	CARB.BLK.VSHRD
18	63.26	63.36	0.10	61	08221	K	COAL	C-2.BLK.VSHRD
18	63.36	63.41	0.05	61	08221	K	COAL	C-4.BLK.VBRKN
18	63.41	63.51	0.10	61	08221	K	COAL	C-2.BLK.VSHRD
18	63.51	63.76	0.25	61	08221	K	COAL	C-3.BLK.VSHRD
19	63.76	64.10	0.34	61	08221	K	COAL	C-3.BLK.VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	64.10	64.36	0.26	61	08221	K	COAL LOSS	
19	64.36	64.54	0.18	61	08221	K	COAL	C-2.BLK.PHRD VSHRD. SOME C-3.
19	64.54	64.59	0.05	61	08221	K	COAL	C-2.BLK.VSHRD
19	64.59	64.67	0.08	61	08221	K	COAL	C-4.BLK.VBRKN
19	64.67	64.75	0.08	61	08221	K	COAL	C-3.BLK.VSHRD
19	64.75	64.80	0.05	61	08221	K	COAL	C-3.BLK.VSHRD
19	64.80	64.97	0.17	61	08222	K	COAL LOSS	
19	64.97	65.05	0.08	61	08222	K	MUDSTONE	CARB.BLK.VBRKN
19	65.05	65.12	0.07	61	08222	K	COAL	C-3.BLK.VSHRD
19	65.12	65.31	0.19	61	08222	K	COAL LOSS	
19	65.31	65.39	0.08	61	08222	K	COAL	C-4.BLK.PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	65.39	65.50	0.11	61	08222 K	COAL	C-3.BLK.VSHRD
19	65.50	65.56	0.06	61	08222 K	MUDSTONE	CARB.BLK.VSHRD
19	65.56	65.59	0.03	61	08222 K	COAL	C-5.BLK.VBRKN
19	65.59	65.67	0.08	61	08222 K	COAL LOSS	
19	65.67	65.87	0.20	61	08223 K FLOOR	MUDSTONE	CARB.DK.BLK.BRKN VBRKN AT BASE. CARB PLANT FRAGS. (EQUIS ETITES LYELLI). K SEAM FLOOR ROCK SAMPL ED.
20	65.87	67.02	1.15	*61		SILTSTONE	SSY.M.GY.VTHNB.BIOTR.SLD MAINLY SLTST WITH BANDS OF SS - MAJOR B IOTRB. LOTS OF PYRITE.
20	67.02	67.59	0.57	*67		SANDSTONE	SLTY.FG.MOD.LT.GY.VTHNB.SLD ALTERNATING LAYERS OF SLTST & SS - SOME SANDSTONE BEDS ARE GREATER THAN 10CM. TOPS UP INDICATOR. SHEAR ZONE SURFACES WHERE BROKEN.
20	67.59	67.90	0.31	68		SILTSTONE	SSY.LT-M.GY.VTHNB.SSD.SLD MAINLY SLTST INTERBEDDED WITH SS. MINOR SSD.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	67.90	68.73	0.83	69		SILTSTONE	SSY.M.GY.VTHNB.BIOTR.SLD MAJOR BIOTRB. MAINLY SLTST WITH SMALL B ANDS OF SS.
21	68.73	69.28	0.55	*71		SILTSTONE	SSY.M.GY.VTHNB.BIOTR.SLD AS ABOVE.
21	69.28	70.01	0.73	*68		SANDSTONE	SLTY.FG.PR.LT-M.GY.VTHNB.SSD.SLD INTERBEDDED SS & SLTST. SOME GRADED BED DING WITHIN THE SS. SHEAR SURFACES. MIN OR SSD. SOME SLTST BEDS ARE WHISPIER TH IN.
22	70.01	71.85	1.84	71		SANDSTONE	SLTY.FG.PR.LT-M.GY.VTHNB.SSD.SLD AS ABOVE.
22	71.85	71.99	0.14	73		SANDSTONE	SLTY.FG.LT-M.GY.VTHNB.BRKN AS ABOVE.
22	71.99	72.02	0.03	74		ROCK LOSS	
23	72.02	74.11	2.09	*76		SANDSTONE	SLTY.FG.PR.LT.GY.LAM.BRKN WHISPIER THIN BEDS OF SLTST CARBONATE V EINS THROUGHOUT. FRACTURES ALONG VEINS. GRAIN SIZE CHANGES TO VFG IN PLACES AN D THEN CHANGES BACK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	74.11	74.12	0.01		72		ROCK LOSS	
24	74.12	75.16	1.04	*	70		SANDSTONE	SLTY. FG. LT. GY. LAM. BRKN AS ABOVE.
24	75.16	75.21	0.05		71		ROCK LOSS	
24	75.21	76.21	1.00		73		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
25	76.21	78.27	2.06	*	77		SANDSTONE	SLTY. MG. PR. LT. GY. LAM. BRKN AS ABOVE - SHEAR ZONE SURFACES.
25	78.27	78.31	0.04		77		ROCK LOSS	
26	78.31	78.93	0.62		76		SANDSTONE	SLTY. MG. PR. LT. M. GY. LAM. SLD AS ABOVE.
26	78.93	80.35	1.42	*	76		MUDSTONE	SLTY. M. GY. VTHNB. SLD INTERBEDDED MUDST & SLTST. VERY CLOSE TO PARALLEL BEDDING. SHEAR ZONE SURFACES WHERE BROKEN. SLICKENSIDES. CARBONATE VEINS COULD PROBABLY BE BEGINNING OF CO ASTERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	80.35	80.37	0.02		75		ROCK LOSS	
27	80.37	81.40	1.03	*	74		MUDSTONE	SLTY. M. GY. VTHNB. SLD AS ABOVE.
27	81.40	82.52	1.12	*	74		MUDSTONE	SLTY. M. GY. VTHNB. SLD AS ABOVE. COASTERS.
28	82.52	84.50	1.98		76		MUDSTONE	SLTY. M. GY. VTHNB. SLD AS ABOVE.
29	84.50	86.46	1.96	*	79		MUDSTONE	SLTY. M. GY. VTHNB. BRKN AS ABOVE.
29	86.46	86.52	0.06		77		ROCK LOSS	
30	86.52	87.56	1.04	*	76		MUDSTONE	SLTY. M. GY. VTHNB. BRKN AS ABOVE.
30	87.56	87.59	0.03		75		ROCK LOSS	
30	87.59	88.56	0.97	*	74		MUDSTONE	SLTY. M. GY. VTHNB. BRKN AS ABOVE.
30	88.56	88.58	0.02		75		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	88.58	90.65	2.07	*76		MUDSTONE	SLTY.LT-DK.GY.VTHNB.BRKN INTERBEDDED MUDST & SLTST. PARALLEL BEDDING. SHEAR ZONE SURFACES. CARB VEINS. KEY ZONE - COASTER ZONE.
32	90.65	92.75	2.10	*79		MUDSTONE	SLTY.LT-DK.GY.VTHNB.SSD.BRKN AS ABOVE. MINOR SSD.
33	92.75	93.83	1.08	*78		MUDSTONE	SLTY.LT-DK.GY.VTHNB.BRKN AS ABOVE.
33	93.83	94.85	1.02	78		MUDSTONE	SLTY.LT-DK.GY.SLD AS ABOVE.
34	94.85	96.90	2.05	*78		MUDSTONE	SLTY.LT-DK.GY.VTHNB.SLD AS ABOVE.
34	96.90	96.96	0.06	79		MUDSTONE	SLTY.LT-DK.GY.VTHNB.VBRKN AS ABOVE. GREATER CONCENTRATION OF CARBONATE VEINS. VERY SHEARED.
34	96.96	96.98	0.02	80		ROCK LOSS	
35	96.98	97.21	0.23	80		MUDSTONE	CARB.DK.GY.LAM.BRKN RHYTHMIC SLTST & MUD LAMS (OUT OF COASTERS). QTZ FRACTURE FILL NEAR TOP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	97.21	97.23	0.02	80 10354		BENTONITE	LT.GY.SLD
35	97.23	97.43	0.20	*80 08224	J ROOF	MUDSTONE	CARB.DK.GY.LAM.BRKN LAMINATED WITH BENTONITE (CORE MAY BE PLACED IN BOX WRONG). (LOWER 16CM SAMPLE D). J SEAM ROOF ROCK.
35	97.43	97.52	0.09	79 08224	J ROOF	MUDSTONE	M.GY.VBRKN ABUNDANT QTZ FILLED FRACTURES, GIVING UNIT A WHITE COLOUR. J SEAM ROOF ROCK. SAMPLED.
35	97.52	97.54	0.02	79 08225	J	COAL LOSS	
35	97.54	97.59	0.05	79 08225	J	COAL	C-3.BLK.BRKN
35	97.59	97.62	0.03	79 08225	J	BRECCIA	MH.SLD MUDST WITH ABUNDANT QTZ FILL FRACTURES.
35	97.62	97.72	0.10	79 08225	J	COAL	C-2.BLK.VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	97.72	97.77	0.05	78	08225 J	MUDSTONE	SLTY. M. GY. VBRKN POSSIBLE BENTONITE.
35	97.77	97.91	0.14	78	08225 J	COAL LOSS	
35	97.91	97.95	0.04	78	08225 J	COAL	C-2. BLK. BRKN
35	97.95	97.97	0.02	77	08225 J	COAL	C-4. BLK. BRKN
35	97.97	98.07	0.10	77	08225 J	COAL	C-2. BLK. BRKN
35	98.07	98.12	0.05	77	08225 J	COAL	C-4. BLK. BRKN
35	98.12	98.28	0.16	76	08225 J	COAL	C-2. BLK. BRKN
35	98.28	98.33	0.05	76	08225 J	COAL	C-3. BLK. VSHRD
35	98.33	98.38	0.05	76	08225 J	COAL	C-2. BLK. VSHRD
35	98.38	98.42	0.04	76	08225 J	COAL	C-6. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	98.42	98.47	0.05	75	08225 J	COAL	C-3. BLK. VSHRD
35	98.47	98.57	0.10	75	08225 J	COAL	C-2. BLK. BRKN
35	98.57	98.61	0.04	75	08225 J	COAL	C-4. BLK. BRKN
35	98.61	98.78	0.17	74	08226 J	MUDSTONE	CARB. DK. GY. BRKN
35	98.78	98.83	0.05	74	08226 J	COAL	C-4. BLK. BRKN
35	98.83	98.94	0.11	74	08226 J	COAL LOSS	
35	98.94	99.02	0.08	73	08226 J	MUDSTONE	CARB. BLK. BRKN
36	99.02	99.08	0.06	73	08226 J	MUDSTONE	CARB. DK. GY. LAM. SSD. BRKN SOME SLTST. LAMS WHICH ARE DISTORTED (SS D).
36	99.08	99.11	0.03	73	08226 J	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	99.11	99.17	0.06	73	08226 J	COAL	C-5. BLK. BRKN
36	99.17	99.26	0.09	72	08226 J	COAL LOSS	
36	99.26	99.36	0.10	72	08227 J FLOOR	MUDSTONE	CARB. DK. GY. MAS. BRKN J SEAM FLOOR ROCK. SAMPLED.
36	99.36	99.38	0.02	72	08227 J FLOOR	COAL	C-1. BLK. SLD J SEAM FLOOR ROCK. SAMPLED.
36	99.38	100.08	0.70	70	08227 J FLOOR	MUDSTONE	CARB. DK. GY. MAS. BRKN (UPPER 13CM SAMPLED). J SEAM FLOOR ROCK
36	100.08	100.64	0.56	68		SILTSTONE	M. GY. SSD. SLD CONTORTED BEDDING IN PLACES. PYRITE STR INGERS. SOME LAMINATED AND VERY THIN BE DDING.
36	100.64	100.85	0.21	*66		SANDSTONE	SLTY. VFG. MOD. LT-M. GY. LAM. SSD. BRKN INTERLAM SS (60%) AND SLTST (40%). LOAD CASTS (RIGHT MAY UP).

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	100.85	101.03	0.18	67		SANDSTONE	FG. MOD. LT. GY. VTHNB. SSD. SLD VTHNB SS WITH MINOR SLTST LAMS. LOAD CA ST (RIGHT MAY UP).
36	101.03	101.13	0.10	68		SANDSTONE	SLTY. LT-M. GY. LAM. SLD INTERLAM SS (50%) AND SLTST (50%).
37	101.13	103.09	1.96	*73		MUDSTONE	SLTY. LT-DK. GY. VTHNB. BRKN INTERBEDDED MUDST & SLTST DISCONTINUING BEDS. CARBONATE VEINS. 1 LARGE CARBONA TE VEIN 3CM THICK RUNS 45CM UP FROM THE BEGINNING OF THE SECTION AT AN ANGLE O F 15 DEGREE.
38	103.09	103.72	0.63	71		MUDSTONE	SLTY. M. GY. VTHNB. SSD. SLD INTERBEDDED MUDST & SLTST. MINOR SSD.
38	103.72	104.62	0.90	*70		SANDSTONE	CLYY. FG. LT-M. GY. VTHNB. SLD VERY THIN MUDST. BEDS. - KIND OF WAVY - S SD OCCURS. SS CHANGES GRAIN SIZE FROM F G TO MG TO FG.
38	104.62	105.12	0.50	69		MUDSTONE	DK. GY. VSHRD CONSOLIDATED MUDST - VERY SHEARED. SO B ADLY SHEARED IT LOOK JUST LIKE MUD.
39	105.12	105.35	0.23	68		MUDSTONE	DK. GY. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	105.35	105.54	0.19	*68		MUDSTONE	SSY.LT-DK.GY.VTHNB.SLD MAINLY MUDST WITH ODD SS BED.
39	105.54	106.62	1.08	*77		SANDSTONE	CLYY.FG.M.GY.VTHNB.BRKN THE SS STARTS VERY ABRUPTLY, MUDST BANDS THROUGHOUT. BIOTURB IN PLACES, ALSO R IP-UPS CLASTS. SHEAR ZONE SURFACES. CAR BONATE VEINS - SOME VEINS HAVE BRECCIA MATERIAL WITHIN.
39	106.62	107.08	0.46	*77		SANDSTONE	CLYY.FG.M.GY.VTHNB.BIOTR.SLD AS ABOVE.
40	107.08	109.27	2.19	*79		SANDSTONE	CLYY.FG.MOD.M.GY.VTHNB.SSD.SLD INTERBEDDED SS & MUDST. BANDS OF MUDSTO NE ARE SOMETIMES WHISPIER THIN. SSD MI NOR GRADED GRAINS IN PLACES OF THE SS. SHEAR SURFACES IN PLACES.
41	109.27	110.34	1.07	*84		SANDSTONE	CLYY.FG.MOD.M.GY.VTHNB.SLD AS ABOVE. ODD BEDS OF SLTST AS WELL, CA RBOATE VEIN.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	110.34	110.86	0.52	78		SANDSTONE	CLYY.VFG.MOD.LT.GY.LAM.SLD VFG SS WITH CARBONATE VEINS THROUGHOUT. VEINS ARE DISPLACED IN MANY PLACES SOM E VEINS ARE BRECCIA. VEINS ARE QUITE LO NG & STRINGY. SHEAR SURFACES. SMALL SE CTIONS OF GRADED BEDDING.
41	110.86	111.39	0.53	*74		SANDSTONE	CLYY.VFG.LT.GY.LAM.SLD AS ABOVE.
42	111.39	113.42	2.03	*78		SANDSTONE	CLYY.VFG.MOD.LT.GY.LAM.BRKN AS ABOVE.
43	113.42	114.63	1.21	79		SANDSTONE	CLYY.VFG.MOD.LT.GY.LAM.BRKN AS ABOVE.
43	114.63	115.44	0.81	*80		SANDSTONE	CLYY.VFG.LT-M.GY.VTHNB.SSD.SLD INTERBEDDED SS, SLTST AND MUDST. MAJOR SSD - SHEAR SURFACES, CARBONATE VEINS. TOPS UP - WORM BURROWS.
44	115.44	115.62	0.18	76		SANDSTONE	SLTY.FG.LT.GY.VTHNB.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	115.62	117.39	1.77	*69		SANDSTONE	SLTY.FG.LT.GY.VTHNB.SSD.BRKN SS INTERBEDDED WITH SLTST BUT MOSTLY SS . ABUNDANT CARBONATE VEINS DISPLACE IN MANY PLACES. SHEAR ZONE - LISTRIC SURFA CES. WORM BURROWS - TOPS UP INDICATES P LACES ARE BADLY MIXED UP.
45	117.39	118.71	1.32	*83		SANDSTONE	SLTY.FG.LT.GY.LAM.SSD.SLD SS INTERBEDDED WITH SLTST. SLTST INCREA SING IN QUANTITY. MAJOR SSD AND BIOTURB . CARBONATE VEINS. MOST VEINS ARE WHIS PIER THIN. BIOTRB.
45	118.71	119.38	0.67	*66		SANDSTONE	SLTY.FG.LT.GY.LAM.SSD.SLD AS ABOVE. WORM BURROWS.
46	119.38	121.29	1.91	*76		SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN ALTERNATING BEDS OF SLTST & SS. FECAL P ELLETS. SSD - SHEAR ZONE. LISTRIC SURFA CES. CARBONATE VEINS - DISPLACED AND AR E BIGGER IN PLACES.
47	121.29	121.63	0.34	*72		SILTSTONE	SSY.LT-M.GY.LAM.SSD.SLD AS ABOVE.
47	121.63	123.42	1.79	*73		SILTSTONE	SSY.LT-M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	123.42	124.64	1.22	*68		SILTSTONE	SSY.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
48	124.64	125.37	0.73	58		SILTSTONE	SSY.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. CROSS BEDDING. WORM BURROWS.
49	125.37	125.63	0.26	*53		SILTSTONE	M.GY. SHRD TUFFACEOUS. FRACTURED.
49	125.63	125.68	0.05	55 10369		BENTONITE	LT.GY.VSHRD
49	125.68	126.67	0.99	*60 08228 I ROOF		SILTSTONE	M.GY. SHRD BRECCIATED (MAINLY NEAR TOP OF UNIT). S OME CALCAREOUS BANDS. BCA'S MAY BECOME AS LOW AS 35 DEGREEE. NORMAL FRACTURES, (LOWER 19CM SAMPLED). I SEAM ROOF ROCK
49	126.67	126.73	0.06	57 08228 I ROOF		MUDSTONE	CARB.BLK.VSHRD I SEAM ROOF ROCK. SAMPLED.
49	126.73	126.77	0.04	57 08229 I		COAL LOSS	
49	126.77	127.27	0.50	55 08229 I		COAL	C-3.BLK.VSHRD ABUNDANT LISTRIC SURFACES. SOME C-2.
50	127.27	127.32	0.05	54 08229 I		COAL	C-4.BLK.VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	127.32	127.36	0.04	53	08229	I	COAL	C-6. BLK. VBRKN
50	127.36	127.48	0.12	53	08229	I	COAL	C-3. BLK. VSHRD
50	127.48	127.52	0.04	52	08229	I	MUDSTONE	CARB. BLK. VBRKN
50	127.52	127.61	0.09	52	08229	I	ROCK LOSS	
50	127.61	127.66	0.05	52	08229	I	COAL	C-4. BLK. VSHRD
50	127.66	127.69	0.03	51	08229	I	COAL	C-5. BLK. VBRKN
50	127.69	127.76	0.07	51	08229	I	COAL	C-4. BLK. PWRD
50	127.76	127.85	0.09	51	08229	I	COAL	C-3. BLK. PWRD
50	127.85	127.88	0.03	50	08229	I	COAL	C-6. BLK. VBRKN VERY HARD.
50	127.88	128.44	0.56	49	08229	I	COAL	C-3. BLK. VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	128.44	128.52	0.08	47	08229	I	COAL	C-3. BLK. VBRKN
50	128.52	128.55	0.03	47	08229	I	MUDSTONE	CARB. BLK. VSHRD
50	128.55	128.57	0.02	46	08229	I	COAL	C-2. BLK. VSHRD
50	128.57	128.60	0.03	46	08229	I	COAL	C-4. BLK. VSHRD
50	128.60	128.63	0.03	46	08229	I	COAL	C-6. BLK. VBRKN VERY HARD.
50	128.63	128.72	0.09	46	08229	I	COAL	C-4. BLK. BRKN
51	128.72	129.17	0.45	44	08229	I	COAL LOSS	
51	129.17	129.40	0.23	42	08229	I	MUDSTONE	CARB. BLK. VBRKN
51	129.40	129.45	0.05	41	08229	I	COAL LOSS	
51	129.45	129.53	0.08	41	08229	I	COAL	C-4. BLK. VSHRD
51	129.53	129.88	0.35	40	08229	I	COAL	C-3. BLK. VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	129.88	130.04	0.16	38	08229 I	ROCK LOSS	
51	130.04	130.07	0.03	38	08230 I	COAL	C-2.BLK.VBRKN
51	130.07	130.22	0.15	37	08230 I	COAL	C-2.BLK.VSHRD
51	130.22	130.24	0.02	37	08230 I	COAL	C-6.BLK.VBRKN VERY HARD.
51	130.24	130.28	0.04	37	08230 I	COAL	C-4
51	130.28	130.38	0.10	36	08230 I	COAL	C-3.BLK.PWRD
51	130.38	130.61	0.23	35	08230 I	COAL	C-3.BLK.VSHRD
51	130.61	130.71	0.10	34	08230 I	COAL	C-4.BLK.VSHRD
52	130.71	130.74	0.03	34	08230 I	MUDSTONE	CARB.BLK.VSHRD
52	130.74	130.82	0.08	34	08230 I	COAL	C-4.BLK.PWRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	130.82	130.92	0.10	33	08230 I	COAL	C-3.BLK.VSHRD
52	130.92	130.99	0.07	33	08230 I	COAL	C-1.BLK.VSHRD
52	130.99	131.02	0.03	32	08230 I	COAL	C-4.BLK.VSHRD
52	131.02	131.10	0.08	32	08230 I	COAL	C-2.BLK.VSHRD
52	131.10	131.34	0.24	31	08230 I	COAL LOSS	
52	131.34	131.40	0.06	30	08230 I	MUDSTONE	CARB.BLK.VBRKN
52	131.40	131.44	0.04	30	08230 I	COAL	C-2.BLK.VBRKN
52	131.44	131.51	0.07	30	08230 I	COAL	C-3.BLK.PWRD
52	131.51	131.55	0.04	29	08230 I	COAL	C-5.BLK.VSHRD
52	131.55	131.80	0.25	29	08230 I	COAL	C-3.BLK.VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	131.80	131.86	0.06	28	08230 I	COAL	C-4. BLK. PWRD
52	131.86	131.90	0.04	27	08230 I	COAL	C-2. BLK. VBRKN
52	131.90	131.95	0.05	27	08230 I	COAL	C-3. BLK. PWRD
52	131.95	132.50	0.55	25	08230 I	COAL LOSS	
52	132.50	132.55	0.05	24	08230 I	MUDSTONE	CARB. BLK. VSHRD
52	132.55	132.80	0.25	23	08230 I	COAL	C-3. BLK. VSHRD
52	132.80	133.00	0.20	22	08230 I	COAL	C-3. BLK. VSHRD
53	133.00	133.26	0.26	20	08230 I	COAL	C-2. BLK. VSHRD
53	133.26	133.63	0.37	18	08230 I	COAL LOSS	
53	133.63	133.66	0.03	17	08230 I	MUDSTONE	CARB. BLK. VSHRD
53	133.66	133.72	0.06	17	08230 I	COAL	C-3. BLK. VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	133.72	133.83	0.11	17	08230 I	COAL	C-2. BLK. VSHRD
53	133.83	133.86	0.03	16	08230 I	COAL	C-4. BLK. VSHRD
53	133.86	133.96	0.10	16	08230 I	COAL	C-2. BLK. PWRD
53	133.96	134.05	0.09	15	08231 I	COAL	C-1. BLK. VSHRD
53	134.05	134.65	0.60	13	08231 I	COAL	C-1. BLK. VSHRD SOME C-2.
53	134.65	134.89	0.24	11	08232 I FLOOR	MUDSTONE	CARB. BLK. VSHRD I SEAM FLOOR ROCK. SAMPLED.
54	134.89	136.12	1.23	07		MUDSTONE	DK. GY. MAS. VSHRD MASSIVE BEDDED MUDST - VSHRD. LISTRIC'S URFACES THROUGHOUT. CORE HEAVILY FRACTU RED.
54	136.12	136.86	0.74	*01		SANDSTONE	CLYY. MG. LT. GY. VTHNB. SHRD BEDDED WITH MUDST AT A SHARP ANGLE +1 D EGREE. CARBONATE VEINS IN PLACES IT LOO KS LIKE A BRECCIA. VERY THIN BEDS OF SL TST START TO APPEAR.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	136.86	138.66	1.80	*60			SILTSTONE	SSY.M.GY.VTHNB.SSD.VSHRD INTERBEDDED SLTST/SS. SHEAR ZONE - LISTRIC SURFACES. CORE FRACTURED THROUGHOUT. WORM BURROWS IN PLACES. MINOR SSD. SHEARED SO BAD IN PLACES IT JUST CRUMBLES.
56	138.66	139.81	1.15	68			MUDSTONE	SSY.M.GY.VTHNB.SHRD SHEAR ZONE - CRUMBLY - LISTRIC SURFACES. HELMINTHOPSIS, FECAL PELLETS, ODD CARBONATE VEINS, DISPLACEMENT OF VEINS AND ALSO SOME OF THE BEDS.
56	139.81	139.95	0.14	*72			SILTSTONE	SSY.LT.GY.VTHNB.SLD SLTST POSSIBLY INFLUENCED BY TUFFITE, VERY LIGHT COLOR.
56	139.95	140.59	0.64	70			SILTSTONE	SSY.M.GY.VTHNB.VBRKN SHEAR ZONE - LISTRIC SURFACES. CARBONATE VEINS. FECAL PELLETS.
56	140.59	140.61	0.02	68			ROCK LOSS	
57	140.61	142.51	1.90	*63			SILTSTONE	SSY.M.GY.SSD.BRKN INTERBEDDED SLTST & SS. MANY DISCONTINUOUS BEDS. CARBONATE FILLED FRAC. FECAL PELLETS. HELMINTHOPSIS. SHEAR ZONE - LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	142.51	142.53	0.02	53			ROCK LOSS	
58	142.53	143.07	0.54	50			SILTSTONE	SSY.M.GY.SSD.VBRKN AS ABOVE.
58	143.07	143.10	0.03	46			ROCK LOSS	
58	143.10	143.68	0.58	43			SANDSTONE	CLYY.MG.PR.LT-M.GY.VBRKN MG TO CG SS, CARBONATE VEINS THROUGHOUT. CLASTS UP TO 7CM LONG. VERY SHEARED - LISTRIC SURFACES. CLASTS ARE MOSTLY MEDIUM ANGLULAR, SOME 1/2 - 1MM CHERT PEBBLE S. GRADED BEDDING.
58	143.68	143.71	0.03	40			ROCK LOSS	
58	143.71	144.40	0.69	*36			SILTSTONE	SSY.PR.LT-DK.GY.WRMBU.VBRKN INTERBEDDED SLTST, SS & MUDST. SOME OF THE SS BEDS ARE GRADED BEDDING WITH COARSE GRAIN SAND. WORM BURROWS THROUGHOUT. LISTRIC SURFACES - SHEAR ZONE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	144.40	144.43	0.03	33			ROCK LOSS	
59	144.43	144.85	0.42	31			SANDSTONE	SLTY.VCG.VPR.LT.GY.SLD YCG GRAIN SS - POORLY SORTED, GRADED BEDDING. ANGULAR CLASTS OF SLTST UP TO 3C M. ODD CARBONATE VEIN.
59	144.85	145.83	0.98	24			SILTSTONE	SSY.MOD.M.GY.VTHNB.WRMBU.VBRKN INTERBEDDED SLTST & SS. WORM BURROWS, FACAL PELLETS, HELMINTHOPSIS. ODD BAND OF CG SS BED WITH CHERT PEBBLES. SHEAR SURFACES - SHEAR ZONE.
59	145.83	145.87	0.04	19			ROCK LOSS	
59	145.87	146.51	0.64	*16			SILTSTONE	SSY.MOD.M.GY.VTHNB.SSD.VBRKN AS ABOVE. MINOR SSD.
59	146.51	146.54	0.03	35			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	146.54	147.32	0.78	*58			SANDSTONE	SLTY.FG.MOD.M.GY.VTHNB.VBRKN MAINLY SS WITH SLTST BANDS. CARBONATE VEINS. SHEAR ZONE - LISTRIC SURFACES VERY CHEMED UP. SLTST CLASTS OF 1-2CM IN PLACES.
60	147.32	147.35	0.03	66			ROCK LOSS	
60	147.35	147.49	0.14	68			SILTSTONE	CLYY.LT.GY.VSHRD BRECCIA CARBONATE VEIN. SHEAR ZONE. REALLY GROUND UP.
60	147.49	147.53	0.04	70			ROCK LOSS	
60	147.53	148.50	0.97	*80			SILTSTONE	SSY.DK.GY.VTHNB.VBRKN SLTST WITH ODD VEIN OF SS & LAMELLAE MUDST BANDS. CARBONATE VEINS. SHEAR ZONE - LISTRIC SURFACES. HELMINTHOPSIS.
60	148.50	148.52	0.02	47			ROCK LOSS	
61	148.52	149.08	0.56	*27			SILTSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

FORM
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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	149.08	149.10	0.02		22		ROCK LOSS	
61	149.10	150.42	1.32	*10			SILTSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE. MORE CARBONATE VEINS.
61	150.42	150.52	0.10		57		ROCK LOSS	
62	150.52	151.43	0.91	*90			SILTSTONE	SSY.DK.GY.VTHNB.VBRKN AS ABOVE.
62	151.43	151.58	0.15		61		ROCK LOSS	
62	151.58	151.99	0.41	*45			SILTSTONE	SSY.DK.GY.VTHNB.VBRKN AS ABOVE.
62	151.99	152.09	0.10		56		ROCK LOSS	
62	152.09	152.67	0.58	*70			SANDSTONE	SLTY.VCG.LT-DK.GY.VTHNB MOST OF THE SS BEDS ARE CG BUT THEY ARE GRADED TO GRANULAR IN PLACES. THERE AL SO ARE CLASTS OF SLTSTUP TO 6CM. CARBON ATE VEINS - DISPLACEMENT SHEAR ZONE - L ISTRIC SURFACES.
62	152.67	152.82	0.15		69		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	152.82	154.11	1.29	*66			SANDSTONE	SLTY.VCG.LT-DK.GY.VTHNB.VBRKN AS ABOVE.
63	154.11	154.29	0.18		39		ROCK LOSS	
63	154.29	154.97	0.68	*23			SANDSTONE	SLTY.VCG.LT-DK.GY.VTHNB.VBRKN AS ABOVE. INCREASE IN SLTST BEDS.
63	154.97	155.12	0.15		26		ROCK LOSS	
64	155.12	156.54	1.42	*33			SANDSTONE	SLTY.VCG.LT-DK.GY.VTHNB.SHRD AS ABOVE.
64	156.54	156.80	0.26		22		ROCK LOSS	
64	156.80	157.25	0.45		18		SILTSTONE	SSY.DK.GY.VTHNB.SHRD SLTST - LOW BEDDING ANGLE, ALMOST VERTI CAL. CARBONATE VEINS BADLY SHEARED.
64	157.25	157.30	0.05		14		ROCK LOSS	
65	157.30	157.62	0.32		12		SILTSTONE	SSY.DK.GY.VTHNB.SHRD AS ABOVE.
65	157.62	157.67	0.05		10		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	157.67	158.78	1.11	*02			SILTSTONE	SSY.DK.GY.VTHNB.WRMBU.BRKN ALMOST VERTICAL BEDS OF ALTERNATING SLT ST & SS, SOME SSD. SHEAR SURFACES, TOPS UP INDICATOR. OFFSET CARBONATE VEINS. WORM BURROWS - DISCONTINUOUS BEDS. SSD.
65	158.78	158.91	0.13	01			ROCK LOSS	
65	158.91	159.33	0.42	*01			SILTSTONE	SSY.DK.GY.VTHNB.WRMBU.BRKN AS ABOVE.
66	159.33	160.56	1.23	*03			SILTSTONE	SSY.DK.GY.VTHNB.WRMBU.SLD AS ABOVE.
66	160.56	161.21	0.65	*01			SILTSTONE	SSY.DK.GY.VTHNB.WRMBU.SLD AS ABOVE.
67	161.21	161.86	0.65	*14			SILTSTONE	SSY.DK.GY.VTHNB.SLD AS ABOVE.
67	161.86	163.26	1.40	*15			SILTSTONE	SSY.DK.GY.VTHNB.SSD.SLD AS ABOVE.
68	163.26	164.87	1.61	*23			SILTSTONE	SSY.DK.GY.VTHNB.WRMBU.BRKN AS ABOVE. HELMINTHOPSIS. SSD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	164.87	165.22	0.35	27			ROCK LOSS	
68	165.22	165.39	0.17	28			SILTSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE. HELMINTHOPSIS.
68	165.39	165.44	0.05	28			ROCK LOSS	
69	165.44	166.26	0.82	*30			SILTSTONE	SSY.DK.GY.VTHNB.SLD AS ABOVE. HELMINTHOPSIS.
69	166.26	167.43	1.17	*25			SANDSTONE	SLTY.VCG.LT-M.GY.VTHNB VERY COARSE GRAIN - POORLY SORTED. SS I NTERMIXED WITH ODD SLTST.BED. SLTST.BED S ARE DISCONTINUOUS IN PLACES. SLTST CL ASTS UP TO 3CM. CARBONATE VEINS. CLASTS SLIGHTLY ROUNDED.
70	167.43	168.29	0.86	25			SANDSTONE	SLTY.VCG.LT.GY.VTHNB.SLD AS ABOVE.
70	168.29	169.16	0.87	25			SANDSTONE	SLTY.GRAN.LT.GY.VTHNB.SLD AS ABOVE. COALY BRECCIA.
70	169.16	169.50	0.34	*25			SANDSTONE	CLYY.MG.PR.M.GY.VTHNB.SLD INTERBEDDED SS & MUDST. SS VARIES FROM MG TO CG WITH CHERT FRAGMENTS. GRADED B EDDING. DISCONTINUOUS BEDS. CARBONATE V EINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	169.50	169.80	0.30	*28			SANDSTONE	CLYY.MG.PR.H.GY.VTHNB.BRKN AS ABOVE.
71	169.80	169.84	0.04	*27			MUDSTONE	CARB.PR.LT.GY.VTHNB.BRKN BRECCIA CARBONATE VEINS.
71	169.84	170.15	0.31	*32			MUDSTONE	SSY.PR.OK.GY.VTHNB.SHRD SHEARED MUDST WITH CARBONATE VEINS THRO UGHOUT. LISTRIC SURFACES.
71	170.15	170.51	0.36	*33			SANDSTONE	CLYY.LT.GY.VTHNB.BRKN INTERBEDDED SS & MUDST WITH THE ODD BED OF SLTST.
71	170.51	170.52	0.01	34			ROCK LOSS	
71	170.52	170.83	0.31	35			SANDSTONE	PBLY.GRAN.LT.GY.SLD GRANULE GRAVEL - GRADED BEDDING. SOME SILTSTONE CLASTS UP TO 2CM.
71	170.83	171.49	0.66	*38			SANDSTONE	CLYY.MG.LT.GY.VTHNB.BRKN ALTERNATING BEDS OF SS & MUDST. CARBONATE BANDS 1-2CM THICK. GRADED BEDDING IN THE SS.
72	171.49	171.84	0.35	*25			SANDSTONE	CLYY.GRAN.LT.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	171.84	172.21	0.37	*25			SILTSTONE	CLYY.M.GY.VTHNB.SSD.BRKN VERY THIN BEDS OF MUDST - SOME DISCONTINUOUS. HELMINTHOPHYSIS. MINOR SSD IN PLACES. SHEAR ZONE. LISTRIC SURFACES.
72	172.21	173.34	1.13	*19			SILTSTONE	CLYY.M.GY.VTHNB.SSD.VBRKN AS ABOVE.
72	173.34	173.36	0.02	18			ROCK LOSS	
73	173.36	173.90	0.54	*18			SILTSTONE	CLYY.M.GY.VTHNB.BRKN AS ABOVE. SS BANDS AS WELL. NO MORE SSD
73	173.90	173.91	0.01	18			ROCK LOSS	
73	173.91	174.64	0.73	*18			SILTSTONE	CLYY.M.GY.VTHNB.WRMBU.VBRKN AS ABOVE. WORM BURROWS. RIVALVE. SS BEDS AS WELL.
73	174.64	174.65	0.01	18			ROCK LOSS	
73	174.65	175.37	0.72	18			SILTSTONE	CLYY.M.GY.VTHNB.WRMBU.VBRKN AS ABOVE. WORM BURROWS. SS BEDS AS WELL

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	175.37	177.20	1.83	*17			SANDSTONE	SLTY. MG. LT-DK. GY. VTHNB. HRMBU. VBRKN ALTERNATING BEDS OF SS & SLTST. MAJOR WORM BURROWS. MAJOR SHEAR ZONE. LISTRIC SURFACES. IN PLACES SS CHANGES GRAIN SIZE, MG TO CG. CARBONATE VEINS. DISCONTINUOUS BEDS. ODD SLTST RIP-UP CLASTS - ANGULAR.
74	177.20	177.25	0.05	25			ROCK LOSS	
75	177.25	177.59	0.34	26			SANDSTONE	SLTY. MG. LT-DK. GY. VTHNB. HRMBU. VBRKN AS ABOVE.
75	177.59	179.08	1.49	*34			SANDSTONE	SLTY. MG. LT-DK. GY. VTHNB. HRMBU. VBRKN AS ABOVE.
75	179.08	179.13	0.05	27			ROCK LOSS	
76	179.13	180.60	1.47	*21			SANDSTONE	SLTY. MG. LT-DK. GY. VTHNB. HRMBU. VBRKN AS ABOVE.
76	180.60	180.65	0.05	39			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	180.65	181.57	0.92	50			SILTSTONE	SSY. LT-DK. GY. VTHNB. VSHRD BADLY SHEARED - VERY SOFT. MAJOR QTZ CARBONATE VEINS THROUGHOUT. VERY THIN BANDS OF SS. TOPS UP.
77	181.57	181.70	0.13	*62			SANDSTONE	GRAN. VPR. LT. GY. SSD. SLD GRADED BEDDING. STARTING VERY FINE AND WORKING UP TO GRANULAR AT TOP. SHEAR SURFACES. SSD AT BOTTOM OF BED.
77	181.70	182.82	1.12	62			SANDSTONE	SLTY. MG. MOD. M. GY. HRMBU. BRKN ALTERNATING BEDS OF SS & SLTST. DISCONTINUOUS BEDS. MAJOR WORM BURROWS. INDICATING TOP UP. A FEW MUDST BANDS THROUGHOUT. CARBONATE VEINS. SHEAR SURFACES.
78	182.82	183.65	0.83	*61			SANDSTONE	SLTY. MG. PR. M. GY. HRMBU. BRKN INTERBEDDING SS & SLTST. THE SS BEDS BEING GRADED BEDDING. MAJOR WORM BURROWS. DISCONTINUOUS BEDS. MINOR SSD - ANGULAR CLASTS. SHEAR SURFACES. SSD.
78	183.65	184.69	1.04	*77			SANDSTONE	SLTY. MG. MOD. M. GY. HRMBU. VBRKN ALTER BEDS OF SS & SLTST. CARBONATE VEINS. WORM BURROWS. SHEAR ZONE. LISTRIC SURFACES. SSD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	184.69	184.74	0.05	74		ROCK LOSS	
79	184.74	186.57	1.83	68		SANDSTONE	SLTY.MG.H.GY.VTHNB.VBRKN AS ABOVE. AREA BADLY FAULTED & SHEARED. EVERYTHING IS MUNCHEDED AND PUT BACK TOGETHER. CAN HARDLY SEE ORIGINAL BEDDING PLAIN. CARBONATE VEINS.
79	186.57	186.62	0.05	62		ROCK LOSS	
79	186.62	186.73	0.11	62		SANDSTONE	SLTY.MG.H.GY.VTHNB.VBRKN AS ABOVE.
79	186.73	186.75	0.02	62		ROCK LOSS	
80	186.75	187.92	1.17	*58		SANDSTONE	SLTY.MG.LT.GY.VTHNB.WRMBU.SHRD INTERBEDDED SS & SLTST. & MUDST. BUT MAINLY SS. VERY SHEARED - LISTRIC SURFACES. SOME BEDS ARE WHISPER THIN. WORM BURR OWS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	187.92	187.97	0.05	68		ROCK LOSS	
80	187.97	188.69	0.72	*75		SANDSTONE	SLTY.MG.LT.GY.VTHNB.VBRKN AS ABOVE. BIVALVES - CONCAVE DOWN. INDI- CATING TOPS UP.
80	188.69	188.72	0.03	76		ROCK LOSS	
81	188.72	189.69	0.97	*77		SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.WRMBU.BRKN GRADED BEDDING WITH SOME SS BEDS. CARBO- NATE FILLED FRACTURES. WORM BURROW. MUD ST. BEDS. AS MELL.
81	189.69	189.72	0.03	72		ROCK LOSS	
81	189.72	190.40	0.68	*69		SANDSTONE	FG.PR.LT.GY.VTHNB.WRMBU.BRKN AS ABOVE. FECAL PELLETS.
81	190.40	190.42	0.02	72		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
82	190.42	192.16	1.74	*78		SANDSTONE	CLYY.MG.M.GY.VTHNB.SSD.VBRKN SHEAR ZONE - LISTRIC SURFACES. CARBONATE FILLED FRACTURES. DISCONTINUOUS BEDS. VERY MIXED UP IN PLACES. A BIT OF GRADED BEDDING IN SS BEDS. WORM BURROWS. MINOR SLTST BEDS. WRMBUR.
83	192.16	192.99	0.83	*80		SANDSTONE	CLYY.FG.M.GY.VTHNB.SSD.VBRKN AS ABOVE. TOPS UP INDICATOR. WRMBUR.
83	192.99	194.14	1.15	*81		MUDSTONE	SSY.DK.GY.VTHNB.SSD.VBRKN ALTERNATING BEDS OF MUDST & SS. SSD - DISCONTINUOUS BEDS. YSHRD IN PLACES. LISTRIC SURFACES.
84	194.14	195.08	0.94	64		MUDSTONE	DK.GY.MAS.VBRKN MASSIVE BEDDED MUDST. CARBONATE VEINS. PLANT FRAGMENTS. SHEAR ZONE, LISTRIC SURFACES.
84	195.08	195.55	0.47	*52		MUDSTONE	FG.DK.GY.MAS.VBRKN AS ABOVE.
84	195.55	195.89	0.34	54		MUDSTONE	DK.BLK.VBRKN CARBONIZED MUDST. - WITH COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
85	195.89	197.76	1.87	*61		MUDSTONE	DK.GY.MAS.SHRD MUDST MASSIVE BEDDED. CARBONATE VEINS. SHEAR ZONE THROUGHOUT. LISTRIC SURFACES. ODD COAL STRINGER. PLANT FRAGMENTS. NILSSONIA SCHAUMBERGENSIS.
85	197.76	197.78	0.02	59		ROCK LOSS	
86	197.78	198.60	0.82	*58		MUDSTONE	DK.GY.MAS.VBRKN AS ABOVE.
86	198.60	198.62	0.02	53		ROCK LOSS	
86	198.62	199.81	1.19	*45		MUDSTONE	DK.GY.MAS.VBRKN AS ABOVE. NO MORE NILSSONIA SCHAUMBERGENSIS.
86	199.81	199.86	0.05	42		ROCK LOSS	
87	199.86	201.12	1.26	*39		MUDSTONE	DK.GY.MAS.SHRD AS ABOVE.
87	201.12	201.17	0.05	42		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	201.17	201.66	0.49		43		MUDSTONE	DK.GY.MAS.VSHRD AS ABOVE. COAL STRINGER 3CM THICK C-5.
88	201.66	203.44	1.78	*49			MUDSTONE	DK.GY.MAS.VSHRD VERY SHEARED MUDST. ODD CARBONATE VEIN. COAL STRINGER.
88	203.44	203.49	0.05		53		ROCK LOSS	
89	203.49	203.53	0.04		53	08233 H/I ROOF	MUDSTONE	CARB.BLK.VSHRD H/I SEAM ROOF ROCK. SAMPLED.
89	203.53	203.58	0.05		54	08233 H/I ROOF	SILTSTONE	M.GY.VBRKN CALCAREOUS. BRECCIATED. H/I SEAM ROOF ROCK. SAMPLED.
89	203.58	203.59	0.01		54	08233 H/I ROOF	MUDSTONE	CARB.BLK.VSHRD H/I SEAM ROOF ROCK. SAMPLED.
89	203.59	203.76	0.17		54	08234 H/I	COAL LOSS	
89	203.76	203.82	0.06		55	08234 H/I	COAL	C-4.BLK.VSHRD
89	203.82	203.84	0.02		55	08234 H/I	COAL	C-3.BLK.VBRKN
89	203.84	203.88	0.04		55	08234 H/I	COAL	C-4.BLK.VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
89	203.88	203.90	0.02		55	08234 H/I	COAL	C-3.BLK.VSHRD
89	203.90	204.11	0.21		56	08234 H/I	COAL	C-2.BLK.VSHRD
89	204.11	204.58	0.47		57	08235 H/I FLOOR	MUDSTONE	SLTY.M-DK.GY.MAS.BRKN VBRKN AT TOP OF UNIT. ABUNDANT PLANT FOSSILS (NILSSONIA TENUICAILIS). (UPPER 2 5CM SAMPLED). H/I FLOOR ROCK.
89	204.58	204.60	0.02		58		ROCK LOSS	
89	204.60	205.25	0.65	*60			MUDSTONE	SLTY.M-DK.GY.MAS.BRKN ABUNDANT PLANT FOSSILS (NILSSONIA TENUICAILIS).
89	205.25	205.29	0.04		60		ROCK LOSS	
90	205.29	207.02	1.73		61		MUDSTONE	SLTY.DK.GY.VTHNB.VBRKN MAINLY MUDSTONE WITH ODD BED OF SLTST. COAL STRINGER. CORE BADLY FRACTURED SHEAR ZONE, LISTRIC SURFACES. PLANT FRAGMENTS. CARBONATE VEINS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	207.02	207.12	0.10	62		ROCK LOSS	
90	207.12	207.25	0.13	62		MUDSTONE	SLTY. DK. GY. VTHNB. SLD AS ABOVE.
91	207.25	209.26	2.01	*63		MUDSTONE	SLTY. DK. GY. VTHNB. BRKN AS ABOVE.
91	209.26	209.41	0.15	64		ROCK LOSS	
92	209.41	209.60	0.19	64	08236 H ROOF	MUDSTONE	CARB. BLK. MAS. BRKN H SEAM ROOF ROCK. SAMPLED.
92	209.60	209.65	0.05	65	08237 H	COAL	C-3. BLK. VSHRD
92	209.65	209.69	0.04	65	08237 H	COAL	C-5. BLK. VBRKN
92	209.69	209.81	0.12	65	08237 H	COAL LOSS	
92	209.81	209.86	0.05	65	08237 H	MUDSTONE	BLK. SHRD
92	209.86	209.95	0.09	65	08237 H	COAL	C-3. BLK. VSHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	209.95	210.13	0.18	65	08237 H	COAL	C-3. BLK. VSHRD
92	210.13	210.15	0.02	65	08237 H	COAL	C-4. BLK. VBRKN
92	210.15	210.22	0.07	65	08237 H	COAL	C-2. BLK. BRKN
92	210.22	210.28	0.06	65	08237 H	COAL	C-4. BLK. BRKN
92	210.28	210.35	0.07	65	08237 H	COAL	C-3. BLK. BRKN
92	210.35	210.39	0.04	65	08237 H	COAL	C-6. BLK. SLD VERY HARD.
92	210.39	210.43	0.04	65	08237 H	COAL	C-4. BLK. BRKN
92	210.43	210.62	0.19	66	08237 H	COAL LOSS	
92	210.62	210.77	0.15	66	08238 H	MUDSTONE	DK. BN. VBRKN
92	210.77	211.02	0.25	66	08238 H	COAL	C-3. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	211.02	211.07	0.05	66	08238	H	COAL	C-4. BLK. VSHRD
93	211.07	211.11	0.04	66	08238	H	COAL LOSS	
93	211.11	211.14	0.03	66	08238	H	MUDSTONE	DK. BN. BRKN
93	211.14	211.22	0.08	66	08238	H	COAL	C-3. BLK. BRKN
93	211.22	211.24	0.02	66	08238	H	COAL	C-5. BLK. BRKN
93	211.24	211.28	0.04	66	08238	H	COAL	C-4. BLK. BRKN
93	211.28	211.36	0.08	66	08238	H	MUDSTONE	DK. BN. BRKN
93	211.36	211.48	0.12	67	08238	H	COAL LOSS	
93	211.48	211.50	0.02	67	08238	H	COAL	C-5. BLK. BRKN
93	211.50	211.51	0.01	67	08238	H	COAL	C-1. BLK. BRKN
93	211.51	211.57	0.06	67	08238	H	COAL	C-4. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	211.57	211.70	0.13	67	08238	H	MUDSTONE	CARB. BLK. VSHRD
93	211.70	211.80	0.10	67	08238	H	COAL	C-2. BLK. VBRKN
93	211.80	211.82	0.02	67	08238	H	COAL	C-3. BLK. VBRKN
93	211.82	212.08	0.26	67	08238	H	COAL LOSS	
93	212.08	212.11	0.03	67	08238	H	MUDSTONE	BLK. VBRKN
93	212.11	212.16	0.05	67	08239	H	COAL	C-3. BLK. BRKN
93	212.16	212.30	0.14	67	08239	H	COAL	C-2. BLK. VBRKN
93	212.30	212.39	0.09	68	08239	H	COAL	C-1. BLK. BRKN
93	212.39	212.44	0.05	68	08239	H	COAL	C-3. BLK. VBRKN
93	212.44	212.56	0.12	68	08239	H	COAL	C-2. BLK. VBRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	212.56	212.70	0.14	68	08239	H	COAL	C-2.BLK.VBRKN
93	212.70	212.82	0.12	68	08239	H	COAL	C-2.BLK.BRKN
94	212.82	212.85	0.03	68	08239	H	COAL	C-2.BLK.BRKN WEAKLY CLEATED.
94	212.85	212.89	0.04	68	08239	H	COAL	C-1.BLK.BRKN MOD CLEATED.
94	212.89	212.96	0.07	68	08239	H	COAL	C-2.BLK.VBRKN
94	212.96	213.01	0.05	68	08239	H	COAL	C-3.BLK.VSHRD
94	213.01	213.25	0.24	68	08239	H	COAL LOSS	
94	213.25	213.30	0.05	69	08239	H	MUDSTONE	CARB.BLK.SHRD
94	213.30	213.33	0.03	69	08239	H	COAL	C-2.BLK.VSHRD
94	213.33	213.51	0.18	69	08239	H	COAL	C-3.BLK.PHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	213.51	213.55	0.04	69	08239	H	COAL	C-3.BLK.VSHRD
94	213.55	214.05	0.50	69	08240	H FLOOR	MUDSTONE	DK.GY.VBRKN CARB NEAR TOP OF UNIT. (UPPER 25CM SAMP LED). H SEAM FLOOR ROCK.
94	214.05	214.47	0.42	70			SILTSTONE	LT-M.GY.MAS.VSHRD CALCAREOUS. QTZ FRACTURE (1CM). BECOMES LESS CALCAREOUS & SSY NEAR LOWER CONTACT.
94	214.47	214.67	0.20	*70			SANDSTONE	SLTY.YFG.MOD.LT-M.GY.VTHNB.SSD.SLD INTERLAM & BEDDED SS (70%)/SLTST (30%). LOAD CASTS (RIGHT MAY UP). CONTORTED BEDDING. POSSIBLY DUE TO SLUMPING. GREAT ES ANOMALOUS. BCA'S (38 DEGREE). SOME MINOR BIOTURBATION.
95	214.67	215.39	0.72	*75			SILTSTONE	SSY.M.GY.SSD.SLD INTERBEDDED SLTST & SS. DISCONTINUOUS BEDS. SSD - TOPS UP INDICATORS.
95	215.39	215.56	0.17	75			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	215.56	216.63	1.07	*76			SANDSTONE	SLTY. MG. PR. LT. GY. VTHNB. BRKN VERY THIN BANDS OF SLTST - MAINLY SS. SOME GRADED BEDDING. CARBONATE VEINS WITH COAL STRINGERS WITHIN. SLTST CLASTS.
95	216.63	216.86	0.23	*62			SANDSTONE	SLTY. MG. PR. LT. GY. VTHNB. BRKN AS ABOVE. ROUNDED CLASTS.
96	216.86	218.78	1.92	*61			SANDSTONE	SLTY. CG. PR. LT. GY. VTHNB. SLD AS ABOVE. INCREASE OF CLASTS - ROUNDED.
96	218.78	218.95	0.17	64			SANDSTONE	SLTY. MG. M. GY. VTHNB. SHRD VERY SHEARED - LISTRIC SURFACES. CARBONATE VEINS. FRACTURE - DISPLACEMENT. CHECKED UP.
97	218.95	219.78	0.83	*66			SANDSTONE	SLTY. MG. M. GY. VTHNB. SHRD AS ABOVE.
97	219.78	220.93	1.15	*70			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN INTERBEDDED SLTST & SS. SHEAR ZONE - LISTRIC SURFACES. ODD CARBONATE VEIN.
97	220.93	221.10	0.17	69			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88015

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
98	221.10	221.81	0.71	*68			SANDSTONE	SLTY. FG. LT. GY. VTHNB. SLD INTERBEDDED SS & SLTST - MAINLY SS BEDS FECAL PELLETS THROUGHOUT. SHEAR SURFACES. ODD ALSO CONTINUOUS BEDS.
98	221.81	222.74	0.93	*76			SANDSTONE	SLTY. FG. MOD. LT. GY. LAM. BRKN MAINLY SS WITH LAMINATED BEDS OF SLTST. FECAL PELLETS. SHEAR SURFACES. VERY SM ALL MUD RIP-UPS. END OF HOLE. TD = 222.74M.

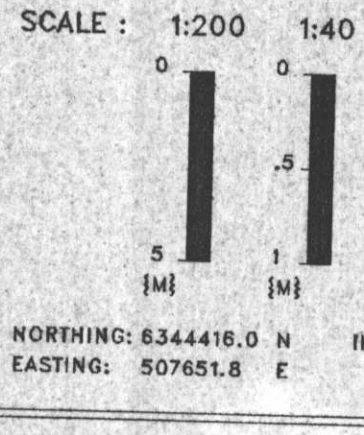
* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88015

GEOLOGIST : ETMANSKI

DATE : FEB 21/89

DRAWING NO. :



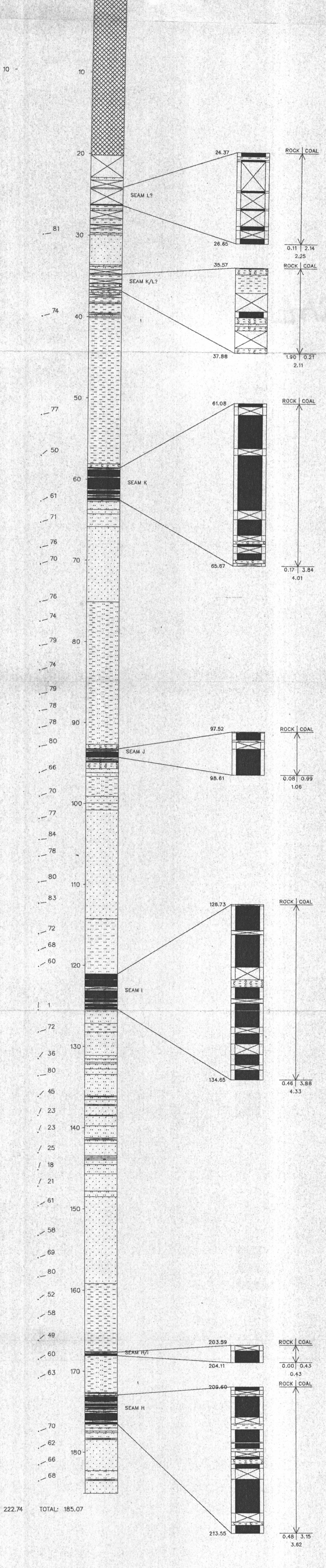
NORTHING: 6344416.0 N
 EASTING: 507651.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 222.74

TOTAL: 185.07

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: **KPNLRDDH88015**
 Log Date: 88-06-29
 Company: CENTURY
 Geologist: ETMANSKI

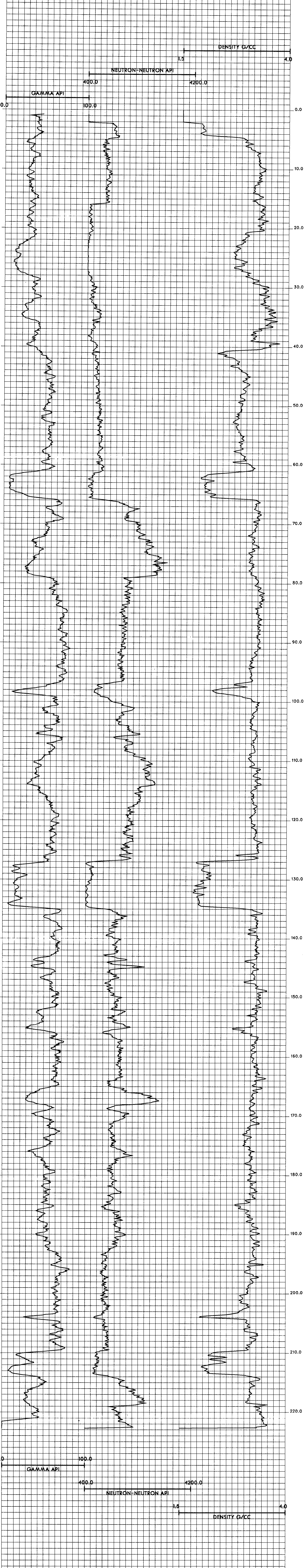
Province: BC Northing: 6344420.00 Lat: 571441
 Zone: 9 Easting: 507652.00 Long: 1285224
 Measuring Point: GROUND LEVEL Elevation: 1558.9

Scale: 1 to 200.0
 Depth Range: 0.0 to 227.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS
 2.

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88016

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88016

DATE - 02/15/89

- HISTORY -

START DATE - 06/28/88
END DATE - 06/30/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - HEARN

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - SEAMS H & I INTERSECTED.

- LOCATION -

PROVINCE - BC
ELEVATION - 1700.80

ZONE - 9
NORTHING - 6343552.34
EASTING - 506348.64

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571413
LONGITUDE - 1285341

- ORIENTATION -

LENGTH - 103.40

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-016

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

I



5.19 m

H

5.04 m

NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.66	3.66	77		OVERBURDEN	CASING DEPTH.
1	3.66	3.80	0.14	77		SANDSTONE	MG. MEL. LT-M. GY. SLD MUDST. MISPS. WEATHERED. VERTICLE FAULT.
1	3.80	4.51	0.71	*77		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN MUDDY SLTST. SLTST. FG SS. & MUDST LAMEL LAE. DISSEMINATED PYRITE, BURROWS, DEMATERING.
1	4.51	5.63	1.12	77		SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN LAMELLAE AS ABOVE. RIP-UP IN CENTER UNIT.
2	5.63	7.56	1.93	76		SILTSTONE	M-DK. GY. LAM. SSD. BRKN LAMELLAE AS ABOVE. LOAD CASTS INDICATE TOPS UP.
3	7.56	9.14	1.58	75		MUDSTONE	SLTY. M-DK. GY. BRKN DISSEMINATED PYRITE. SUBTLE LAMELLAE TH ROUGHOUT WITH OBVIOUS SLTST LAMELLAE IN CENTER UNIT. LOAD CAST INDICATE TOPS U P. DEMATERING AT BASAL UNIT.
3	9.14	9.60	0.46	74		SILTSTONE	M-DK. GY. LAM. SSD. BRKN MUDST LAMELLAE. DEMATERING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	9.60	9.75	0.15	74		SILTSTONE	M-DK. GY. LAM. SSD. SLD ARGILLACEOUS FRACTURE FILL. MUDDY LAMEL LAE. BIOTR.
4	9.75	10.35	0.60	73		MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN LOAD CAST INDICATE TOPS UP.
4	10.35	10.96	0.61	*72		MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN SUBTLE MUDDY LAMELLAE THROUGHOUT UNIT. 2CM BAND OF FINELY LAMINATED MUDST AND QTZ AT BASE.
4	10.96	11.68	0.72	73		MUDSTONE	SLTY. M-DK. GY. SSD. BRKN SLTST RIP-UP AT TOP OF UNIT. TWIST-OFF AT TOP OF UNIT: POSSIBLE CORE LOSS. 2CM BAND OF QTZ.
5	11.68	12.00	0.32	74		SILTSTONE	M-DK. GY. LAM. VBRKN MUDDY SLTST. DISSEMINATED PYRITE. ARGIL LACEOUS FRACTURE FILL.
5	12.00	12.09	0.09	75		SILTSTONE	M-DK. GY. LAM. SLD AS ABOVE.
5	12.09	13.61	1.52	76		MUDSTONE	SLTY. M-DK. GY. LAM. SSD. BRKN LOAD CASTS INDICATE TOPS UP. 3CM QTZ & MUDSTONE LAMELLAE IN CENTER OF UNIT WIT H ARGILLACEOUS FRACTURE FILL ON EITHER SIDE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	13.61	14.89	1.28		77		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST. SMALL SCALE FAULT & SMALL SCALE OVERTURNED FOLD IN CENTER OF UNIT. SMALL (RIPPLES?) AT BASE OF UNIT.
6	14.89	15.09	0.20		78		SANDSTONE	VFG.LT-M.GY.LAM.SLD MINOR DEMATERING.
6	15.09	15.57	0.48		79		SILTSTONE	LT-M.GY.LAM.BRKN VFG TO FG SS & MUDST LAMELLAE.
7	15.57	16.66	1.09		80		SILTSTONE	LT-M.GY.LAM.WRMBU.BRKN MUDST & VFG SS LAMELLAE. MINOR X-BDG. DISSEMINATED PYRITE.
7	16.66	17.46	0.80		82		SILTSTONE	LT-M.GY.LAM. MUDDY SLTST WITH MUDST & FG SS LAMELLAE. LOAD CASTS INDICATE TOPS UP. EXTENSIVE SS & BURROWING (15CM) IN CENTER OF SECTION.
8	17.46	19.44	1.98	*	83		SILTSTONE	LT-M.GY.LAM.BIOTR.BRKN MUDDY SLTST WITH MUDST & VFG SS LAMELLAE. FLAME STRUCTURE. WORM BURROWS. DISSEMINATED PYRITE.
9	19.44	19.67	0.23		84		SILTSTONE	LT-M.GY.LAM.BRKN MUDDY SLTST WITH MUDST LAMELLAE. FLAME STRUCTURE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	19.67	19.73	0.06		84		BENTONITE	LT.GY.SLD
9	19.73	19.83	0.10		85		SILTSTONE	LT-M.GY.LAM.BRKN MUDDY SLTST WITH MUDST LAMELLAE.
9	19.83	19.86	0.03		85		BENTONITE	LT.GY.SLD
9	19.86	21.37	1.51	*	86		SILTSTONE	LT-M.GY.LAM.WRMBU.BRKN AS ABOVE. LESS 1CM QTZ VEIN IN CENTER OF UNIT.
10	21.37	22.67	1.30		85		SILTSTONE	M.GY.LAM.SSD.BRKN MUDDY SLTST WITH MUDST LAMELLAE. BURROWS, FLAME STRUCTURES.
10	22.67	22.94	0.27		85		SILTSTONE	M.GY.LAM.SSD.BRKN MUDDY SLTST WITH MUDST LAMELLAE. DISSEMINATED PYRITE. TWIST-OFF; POSSIBLE CORE LOSS.
10	22.94	23.06	0.12		84		SILTSTONE	M.GY.LAM.SSD.BRKN LAMELLAE AS ABOVE.
10	23.06	23.09	0.03		83 10361		BENTONITE	LT-M.GY

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	23.09	23.38	0.29	82		SILTSTONE	LT-M.GY.LAM.SSD.BRKN LAMELLAE AS ABOVE. POSSIBLE TUFFACEOUS VERY THIN BEDS RATHER THAN LT GREY SLTS
11	23.38	23.78	0.40	82		SILTSTONE	LT-M.GY.LAM.SSD.BRKN TUFFITE WITH MUDST LAMELLAE. RIP-UP CLASTS AT BASAL UNIT.
11	23.78	24.25	0.47	81		SILTSTONE	LT.GY.BRKN TUFFITE WITH CARBONATE FRACTURE FILL.
11	24.25	24.56	0.31	80		SILTSTONE	LT.GY.SLD MASSIVE TUFFITE.
11	24.56	24.80	0.24	79		SILTSTONE	LT.GY.BRKN HEAVILY FRACTURED TUFFITE WITH QTZ & CARBONATE INFILL.
11	24.80	25.52	0.72	79		SILTSTONE	LT.GY.SSD.BRKN FEW MUDST WISPS IN TUFFITE UNIT.
12	25.52	25.72	0.20	78		SILTSTONE	LT.GY.SLD FINE SLTST WISPS IN TUFFITE.
12	25.72	27.66	1.94	*77		SILTSTONE	LT.GY.SLD BANDS OF VERY THIN MUDST LAMELLAE; (LAMINATIONS HAVE WAVE LIKE FORM) IN TUFFITE. DISSEMINATED PYRITE NEAR BASAL UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	27.66	28.49	0.83	77		SILTSTONE	LT.GY.BRKN TUFFITE, BEGINNING OF BOX (ABOUT 1/3 FROM BASE OF TUFFITE UNIT) IS ABOUT 15CM OF RIBBED OR CRENULATED SEDIMENT WHICH MAY INDICATE STRESS OR DISTURBANCE CONTEMPORANEOUSLY WITH DEPOSITION. BASAL UNIT HAS MUDST LAMELLAE.
13	28.49	28.77	0.28	77		SILTSTONE	M.GY.VBRKN TUFFACEOUS.
13	28.77	29.23	0.46	77	10360	BENTONITE	M-DK.GY.VBRKN HEAVILY FRACTURED WITH SLTST CLASTS & BENTONITE INFILL.
13	29.23	29.73	0.50	77		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST WITH MUDST LAMELLAE.
14	29.73	31.81	2.08	77		SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE. DISSEMINATED PYRITE. NUCLEATED SPHERICAL PYRITE ABOUT DISSEMINATED PYRITE.
15	31.81	31.98	0.17	77		SILTSTONE	M.GY.LAM.BRKN MUDDY SLTST.
15	31.98	32.09	0.11	77		SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. THIST-OFF; POSSIBLE CORE LOSS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	32.09	32.10	0.01	77		ROCK LOSS	
15	32.10	33.95	1.85	77		SILTSTONE	M. GY. LAM. SSD. BRKN MUDDY SLTST; MUDST LAMELLAE. QUARTZ & A QUA - WHITE SOFT SHEET SILICATE FRACTUR E. INFILL. LOAD CASTS INDICATE TOPS UP.
16	33.95	34.63	0.68	*77		MUDSTONE	SLTY. DK. GY. LAM. SSD. SLD TUFACEOUS LENSES. INTERLAMINATED SLTST AND MUDST. MINOR SHARP FEATURE INDICAT ES TOPS UP. VERY MINOR TALC FRACTURE.
16	34.63	34.72	0.09	77		SILTSTONE	CLYY. M. GY. LAM MUDST INTERLAMS. CALCAREOUS SILTST WITH CALCITE VEINS THROUGHOUT.
16	34.72	35.01	0.29	77	08241 I ROOF	MUDSTONE	DK. GY. BRKN TALCY FRACTURE. SOMENHAT SHEARED IN PLA CES. (LOWER 25CM SAMPLED). I SEAM ROOF ROCK.
16	35.01	35.07	0.06	77	08242 I	COAL	C-3. BLK. VBRKN MUDST INTERLAMS.
16	35.07	35.10	0.03	77	08242 I	COAL	C-3. BLK. VBRKN C-5 AND MUDST FRAGS.
16	35.10	35.79	0.69	77	08242 I	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.79	35.84	0.05	78	08242 I	MUDSTONE	CARB. BLK. VSHRD SOFT, CONSISTENCY OF SHOT.
16	35.84	36.02	0.18	78	08242 I	COAL	C-3. BLK. VBRKN CORE TWIST-OFF AT TOP. POSSIBLE CORE LO SS.
16	36.02	36.09	0.07	78	08242 I	COAL	C-2. BLK. VBRKN
16	36.09	36.14	0.05	78	08242 I	COAL	C-4. BLK. VBRKN
16	36.14	36.70	0.56	78	08242 I	COAL LOSS	
16	36.70	36.81	0.11	78	08242 I	MUDSTONE	DK. GY. VSHRD SOFT, LIKE PHILADELPHIA CREAM CHEESE.
16	36.81	36.92	0.11	78	08242 I	MUDSTONE	DK. GY. BRKN MINOR COAL STRINGERS.
16	36.92	36.97	0.05	78	08242 I	COAL	C-4. BLK. BRKN C-1, C-2, C-4 LAMS.
17	36.97	36.99	0.02	78	08242 I	COAL	C-2. BLK. BRKN C-1 AND C-3 INTERBANDS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	36.99	37.02	0.03	79	08242	I	MUDSTONE	CARB. BLK. BRKN CORE TWIST-OFF AT BASE. POSSIBLE CORE LOSS.
17	37.02	37.18	0.16	79	08243	I	ROCK LOSS	
17	37.18	37.74	0.56	79	08243	I	COAL LOSS	
17	37.74	37.78	0.04	79	08243	I	COAL	C-3. BLK. BRKN
17	37.78	37.87	0.09	79	08243	I	COAL	C-2. BLK. BRKN C-1 AND C-4 INTERLAM.
17	37.87	37.92	0.05	79	08243	I	COAL	C-1. BLK. BRKN
17	37.92	37.95	0.03	79	08243	I	COAL	C-2. BLK. BRKN
17	37.95	38.02	0.07	79	08243	I	COAL	C-1. BLK. BRKN
17	38.02	38.11	0.09	79	08243	I	COAL	C-2. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	38.11	38.14	0.03	79	08243	I	COAL	C-1. BLK. BRKN
17	38.14	38.17	0.03	80	08243	I	COAL	C-2. BLK. BRKN
17	38.17	38.20	0.03	80	08243	I	COAL	C-1. BLK. BRKN
17	38.20	38.22	0.02	80	08243	I	COAL	C-2. BLK. BRKN
17	38.22	38.24	0.02	80	08243	I	MUDSTONE	CARB. BLK. YSHRD SOFT, UNLITHIFIED.
17	38.24	38.26	0.02	80	08243	I	COAL	C-4. BLK. YBRKN
17	38.26	38.32	0.06	80	08243	I	COAL	C-3. BLK. YBRKN
17	38.32	38.34	0.02	80	08243	I	COAL	C-5. BLK. YBRKN
17	38.34	38.42	0.08	80	08243	I	COAL	C-3. BLK. BRKN ABUNDANT C-2 LAMS.
17	38.42	38.44	0.02	80	08243	I	MUDSTONE	CARB. BLK. YSHRD SOFT, UNLITHIFIED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	38.44	38.47	0.03	81	08243	I	COAL	C-5, BLK, BRKN C-1 BANDS PRESENT.
17	38.47	38.64	0.17	81	08243	I	COAL	C-2, BLK, BRKN C-1 BANDS AND C-4 BANDS COMMON.
17	38.64	38.68	0.04	81	08243	I	COAL	C-3, BLK, BRKN C-2 AND C-5 INTERBANDS.
17	38.68	38.71	0.03	81	08243	I	COAL	C-1, BLK, VBRKN
17	38.71	38.73	0.02	81	08243	I	COAL	C-3, BLK, PHRD
17	38.73	38.76	0.03	81	08243	I	COAL	C-1, BLK, VBRKN
17	38.76	38.78	0.02	81	08243	I	COAL	C-2, BLK, VBRKN
17	38.78	38.81	0.03	81	08243	I	COAL	C-1, BLK, VBRKN
17	38.81	40.09	1.28	81	08243	I	COAL LOSS	
17	40.09	40.29	0.20	82	08243	I	COAL	C-4, BLK, PHRD SOFT, UNCONSOLIDATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	40.29	40.32	0.03	82	08244	I FLOOR	MUDSTONE	CARB, BLK, PHRD SOFT, UNCONSOLIDATED.
18	40.32	41.12	0.80	82	08244	I FLOOR	MUDSTONE	BLK, BRKN C-2 PARTICLES DISPERSED. I SEAM FLOOR ROCK.
18	41.12	41.77	0.65	82			MUDSTONE	DK, GY, BRKN EXTREMELY FINE WHITE WISPS IN TOP OF UNIT; TO FINE TO IDENTIFY. FINE COAL STRINGS.
18	41.77	42.12	0.35	*82			SILTSTONE	M-DK, GY, LAM, SSD, SLD MUDST & FG SS LAMELLAE.
18	42.12	42.65	0.53	82			SANDSTONE	MG, LT-M, GY, LAM, BIOTR, BRKN MUDST & SLTST LAMELLAE.
18	42.65	43.10	0.45	82			SANDSTONE	MG, LT-M, GY, SLD MASSIVE, RIP-UPS.
19	43.10	44.77	1.67	82			SANDSTONE	MG, LT-M, GY, BRKN FINING UPWARD SS. LONG VERTICAL CARBONATE FRACTURE VEIN.
19	44.77	45.12	0.35	83			SANDSTONE	MG, LT-M, GY, SLD SUBROUNDED SLTST RIP-UPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	45.12	45.90	0.78	83			SANDSTONE	FG.LT-M.GY.SLD LENTICULAR SLTST RIP-UPS.
20	45.90	46.59	0.69	83			SANDSTONE	MG.LT-M.GY.SLD SUBROUNDED SLTST RIP-UPS.
20	46.59	46.85	0.26	83			SANDSTONE	MG.LT-M.GY.SLD IMBRICATION OF PEBBLES WITH EXTENSIVE P EBBLES & CLASTS. IMBRICATION LINEATION IS 70 DEGREES (TO BCA).
20	46.85	47.29	0.44	83			SANDSTONE	MG.LT-M.GY.LAM.SLD MUDST LAMELLAE, SMALL RIP-UPS.
21	47.29	47.49	0.20	83			SANDSTONE	FG.LT.GY.LAM.SLD MUDST WISPS, RIP-UP CLASTS AT BASAL UNIT T. RIP-UP.
21	47.49	47.62	0.13	84			SANDSTONE	FG.LT-M.GY.VTHNB.SLD VERY THIN MUDST BEDS.
21	47.62	47.93	0.31	84			SANDSTONE	FG.LT-M.GY.LAM.SLD MUDST LAMELLAE, DEWATERING, MINOR RIP-U P. LOAD CASTS INDICATE TOPS UP.
21	47.93	49.41	1.48	*84			SANDSTONE	FG.LT-M.GY.LAM.BRKN AS ABOVE, MINOR SSD, IMBRICATION OF RIP -UP CLASTS AT BASAL UNIT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	49.41	49.61	0.20	84			SANDSTONE	FG.LT-M.GY.LAM.BRKN MUDST LAMELLAE.
22	49.61	50.76	1.15	*85			SILTSTONE	M.GY.LAM.SSD.BRKN MUDST LAMELLAE, GOUGE INFILL AT TOP OF UNIT. HELMINTHOPSIS AT BASE OF UNIT.
22	50.76	51.10	0.34	84			MUDSTONE	M-DK.GY.BRKN DISSEMINATED PYRITE. HELMINTHOPSIS.
22	51.10	51.42	0.32	84			MUDSTONE	M-DK.GY.SLD AS ABOVE.
23	51.42	51.97	0.55	83			MUDSTONE	M-DK.GY.SLD AS ABOVE.
23	51.97	52.94	0.97	83			SANDSTONE	FG.LT-M.GY.BRKN MASSIVE.
23	52.94	53.23	0.29	82			SANDSTONE	FG.M.GY.BIOTR.BRKN DEWATERING AT BASAL, BIOTRB AT TOP.
24	53.23	55.13	1.90	81			SANDSTONE	FG.LT-M.GY.LAM.SSD.BRKN SLTST & MUDST LAMELLAE, LOAD CASTS INDI CATE TOPS UP, BIOTRB AT BASAL & TOP OF UNIT, DEWATERING & BURROWS TOP 1/3, DEW ATERING & RIP-UPS AT CENTER, VERY THIN TO THIN MASSIVE SS BEDS BUT WITH LAMELL AE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	55.13	55.43	0.30	81			SANDSTONE	MG. LT-M. GY. BIOTR. BRKN MUDDY SS.
25	55.43	55.86	0.43	*80			SANDSTONE	FG. LT-M. GY. BRKN AS ABOVE. MUDST WISPS.
25	55.86	57.06	1.20	81			SANDSTONE	FG. M-DK. GY. LAM. SSD. BRKN SLTST AND MUDST LAMELLAE. SHEAR ZONES. SMALL SCALE FAULT (LESS 1CM DISPLACEMENT) AT TOP & CENTER OF UNIT. QTZ FRACTURE FILL. BURROWS AT CENTER OF UNIT.
25	57.06	57.14	0.08	82			SANDSTONE	MG. M. GY. SLD MUDST WISPS.
25	57.14	57.45	0.31	84			SANDSTONE	MG. M. GY. LAM. BRKN MUDST LAMELLAE AT BASAL UNIT GRADE INTO MUDST WISPS AT TOP OF UNIT.
26	57.45	58.84	1.39	*85			SANDSTONE	FG. M. GY. LAM. SLD MUDST LAMELLAE. EXTREMELY THIN WISPS OF WHITE FLECKS (LESS 3MM) IN A FEM. MUDST LAMELLAE (TO SMALL TO IDENTIFY).
26	58.84	59.53	0.69	85			SILTSTONE	M-DK. GY. LAM. BIOTR. BRKN VERY FINE CARBONATE FRACTURE FILL. VBRKN M AT BASE, GRADES INTO BRKN WITH ARGILLACEOUS FRACTURE FILL AT CENTER OF UNIT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	59.53	59.73	0.20	85			SILTSTONE	M-DK. GY. VBRKN QTZ INFILL OF FRACTURE.
27	59.73	59.98	0.25	84			SILTSTONE	M-DK. GY. SLD SHEAR ZONE.
27	59.98	60.12	0.14	84			MUDSTONE	DK. GY. BRKN AS ABOVE.
27	60.12	60.29	0.17	84			MUDSTONE	DK. GY. SLD TWIST-OFF. POSSIBLE CORE LOSS.
27	60.29	60.70	0.41	84			MUDSTONE	DK. GY. BRKN MUDST INTERBEDDED WITH 5-10CM OF MUD.
27	60.70	61.06	0.36	84			MUDSTONE	DK. GY. SLD TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS. SHEAR ZONE AT BASAL UNIT.
27	61.06	61.54	0.48	83			MUDSTONE	DK. GY. BRKN MUDST INTERBEDDED WITH 5-10CM OF MUD.
28	61.54	63.32	1.78	83			MUDSTONE	DK. GY. BRKN DISSEMINATED PYRITE AT TOP OF UNIT. HELMINTHOPSIS AT CENTER OF UNIT AND AT BASE. AQUA BLUE SOFT SHEET SILICATE IN SHEAR ZONE NEAR BASE OF UNIT. SSD AT BASAL UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	63.32	63.64	0.32		83		SILTSTONE	M-DK.GY.LAM.BRKN TWIST-OFF AT TOP OF UNIT; POSSIBLE CORE LOSS.
29	63.64	63.79	0.15		83		SANDSTONE	M-DK.GY.SSD.BRKN MUDDY SS.
29	63.79	64.18	0.39		83		SILTSTONE	M-DK.GY.LAM.BRKN MUDDY SLTST.
29	64.18	64.38	0.20		82		SANDSTONE	M-DK.GY.LAM.SSD.SLD MUDDY SS.
29	64.38	65.06	0.68		82		SANDSTONE	LT-M.GY.LAM.BIOTR.BRKN MUDST LAMELLAE. MINOR RIP-UP & LOAD CAS TS. AT CENTER OF UNIT.
29	65.06	65.76	0.70	*	82		SILTSTONE	M-DK.GY.LAM.SSD LOAD CASTS INDICATE TOPS UP.
30	65.76	66.13	0.37		82		MUDSTONE	DK.GY.BRKN
30	66.13	67.03	0.90	*	81		MUDSTONE	SSY.LT-DK.GY.LAM.WRMBU.BRKN SSD & DISSEMINATED PYRITE IN THIN BED O F FG SS IN CENTER OF UNIT.
30	67.03	67.82	0.79		81		MUDSTONE	DK.GY.BRKN DISSEMINATED PYRITE AT TOP OF UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	67.82	68.62	0.80		80		MUDSTONE	DK.GY.BRKN MASSIVE. PYRITE BLEBS.
31	68.62	68.81	0.19		80		MUDSTONE	SLTY. M-DK.GY.LAM.SSD.SLD
31	68.81	69.07	0.26		79		MUDSTONE	DK.GY.BRKN MASSIVE.
31	69.07	69.87	0.80		79		MUDSTONE	DK.GY.BRKN MASSIVE. PLANT HASH.
32	69.87	71.90	2.03		78		MUDSTONE	DK.GY.BRKN PYRITE BLEBS (2CM) AT TOP OF UNIT. HELM INTHOPSIS IN LOWER HALF OF UNIT. POSSIB LE PYRITE. GASTROPOD (5CM FROM BASE). P LANT HASH THROUGHOUT.
33	71.90	72.11	0.21		78		MUDSTONE	DK.GY.BRKN MASSIVE.
33	72.11	73.93	1.82		77		MUDSTONE	DK.GY.BRKN MASSIVE. 4CM MUD AT TOP OF UNIT. HELMIN THOPSIS AT TOP AND LOWER THIRD OF UNIT. COAL STRINGERS IN LOWER UNIT. PLANT HA SH THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.93	75.07	1.14	77			MUDSTONE	DK.GY.BRKN MASSIVE. PLANT HASH THROUGHOUT. SHEAR Z ONE IN CENTER OF UNIT. COAL STRINGERS ABUNDANT. HELMINTHOPSIS. LOAD CASTS. SSD NEAR BASAL UNIT.
34	75.07	76.02	0.95	*76			MUDSTONE	DK.GY.BRKN HELMINTHOPSIS. PYRITE BLEBS AT TOP OF B ASAL UNIT. PLANT HASH THROUGHOUT. UNIDE NT.FERN. AT 75.29M.
35	76.02	76.42	0.40	76			MUDSTONE	DK.GY.SLD HOMOGENEOUS.
35	76.42	76.44	0.02	76			MUDSTONE	DK.GY SOFT. UNLITHIFIED. FEELS BENTONITIC.
35	76.44	77.49	1.05	76			MUDSTONE	DK.GY.THNB.SLD RARE COAL STRINGERS (<1MM THICK) GETTING MORE ABUNDANT TOWARDS THE BASE. PLANT FRAGMENTS PRESENT.
35	77.49	77.89	0.40	76	08245	H ROOF	MUDSTONE	DK.GY.BRKN ABUNDANT VERY THIN (<1MM) COAL STRINGER S AND COALIFIED PLANT FRAGMENTS. (LOWER 23CM SAMPLED). H SEAM ROOF ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	77.89	77.91	0.02	75	08245	H ROOF	MUDSTONE	CARB.DK.GY.SLD LARGE PYRITE BAND 10-15 MM THICK. H SEA H ROOF ROCK. SAMPLED.
35	77.91	78.04	0.13	75	08246	H	COAL	C-5.BLK.VBRKN CARB MUDST FRAGMENTS PRESENT.
35	78.04	78.08	0.04	75	08246	H	COAL	C-4.BLK.VBRKN
36	78.08	78.11	0.03	75	08246	H	COAL	C-6.BLK.SLD VERY HARD, ABUNDANT QTZ STRINGERS.
36	78.11	78.41	0.30	75	08246	H	MUDSTONE	DK.GY.BRKN POLISHED BROKEN SURFACES - SHEARING.
36	78.41	78.46	0.05	75	08246	H	COAL	C-3.BLK.BRKN MINOR C-2 AND C-4 BANDING.
36	78.46	78.73	0.27	75	08246	H	COAL	C-4.BLK.BRKN
36	78.73	78.77	0.04	75	08246	H	MUDSTONE	CARB.BLK.SLD
36	78.77	78.80	0.03	74	08246	H	COAL	C-4.BLK.SLD
36	78.80	78.92	0.12	74	08246	H	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	78.92	78.96	0.04	74 08246	H	MUDSTONE	CARB. BLK. YBRKN ABUNDANT C-5 AND C-3 STRINGERS.
36	78.96	78.98	0.02	*74 08246	H	MUDSTONE	DK. GY
36	78.98	79.05	0.07	74 08246	H	MUDSTONE	LT. BN. VSHRD SOFT, UNCONSOLIDATED.
36	79.05	79.14	0.09	74 08246	H	COAL	C-3, BLK. YBRKN
36	79.14	79.17	0.03	74 08246	H	COAL	C-2, BLK. BRKN MINOR C-3 BANDS.
36	79.17	79.22	0.05	74 08246	H	COAL	C-4, BLK. SHRD
36	79.22	79.24	0.02	74 08246	H	COAL	C-3, BLK. YBRKN
36	79.24	79.32	0.08	74 08246	H	COAL	C-2, BLK. BRKN ABUNDANT C-1 BANDS. MINOR C-3 BANDS.
36	79.32	79.34	0.02	74 08246	H	COAL	C-3, BLK. YBRKN
36	79.34	79.37	0.03	74 08246	H	COAL	C-2, BLK. YBRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 22

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	79.37	79.51	0.14	74 08246	H	COAL LOSS	
36	79.51	79.53	0.02	74 08246	H	MUDSTONE	CARB. BLK. VSHRD
36	79.53	79.56	0.03	74 08246	H	COAL	C-4, BLK. YBRKN
36	79.56	79.58	0.02	74 08246	H	MUDSTONE	CARB. DK. GY. VSHRD
36	79.58	79.78	0.20	74 08246	H	COAL	C-4, BLK. BRKN MINOR C-3 BANDS.
36	79.78	79.85	0.07	74 08246	H	COAL	C-3, BLK. BRKN MINOR C-4 BANDS.
36	79.85	79.90	0.05	74 08246	H	COAL	C-4, BLK. BRKN
36	79.90	80.07	0.17	74 08246	H	MUDSTONE	M. GY. VSHRD SOFT, UNCONSOLIDATED, TUFFACEOUS TOWARD S THE MIDDLE.
36	80.07	80.11	0.04	74 08246	H	COAL	C-4, BLK. YBRKN

* DENOTES MEASURED BCA

FORM 4000-1

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	80.11	80.22	0.11	74 08246	H	COAL	C-5.BLK.BRKN
37	80.22	80.26	0.04	74 08246	H	COAL	C-4.BLK.BRKN CORE TWIST-OFF AT TOP. POSSIBLE CORE LO SS.
37	80.26	80.30	0.04	74 08246	H	COAL	C-4.BLK.PHRD
37	80.30	80.39	0.09	74 08246	H	COAL LOSS	
37	80.39	80.40	0.01	74 08246	H	MUDSTONE	CARB.BLK.VSHRD SOFT, UNLITHIFIED.
37	80.40	80.49	0.09	74 08246	H	MUDSTONE	CARB.BLK.BRKN ABUNDANT C-5 AND C-4 BANDS 1-2MM THICK.
37	80.49	80.53	0.04	74 08246	H	COAL	C-5.BLK.VBRKN
37	80.53	80.73	0.20	74 08246	H	COAL LOSS	
37	80.73	80.75	0.02	74 08246	H	MUDSTONE	CARB.BLK.VSHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	80.75	80.80	0.05	74 08246	H	COAL	C-2.BLK.BRKN ABUNDANT C-1 BANDS.
37	80.80	80.82	0.02	74 08246	H	COAL	C-1.BLK.BRKN
37	80.82	80.85	0.03	74 08246	H	SILTSTONE	CLYY.M.GY.SLD CALCITE VEINS THROUGHOUT.
37	80.85	80.90	0.05	74 08246	H	MUDSTONE	DK.GY.VSHRD SOFT.
37	80.90	80.93	0.03	74 08246	H	COAL	C-2.BLK.BRKN ABUNDANT C-1 BANDS.
37	80.93	81.00	0.07	74 08246	H	COAL	C-4.BLK.BRKN
37	81.00	81.07	0.07	74 08246	H	MUDSTONE	CARB.BLK.BRKN
37	81.07	81.15	0.08	74 08246	H	COAL	C-5.BLK.BRKN ABUNDANT MUDST INTERLAMS.
37	81.15	81.23	0.08	74 08246	H	MUDSTONE	CARB.BLK.VSHRD SOFT.
37	81.23	81.45	0.22	73 08247	H	COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	81.45	81.51	0.06	73	08247	H	COAL	C-4.BLK.BRKN ABUNDANT C-3 BANDS.
37	81.51	81.53	0.02	73	08247	H	COAL	C-5.BLK.VBRKN
37	81.53	81.60	0.07	73	08247	H	COAL	C-3.BLK.VBRKN ABUNDANT C-2 BANDS.
37	81.60	81.63	0.03	73	08247	H	COAL	C-1.BLK.VBRKN
37	81.63	81.65	0.02	73	08247	H	COAL	C-3.BLK.VBRKN
37	81.65	81.68	0.03	73	08247	H	COAL	C-1.BLK.BRKN
37	81.68	81.76	0.08	73	08247	H	COAL	C-3.BLK.VBRKN
37	81.76	81.78	0.02	73	08247	H	COAL	C-4.BLK.VBRKN
37	81.78	81.96	0.18	73	08247	H	COAL	C-3.BLK.VBRKN
37	81.96	81.98	0.02	73	08247	H	COAL	C-4.BLK.BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	81.98	82.02	0.04	73	08247	H	COAL	C-1.BLK.BRKN
37	82.02	82.04	0.02	73	08247	H	COAL	C-5.BLK.BRKN
37	82.04	82.06	0.02	73	08247	H	COAL	C-4.BLK.BRKN
37	82.06	82.10	0.04	73	08247	H	COAL	C-3.BLK.BRKN
37	82.10	82.12	0.02	73	08247	H	COAL	C-4.BLK.BRKN
37	82.12	82.14	0.02	73	08247	H	COAL	C-2.BLK.VBRKN
37	82.14	82.23	0.09	73	08247	H	COAL	C-3.BLK.VSHRD SOFT.
37	82.23	82.39	0.16	73	08247	H	COAL	C-2.BLK.BRKN ABUNDANT C-3 BANDS.
38	82.39	82.41	0.02	73	08247	H	COAL	C-2.BLK.BRKN ABUNDANT C-3 BANDS.
38	82.41	82.45	0.04	73	08247	H	COAL	C-1.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	82.45	82.47	0.02	73	08247 H	COAL	C-2.BLK.BRKN MINOR C-3 BANDS.
38	82.47	82.65	0.18	73	08247 H	COAL LOSS	
38	82.65	82.68	0.03	73	08247 H	MUDSTONE	SLTY.DK.GY.SLD (INTERVAL IS YBRKN).
38	82.68	82.70	0.02	73	08247 H	COAL	C-5.BLK.VBRKN INTERBANDED C-4 AND CARB.MUDST.
38	82.70	82.72	0.02	73	08247 H	MUDSTONE	CARB.BLK.BRKN PLANT FRAGMENTS PRESENT.
38	82.72	82.75	0.03	73	08247 H	MUDSTONE	DK.GY.VSHRD SOFT, UNLITHIFIED.
38	82.75	82.93	0.18	73	08247 H	COAL LOSS	
38	82.93	82.99	0.06	73	08247 H	COAL	C-3.BLK.VBRKN C-2 BANDS PREVALENT.
38	82.99	83.04	0.05	73	08247 H	COAL	C-1.BLK.BRKN MINOR C-2 BANDS.
38	83.04	83.08	0.04	73	08247 H	COAL	C-2.BLK.BRKN MINOR C-1 BANDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	83.08	83.11	0.03	73	08247 H	COAL	C-4.BLK.BRKN MUDST INTERBEDDED WITH C-3.
38	83.11	83.17	0.06	73	08247 H	COAL	C-3.BLK.BRKN ABUNDANT C-4 BANDS.
38	83.17	83.36	0.19	73	08248 H FLOOR	MUDSTONE	CARB.BLK.LAM.SLD VERY ABUNDANT COAL STRINGERS 1-10MM THICK. H SEAM FLOOR ROCK. SAMPLED.
38	83.36	84.31	0.95	*73	08248 H FLOOR	MUDSTONE	SSY.DK.GY.LAM.SSD.SLD FG SS INTERLAMS. DISSEMINATED PYRITE LEASE NEAR BASE. MINOR THIN (<1MM) COAL STRINGERS AND COALIFIED TREE FRAGMENTS. (UPPER 6CM SAMPLED). H SEAM FLOOR ROCK.
38	84.31	84.34	0.03	76		MUDSTONE	SSY.DK.GY.LAM.SSD.SLD AS ABOVE.
38	84.34	84.65	0.31	80		SANDSTONE	CLYY.VFG.WEL.DK.GY.LAM.SSD.SLD RARE PLANT FRAGMENTS. INTERLAMINATED MUDST AND VFG SS.
39	84.65	85.21	0.56	*83		MUDSTONE	SSY.WEL.DK.GY.LAM.BRKN 1CM PYRITE BAND 11CM FROM TOP OF INTERVAL. 6CM ZONE OF SHEARING WITH CARBONATE VEINING. ABUNDANT COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	85.21	85.92	0.71	*53			SANDSTONE	CLYY.FG.DK.GY.VTHNB.SSD.BRKN BIOTURBATION. RARE CALCITE VEINING. INC REASE OF SS CONCENTRATION TOWARD BASE.
39	85.92	86.42	0.50	*81			SANDSTONE	FG.M.GY.VTHNB.BRKN VERY THIN BEDS OF MUDST AND SLTST. SHEA RED SURFACES. RARE CARBONATE VEINING AL ONG FRACTURES.
39	86.42	86.54	0.12	81			SILTSTONE	SSY.M.GY CARBONATE VEINING. SOME CARBONATE CEMEN T.
40	86.54	86.79	0.25	*81			SANDSTONE	FG.M.GY.LAM.SLD MUDST LAMELLAE.
40	86.79	87.17	0.38	81			SANDSTONE	MG.M.GY.SLD MUDST WISPS.
40	87.17	88.19	1.02	80			SANDSTONE	MG.M.GY.SLD MUDST WISPS WIHT RIP-UPS IN CENTER OF U NIT. 50CM OF COARSE GRAINED SS.
40	88.19	88.31	0.12	80			SANDSTONE	MG.M.GY.LAM.SLD MUDST LAMELLAE.
40	88.31	88.60	0.29	79			SANDSTONE	MG.M.GY.SLD MASSIVE. SMALL FAULT. QTZ INFILL (2MM).

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	88.60	88.66	0.06	79			SANDSTONE	MG.M.GY.LAM.SLD DENATERING. MUDST LAMELLAE.
41	88.66	88.74	0.08	78			SANDSTONE	MG.M.GY.LAM.SLD MUDST LAMELLAE.
41	88.74	88.94	0.20	78			SANDSTONE	MG.M.GY.SLD FEW MUD WISPS.
41	88.94	89.49	0.55	77			SANDSTONE	MG.M.GY.LAM.SLD RIP-UPS AT BASAL UNIT ONLY. 2CM FAULT D ISPLACEMENT.
41	89.49	90.15	0.66	77			SANDSTONE	MG.M.GY.SLD MASSIVE. FAULT CONTINUES AT TOP OF UNIT
41	90.15	90.70	0.55	76			SANDSTONE	MG.M.GY.LAM.SLD MUDST LAMELLAE SPARSE & SEPARATES. LOAD CASTS INDICATE TOPS UP. TWIST-OFF AT T OP OF UNIT. POSSIBLE CORE LOSS.
42	90.70	91.05	0.35	76			SANDSTONE	MG.M.GY.LAM.SLD MUDST LAMELLAE. RIP-UPS UP TO 7CM.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	91.05	91.14	0.09	75		SANDSTONE	CG.M.GY.SLD IMBRICATION OF PEBBLES; SUBROUNDED, UP TO 4CM IN LENGTH, MOSTLY SLTY MUDST. IMBRICATION IS 80 DEGREE TO BCA. BASAL UNIT IS 2CM SLTY MUDST.
42	91.14	91.21	0.07	*75		SANDSTONE	CG.M.GY.LAM.SLD MUDST LAHELLAE.
42	91.21	92.86	1.65	75		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDST LAHELLAE.
42	92.86	93.11	0.25	75		ROCK LOSS	
43	93.11	93.19	0.08	75		SILTSTONE	M-DK.GY.LAM.SSD.SLD MUDST LAHELLAE.
43	93.19	93.78	0.59	75		MUDSTONE	SLTY.M-DK.GY.LAM.SLD HELMINTHOPSIS.
43	93.78	95.13	1.35	75		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST 14CM BAND OF SLTY MUDST IN CENTER OF UNIT.
44	95.13	96.36	1.23	75		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST SNOWFLAKE ZONE. 10CM EXTENSIVE CARBONATE FRACTURE FILL AT CENTER OF UNIT.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	96.36	97.31	0.95	75		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST. HELMINTHOPSIS.
45	97.31	97.63	0.32	75		SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE.
45	97.63	97.91	0.28	75		SILTSTONE	LT-M.GY.LAM.SSD.BRKN GRADES FROM MED GREY TO LT GREY AT TOP. HELMINTHOPSIS.
45	97.91	99.47	1.56	75		MUDSTONE	SLTY.M-DK.GY.LAM.SSD.BRKN HELMINTHOPSIS. PYRITE BLEBS (UP TO 2CM)
46	99.47	99.54	0.07	75		MUDSTONE	SLTY.DK.GY.SLD
46	99.54	101.61	2.07	75		MUDSTONE	DK.GY.SSD.SLD DISSEMINATED PYRITE IN SSD AREAS. BIVALVES.
47	101.61	102.27	0.66	75		MUDSTONE	DK.GY.SSD.SLD AS ABOVE. SHEAR SURFACE. BIVALVES.
47	102.27	102.59	0.32	75		ROCK LOSS	
47	102.59	103.04	0.45	75		MUDSTONE	DK.GY.SSD.SLD AS ABOVE. BIVALVES.

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88016

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	103.04	103.40	0.36	75		ROCK LOSS	END OF HOLE. TD = 103.40M.

* DENOTES MEASURED BCA
NEWPAGE

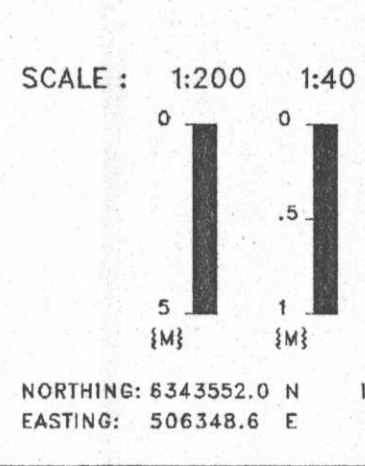
748

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88016

GEOLOGIST : HEARN

DATE : FEB 21/89

DRAWING NO. :

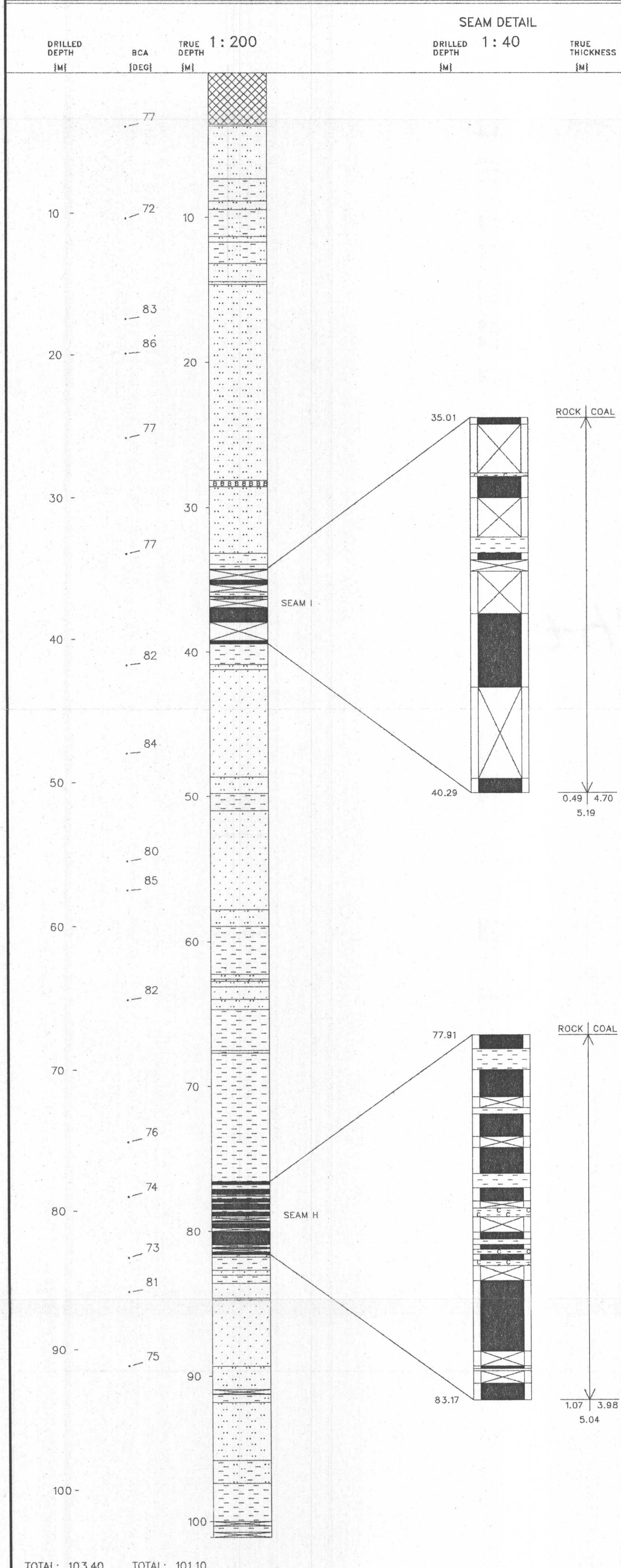


NORTHING: 634352.0 N
 EASTING: 506348.6 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED



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Gulf Canada Resources Limited Coal Division

Geophysical Log

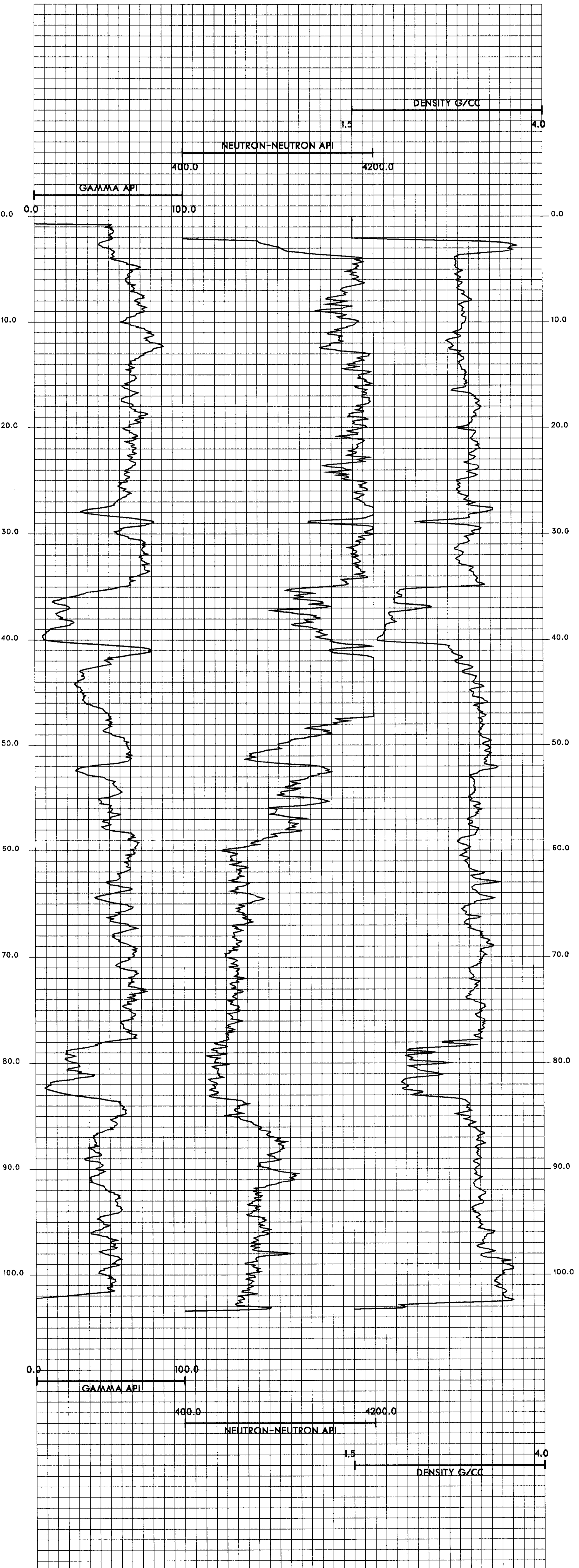
Datasource: **KPNLRDDH88016**
Log Date: 88-06-28
Company: CENTURY
Geologist: HEARN

Province: BC Northing: 6343550.00 Lat: 571413
Zone: 9 Easting: 506349.00 Long: 1285341
Measuring Point: GROUND LEVEL Elevation: 1700.8

Scale: 1 to 200.0
Depth Range: 0.0 to 108.0
True Thickness: NO

Comments:
1. LOGGED THROUGH RODS
2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88017

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88017

DATE - 02/15/89

- HISTORY -

START DATE - 06/28/88

END DATE - 06/30/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTS G AT 24.08, I (OVT) AT 58.80, I AT 79.5
5. POOR RECOVERY OF G DUE TO TOOL PROBLEMS.

- LOCATION -

PROVINCE - BC
ELEVATION - 1716.35

ZONE - 9
NORTHING - 6343811.32
EASTING - 506440.57

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571421
LONGITUDE - 1285336

- ORIENTATION -

LENGTH - 169.94

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-017

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

G

1.38 m

I

8.29 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



GULF CANADA CORPORATION

SEAM DETAIL

COAL DIVISION MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88017 SEAM : 10VT INTERVAL(M) : 58.80 - 59.65 ELEVATION(M) : 1716.4
 GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 25/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG	
1 2 3 4 5 6	58.80 59.65	↑ ↓			88.9	8232	190	0.10 / 0.02 0.12		1.29	55.60	5.03	38.08	0.32	12.30	

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.66	3.66	89		OVERBURDEN	CASING DEPTH.
1	3.66	5.06	1.40	89		ROCK LOSS	
1	5.06	5.69	0.63	89		SANDSTONE	FER. VFG. M. GY. LAM. VBRKN SLTST LAMINATIONS, FE STAINING, NUMEROUS S. THIST-OFFS. POSSIBLE CORE LOSS.
1	5.69	6.09	0.40	89		ROCK LOSS	
1	6.09	6.42	0.33	89		SANDSTONE	FER. VFG. M. GY. LAM. VBRKN AS ABOVE. CORE LOSS.
1	6.42	6.82	0.40	89		ROCK LOSS	
2	6.82	7.95	1.13	*89		SANDSTONE	FER. FG. MEL. LT-M. GY. LAM. SSD. VBRKN AS ABOVE WITH MINOR COALY STRINGERS. MI NOR. MUDST. LAMS.
2	7.95	8.35	0.40	89		ROCK LOSS	
3	8.35	9.55	1.20	*89		SANDSTONE	FER. FG. MEL. LT-M. GY. LAM. VBRKN AS ABOVE. MINOR SMALL SLTST RIP-UPS. PR OBABLE CORE LOSS.
3	9.55	9.95	0.40	89		ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
4	9.95	11.31	1.36	*88		SANDSTONE	FER. FG. MEL. LT-M. GY. LAM. VBRKN AS ABOVE. HIGH ANGLE CALCAREOUS FRACTUR E FILL. RIPUP CLASTS.
5	11.31	11.35	0.04	87		SANDSTONE	FER. FG. MEL. LT-M. GY. LAM. VBRKN AS ABOVE. RIP-UP CLASTS.
5	11.35	11.75	0.40	87		ROCK LOSS	
5	11.75	12.58	0.83	86		SANDSTONE	FER. FG. MEL. LT-M. GY. LAM. SHRD AS ABOVE. POSSIBLE CORE LOSS.
5	12.58	12.98	0.40	85		ROCK LOSS	
6	12.98	13.47	0.49	85		SANDSTONE	VFG. MEL. M. GY. LAM. VBRKN AS ABOVE. RIP-UP CLASTS.
6	13.47	14.37	0.90	*84		SANDSTONE	VFG. MEL. M. GY. LAM. XBDG. BRKN INTERLAMINATED WITH SLTST. FAINT TRUNCA TIONS INDICATE TOPS UP. SILTSTONE INCRE ASES TOWARDS BASE.
7	14.37	14.88	0.51	*74		SANDSTONE	VFG. MEL. M. GY. LAM. BRKN AS ABOVE. GRADES INTO A CLEAN MG SS AT BASE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	14.88	15.56	0.68	75			SANDSTONE	MG. MEL. LT-M. GY. THNB. BRKN. VERY MINOR SLTST LAMS. AT 18CM FROM BASE ARE 2 PEBBLE BANDS 1CM THICK, EACH WITH CHERT AND MUDST. CLASTS UP TO 1.5CM AVG AT 0.5CM.
7	15.56	16.28	0.72	76			CONGLOMERATE	PBL. LT-M. GY. THNB. BRKN. BOTH MUD AND CHERT CLASTS UP TO 2.5CM. AVG IS 1CM. MATRIX IS MG SS. MATRIX SUPPORTED.
8	16.28	16.51	0.23	76			CONGLOMERATE	PBL. LT-M. GY. THNB. BRKN. AS ABOVE.
8	16.51	16.62	0.11	76			SANDSTONE	MG. MEL. M. GY. VTHNB. SHRD. MOSTLY RUBBLE. POSSIBLE CORE LOSS.
8	16.62	17.99	1.37	77			CONGLOMERATE	PBL. LT-M. GY. THNB. BRKN. SAME AS CGL ABOVE. QTZ AND CLAY FRACTURE FILL. MINOR COALY STRINGERS. SHARP BASAL CONTACT.
8	17.99	18.14	0.15	78			MUDSTONE	M-DK. GY. LAM. SSD. BRKN. INTERLAMINATED WITH SLTST.
9	18.14	19.71	1.57	*79			SILTSTONE	M. GY. LAM. SSD. BRKN. INTERLAMINATED MUDSTONE AND SILT. MUDDY AT TOP. SANDY AT BASE. FUS. PLANT FRAGS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	19.71	20.09	0.38	77			SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. SLD. INTERLAMINATED WITH SLTST.
10	20.09	21.65	1.56	*76			SANDSTONE	VFG. MEL. M. GY. LAM. SSD. SLD. AS ABOVE. FECAL PELLETS. X-BEDDING TOPS APPEAR UP.
10	21.65	21.94	0.29	74			SILTSTONE	M. GY. LAM. SSD. VBRKN. NUMEROUS TWIST-OFFS. POSSIBLE CORE LOSS.
10	21.94	22.10	0.16	*74			SILTSTONE	M. GY. LAM. SSD. SLD. AS ABOVE. BECOMES MUDDY AT BASE.
10	22.10	22.21	0.11	73			ROCK LOSS	
11	22.21	22.33	0.12	73			MUDSTONE	PYR. DK. GY. LAM. SHRD. NUMEROUS PLANT FRAGS. DISSEMINATED PYRITE REPLACEMENT. PROBABLE CORE LOSS.
11	22.33	22.49	0.16	72			SANDSTONE	FG. LT. GY. SHRD. NUMEROUS TWIST-OFFS. MOSTLY RUBBLE. TUBE DID NOT LOCK.
11	22.49	22.59	0.10	71			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	22.59	23.05	0.46	70			MUDSTONE	CARB. BLK. VSHRD MOSTLY MUDST TO CARB MUDST. SOME COAL W ITHIN C-3. MANY LISTRIC SURFACES. POSSI BLE COAL SEAM NEAR.
11	23.05	23.75	0.70	67			ROCK LOSS	
11	23.75	24.08	0.33	65			MUDSTONE	DK. GY. SHRD CARBONACEOUS IN PARTS. QTZ VEINING THRO UGHOUT. LISTRIC SURFACES.
11	24.08	24.16	0.08	64	99998	G	COAL	C-5. BLK. VSHRD DIFFICULT TO DISCERN ACTUAL QUALITY.
12	24.16	24.23	0.07	63	99998	G	COAL	C-5. BLK. VSHRD AS ABOVE.
12	24.23	24.30	0.07	63	99998	G	COAL LOSS	
12	24.30	24.70	0.40	62	99998	G	ROCK LOSS	
12	24.70	25.00	0.30	60	99998	G	COAL LOSS	
12	25.00	25.30	0.30	58	99998	G	ROCK LOSS	
12	25.30	25.68	0.38	57	99998	G	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	25.68	27.34	1.66	52			MUDSTONE	PYR. DK. GY. BRKN LISTRIC SURFACES, CALCITE FRACTURE FILL - MINOR COALIFIED PLANT FRAGS AND COALY STRINGERS. PYRITE NEAR BASE.
13	27.34	27.91	0.57	46			MUDSTONE	PYR. DK. GY. BRKN AS ABOVE, BECOMES INCREASINGLY SILTY TO WARDS BASE.
13	27.91	28.34	0.43	44			ROCK LOSS	
13	28.34	29.42	1.08	*40			SILTSTONE	PYR. DK. GY. LAM. SSD. VBRKN INTERLAMINATED WITH VFG SS AND MINOR MU D. LISTRIC SURFACES AND CALCAREOUS FRAC TURE INFILL THROUGHOUT.
13	29.42	29.82	0.40	46			ROCK LOSS	
14	29.82	31.26	1.44	*53			SILTSTONE	PYR. M-DK. GY. LAM. SSD. VBRKN AS ABOVE. QTZ BRECCIA AT BASE.
14	31.26	31.66	0.40	48			ROCK LOSS	
14	31.66	31.98	0.32	46			SILTSTONE	PYR. M-DK. GY. LAM. SSD. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	31.98	32.38	0.40		44		ROCK LOSS	
15	32.38	33.55	1.17	*39			SILTSTONE	M-DK.GY.LAM.SSD.VBRKN AS ABOVE. VERY SHEARED WITH WHITE TALC-LIKE INFILL. TOPS STILL APPEAR TO BE UP
15	33.55	33.95	0.40		26		ROCK LOSS	
15	33.95	34.33	0.38	*20			SILTSTONE	PYR.M-DK.GY.LAM.SSD.BRKN AS ABOVE. BCA'S ARE RAPIDLY SHALLOWING.
15	34.33	34.73	0.40		14		ROCK LOSS	
16	34.73	35.67	0.94	*03			SILTSTONE	PYR.M-DK.GY.LAM.SSD.VBRKN AS ABOVE NEAR VERTICAL.
16	35.67	36.07	0.40		03		ROCK LOSS	
16	36.07	37.04	0.97	*04			SILTSTONE	PYR.M.GY.LAM.SSD.BRKN AS ABOVE.
16	37.04	37.44	0.40		28		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	37.44	39.07	1.63	*63			SILTSTONE	PYR.M.GY.LAM.SSD.VBRKN AS ABOVE. PYRITE THROUGHOUT. BEDS ARE NEAR VERTICAL. SHEARED SURFACES THROUGHOUT.
17	39.07	39.47	0.40		60		ROCK LOSS	
18	39.47	41.21	1.74	57			SILTSTONE	PYR.M.GY.LAM.SSD.VBRKN AS ABOVE. MUDST LAMS INCREASE TOWARDS BASE. MINOR ALY STRINGERS.
18	41.21	41.61	0.40		53		ROCK LOSS	
19	41.61	42.78	1.17	51			MUDSTONE	PYR.DK.GY.LAM.SSD.BRKN INTERLAMINATED WITH SLTST. COALY STRINGERS THROUGHOUT. VERY SOFT AT BASE. STILL NEAR VERTICAL.
19	42.78	43.18	0.40		48		ROCK LOSS	
19	43.18	43.85	0.67		47		MUDSTONE	PYR.DK.GY.LAM.SSD.BRKN AS ABOVE WITH SOME TALC-LIKE FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	52.12	52.52	0.40	20			ROCK LOSS	
24	52.52	53.69	1.17	17			MUDSTONE	M-DK.GY. SHRD QZ BRECCIA THROUGHOUT. BEDDING NEAR VERTICAL. LISTRIC SURFACES BECOMES SLTY AT BASE.
25	53.69	53.97	0.28	15			MUDSTONE	SLTY. M-DK.GY. BRKN AS ABOVE.
25	53.97	54.37	0.40	14			ROCK LOSS	
25	54.37	54.47	0.10	13			MUDSTONE	SLTY. M-DK.GY. VSHRD AS ABOVE. RUBBLE. PROBABLE CORE LOSS.
25	54.47	54.87	0.40	12			ROCK LOSS	
25	54.87	55.41	0.54	*11			MUDSTONE	SLTY. M-DK.GY. YBRKN AS ABOVE.
25	55.41	55.82	0.41	*11			SILTSTONE	M.GY. LAM. BRKN QZ VEINS THROUGHOUT. MINOR COALY QZ S TRINGERS. MINOR MUDST LAMINATIONS.
26	55.82	57.21	1.39	*12			SILTSTONE	M.GY. LAM. SSD. YBRKN AS ABOVE. AMBIGUOUS TOPS.
26	57.21	57.61	0.40	11			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	57.61	57.73	0.12	10	08251	I OVT FLOOR	MUDSTONE	DK. GY. LAM. SHRD POSSIBLE CORE LOSS. (LOWER 8CM SAMPLED) . I (OVT) FLOOR ROCK.
27	57.73	58.13	0.40	10	08251	I OVT FLOOR	ROCK LOSS	
27	58.13	58.30	0.17	10	08251	I OVT FLOOR	MUDSTONE	CARB. DK. GY. VSHRD NUMEROUS COALIFIED PLANT FRAGS WITHIN. SAMPLED. I (OVT) FLOOR ROCK.
27	58.30	58.80	0.50	09	08251	I OVT FLOOR	ROCK LOSS	
27	58.80	58.97	0.17	09	08252	I OVT	COAL LOSS	
27	58.97	59.04	0.07	08	08252	I OVT	COAL	C-4. BLK. BRKN
27	59.04	59.08	0.04	08	08252	I OVT	COAL	C-5. BLK. BRKN WITH CARB MUDST AND C-3 LAMS.
27	59.08	59.14	0.06	08	08252	I OVT	MUDSTONE	CARB. BLK. SHRD MINOR COALY PARTINGS.
27	59.14	59.21	0.07	08	08252	I OVT	COAL	C-4. BLK. SLD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	43.85	44.25	0.40	45			ROCK LOSS	
20	44.25	45.52	1.27	43			MUDSTONE	DK.GY.LAM.VBRKN SHEARED SURFACES. THIN COALY BANDS. PLANT FRAGS. NEAR BASE BECOMES VERY SHEARED. RUBBLE.
20	45.52	45.92	0.40	40			ROCK LOSS	
21	45.92	46.13	0.21	39			MUDSTONE	DK.GY.LAM.VSHRD AS ABOVE. POSSIBLE CORE LOSS.
21	46.13	46.53	0.40	38			ROCK LOSS	
21	46.53	46.97	0.44	37			MUDSTONE	DK.GY.LAM.BRKN MINOR SLTST LAMS. QTZ VEINING AND LISTRIC SURFACES. BEDS ARE STILL STEEP.
21	46.97	47.37	0.40	36			ROCK LOSS	
21	47.37	47.65	0.28	34			BRECCIA	MM.VBRKN QTZ BRECCIA. VERY ANGULAR MUDST CLASTS WITHIN.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	47.65	48.05	0.40	33			ROCK LOSS	
21	48.05	48.52	0.47	32			MUDSTONE	DK.GY.BRKN NUMEROUS QTZ VEINS UP TO 1CM THICK THROUGHOUT. LISTRIC SURFACES.
22	48.52	49.33	0.81	30			MUDSTONE	DK.GY.LAM.SSD.SHRD LISTRIC SURFACES THROUGHOUT. POSSIBLE CORE LOSS.
22	49.33	49.73	0.40	28			ROCK LOSS	
22	49.73	50.08	0.35	27			MUDSTONE	DK.GY.LAM.SSD.SHRD AS ABOVE. QTZ VEINS THROUGHOUT.
23	50.08	51.33	1.25	25			MUDSTONE	DK.GY.LAM.SSD.SHRD AS ABOVE. POSSIBLE SCOUR SURFACE INDICATES BEDS OVERTURNED.
23	51.33	51.73	0.40	22			ROCK LOSS	
24	51.73	52.12	0.39	21			MUDSTONE	M-DK.GY.VBRKN NUMEROUS QTZ VEINS AND LISTRIC SURFACES. WHITE SOAPY CLAY FRACTURE FILL.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	59.21	59.30	0.09	08	08252	I QVT	MUDSTONE	CARB. BLK. SHRD
27	59.30	59.42	0.12	08	08252	I QVT	COAL	C-5. BLK. BRKN MINOR CALCITE WITHIN.
27	59.42	59.56	0.14	08	08252	I QVT	COAL	C-6. BLK. BRKN HAS BRECCIATED APPEARANCE FAIRLY HEAVY AND HARD.
27	59.56	59.65	0.09	08	08252	I QVT	COAL LOSS	
27	59.65	59.74	0.09	08	08253	I QVT ROOF	MUDSTONE	CLYY. BN. VSHRD VERY SOFT AND UNCONSOLIDATED. I (QVT) R OOF ROCK. SAMPLED.
27	59.74	60.58	0.84	07	08253	I QVT ROOF	SILTSTONE	LT. GY. LAM. BRKN MINOR BANDS OF BENTONITE. APPEARS TO BE TUFFITE ABOVE I. I (QVT) ROOF ROCK. (U PPER 16CM SAMPLED).
28	60.58	62.38	1.80	*05	08299		SILTSTONE	LT. GY. LAM. BRKN VERY FRACTURED WITH WHITE SOAPY TALC-LI KE INFILL LOOKS SOMEWHAT LIKE TUFFITE. MINOR LAMINATED MUDST.

* DENOTES MEASURED BCA

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PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	62.38	62.73	0.35	06			ROCK LOSS	
29	62.73	64.26	1.53	*07			SILTSTONE	LT. GY. LAM. VBRKN AS ABOVE. PROBABLE CORE LOSS.
29	64.26	64.71	0.45	16			ROCK LOSS	
30	64.71	65.12	0.41	*20			SILTSTONE	LT. GY. LAM. VBRKN AS ABOVE. CORE LOSS.
30	65.12	66.49	1.37	*21			SILTSTONE	LT. GY. LAM. BRKN AS ABOVE. TOPS ARE NOT DISCERNABLE, CAL CITE VEINS.
31	66.49	67.85	1.36	*38			SILTSTONE	LT. GY. LAM. BRKN AS ABOVE WITH CALCITE AND QTZ VEINS & S TRINGERS.
31	67.85	68.02	0.17	40			SILTSTONE	LT. GY. LAM. BRKN AS ABOVE.
31	68.02	68.37	0.35	41			ROCK LOSS	
32	68.37	69.22	0.85	42			SILTSTONE	LT. GY. LAM. VBRKN AS ABOVE. SHEARED IN SPOTS. CALCAREOUS & QTZ FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	69.22	69.57	0.35	44			ROCK LOSS	
32	69.57	69.95	0.38	*45			SILTSTONE	LT.GY.LAM.VBRKN AS ABOVE.
32	69.95	70.30	0.35	50			ROCK LOSS	
33	70.30	70.38	0.08	53			SILTSTONE	LT.GY.LAM.SHRD AS ABOVE. CORE LOSS.
33	70.38	70.73	0.35	56			ROCK LOSS	
33	70.73	71.90	1.17	*67			SILTSTONE	LT.GY.LAM.VBRKN AS ABOVE.
33	71.90	72.05	0.15	65			ROCK LOSS	
33	72.05	72.15	0.10	64			SILTSTONE	LT.GY.LAM.SHRD AS ABOVE. POSSIBLE CORE LOSS.
33	72.15	72.41	0.26	64			ROCK LOSS	
33	72.41	72.50	0.09	63			SILTSTONE	LT.GY.LAM.SHRD AS ABOVE. POSSIBLE CORE LOSS.
33	72.50	72.90	0.40	62			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	72.90	73.65	0.75	*60			SILTSTONE	LT.GY.LAM.SSD.VBRKN AS ABOVE.
34	73.65	74.46	0.81	64			SILTSTONE	LT.GY.LAM.BRKN AS ABOVE. BECOMES LESS BRECCIATED NEAR BASE. MINOR BENTONITE LAMS WITHIN.
34	74.46	74.55	0.09	67	10355		BENTONITE	LT.GY.SLD SOFT AND WAXY. SAMPLED.
34	74.55	74.61	0.06	67			SILTSTONE	DK.GY.LAM.SLD
35	74.61	74.84	0.23	*68			SILTSTONE	M-DK.GY.LAM.SLD MINOR VFG SS LAMS.
35	74.84	75.07	0.23	68			ROCK LOSS	
35	75.07	75.49	0.42	*69			SILTSTONE	M-DK.GY.LAM.VBRKN AS ABOVE. MINOR CALCAREOUS STRINGERS.
35	75.49	75.69	0.20	68			ROCK LOSS	
35	75.69	76.46	0.77	66			SILTSTONE	M-DK.GY.LAM.VBRKN UNCONSOLIDATED DK BROWN CLAY WITHIN. NU MEROUS QTZ AND CALCITE VEINS THROUGHOUT UP TO 3CM THICK. LITRIFIC SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	76.46	77.13	0.67	63			ROCK LOSS	
36	77.13	77.83	0.70	*60			SILTSTONE	DK.GY.LAM.VBRKN LYSTRIC SURFACES. MINOR VFG SS LAMS.
36	77.83	78.03	0.20	60			ROCK LOSS	
36	78.03	78.74	0.71	*60			SILTSTONE	DK.GY.LAM.BRKN AS ABOVE.
37	78.74	79.19	0.45	60	08254	I ROOF	SILTSTONE	DK.GY.LAM.VBRKN LYSTRIC AND SHEAR SURFACES LOOKS SOMEHW AT LIKE TUFFITE. (LOWER 9CM SAMPLED). I SEAM ROOF ROCK.
37	79.19	79.39	0.20	60			ROCK LOSS	
37	79.39	79.55	0.16	60	08254	I ROOF	MUDSTONE	DK.GY.LAM.VBRKN PLANT FRAGS THROUGHOUT. I SEAM ROOF ROC K. SAMPLED.
37	79.55	79.71	0.16	60	08255	I	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	79.71	79.78	0.07	60	08255	I	COAL	C-2.BLK.VBRKN
37	79.78	79.97	0.19	60	08255	I	COAL	C-3.BLK.SHRD DIFFICULT TO DISCERN ACTUAL QUALITY. C- 1 PIECES WITH CARB.MUDST IN PLACES.
37	79.97	81.30	1.33	60	08255	I	COAL LOSS	
37	81.30	81.51	0.21	61	08255	I	MUDSTONE	CARB.BLK.VBRKN SHEAR SURFACES THROUGHOUT.
37	81.51	81.54	0.03	61	08255	I	COAL	C-4.BLK.SHRD
37	81.54	82.09	0.55	61	08255	I	COAL LOSS	
37	82.09	82.20	0.11	61	08255	I	COAL	C-3.BLK.VBRKN
37	82.20	82.38	0.18	61	08255	I	COAL	C-3.BLK.SHRD PREDOMINANTLY C-3 WITH BOTH CARB MUDST AND C-1 BANDS <1CM THICK.
38	82.38	82.66	0.28	61	08255	I	COAL	C-3.BLK.VSHRD VERY SMALL CM CHUNKS WITHIN.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	82.66	82.82	0.16	61	08255	I	COAL	C-4. BLK. VSHRD
38	82.82	82.90	0.08	61	08255	I	COAL	C-5. BLK. VSHRD
38	82.90	83.97	1.07	61	08255	I	COAL LOSS	
38	83.97	84.04	0.07	61	08255	I	COAL	C-2. BLK. VSHRD
38	84.04	84.36	0.32	61	08255	I	COAL	C-3. BLK. VSHRD WITH MINOR C-1 BANDS.
38	84.36	84.63	0.27	61	08255	I	COAL LOSS	
38	84.63	84.77	0.14	61	08255	I	COAL	C-5. BLK. VSHRD MOSTLY POWDER.
38	84.77	84.81	0.04	61	08255	I	MUDSTONE	CARB. BLK. VSHRD
38	84.81	85.01	0.20	61	08255	I	COAL LOSS	
38	85.01	85.67	0.66	61	08256	I	COAL	C-2. BLK. VSHRD PREDOMINANTLY C-2 WITH C-1 AND C-3.
39	85.67	85.74	0.07	61	08256	I	COAL	C-2. BLK. VSHRD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	85.74	85.77	0.03	61	08256	I	COAL	C-6. BLK. VBRKN
39	85.77	85.84	0.07	61	08256	I	COAL	C-2. BLK. SHRD
39	85.84	85.88	0.04	61	08256	I	COAL	C-4. BLK. BRKN
39	85.88	86.04	0.16	61	08256	I	COAL	C-2. BLK. VSHRD
39	86.04	88.29	2.25	62	08256	I	COAL LOSS	
39	88.29	88.37	0.08	62	08256	I	COAL	C-1. BLK. VBRKN GOOD CLEAT AND CONCOIDAL FRACTURES.
39	88.37	88.48	0.11	62	08256	I	COAL	C-1. BLK. VBRKN AS ABOVE.
39	88.48	88.60	0.12	62	08256	I	COAL	C-2. BLK. VSHRD C-1 WITHIN.
39	88.60	88.88	0.28	62	08256	I	COAL	C-1. BLK. BRKN
39	88.88	88.99	0.11	62	08256	I	COAL	C-2. BLK. SHRD MINOR C-1 AND CARB. MUDSTONE WITHIN.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	88.99	89.03	0.04	62	08256	I	COAL	C-3.BLK.SHRD
39	89.03	89.51	0.48	62	08257	I FLOOR	MUDSTONE	DK.GY.SLD PLANT FRAGS THROUGHOUT. NUMEROUS VERY SMALL COALY QTZ STRINGERS. (UPPER 25CM SAMPLED). I SEAM FLOOR ROCK.
40	89.51	90.11	0.60	*62			MUDSTONE	DK.GY.LAM.SSD.BRKN SLTST LAMINATIONS. HIGH ANGLE FRACTURES ARE FILLED WITH WHITE SOAPY MATERIAL. LISTRIC SURFACES. SLICKENSIDES. TOPS APP EAR UP.
40	90.11	90.18	0.07	61			MUDSTONE	CLYY.M.BN.SLD UNCONSOLIDATED BROWN CLAY.
40	90.18	90.69	0.51	59			SILTSTONE	M.GY.LAM.SSD.SLD INTERLAMINATED WITH LT.GREY VFG.SS. QTZ STRINGERS AT BASE. GRADES INTO SS AT BASE. FUS. LISTRIC SURFACES.
40	90.69	91.37	0.68	*57			SANDSTONE	FG.MEL.LT.GY.VTHNB.SSD.BRKN MINOR SLTST LAMINATIONS, HIGH ANGLE FRACTURES.
41	91.37	92.33	0.96	58			SANDSTONE	FG.MEL.LT.GY.VTHNB.SSD.BRKN AS ABOVE. SLICKENSIDES. TOPS ARE UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	92.33	93.22	0.89	59			SANDSTONE	MG.MEL.LT.GY.VTHNB.SSD.SLD AS ABOVE.
42	93.22	93.70	0.48	60			SANDSTONE	MG.MEL.LT.GY.VTHNB.SLD MINOR SLTST LAMS. RIP-UPS AND CALCAREOUS FILLED FRACTURES.
42	93.70	94.10	0.40	60			ROCK LOSS	
42	94.10	94.20	0.10	60			SANDSTONE	MG.MEL.LT.GY.VTHNB.VBRKN TWIST-OFFS. POSSIBLE CORE LOSS.
42	94.20	94.60	0.40	61			ROCK LOSS	
42	94.60	95.17	0.57	61			SANDSTONE	MG.MEL.LT.GY.VTHNB.SLD MINOR SLTST LAMS. QTZ VEINS. RIP-UP CLASTS.
42	95.17	95.57	0.40	62			ROCK LOSS	
42	95.57	95.72	0.15	62			SANDSTONE	MG.MEL.LT.GY.VTHNB.VBRKN AS ABOVE. CORE LOSS. RIP-UP CLASTS.
42	95.72	96.12	0.40	62			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	96.12	96.64	0.52	*63			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.BRKN MINOR SLTST AND VFG SS LAMS. TOPS ARE UP.
43	96.64	97.12	0.48	64			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE.
43	97.12	98.16	1.04	*65			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. TOPS ARE UP.
43	98.16	98.39	0.23	63			SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. SOME TALCY SURFACES.
43	98.39	98.59	0.20	62			ROCK LOSS	
44	98.59	99.25	0.66	*60			SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. SLICKENSIDES.
44	99.25	99.81	0.56	59			SILTSTONE	LT-M.GY.LAM.SSD.BRKN AS ABOVE. GRADES INTO INTERLAMINATED SLTST AND MUDST AT TOP. AT 15CM IS A 5CM QTZ VEIN.
44	99.81	100.54	0.73	57			MUDSTONE	DK.GY.LAM.SSD.SLD INTERLAMINATED WITH SLTST. HELMINTHOPSI S. TOPS ARE UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	100.54	101.53	0.99	55			MUDSTONE	DK.GY.LAM.SSD.SLD GRADES INTO INTERLAMINATED SLTST AND VFG SS AT BASE.
45	101.53	102.47	0.94	53			SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BRKN HIGH SILT CONTENT AT TOP BECOMING MUCH LESS AT BASE. SOFT CALCAREOUS FRACTURE FILL. LISTRIC SURFACES.
46	102.47	102.86	0.39	52			SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.BRKN INTERLAMINATED WITH SLTST. NUMEROUS BURROWS. TOPS ARE UP.
46	102.86	104.15	1.29	*50			SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.BRKN AS ABOVE. NUMEROUS AT BASE ARE TWO 3-5C M. QTZ AND CALCITE VEINS.
47	104.15	105.57	1.42	55			SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.BRKN AS ABOVE.
48	105.57	107.12	1.55	*61			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. NUMEROUS QTZ VEINS WITH MINOR CALCITE. TOPS ARE UP. PLANT FRAGS.
48	107.12	107.32	0.20	64			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
49	107.32	107.78	0.46	*65		SANDSTONE	FG.MEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. NUMEROUS QTZ VEINS TOPS UP.
49	107.78	108.18	0.40	63		ROCK LOSS	
49	108.18	109.09	0.91	60		SANDSTONE	FG.MEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. QTZ BRECCIA IN PARTS. POSSIBLE CORE LOSS. LISTRIC SURFACES THROUGHOUT.
49	109.09	109.49	0.40	57		ROCK LOSS	
50	109.49	110.47	0.98	54		SANDSTONE	FG.MEL.LT-M.GY.VTHNB.SSD.VBRKN AS ABOVE. QTZ BRECCIA WITH SOME CALCITE THROUGHOUT. ALSO SOFT LIGHT GREEN MINERAL IN FRACTURES. GYPSUM?
50	110.47	111.10	0.63	50		MUDSTONE	DK.GY.LAM.BRKN NUMEROUS QTZ & CALCITE FILLED FRACTURES. LISTRIC SURFACES.
51	111.10	111.14	0.04	48		MUDSTONE	DK.GY.LAM.BRKN AS ABOVE. QUICKLY GRADES INTO SS AT BASE.
51	111.14	111.34	0.20	48		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
51	111.34	112.82	1.48	*44		SANDSTONE	FG.MEL.LT-M.GY.VTHNB.HRMBU.VBRKN MINOR SILT LAMS. SILTY IN PARTS. NUMEROUS WORM BURROWS TOPS UP. MANY FRACTURES ARE FILLED WITH QTZ, CALCITE AND CLAY.
51	112.82	113.02	0.20	45		ROCK LOSS	
52	113.02	113.08	0.06	45		SANDSTONE	FG.MEL.LT-M.GY.VTHNB.HRMBU.VBRKN AS ABOVE.
52	113.08	113.48	0.40	45		ROCK LOSS	
52	113.48	114.43	0.95	*46		SANDSTONE	FG.MEL.LT-M.GY.VTHNB.VBRKN VERY BROKEN AND FRACTURED. FRACTURE FILLS AS ABOVE. MOSTLY RUBBLE. PROBABLE CORE LOSS.
52	114.43	114.83	0.40	46		ROCK LOSS	
53	114.83	115.17	0.34	45		SANDSTONE	FG.MEL.LT-M.GY.VTHNB.VBRKN AS ABOVE.
53	115.17	115.37	0.20	45		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	115.37	116.42	1.05	*45		SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. YBRKN SLTST LAMS VERY FRACTURED. AS ABOVE.
53	116.42	116.62	0.20	41		ROCK LOSS	
54	116.62	117.55	0.93	*38		SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. YBRKN AS ABOVE, GRADES TO PREDOMINANTLY LAMINATED. SLTST AT BASE.
54	117.55	117.75	0.20	50		ROCK LOSS	
54	117.75	118.19	0.44	*57		SILTSTONE	M. GY. LAM. SSD. YBRKN INTERLAMINATED WITH VFG SS. FRACTURE FILL AS ABOVE.
54	118.19	118.59	0.40	54		ROCK LOSS	
55	118.59	119.61	1.02	*50		SILTSTONE	M. GY. LAM. SSD. BRKN LAMINATED SILT AND VFG SS AS ABOVE. FRACTURE FILL AS ABOVE. WITHIN ARE MINOR T MIST-OFFS AND RUBBLE. POSSIBLE CORE LOSS.
55	119.61	120.01	0.40	49		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	120.01	120.36	0.35	49		SILTSTONE	M. GY. LAM. SSD. SHRD AS ABOVE. POSSIBLE CORE LOSS.
55	120.36	120.76	0.40	49		ROCK LOSS	
56	120.76	121.14	0.38	49		SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE.
56	121.14	122.21	1.07	*48		SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. LIGHT GREEN FRACTURE FILL. LISTRIC SURFACES. BECOMES VERY SANDY AND CLAYEY IN PARTS.
57	122.21	123.48	1.27	*50		SILTSTONE	M. GY. LAM. SSD. BRKN AS ABOVE. LISTRIC SURFACES. MUD FILLED FRACTURES. TOPS ARE UP. INCREASING MUD CONTENT TOWARDS BASE.
57	123.48	123.91	0.43	41		MUDSTONE	M-DK. GY. LAM. BRKN INTERLAMINATED WITH SLTST. LISTRIC SURFACES THROUGHOUT.
58	123.91	124.56	0.65	*36		MUDSTONE	M-DK. GY. LAM. BRKN AS ABOVE. HELMINTHOPHIS. BCA'S ARE SHALOWING RAPIDLY.
58	124.56	125.63	1.07	*26		MUDSTONE	M-DK. GY. LAM. BRKN AS ABOVE WITH CALCAREOUS VEIN AT BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	125.63	125.77	0.14		25		BRECCIA	WH.VBRKN CONTAINING BOTH QTZ AND CALCITE MUDST T HROUGHOUT.
59	125.77	125.87	0.10		25		BRECCIA	WH.VBRKN AS ABOVE.
59	125.87	126.07	0.20		24		ROCK LOSS	
59	126.07	126.19	0.12	*	24		MUDSTONE	DK.GY.LAM.SSD.SLD SLTST LAMS. TOPS APPEAR UP.
59	126.19	126.57	0.38	*	20		SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE. SHEAR SURFACES AND CALCITE VE INING AT BASE. BECOME SILTY AT BASE.
59	126.57	127.84	1.27	*	06		SANDSTONE	VFG.M.GY.LAM.SSD.BRKN INTERLAM. OF SLTST. NUMEROUS QTZ AND CALCITE VEINS GIVING A BRECCIATED APPEARANCE. TOPS UP.
60	127.84	128.85	1.01		04		SANDSTONE	VFG.M.GY.LAM.SSD.VBRKN AS ABOVE. BEDDING IS VERY WAVY. BRECCIA WITHIN BEDS ARE NEAR VERTICAL.
60	128.85	129.05	0.20		04		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	129.05	129.47	0.42		03		SANDSTONE	VFG.M.GY.LAM.SSD.SLD AS ABOVE.
60	129.47	129.69	0.22		03		SANDSTONE	VFG.M.GY.LAM.SSD.BRKN AS ABOVE. VERY BRECCIATED. SHEARED SURFACES.
61	129.69	129.82	0.13		02		BRECCIA	WH.BRKN NUMEROUS ANGULAR RIP-UP CLASTS.
61	129.82	131.66	1.84	*	01		SILTSTONE	M.GY.LAM.SSD.BRKN INTERLAMINATED WITH VFG SS. FRACTURES FILLED WITH VERY SOFT GREEN MINERAL AND CALCITE. BEDDING IS VERTICAL.
61	131.66	131.86	0.20		01		ROCK LOSS	
62	131.86	132.14	0.28	*	01		SILTSTONE	M.GY.LAM.SSD.VBRKN AS ABOVE.
62	132.14	132.52	0.38	*	11		SANDSTONE	FG.WEL.LY-M.GY.LAM.SSD.BRKN INTERLAMINATED WITH SLTST. BEDDING IS VERY WAVY. MINOR SMALL OFFSET FAULTS. TOPS APPEAR TO STILL BE UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	132.52	133.01	0.49	15			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.YBRKN AS ABOVE. BEDDING APPEARS TO BE NEAR VERTICAL.
62	133.01	133.21	0.20	18			ROCK LOSS	
63	133.21	133.98	0.77	*22			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. 2CM QTZ VEIN WITHIN. TOPS APPAR TO BE UP.
63	133.98	134.56	0.58	*10			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
63	134.56	134.64	0.08	*01			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
63	134.64	135.16	0.52	*01			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. OVERTURNS HERE.
64	135.16	135.33	0.17	*01			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
64	135.33	136.00	0.67	*10			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	136.00	137.07	1.07	*14			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. LOAD CASTS INDICATE BEDS ARE OVERTURNED.
65	137.07	137.61	0.54	*15			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD AS ABOVE. OVERTURNED. VERY SILTY.
65	137.61	138.84	1.23	*18			SILTSTONE	M.GY.LAM.SSD.BRKN WITH SS LAMINATIONS. OVERTURNED. SOME LAMINAR SURFACES WITH SOFT LIGHT GREEN MINERAL WITHIN.
66	138.84	140.05	1.21	*21			SILTSTONE	M.GY.LAM.SSD.YBRKN INTERLAMINATED WITH SS. SHEAR SURFACES THROUGHOUT. SOME TWIST-OFFS.
66	140.05	140.25	0.20	19			ROCK LOSS	
66	140.25	140.77	0.52	*18			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. SHEAR SURFACES.
67	140.77	142.64	1.87	*01			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. NUMEROUS SHEARED SURFACES, BEING NEAR VERTICAL. POSSIBLE FOLD.
68	142.64	143.06	0.42	*03			SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	143.06	144.34	1.28	*01			SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE. BEDDING IS VERY WAVEY.
69	144.34	145.51	1.17	*14			SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE. NUMEROUS SHEAR SURFACES. HELMINTHOPSIS THROUGHOUT.
69	145.51	146.12	0.61	*38			SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE WITH MINOR HELMINTHOPSIS AT TO P. LISTRIC SURFACES.
70	146.12	146.93	0.81	*38			SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE. LISTRIC SURFACES. BIOTRB. QTZ VEINING. OVERTURNED.
70	146.93	147.30	0.37	*20			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. WITHIN IS A 14CM ZONE OF BRECCIATION. LISTRIC SURFACES.
70	147.30	148.02	0.72	*01			SILTSTONE	M.GY.LAM.SSD.BRKN QTZ VEINS AND SOFT GREEN MINERAL IN FRACTURES. BEDS ARE VERTICAL.
71	148.02	148.31	0.29	*01			SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE.
71	148.31	149.88	1.57	*18			SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE WITH MINOR QTZ VEINS AND LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	149.88	151.29	1.41	*04			SILTSTONE	M.GY.LAM.SSD.SLD VFG SS LAMINATIONS. SOME BIOTURBATION. NEAR VERTICAL BEDS.
72	151.29	151.76	0.47	05			SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE.
72	151.76	152.16	0.40	05			ROCK LOSS	
72	152.16	152.25	0.09	05			SILTSTONE	M.GY.LAM.SSD.VBRKN MOSTLY RUBBLE WITH SHEARED SURFACES. PROBABLE CORE LOSS.
72	152.25	152.65	0.40	06			ROCK LOSS	
73	152.65	153.18	0.53	*06			SILTSTONE	M.GY.LAM.SSD.SLD AS ABOVE. 2CM QTZ VEIN AT BASE.
73	153.18	153.58	0.40	05			ROCK LOSS	
73	153.58	154.36	0.78	05			SILTSTONE	M.GY.LAM.VBRKN VERY BRECCIATED. 2CM QTZ VEIN PARALLEL TO BEDDING. POSSIBLE CORE LOSS.
73	154.36	154.70	0.34	04			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	154.70	155.06	0.36	04			SILTSTONE	M.GY. LAM. SSD. SLD INTERLAMINATED WITH VFG SS.
74	155.06	155.76	0.70	*03			SILTSTONE	M.GY. LAM. SSD. SLD AS ABOVE.
74	155.76	156.11	0.35	02			SILTSTONE	M.GY. LAM. SSD. YBRKN AS ABOVE.
74	156.11	156.70	0.59	*01			SILTSTONE	M.GY. LAM. SSD. BRKN AS ABOVE. BECOMES SANDY AT BASE. FOLD.
75	156.70	158.34	1.64	*01			SANDSTONE	FG. MEL. LT-M.GY. LAM. SSD. BRKN WITH SLTST LAMS. APPEARS TO BE SLIGHTLY OVERTURNED.
75	158.34	158.59	0.25	01			SANDSTONE	FG. MEL. LY-M.GY. LAM. SSD. BRKN AS ABOVE.
76	158.59	160.47	1.88	*01			SANDSTONE	VFG. MEL. LY-M.GY. THNB. BRKN VERY RARE SLTST LAMS NEAR BASE.
77	160.47	160.81	0.34	*01			SANDSTONE	FG. MEL. LY-M.GY. LAM. WRMBU. BRKN INTERLAMS WITH SLTST.
77	160.81	162.17	1.36	*05			SANDSTONE	FG. MEL. LY-M.GY. LAM. WRMBU. SLD AS ABOVE. BEDS SEEM TO BE UPRIGHT. BECOMING SILTY TOWARDS BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	162.17	163.19	1.02	*04			SILTSTONE	M.GY. LAM. SSD. BRKN INTERLAMINATED WITH VFG SS.
78	163.19	163.49	0.30	03			ROCK LOSS	
78	163.49	163.57	0.08	02			SILTSTONE	M.GY. YSHRD ALMOST POWDERED. NUMEROUS PIECES OF QTZ WITHIN THIST-OFF AT BASE. POSSIBLE CORE LOSS.
78	163.57	163.87	0.30	02			ROCK LOSS	
78	163.87	164.15	0.28	*01			SANDSTONE	FG. MEL. LT-M.GY. LAM. SSD. BRKN SLTST. LAMS. FAIRLY HAZY BEDDING.
78	164.15	164.66	0.51	*02			SANDSTONE	FG. MEL. LT-M.GY. LAM. SSD. SLD AS ABOVE.
79	164.66	166.70	2.04	*04			SANDSTONE	FG. MEL. LT-M.GY. LAM. SSD. BRKN AS ABOVE. WITH MINOR BURROWS. APPEARS TO BE UPRIGHT.
80	166.70	167.18	0.48	04			SANDSTONE	FG. MEL. LT-M.GY. YTHNB. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88017

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	167.18	168.76	1.58	*04		SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. SLD. AS ABOVE.
81	168.76	169.94	1.18	*07		SANDSTONE	FG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE. LOAD CASTS SUGGEST TOPS ARE U P. END OF HOLE. TD = 169.94M.

* DENOTES MEASURED BCA
NEWPAGE

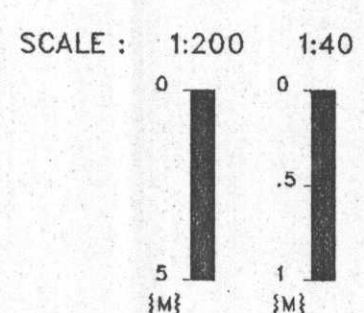
748

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88017

GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :



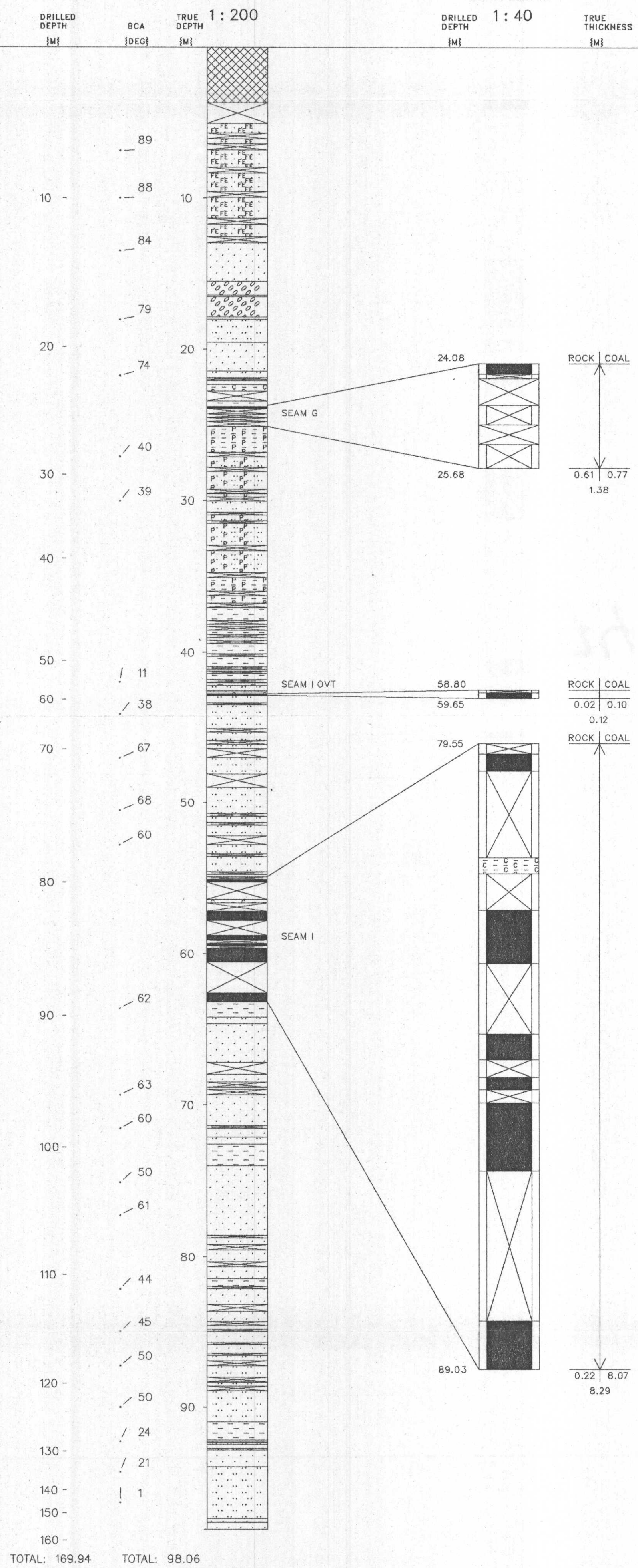
NORTHING: 6343811.0 N
 EASTING: 506440.5 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: **KPNLRDDH88017**

Province: BC Northing: 6343810.00 Lat: 571421

Log Date: 88-06-30

Zone: 9 Easting: 506441.00 Long: 1285336

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1716.3

Geologist: MURRAY

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 174.0

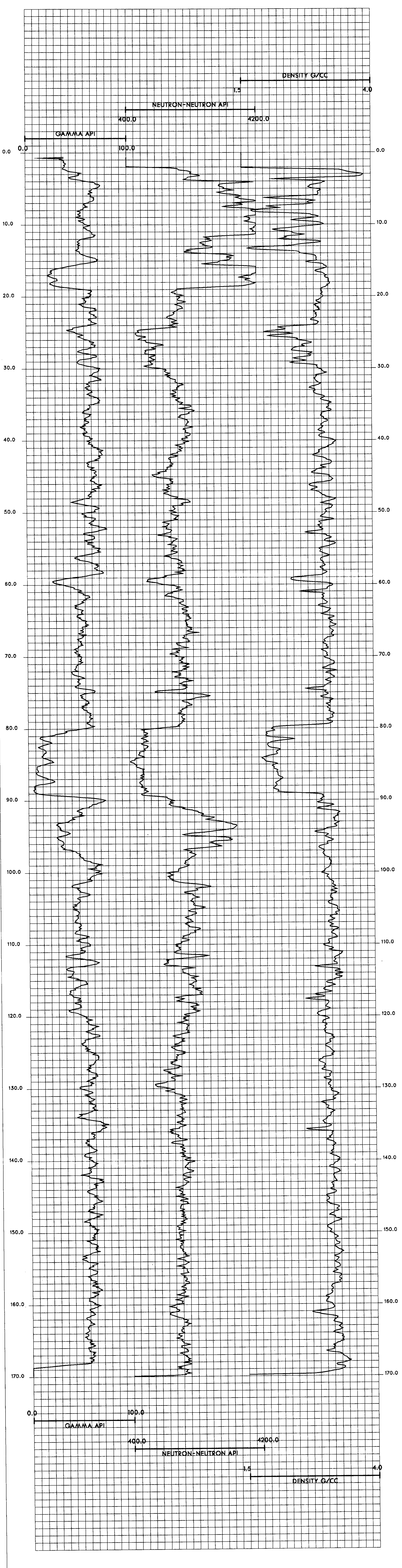
1. LOGGED THROUGH RODS

True Thickness: NO

2.

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88018

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88018

DATE - 02/15/89

- HISTORY -

START DATE - 07/01/88

END DATE - 07/03/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS M, L, K/L, K, J, I, H/I, H. TWO
CASING DEPTHS DUE TO LOST CIRC.

- LOCATION -

PROVINCE - BC
ELEVATION - 1602.71

ZONE - 9
NORTHING - 6344349.25
EASTING - 507385.50

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571439
LONGITUDE - 1285239

- ORIENTATION -

LENGTH - 260.51

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 13.72
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

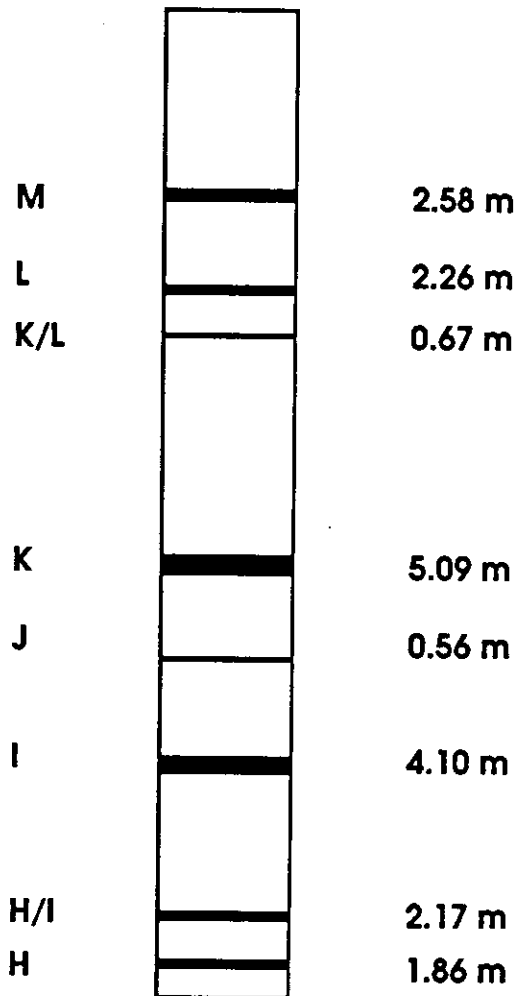
MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-018

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000



GULF CANADA CORPORATION

COAL DIVISION MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDM88018 SEAM : K/L INTERVAL(M) : 85.53 - 86.25 ELEVATION(M) : 1602.7
 GEOLOGIST : KRAUS SCALE: 1:40 DATE : JAN 26/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG	
	85.53	↑		0.30 (0.30)	97.2	8297	107	0.64 / 0.03	0.64 / 0.03	0.94	35.33	7.25	56.48	0.50	21.83	—
	86.25	↓		0.28				0.87	0.87							

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	6.10	6.10		73		OVERBURDEN	THERE ARE 2 CASING DEPTHS. #1 AT 6.10, #2 AT 13.72M. CORE BEGINS AT 6.10M.
1	6.10	7.25	1.15	*	73		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN POSSIBLE CORE LOSS. SLTST LAMS AND LENS ES. IRON STAINING. CALCITE FRACTURE FIL LS.
1	7.25	8.23	0.98		73		ROCK LOSS	
1	8.23	8.87	0.64		73		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE.
2	8.87	9.90	1.03		74		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE.
2	9.90	10.57	0.67		74		ROCK LOSS	
2	10.57	10.75	0.18	*	74		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE.
3	10.75	11.89	1.14		74		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE. WITH 5CM BAND OF BRECCIATED S S (CLAYEY) PARALLEL TO BEDDING.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	11.89	12.11	0.22	*	73		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE, LITHOLOGY.
4	12.11	13.31	1.20	*	70		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE WITH INCREASING SLTST INTERBED DING. LOAD CASTS - TOPS UP.
4	13.31	14.31	1.00		71		ROCK LOSS	
4	14.31	14.65	0.34		72		SANDSTONE	FER.MG.VHEL.S-P.GY.VTHNB.BRKN AS ABOVE.
5	14.65	15.02	0.37		72		SANDSTONE	FER.FG.VHEL.M.GY.VTHNB.SSD.SLD INTERLAM WITH SLTST. IRON STAINING. LOA D CASTS TOPS UP. NRMBUR & FECAL PELLETS - POSSIBLE COAL STRINGER. PLANT FRAGMEN TS ON BEDDING PLANE.
5	15.02	15.38	0.36		73		SANDSTONE	FER.VFG.VHEL.BN.VTHNB.VBRKN AS ABOVE. CORE LOSS. CORE IN PIECES WIT HSOME MUD.
5	15.38	16.08	0.70		73		ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	16.08	16.76	0.68	*74			SANDSTONE	FER. FG. VMEL. LT-DK. GY. YTHNB. SSD VBRKN INTERBEDDED WITH SLTST. LOAD CASTS - TO PS UP. IRON STAINING. WITH CLAY BANDS - 1CM PARALLEL TO BEDDING. SLIGHTLY BIOT RB IN AREAS. CORE LOSS.
5	16.76	17.36	0.60	73			ROCK LOSS	
5	17.36	17.55	0.19	73			SANDSTONE	FER. FG. VMEL. LT-DK. GY. YTHNB. SSD VBRKN AS ABOVE. IRON STAINING. CALCITE VEINS. TOPS UP.
6	17.55	19.56	2.01	*71			SANDSTONE	FER. FG. VMEL. M-DK. GY. YTHNB. SSD. BRKN INTERBEDDED WITH SLTST. SOME MUDST LAMS - SLIGHTLY BIOTRB. FE STAINING. TOPS UP - LOAD CASTS. PLANT MASH FOUND ON BEDD ING.
7	19.56	20.02	0.46	*77			SANDSTONE	SLTY. VFG. VMEL. M-DK. GY. YTHNB. SSD BRKN AS ABOVE. BEDS FINING UPWARDS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	20.02	20.81	0.79	*71			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. YTHNB. SSD. SLD INTERBED WITH VFG SS & MUDST. SOME BIOT RB AND FECAL PELLETS. IRON STAINING POS SIBLE. CORE LOSS. DISSEMINATED PYRITE IN SS. TOPS UP IN LOAD CASTS.
7	20.81	20.90	0.09	72			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. VBRKN MASHED. FE STAINED.
7	20.90	21.43	0.53	72			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. YTHNB. SSD. BRKN MINOR VFG SS BEDS AND MUDST LAMS. FE ST AINING. SOME PYRITE NODULES.
8	21.43	22.72	1.29	*73			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. YTHNB. SSD. BRKN AS ABOVE WITH LOAD CASTS - TOPS UP. BAN DS OF MORE BROKEN CORE WITH MUD BANDS. (<1CM) PARALLEL TO BEDDING. PLANT MASH.
8	22.72	22.87	0.15	74			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. YTHNB. SSD VBRKN AS ABOVE. CORE LOSS AND FE STAINING.
8	22.87	23.37	0.50	75			ROCK LOSS	
8	23.37	23.52	0.15	76			SILTSTONE	SSY. VFG. VMEL. BN. VBRKN CORE LOSS & FE STAINED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	23.52	23.71	0.19		76		SILTSTONE	SSY.VHVL.LT-DK.GY.VTHNB.SSD.SLD INTERBED WITH SS. FE STAINED. FINING UPWARD - TOPS UP.
9	23.71	24.33	0.62	*77			SILTSTONE	SSY.VFG.VHVL.DK.GY.VTHNB.SSD.BRKN AS ABOVE. DECREASE IN SS WITH DEPTH. TO PS UP - FINING UPWARD. FE STAINING. RIP -UP. VFG SS.
9	24.33	24.83	0.50		74		ROCK LOSS	
9	24.83	25.30	0.47		71		SILTSTONE	SSY.VFG.VHVL.DK.GY.VTHNB.VBRKN MASHED RK. MUD PRESENT (CLAYEY) IN PLACES.
9	25.30	25.77	0.47	*68			SILTSTONE	VFG.VHVL.M.GY.LAM.BRKN BROWN AREAS - FE STAINING. WITH MUDST LAMS. BAND OF MORE BROKEN ROCK - 5.0CM THICK.
10	25.77	25.86	0.09	*60			SILTSTONE	SSY.VFG.VHVL.DK.GY.VTHNB.BRKN INTERBEDDED WITH VFG SS. FE STAINED.
10	25.86	26.36	0.50		52		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	26.36	26.46	0.10		43		SILTSTONE	VFG.VHVL.DK.GY.VBRKN MASHED ROCK - FE STAINED. CLAY BAND PRESENT.
10	26.46	26.92	0.46		35		SILTSTONE	VFG.VHVL.DK.GY.LAM.BRKN INTERLAM WITH MUDST. FE STAINING. PYRITE NODULES.
10	26.92	27.11	0.19		26		SILTSTONE	VFG.VHVL.DK.GY.LAM.VBRKN ALMOST MASHED. AS ABOVE.
10	27.11	27.40	0.29	*19			SILTSTONE	VFG.VHVL.DK.GY.LAM.SSD.BRKN AS ABOVE. BEDS STEEPEN.
10	27.40	27.53	0.13		22		SILTSTONE	VFG.DK.GY.VBRKN AS ABOVE. MASHED. MUD. CLAY. CORE LOSS.
10	27.53	28.03	0.50		26		ROCK LOSS	
10	28.03	28.22	0.19		30		SANDSTONE	SLTY.MG.VHVL.M.GY.VTHNB.VBRKN INTERBEDDED WITH SLTST. FE STAINED; CALCITE VEIN. CORE LOSS.
11	28.22	28.56	0.34		33		MUDSTONE	SLTY.VHVL.BLK.LAM.BRKN MASHED. POSSIBLE CORE LOSS. MUD & CLAY PRESENT.
11	28.56	28.81	0.25		37		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	28.81	29.38	0.57	42		MUDSTONE	SLTY. VMEL. BLK. LAM. BRKN SOME DISSEMINATED PYRITE. SOME FE STAIN ING.
11	29.38	29.73	0.35	48		MUDSTONE	CLYY. BLK MASHED. CLAY & MUD. PIECES OF MUDST ROC K. SOME COAL STRINGERS.
11	29.73	30.58	0.85	56		ROCK LOSS	
11	30.58	30.89	0.31	63		MUDSTONE	CARB. BLK MASHED GOOP (UNLITHIFIED). CLAY WITH CO AL STRINGERS. COAL STRINGERS.
12	30.89	31.43	0.54	68		MUDSTONE	CARB. BLK. LAM. BRKN LITHIFIED. PLANT HASH (NILSSONIA). COAL STRINGERS. BANDS OF CLAY - 2.0CM THICK EVERY 5.0CM.
12	31.43	32.40	0.97	*78		SILTSTONE	VFG. VMEL. M. GY. LAM. BIOTR. BRKN INTERLAM WITH MUDST. ALTERNATES WITH FG SS BANDS - 10CM. SS SOFT, PITTED SURFA CES. POSSIBLE CORE LOSS. TOPS UP LOAD C ASTS - SSD. COAL STRINGERS. CLAY BANDS (<1.0CM) PARALLEL TO BEDDING.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	32.40	32.42	0.02	73	10447	BENTONITE	CLYY. VMEL. LT. GY. SLD
12	32.42	32.48	0.06	72		SILTSTONE	VFG. VMEL. LT. GY. LAM. SLD ASH INFLUENCE.
12	32.48	32.49	0.01	72	10447	BENTONITE	CLYY. VMEL. LT. GY. SLD
12	32.49	32.55	0.06	72		SILTSTONE	VFG. VMEL. LT. GY. LAM. SLD ASH INFLUENCE.
12	32.55	32.57	0.02	71	10447	BENTONITE	CLYY. VMEL. LT. GY. SLD
12	32.57	32.94	0.37	*69		SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH FG SS (PITTED SURFACE) BAND OF LT. GREY. SILTST. MUD FRACTURE F ILL.
13	32.94	33.09	0.15	73		SILTSTONE	SSY. VFG. VMEL. LT-M. GY. VTHNB. SSD. SLD INTERBEDDED WITH FG SS. MUDSTONE WISPS. LIGHT COLOUR DUE TO VOLCANIC ASH INFLU ENCE. SS HAS GRANULAR SURFACE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	33.09	33.65	0.56	*78		SILTSTONE	SSY. VFG. VHEL. LT-M. GY. YTHNB. SSD. BRKN AS ABOVE. GRADING INTO A SS WITH LESS SLTST BEDDING. TOPS UP WITH LOAD CASTS.
13	33.65	34.98	1.33	*77		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD ASH INFLUENCE. DARK BANDS AND WISPS ARE SLTST. GRANULAR SURFACE OF SS. ALSO A 3.0CM BAND WITH SLTST RIP-UPS.
14	34.98	36.20	1.22	*70		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD AS ABOVE WITH LESS SLTST; ONLY IN WISPS. SS GRANULAR SURFACE. ASH INFLUENCE. LARGE PLANT FRAGMENT (WOOD) IN SS.
14	36.20	37.07	0.87	*65		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD AS ABOVE. SOME SOFT BANDS (<1CM) PARALLEL TO BEDDING. A CLAYEY SS.
15	37.07	39.07	2.00	*78		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD AS ABOVE. WITH CLAY BANDS ALSO. WITH CALCITE VEINS.
15	39.07	39.14	0.07	76		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD AS ABOVE WITH CLAY BANDS AND CALCITE VEINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	39.14	41.20	2.06	*73		SANDSTONE	MG. VHEL. LT. GY. MAS. SLD AS ABOVE. WITH CLAY BANDS AND CALCITE VEINS. SHEARED LISTRIC SURFACES SLIGHTLY COALIFIED.
17	41.20	41.63	0.43	72		SANDSTONE	MG. VHEL. LT. GY. MAS. BRKN AS ABOVE.
17	41.63	42.17	0.54	*72		SANDSTONE	MG. VHEL. LT. GY. YTHNB. SSD. BRKN INTERBEDDED WITH SLTST. ASH INFLUENCE. DARK BANDS ARE SLTST. PLANT HASH AT BASAL SECTION.
17	42.17	43.28	1.11	*77		SANDSTONE	SLTY. FG. VHEL. LT-M. GY. YTHNB. SSD. BRKN AS ABOVE. GRADING INTO A SLTST. FRACTURE FILL WITH CLAY & CALCITE. ONE 2.0CM BAND OF DK GREY MUD IS SEEN.
17	43.28	43.93	0.65	77		ROCK LOSS	
18	43.93	44.14	0.21	76		SILTSTONE	SSY. PR. M. GY. VBRKN MINOR ANKERITE VEINING. MUDDIER TOWARD BASE. SHARP LOWER CONTACT.
18	44.14	44.21	0.07	76		MUDSTONE	SLTY. PR. M. GY. VBRKN ABUNDANT COALY PLANT FRAGMENTS. GRADATIONAL LOWER CONTACT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	44.21	44.71	0.50	76			ROCK LOSS	
18	44.71	44.87	0.16	76			SILTSTONE	M.GY.BRKN AS ABOVE.
18	44.87	44.99	0.12	76			MUDSTONE	SLTY.PR.M.GY.BRKN AS ABOVE.
18	44.99	45.08	0.09	76			SILTSTONE	M.GY.BRKN
18	45.08	45.26	0.18	76			MUDSTONE	M.GY.BRKN ABUNDANT COALY PLANT FRAGMENTS. LISTRIC SURFACES.
18	45.26	46.23	0.97	75			ROCK LOSS	
18	46.23	46.26	0.03	75			SILTSTONE	SSY.M.GY.VBRKN UNCONSOLIDATED FAULT GOUGE MATERIAL. MI NOR FAULT? APPROXIMATE ORIENTATION 45 D EGRES.
18	46.26	47.01	0.75	*75	08288	M ROOF	MUDSTONE	SLTY.M-DK.GY.BRKN ABUNDANT COALY PLANT MATERIAL INCREASIN G TOWARD BASE. (LOWER 18.0CM SAMPLED). M SEAM ROOF ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	47.01	47.08	0.07	*71	08288	M ROOF	MUDSTONE	CARB.BLK.BRKN MINOR COAL STRINGERS. ROOF ROCK.
18	47.08	47.22	0.14	71	08289	M	COAL LOSS	
18	47.22	47.24	0.02	71	08289	M	COAL	C-1.BLK.BRKN
18	47.24	47.25	0.01	71	08289	M	MUDSTONE	CARB.BLK.BRKN
18	47.25	47.35	0.10	71	08289	M	COAL LOSS	
18	47.35	47.36	0.01	71	08289	M	COAL	C-1.BLK.BRKN
19	47.36	47.46	0.10	71	08289	M	COAL	C-2.BLK.VBRKN
19	47.46	47.57	0.11	71	08289	M	COAL	C-5.BLK.SHRD GRADES INTO MUDST.
19	47.57	47.73	0.16	70	08289	M	MUDSTONE	DK.GY.BRKN MUD PARTING. NUMEROUS LISTRIC SURFACES.
19	47.73	47.86	0.13	70	08289	M	COAL	C-3

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	47.86	48.09	0.23	70	08289	M	MUDSTONE	CARB. BLK. VBRKN MINOR COAL STRINGERS.
19	48.09	48.11	0.02	70	08289	M	COAL	C-4. BLK. VBRKN
19	48.11	48.25	0.14	70	08289	M	COAL LOSS	
19	48.25	48.58	0.33	70	08289	M	MUDSTONE	CARB. BLK. BRKN
19	48.58	48.63	0.05	70	08289	M	COAL	C-3. BLK. VBRKN
19	48.63	48.74	0.11	69	08289	M	COAL LOSS	
19	48.74	48.80	0.06	69	08289	M	COAL	C-6. BLK. VBRKN
19	48.80	48.86	0.06	69	08289	M	MUDSTONE	CARB. BLK. VBRKN MINOR COAL STRINGERS.
19	48.86	48.87	0.01	69	08289	M	COAL	C-4. BLK. VBRKN
19	48.87	48.90	0.03	69	08289	M	COAL LOSS	
19	48.90	49.00	0.10	69	08289	M	SILTSTONE	M-DK. GY. BRKN COAL FRAGMENTS WITHIN SLYST.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	49.00	49.02	0.02	69	08289	M	SILTSTONE	M-DK. GY. VBRKN APPEAR BRECCIATED. MINOR ANKERITE VEINI NG. NUMEROUS COAL FRAGMENTS.
20	49.02	49.35	0.33	69	08290	M	COAL	C-3. BLK. VSHRD AVERAGE VALUE FOR SHEARED ZONE.
20	49.35	49.90	0.55	69	08290	M	COAL LOSS	
20	49.90	50.00	0.10	68	08290	M	COAL	C-6. BLK. VSHRD
20	50.00	50.48	0.48	68	08290	M	COAL LOSS	
20	50.48	50.58	0.10	68	08290	M	COAL	C-3. BLK. VSHRD
20	50.58	50.72	0.14	68	08290	M	COAL	C-2. BLK. VBRKN
20	50.72	50.92	0.20	68	08290	M	COAL	C-3. BLK. VSHRD
20	50.92	51.02	0.10	67	08290	M	COAL	C-4. BLK. VSHRD
20	51.02	51.04	0.02	67	08290	M	MUDSTONE	BLK. SHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	51.04	51.07	0.03	67	08290 M	COAL	C-3.BLK.SHRD
20	51.07	51.13	0.06	67	08290 M	MUDSTONE	BLK.VBRKN MINOR COAL STRINGERS.
20	51.13	51.27	0.14	67	08290 M	COAL	C-2.BLK.BRKN
20	51.27	51.36	0.09	67	08290 M	COAL	C-6.BLK.PHRD SOFT.
20	51.36	51.46	0.10	67	08290 M	MUDSTONE	CARB.BLK.VBRKN
21	51.46	51.49	0.03	67	08290 M	COAL	C-3.BLK.VBRKN
21	51.49	51.56	0.07	67	08290 M	COAL	C-5.BLK.VBRKN
21	51.56	51.80	0.24	67	08290 M	COAL LOSS	
21	51.80	51.91	0.11	67	08291 M FLOOR	MUDSTONE	BLK.BRKN ABUNDANT PLANT FRAGMENTS, M SEAM FLOOR ROCK. SAMPLED.
21	51.91	51.99	0.08	67	08291 M FLOOR	MUDSTONE	CARB.BLK.VSHRD SOFT. M SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	51.99	52.13	0.14	66	08291 M FLOOR	ROCK LOSS	
21	52.13	52.20	0.07	66	08291 M FLOOR	BRECCIA	BLK.VBRKN SLTST SET IN QTZ. APPEARS SHEARED. (UPPER 6.0CM SAMPLED). M SEAM FLOOR ROCK.
21	52.20	52.30	0.10	66		MUDSTONE	DK.GY.VBRKN
21	52.30	52.39	0.09	66		SILTSTONE	M.GY.BRKN
21	52.39	52.66	0.27	66		MUDSTONE	SLTY.M-DK.GY.SHRD NUMEROUS CHLORITE COATED LITRIFIC SURFACES.
21	52.66	53.36	0.70	66		SILTSTONE	M.GY.VBRKN SEVERAL BANDS OF MUDST. LITRIFIC SURFACE S. APPEARS SHEARED NEAR BASE. MINOR QTZ VEINING. OCCASIONAL COAL FRAGMENT.
22	53.36	53.42	0.06	65		SILTSTONE	VFG.VMEL.LT.GY.LAM.SLD POSSIBLE ASH INFLUENCE. NISPS OF DARK GREY SLTST.
22	53.42	53.55	0.13	65		SILTSTONE	VFG.VMEL.LT-DK.GY.BIOTR.SLD HEAVILY BIOTRB WITH WORM BURROWS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	53.55	53.56	0.01		65		MUDSTONE	CLYY, LT. GY. SLD BENTONITE LIKE CLAY.
22	53.56	53.99	0.43		65		SILTSTONE	SSY, VFG, VMEL, DK, GY, VTHNB, SSD, SLD INTERBEDDED WITH VFG SS WITH GRANULAR S URFACE. RIP-UPS PRESENT. GRADES INTO A SS.
22	53.99	55.39	1.40	*64			SANDSTONE	MG, VMEL, M, GY, VTHNB, SSD, SLD WITH INTERBEDDED SLTST AND FG SS. COAL STRINGER. FECAL PELLETS. TOPS UP, LOADI NG STRUCTURE.
23	55.39	57.07	1.68	*66			SILTSTONE	SSY, VFG, VMEL, M, GY, VTHNB, BIOTR, BRKN INTERBEDDED LT & DK SLTST. FEW FG SS BE DS, QTZ VEINS, COAL STRINGERS, INCREASI NGLY FRACTURED WITH MUD INFILL.
23	57.07	57.30	0.23		66		BRECCIA	CLYY, M, GY, BRKN WITH CLAY, SLTST AND QTZ.
24	57.30	58.04	0.74		67		BRECCIA	M, GY, BRKN AS ABOVE.
24	58.04	58.52	0.48	*67			SANDSTONE	CG, MEL, LT, M, GY, VTHNB, SSD, BRKN INTERBEDDED WITH FG SS AND SLTST. QTZ A ND CHLORITE ALONG SHEARED SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	58.52	58.59	0.07		69		BRECCIA	CLYY, DK, GY, SLD CLAY WITH SLTST CLASTS ANGULAR.
24	58.59	59.30	0.71	*71			SANDSTONE	MG, MEL, LT, M, GY, VTHNB, SSD, BRKN INTERBEDDED WITH FG SS AND SLTST. QTZ & CHLORITE ALONG SHEARED SURFACES. COAL STRINGERS, GRANULAR SURFACES.
25	59.30	59.32	0.02		71		SANDSTONE	MG, MEL, LT, M, GY, VTHNB, SSD, BRKN AS ABOVE.
25	59.32	61.41	2.09	*70			SANDSTONE	MG, MEL, M, DK, GY, VTHNB, SSD, BRKN AS ABOVE, INCREASING SLTST, TOPS UP, BI OTRB ALSO PRESENT; FECAL PELLETS, THIN CLAY FRACTURE FILL PARALLEL TO BEDDING. CHLORITE ON SHEARED SURFACES.
26	61.41	61.68	0.27		70		MUDSTONE	CLYY, DK, GY, BRKN QTZ & CHLORITE ALONG SHEARED SURFACES. CLAY HAS LITRIFIC SURFACES.
26	61.68	62.50	0.82		69		SANDSTONE	CLYY, MG, MEL, M, GY, VTHNB, BIOTR, BRKN INTERBEDDED WITH FG SS AND SLTST. CLAY BANDS PARALLEL TO BEDDING. COAL STRINGE RS & PLANT WASH, FECAL PELLETS.
26	62.50	63.38	0.88	*69			SANDSTONE	CLYY, MG, MEL, M, GY, VTHNB, SSD, BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	63.38	65.45	2.07	*80			SANDSTONE	CLYY.MG.WEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. SOFT PITTED SURFACE ON SS.
28	65.45	67.37	1.92	*71			SANDSTONE	CLYY.MG.WEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. PLANT WASH (LOTS) & COAL STRINGS. SHEARED WITH CHLORITE AND LISTRIC SURFACES. ALSO BIOTRB AND HRMBUR. LOAD CASTS - TOPS UP.
29	67.37	68.65	1.28	*86			SANDSTONE	CLYY.MG.WEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. A 5CM BAND OF CLAY & QTZ. SHEARED SURFACES.
29	68.65	69.39	0.74	84			SANDSTONE	CLYY.MG.WEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. TOPS UP.
30	69.39	71.49	2.10	*81			SANDSTONE	MG.WEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. WITH RIP-UP SLTST. WITH SHEARED SURFACES. LOADING STRUX - TOPS UP. MINOR FRACTURE DISPLACEMENT.
31	71.49	72.14	0.65	*82			SANDSTONE	MG.WEL.M.GY.VTHNB.SSD.SLD AS ABOVE.
31	72.14	72.21	0.07	81			SILTSTONE	M.GY.LAM.SSD.BRKN WITH NUMEROUS PLANT FRAGS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	72.21	72.47	0.26	81	08292 L	ROOF	MUDSTONE	DK.GY.LAM.BRKN NUMEROUS PLANT FRAGS. SOME OF WHICH ARE COALIFIED. (LOWER 18.0CM SAMPLED). L S EAM ROOF ROCK.
31	72.47	72.54	0.07	81	08292 L	ROOF	MUDSTONE	CARB.BLK.BRKN AS ABOVE. THIN QTZ VEINS AT BASE. (ROOF SAMPLED).
31	72.54	72.65	0.11	81	08293 L		COAL	C-3.BLK.BRKN INTERLAMINATED OF C-1 AND C-5. MINOR QTZ WITHIN.
31	72.65	72.72	0.07	80	08293 L		COAL	C-2.BLK.BRKN GOOD CLEAT.
31	72.72	72.84	0.12	80	08293 L		COAL	C-2.BLK.BRKN GOOD CLEAT SOME C-1.
31	72.84	72.87	0.03	80	08293 L		COAL	C-4.BLK.BRKN
31	72.87	72.93	0.06	80	08293 L		COAL	C-2.BLK.BRKN GOOD CLEAT. MINOR CONCOIDAL FRACTURES.
31	72.93	73.22	0.29	80	08293 L		COAL LOSS	
31	73.22	73.28	0.06	79	08293 L		COAL	C-5.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	73.28	73.57	0.29	79	08293	L	COAL LOSS	
31	73.57	73.75	0.18	78	08293	L	COAL	C-3. BLK. BRKN C-1 BANDS WITHIN.
31	73.75	73.81	0.06	78	08293	L	COAL	C-4. BLK. VBRKN MOSTLY RUBBLE. MINOR QTZ WITHIN.
32	73.81	73.92	0.11	78	08293	L	COAL	C-4. BLK. VBRKN MINOR C-1 BANDS.
32	73.92	74.05	0.13	78	08294	L	COAL	C-6. BLK. VBRKN BONE COAL VERY HARD.
32	74.05	74.53	0.48	77	08294	L	COAL LOSS	
32	74.53	74.67	0.14	77	08294	L	MUDSTONE	CARB. BLK. VBRKN
32	74.67	74.72	0.05	76	08294	L	COAL	C-4. BLK. VBRKN
32	74.72	74.85	0.13	76	08294	L	COAL LOSS	
32	74.85	75.28	0.43	76	08295	L FLOOR	MUDSTONE	CARB. BLK. LAM. BRKN COALIFIED PLANT WITH MINOR COALY STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	75.28	75.38	0.10	75			MUDSTONE	CARB. BLK. LAM. BRKN AS ABOVE. SHEAR SURFACES.
32	75.38	76.08	0.70	75			MUDSTONE	DK. GY. LAM. SLD NUMEROUS PLANT FRAGS WITHIN. MINOR BROWN CLAY BANDS.
33	76.08	78.01	1.93	*72			MUDSTONE	CARB. VMEL. DK. GY. LAM. BRKN WITH SLTST RIP-UP CLASTS THESE HAVE BIO TRB AND QTZ VEINING. COAL STRINGERS & PLANT HASH. SHEARED SURFACES (LISTRIC AND WITH QTZ).
34	78.01	78.21	0.20	66			MUDSTONE	CARB. VMEL. DK. GY. LAM. BRKN AS ABOVE.
34	78.21	79.84	1.63	*60			SANDSTONE	SLTY. FG. MEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH VFG SS. ALTERNATED WITH H. BEDS OF BIOTURBATED SLTST. (12CM) EVERY 50CM. SOME SLTST RIP-UPS AND SHEARED MUD FRACTURE FILL. PLANT HASH AND COAL STRINGERS. DECREASE IN AMOUNT.
35	79.84	80.10	0.26	*65			SANDSTONE	SLTY. FG. MEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST & VFG SS. SHEARED MUD FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	80.10	80.47	0.37	66			SANDSTONE	MG.VMEL.LT.GY.VTHNB.SLD ASH INFLUENCE. GRADING INTO A DARKER SS
35	80.47	80.87	0.40	66			SILTSTONE	SSY.FG.VMEL.DK.GY.THNB.SSD.SLD INTERBEDDED WITH FG SS. CLAY BANDS PARALLEL TO BEDDING. QTZ VEINING IN BANDS WITH SOME PYRITE NODULES.
35	80.87	81.05	0.18	67			SANDSTONE	MG.VMEL.M.GY.VTHNB.SLD INTERBEDDED WITH FG SS AND SLTST. GRADING FROM A SLTST.
35	81.05	81.73	0.68	*68			SANDSTONE	MG.VMEL.M.GY.VTHNB.SSD.SLD AS ABOVE. GRADING INTO A MASSIVE SS. SOME RIP-UP SLTST.
36	81.73	83.82	2.09	*70			SANDSTONE	MG.VMEL.LT.GY.VTHNB.SSD.SLD ASH INFLUENCE. DARK SLTST WHIPS AND LENSSES. POSSIBLE FECAL PELLETS. TOPS UP - LOADING STRUX.
37	83.82	84.08	0.26	66			SANDSTONE	CLYY.FG.PR.LT.GY.MAS.SLD VERY ARGILLACEOUS SS.

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	84.08	85.53	1.45	*63	08296	K/L ROOF	SANDSTONE	CLYY.FG.PR.LT.GY.MAS.BRKN VERY ARGILLACEOUS SS. EUBEDRAL PYRITE XTLS NEAR LOWER CONTACT. OCCASSIONAL CARB MUDST & COAL LAMS IN LOWER PORTIONS. (LOWER 25CM SAMPLED). K/L SEAM ROOF ROCK
37	85.53	85.58	0.05	*70	08297	K/L	COAL	C-5.BLK.SLD
37	85.58	85.60	0.02	70	08297	K/L	SANDSTONE	CLYY.FG.PR.LT.GY.SLD
37	85.60	85.61	0.01	70	08297	K/L	MUDSTONE	CLYY.BLK.SLD PASTY.
37	85.61	85.81	0.20	69	08297	K/L	COAL	C-3.BLK.BRKN VERY HARD.
38	85.81	85.93	0.12	69	08297	K/L	COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	85.93	85.95	0.02	68	08297	K/L	COAL LOSS	
38	85.95	85.99	0.04	68	08297	K/L	COAL	C-2.BLK.VBRKN
38	85.99	86.05	0.06	68	08297	K/L	COAL	C-3.BLK.VBRKN
38	86.05	86.12	0.07	68	08297	K/L	COAL	C-2.BLK.VBRKN POWDERED IN LOWER HALF.
38	86.12	86.25	0.13	67	08297	K/L	COAL	C-3.BLK.VBRKN
38	86.25	86.46	0.21	67	08298	K/L FLOOR	MUDSTONE	CARB.BLK.MAS.BRKN CARB PLANT FRAGS. SAMPLED. K/L SEAM FLO OR ROCK.
38	86.46	87.09	0.63	65	08298	K/L FLOOR	MUDSTONE	DK.GY.MAS.BRKN MINOR CARB PLANT FRAGS. UPPER 4.0CM SAM PLED.
38	87.09	87.81	0.72	*62			MUDSTONE	DK.GY.MAS.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	87.81	88.54	0.73	64			SANDSTONE	MG.VWEL.M-DK.GY.VTHNB.SSD.SLD COARSENS FROM A FG SS. INTERBEDDED WITH SLTST TO A CG SS WITH SLTST MISPS. BIO TRB & SLTST RIP-UPS. LOADING STRUX. TO PS UP.
39	88.54	89.96	1.42	*68			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SSD.SLD WITH SLTST RIP-UPS AND LAMS. SOME OF WH ICH ARE BIOTURBATED. QTZ VEIN. SS MAY C OARSENS OR FINE SLIGHTLY.
40	89.96	91.99	2.03	*69			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SSD.BRKN COARSENS TO CG SS. SLTST LAMS AND RIP-U PS. QTZ VEINING. SHEARED MUD FRAC. POSS IBLE COAL STRINGERS.
41	91.99	93.10	1.11	*70			SANDSTONE	CG.VWEL.S-P.GY.VTHNB.SLD SLTST LAMS.
41	93.10	94.02	0.92	68			SANDSTONE	CG.VWEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. SLTST RIP-UPS.
42	94.02	96.12	2.10	*66			SANDSTONE	CG.VWEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. LOAD CAST - TOPS UP. QTZ VEIN ING. SLTST BEDS AND RIP-UPS MORE ABUNDA NT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	96.12	98.26	2.14	*72			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SSD.BRKN SLTST BEDS FEW IN NUMBER. COAL STRINGER S. SLTST RIP-UP CLASTS APPEAR IMBRICATE D. QTZ VEINING. LOAD STRUX - TOPS UP.
44	98.26	99.02	0.76	*75			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. SLTST RIP-UP CLAST OCCUR IN 1 CM BANDS EVERY 30CM. COAL STRINGER.
44	99.02	99.22	0.20	76			SANDSTONE	GRAN.VMEL.S-P.GY.MAS.BRKN COAL STRINGERS. SLTST RIP-UPS. QTZ VEIN S.
44	99.22	99.78	0.56	77			SANDSTONE	GRAN.VMEL.S-P.GY.MAS.BRKN AS ABOVE. GRADES INTO A CG SS.
44	99.78	100.31	0.53	*78			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SLD QTZ & COAL STRINGERS PARALLEL TO BEDDIN G. SLTST RIP-UPS. MUD-CLAY BANDS PARALL EL TO BEDDING WITH SHEARED SURFACES.
45	100.31	100.71	0.40	75			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SLD INTERBEDDED WITH SLTST. COAL STRINGERS. SHEARED SURFACES.
45	100.71	100.87	0.16	73			SILTSTONE	VMEL.OK.GY.VBRKN POSSIBLE CORE LOSS. SHEARED, LISTRIC SU RFACES. QTZ.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	100.87	101.47	0.60	71			ROCK LOSS	
45	101.47	102.92	1.45	*65			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SSD.SLD BANDS OF SLTST BEDS RANDOMLY SITUATED I N SS. SLTST RIP-UPS. QTZ FRACTURE. COAL STRINGERS. SOME FINING UPWARD.
46	102.92	103.18	0.26	60			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SSD.SLD GRAIN SIZE OF BEDS VARY WITHIN THE CG. R ANGE. SLTST LAMS.
46	103.18	104.32	1.14	*55			SANDSTONE	CG.VMEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. SOME MUD FRACTURES & QTZ FRAC TURE.
46	104.32	104.93	0.61	*67			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. SHARP CONTACT BETWEEN MG & CG . SLTST RIP-UPS.
47	104.93	106.06	1.13	*70			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SLD AS ABOVE. COAL & QTZ STRINGERS.
47	106.06	107.04	0.98	70			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	107.04	108.22	1.18	*71			SANDSTONE	MG.VHEL.S-P.GY.SSD.BRKN FG SS GRADING INTO A CG SS WITH RIP-UP CLASTS OF SLTST. QTZ VEINS. CYCLE REPEA TS THICE AND ARE SEPARATED WITH CLAY BA ND WITH SHEARED LISTRIC SURFACES.
48	108.22	108.39	0.17		70		SANDSTONE	MG.VHEL.S-P.GY.MAS.SLD SLTST LAMS & LENSES CARB MUDSTONE BANDS <1CM SEEN RANDOMLY. QTZ VEINING.
48	108.39	109.10	0.71		70		SANDSTONE	MG.VHEL.S-P.GY.MAS.SLD AS ABOVE.
49	109.10	110.84	1.74	*69			SANDSTONE	MG.VHEL.S-P.GY.MAS.SSD.SLD SOME VAVATRAX IN GRAIN SIZE (MG). SLTST LAM PRESENT. SLTST RIP-UPS LARGE IN SI ZE (2CM) AND IN BANDS FOUND IN COARSER SS. COAL STRINGERS.
49	110.84	111.25	0.41		70		SANDSTONE	MG.VHEL.S-P.GY.MAS.SLD LOTS OF SLTST RIP-UPS CLASTS. RESEMBLES A CONGLOMERATE. COAL STRINGERS.
50	111.25	112.07	0.82		71		SANDSTONE	MG.VHEL.S-P.GY.MAS.BRKN ABOVE CYCLE REPEATS. MG SS GRADING TO A COARSER SS WITH CONGLOMERATE LIKE RIP- UP CLASTS AND COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	112.07	112.63	0.56		71		SANDSTONE	MG.MOD.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. QTZ VEINS & COA L STRINGER. POSSIBLE CORE LOSS. SOME SL TST RIP-UP CLASTS.
50	112.63	112.72	0.09		72		MUDSTONE	CLYY.DK.GY.LAM.SLD SOFT CLAY BAND WITH SHEARED LISTRIC SUR FACES.
50	112.72	113.25	0.53	*72			SILTSTONE	SSY.VFG.WEL.DK.GY.LAM.SSD.SLD INTERLAMINATED WITH VFG SS AND MUDST LA MS. ONE MG SS LENSE RIMMED WITH MUDST. LOAD CASTS - TOPS UP. MUD CLAY BANDS PA RALLEL TO BEDDING <1CM. SHEARED LISTRIC SURFACES. SLTST RIP-UPS IN SS BEDS.
51	113.25	113.81	0.56		69		SANDSTONE	FG.VHEL.M.GY.VTHNB.SSD.BRKN LOTS OF SLTST RIP-UP CLASTS. LOTS FRACT URES. (QTZ).
51	113.81	114.65	0.84		65		MUDSTONE	SLTY.VHEL.BLK.LAM.SSD.BRKN INTERLAM WITH SLTST. LOTS COAL STRINGER S. GRADING INTO A SLTST. SHEARED LISTRI C SURFACES ALONG MUD BEDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	114.65	115.09	0.44	*62		SANDSTONE	SLTY. VFG. VHEL. LT. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. SS & SLTST ARE LIGHT GREY IN COLOUR. SS PITTED SURFACE GRADING INTO A SLTST.
51	115.09	115.29	0.20	62		SILTSTONE	VFG. VHEL. LT-DK. GY. VTHNB. BIOTR. BRKN INTERBEDDED LIGHT & DARK SLTST. BIOTR. GRADING TO DARK GREY SLTST. SHEARED CLAY BAND <1.0CM.
52	115.29	117.47	2.18	62		SILTSTONE	CARB. VFG. VHEL. DK. GY. VTHNB. BIOTR. SLD INTERBEDDED WITH SOME VFG SS AND MUDST. LOTS COAL STRINGERS. WORM BURROWS FILLED WITH SS. ONE BURROW IS U SHAPED AND ONE LARGE BIVALVE.
53	117.47	118.26	0.79	*62		SANDSTONE	SLTY. FG. VHEL. DK. GY. VTHNB. BIOTR. BRKN INTERBEDDED WITH SLTST. WORM BURROW. LOAD CASTS - TOPS UP.
53	118.26	119.56	1.30	*69		SANDSTONE	SLTY. FG. VHEL. LT-DK. GY. VTHNB. SSD BRKN INTERBEDDED WITH SLTST. RIP-UP SLTST. GRADING INTO MORE MASSIVE FG SS WITH SLTST LAMS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	119.56	121.36	1.80	*70		SANDSTONE	MG. VHEL. S-P. GY. THNB. BIOTR. BRKN INTERBEDDED WITH SLTST. POSSIBLE CORE L OSS. SS RIP-UP. LOAD CASTS - TOPS UP. SOME DEWATERING FEATURES.
54	121.36	121.57	0.21	70		SANDSTONE	MG. VHEL. S-P. GY. THNB. BIOTR. SLD AS ABOVE.
55	121.57	123.80	2.23	*70		SILTSTONE	SSY. VFG. VHEL. DK. GY. THNB. SSD. BRKN INTERBEDDED WITH FG SS AND MUDST. LOAD CASTS - TOPS UP. QTZ & CHLORITE FRACTURE FILL (SHEARING). BIVALVES (STAFFINELL A).
56	123.80	124.33	0.53	69		SILTSTONE	VFG. VHEL. BLK. LAM. SSD. SLD INTERLAM WITH MUDST. GRADING INTO A MUDST. LOAD CASTS - TOPS UP. COALIFIED PLANT FRAGMENTS.
56	124.33	125.78	1.45	*68		MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. SSD. BRKN INTERLAM WITH SLTST. SHEARED CLAY SURFACES AND QTZ FRACTURE FILL PARALLEL TO BEDDING. COALIFIED PLANT FRAGMENTS. BREAKS PARALLEL TO BEDDING.
57	125.78	126.46	0.68	68		MUDSTONE	VFG. VHEL. BLK. LAM. SSD. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	126.46	126.96	0.50	67		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BRKN AS ABOVE. VERY FRACTURED - FILL WITH QTZ AND MUD. SHEARED LISTRIC SURFACE.
57	126.96	127.16	0.20	67		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SSD. BRKN INTERLAM WITH SLTST. PLANT FRAGMENTS (C OALIFIED). SHEARED MUD SURFACES PARALLEL TO BEDDING.
57	127.16	127.85	0.69	*67		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SSD. BRKN AS ABOVE.
58	127.85	127.90	0.05	67		MUDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. SSD. SLD AS ABOVE. MORE SLTST. ALTERATION OF A R IP-UP TO PYRITE.
58	127.90	127.98	0.08	67		MUDSTONE	CLYY. BLK. BRKN SHEARED MUD BAND LISTRIC SURFACES.
58	127.98	129.13	1.15	*67		SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. SSD. BRKN INTERBEDDED WITH VFG SS & MUDST. BREAKS PARALLEL TO BEDDING. SS GRADUALLY DISAPPEARS. PLANT HASH, THIN CLAY BANDS PARALLEL TO BEDDING.
58	129.13	129.97	0.84	69		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BRKN INTERLAM WITH SLTST. BREAKS PARALLEL TO BEDDING. ALSO PLANT HASH & MUD BANDS PARALLEL TO BEDDING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	129.97	130.22	0.25	69		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BRKN AS ABOVE.
59	130.22	132.14	1.92	*71		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SLD AS ABOVE. PLANT HASH & BAIERA FURCATA.
60	132.14	133.38	1.24	*70		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SLD AS ABOVE. NILSSONIA TENUICAILIS AND SCH AUMBERGENSIS.
60	133.38	134.27	0.89	72		MUDSTONE	SSY. VFG. VMEL. BLK. LAM. SSD. SLD AS ABOVE WITH INTERLAM OF VFG SS AND SLTST. NILSSONIA TENUICAILIS.
61	134.27	136.28	2.01	*75		MUDSTONE	SSY. VFG. VMEL. BLK. LAM. SSD. SLD AS ABOVE. SOME MUD FRACTURE FILL. SHEARED LISTRIC SURFACES WITH QTZ. BIVALVES.
62	136.28	136.38	0.10	74		MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. SSD. SLD ABOVE LITHOLOGY.
62	136.38	136.72	0.34	74		MUDSTONE	SLTY. VFG. VMEL. BLK. VTHNB. SSD. SLD ABOVE LITHOLOGY. HEAVILY FRACTURED. MUD & QTZ & LISTRIC SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	136.72	138.39	1.67	*73		MUDSTONE	SLTY. VFG. VHEL. BLK. VTHNB. SSD. SLD ABOVE LITHOLOGY. LOADING STRUX - TOPS U P. MUD BAND <1CM THICK. BIVALVES AND PL ANT HASH.
63	138.39	138.74	0.35	*70		MUDSTONE	SSY. VFG. VHEL. BLK. VTHNB. SSD. SLD AS ABOVE WITH DECREASING SS.
63	138.74	139.41	0.67	73		MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. SLD INTERLAM WITH SLTST. SLIGHT SSD - TOPS UP. A VFG SS RIP-UP CLAST. PLANT HASH.
63	139.41	139.57	0.16	*75		MUDSTONE	SLTY. VFG. VHEL. BLK. LAM. SLD AS ABOVE. GRADES TO A LT GREY SLTST (TU FFITE).
63	139.57	139.58	0.01	75 10357		BENTONITE	CLYY. LT. GY
63	139.58	140.44	0.86	77		MUDSTONE	VFG. VHEL. BLK. LAM. SLD INTERLAM WITH SLTST. MUD & QTZ FRACTURE FILL WITH SHEARED SURFACES. PLANT HASH
64	140.44	141.84	1.40	*80		MUDSTONE	VFG. VHEL. BLK. LAM. SLD AS ABOVE. PLANT HASH, NILSSONIA TENUICA ULIS SLIGHTLY COALIFIED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	141.84	142.53	0.69	79		MUDSTONE	VFG. VHEL. BLK. LAM. BRKN AS ABOVE. VERY FRACTURED WITH QTZ & MUD ALONG SHEARED SURFACES.
65	142.53	143.57	1.04	78 08301 K ROOF		MUDSTONE	DK. GY. MAS. BRKN GRADUAL INCREASE OF CARB MATERIAL TOMAR DS BASE OF UNIT. BECOMES CARB MUDST IN LOWER 10CM. (LOWER 25CM SAMPLED).
65	143.57	143.62	0.05	78 08302 K		COAL	C-5. BLK. VBRKN
65	143.62	143.66	0.04	77 08302 K		COAL	C-3. BLK. VBRKN
65	143.66	143.74	0.08	77 08302 K		COAL	C-4. BLK. PHRD
65	143.74	143.86	0.12	77 08302 K		COAL	C-1. BLK. VSHRD CLOSE TO C-2.
65	143.86	144.05	0.19	77 08302 K		COAL	C-1. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	144.05	144.10	0.05	77	08302	K	COAL	C-2.BLK.BRKN
65	144.10	144.20	0.10	77	08302	K	COAL	C-1.BLK.VBRKN
65	144.20	144.45	0.25	77	08302	K	COAL LOSS	
65	144.45	144.50	0.05	77	08302	K	MUDSTONE	CARB.BLK.VBRKN
65	144.50	144.53	0.03	77	08302	K	COAL	C-4.BLK.VBRKN
66	144.53	144.56	0.03	77	08302	K	COAL	C-3.BLK.VSHRD
66	144.56	144.62	0.06	77	08302	K	COAL	C-6.BLK.SLD VERY HARD.
66	144.62	144.67	0.05	76	08302	K	COAL	C-1.BLK.VBRKN
66	144.67	144.70	0.03	76	08302	K	COAL	C-2.BLK.VBRKN
66	144.70	144.74	0.04	76	08302	K	COAL	C-6.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	144.74	144.82	0.08	76	08302	K	COAL	C-4.BLK.VSHRD
66	144.82	145.34	0.52	76	08302	K	COAL	C-2.BLK.BRKN
66	145.34	145.41	0.07	76	08302	K	COAL	C-3.BLK.VBRKN
66	145.41	145.48	0.07	76	08302	K	COAL	C-3.BLK.BRKN
66	145.48	145.50	0.02	76	08302	K	COAL	C-4.BLK.VBRKN
66	145.50	145.57	0.07	76	08302	K	COAL	C-3.BLK.BRKN
66	145.57	145.59	0.02	76	08302	K	COAL	C-1.BLK.BRKN
66	145.59	145.63	0.04	75	08302	K	COAL	C-6.BLK.BRKN VERY HARD.
66	145.63	145.79	0.16	75	08302	K	COAL	C-2.BLK.BRKN
66	145.79	145.85	0.06	75	08302	K	COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	145.85	145.91	0.06	75	08302 K	COAL	C-4.BLK.VSHRD
66	145.91	145.96	0.05	75	08302 K	COAL	C-2.BLK.VBRKN
66	145.96	146.02	0.06	75	08302 K	COAL	C-3.BLK.VBRKN
67	146.02	146.05	0.03	75	08302 K	COAL	C-1.BLK.BRKN
67	146.05	146.09	0.04	75	08302 K	COAL	C-2.BLK.BRKN
67	146.09	146.13	0.04	75	08302 K	COAL	C-3.BLK.BRKN
67	146.13	146.57	0.44	75	08302 K	COAL LOSS	
67	146.57	146.62	0.05	74	08303 K	MUDSTONE	CARB.BLK.VBRKN
67	146.62	146.67	0.05	74	08303 K	COAL	C-1.BLK.BRKN
67	146.67	146.83	0.16	74	08303 K	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	146.83	146.90	0.07	74	08303 K	MUDSTONE	CARB.DK.BN.BRKN
67	146.90	147.01	0.11	74	08303 K	COAL	C-3.BLK.VBRKN
67	147.01	147.02	0.01	74	08303 K	MUDSTONE	CARB.BLK.VBRKN
67	147.02	147.04	0.02	74	08303 K	COAL	C-3.BLK.VBRKN
67	147.04	147.12	0.08	74	08303 K	COAL LOSS	
67	147.12	147.23	0.11	74	08303 K	MUDSTONE	CARB.BLK.VSHRD
67	147.23	147.25	0.02	74	08303 K	COAL	C-3.BLK.PHRD
67	147.25	147.44	0.19	74	08303 K	MUDSTONE	SHRD
67	147.44	147.49	0.05	74	08303 K	COAL	C-2.BLK.SLD
67	147.49	147.66	0.17	73	08303 K	MUDSTONE	BLK.SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	147.66	147.75	0.09	73	08304	K	COAL	C-2. BLK. VBRKN
67	147.75	148.25	0.50	73	08304	K	COAL	C-2. BLK. VBRKN
67	148.25	148.30	0.05	73	08304	K	COAL LOSS	
67	148.30	148.33	0.03	73	08304	K	MUDSTONE	CARB. BLK. VSHRD
68	148.33	148.41	0.08	73	08304	K	MUDSTONE	CARB. BLK. SHRD
68	148.41	148.56	0.15	73	08304	K	COAL LOSS	
68	148.56	148.58	0.02	72	08304	K	COAL	C-3. BLK. VSHRD
68	148.58	148.63	0.05	72	08304	K	COAL	C-4. BLK. VSHRD
68	148.63	148.85	0.22	72	08304	K	COAL	C-3. BLK. VSHRD ABUNDANT HAIRLINE QTZ FILLED FRACTURES.
68	148.85	148.97	0.12	72	08305	K FLOOR	MUDSTONE	CARB. DK. GY. MAS. BRKN CARB PLANT FOSSILS, VERY ABUNDANT. (FLO OR SAMPLED). K SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	148.97	149.13	0.16	*72	08305	K FLOOR	MUDSTONE	CARB. DK. GY. MAS. BRKN ABUNDANT PLANT FOSSILS. (UPPER 13.0CM S AMPLED).
68	149.13	149.50	0.37	72			MUDSTONE	SLTY. DK. GY. MAS. BRKN CARBONACEOUS. ABUNDANT PLANT FRAGS.
68	149.50	149.57	0.07	71			SILTSTONE	M. GY. LAM. SLD
68	149.57	149.93	0.36	71			SANDSTONE	VFG. LT-M. GY. MAS. SSD. SLD LOAD CASTS (RIGHT WAY UP).
68	149.93	150.36	0.43	71			SILTSTONE	M-DK. GY. MAS. SLD CALCAREOUS SWIRLS & BLEBS.
69	150.36	151.61	1.25	*70			MUDSTONE	SLTY. VFG. VMEL. BLK. LAM. BIOTR. SLD INTERBEDDED WITH SLTST FEW VFG SS. GRAD ING INTO SLTST. NORM BURROWS. PLANT HAS H; SLTIGHTLY COALIFIED.
69	151.61	152.40	0.79	69			SILTSTONE	VFG. VMEL. DK. GY. LAM. BIOTR. SLD INTERLAM WITH SLTST. PLANT HASH.
70	152.40	153.24	0.84	*69			SILTSTONE	VFG. VMEL. DK. GY. LAM. SSD. SLD INTERLAM WITH MUDST AND VFG SS. SOME BI OTRB; PLANT HASH. GRADING INTO A VFG MA SSIVE SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	153.24	154.44	1.20	*71			SANDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. SSD. SLD INTERLAM WITH SLTST. SOME AREAS WITHOUT SLTST. QTZ VEINING & MUD SHEARING. PLANT HASH. GRADES TO MASSIVE FG. SS.
71	154.44	154.52	0.08	71			SANDSTONE	SLTY. VFG. VMEL. M-DK. GY. VTHNB. SSD. SLD INTERBEDDED WITH SLTST. AND MUDST. LAMS.
71	154.52	156.54	2.02	*71			SANDSTONE	SLTY. VFG. VMEL. M-DK. GY. SSD. SLD AS ABOVE. WITH LOAD & FLAME STRUX - TOP S. UP. SOME BIOTRB. SOME SHEARED SURFACE S.
72	156.54	157.28	0.74	72			SANDSTONE	VFG. VMEL. M. GY. VTHNB. BIOTR. SLD INTERLAM WITH SLTST. HEAVILY BIOTURBATE D.
72	157.28	157.56	0.28	72			SANDSTONE	VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. LOAD CASTS - TO PS UP. SOME FINING UPWARD IF BEDS. FRACTURE DISPLACEMENT (MINOR). FECAL PELLET S. IN LOAD STRUX.
72	157.56	158.61	1.05	*72			SANDSTONE	VFG. VMEL. M. GY. VTHNB. SSD. BRKN AS ABOVE. WITH X-BDG.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	158.61	158.95	0.34	*73			SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. BRKN INTERBEDDED WITH VFG. SS. SHEARED LISTRIC SURFACES PARALLEL TO BEDDING.
73	158.95	160.54	1.59	*74			SANDSTONE	MG. VMEL. S-P. GY. MAS. BRKN FEW INTERLAM. OF SLTST. RANDOMLY FOUND. LARGE QTZ. FILL FRACTURES.
73	160.54	160.67	0.13	73			SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SLD INTERBEDDED WITH VFG. SS. SOME MUDST. LAM S.
74	160.67	161.22	0.55	72			SILTSTONE	SSY. VFG. VMEL. DK. GY. MAS. SLD FEW MUDST. WISPS.
74	161.22	162.61	1.39	*71			SILTSTONE	SSY. VFG. VMEL. M-DK. GY. VTHNB. BRKN INTERBEDDED WITH VFG. SS. AND MUDST. LAMS. MUD FRACTURE FILL & QTZ. BECOMING RHYTHMICS.
75	162.61	163.61	1.00	*67			MUDSTONE	VMEL. DK. GY. VTHNB. SLD INTERBEDDED WITH SLTST. RHYTHMIC. FEW INTERBEDS OF VFG. SS. MUD & QTZ. FRAC. FILL
75	163.61	164.50	0.89	*69			MUDSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. BRKN AS ABOVE WITH MORE SS. BEDS. COAL STRINGERS. QTZ. VEIN.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	164.50	165.30	0.80	*73		MUDSTONE	SSY.VFG.VHML.DK.GY.VTHNB.BRKN AS ABOVE. X-BEDDING TOPS UP.
76	165.30	166.31	1.01	74		MUDSTONE	SLTY.VFG.VHML.DK.GY.LAM.VBRKN POSSIBLE CORE LOSS. SOME BIOTRB. OTHER HEAVILY FRACTURED WITH QTZ & MUD AND SH EARED. INTERLAM WITH SLTST.
76	166.31	166.46	0.15	74		ROCK LOSS	
77	166.46	167.12	0.66	74		MUDSTONE	SLTY.VFG.VHML.DK.GY.LAM.VBRKN AS ABOVE. BECOMING RHYTHMIC. HEAVILY FR ACTURED CAUSING DISPLACEMENT OF THE BED DING.
77	167.12	168.53	1.41	*75		MUDSTONE	SLTY.VFG.VHML.DK.GY.LAM.BRKN RHYTHMIC MUDST & SLTST LAMS. BREAK ALON G BEDDING COASTER ZONE. SOME FRACTURING WITH QTZ FILL.
78	168.53	169.23	0.70	*67		MUDSTONE	SLTY.VFG.VHML.DK.GY.LAM.BRKN AS ABOVE. NO FRACTURING BUT SOME QTZ CR YSTALS SEEN. COASTERS.
78	169.23	170.56	1.33	*69		MUDSTONE	SLTY.VFG.VHML.DK.GY.LAM.BRKN AS ABOVE. COASTERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	170.56	170.66	0.10	66		MUDSTONE	BLK.VBRKN VERY SHEARED. SLIGHTLY CARBONACEOUS. LI STRIC SURFACES.
79	170.66	170.96	0.30	*65		MUDSTONE	SSY.LY-DK.GY.VTHNB.VSHRD CARBONACEOUS MUDSTONE INTERBEDDED WITH ARGILLACEOUS SANDSTONE. NUMEROUS PLANT FRAGMENTS. QUARTZ FRACTURE FILL.
79	170.96	171.02	0.06	65 99999	J	COAL	C-5.DK.GY.VSHRD MINOR PYRITE.
79	171.02	171.09	0.07	65 99999	J	COAL	C-4.BLK.VBRKN C-4 WITH RARE BANDS OF C-2.
79	171.09	171.14	0.05	65 99999	J	COAL	C-2.BLK.SHRD WELL CLEATED.
79	171.14	171.17	0.03	65 99999	J	COAL	C-4.BLK.SHRD
79	171.17	171.58	0.41	66 99999	J	COAL LOSS	
79	171.58	171.61	0.03	66		ROCK LOSS	
79	171.61	171.70	0.09	66		SILTSTONE	DK.GY.SHRD NUMEROUS PLANT FOSSILS. LISTRIC SHEAR S URFACES THROUGHOUT. CARBONACEOUS AT TOP

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	171.70	171.73	0.03	66		COAL	C-1. BLK. SHRD WELL CLEATED, PYRITE BAND AT BASE.
79	171.73	171.80	0.07	66		COAL LOSS	
79	171.80	171.90	0.10	66		MUDSTONE	CARB. BLK. VSHRD LISTRIC SURFACES THROUGHOUT. ABUNDANT P. LANT FRAGMENTS.
79	171.90	171.98	0.08	66		BRECCIA	DK. GY. VSHRD SILTSTONE BRECCIA WITH C-1 COAL STRINGE RS THROUGHOUT.
79	171.98	172.29	0.31	67		MUDSTONE	CARB. BLK. VSHRD SHINEY LISTRIC SURFACES THROUGHOUT.
79	172.29	172.31	0.02	67		COAL	C-1. BLK. VBRKN C-1 BAND WITH QUARTZ VEINING. WELL CLEA TED.
79	172.31	172.37	0.06	67		COAL	C-5. BLK. SHRD C-1. SLIVERS WITH C-5.
79	172.37	172.99	0.62	67		MUDSTONE	CARB. DK. GY. SHRD LISTRIC SURFACES.
80	172.99	173.10	0.11	68		MUDSTONE	CARB. DK. GY. SHRD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
80	173.10	173.22	0.12	68		SILTSTONE	M. GY. VBRKN POSSIBLE ROCK LOSS.
80	173.22	173.68	0.46	*68		MUDSTONE	SLTY. M. GY. LAM. SSD. SHRD INTERLAMINATED BLACK MUD, SILT AND VERY FINE SAND. LOAD CASTS INDICATE TOPS UP
80	173.68	174.18	0.50	69		SANDSTONE	SLTY. FG. PR. LT-M. GY. VTHNB. SSD. BRKN INTERBEDDED FINE SAND, SILT AND BLACK M. UD. LOAD CAST INDICATE TOPS ARE UP.
80	174.18	174.69	0.51	*70		SILTSTONE	M. GY. LAM. SSD. SLD INTERLAMINATED SILT AND MUD. BEDDING CO NTORTED DUE TO SSD.
81	174.69	176.08	1.39	*71		MUDSTONE	SLTY. VFG. VHEL. DK. GY. VTHNB. BRKN SOME SLTST INTERBEDS AND RIP-UPS. NOT R MYTHMIC.
81	176.08	176.34	0.26	70		MUDSTONE	SLTY. VFG. VHEL. DK. GY. VTHNB. SLD AS ABOVE.
81	176.34	176.80	0.46	70		MUDSTONE	SLTY. VFG. VHEL. DK. GY. VTHNB. VBRKN POSSIBLE CORE LOSS. HIGHLY SHEARED & FR ACTURED. MUD & QTZ FRACTURE FILL. ROCK IS MUDSTONE - AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	176.80	177.10	0.30	70			ROCK LOSS	
82	177.10	178.33	1.23	69			MUDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. SLD AS ABOVE. BUT WITH LESS FRACTURING.
82	178.33	179.16	0.83	*68			MUDSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH VFG SS. SOME BIOTRB & SSD. LOAD CASTS - TOPS UP.
83	179.16	179.56	0.40	*70			SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD INTERBED. WITH VFG SS. WITH WRMBUR. VARYING AMOUNT OF SS. SOME MUDST LAMS.
83	179.56	180.07	0.51	*55			SILTSTONE	SSY. VFG. VMEL. M. GY. VTHNB. SSD. SLD AS ABOVE. SHEARED MUD FRACTURE FILL & Q TZ VEINS. GRADING INTO A SS (VFG).
83	180.07	180.53	0.46	56			SANDSTONE	FG. VMEL. S-P. MAS. SLD SLTST WISPS. QTZ VEINS.
83	180.53	181.17	0.64	58			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SLD SLTST LAMS. QTZ FRACTURE FILL. SHEARED MUD FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	181.17	181.38	0.21	59			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. VBRKN AS ABOVE. WITH BAND (8CM) OF BRECCIATED MUD.
84	181.38	182.59	1.21	*61			SANDSTONE	FG. VMEL. M. GY. VTHNB. SSD. BRKN LESS SLTST. GRADING INTO A MORE MASSIVE SS WITH SLTST WISPS. QTZ & MUD FRACTURE FILL.
84	182.59	182.99	0.40	62			SANDSTONE	FG. VMEL. M. GY. MAS. SSD. SLD AS ABOVE. POSSIBLE BIOTRB.
85	182.99	185.07	2.08	*63			SANDSTONE	SLTY. FG. VMEL. M. GY. VTHNB. SSD. SLD GRADES FROM MASSIVE SS WITH SLTST WISPS TO INTERBEDDED VTHNB FG SS AND SLTST. TOPS UP - LOAD STRUX. SOME BIOTRB. QTZ VEINING.
86	185.07	185.63	0.56	*63			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED SLTST & VFG SS SOME MUDST LAMS. LESS SSD THAN ABOVE.
86	185.63	186.95	1.32	*68			SANDSTONE	VFG. VMEL. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. WORM BURROWS. FRACTURED - QTZ AND SHEARED MUD. WITH SOME DISPLACEMENT. LOAD CASTS TOP UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
87	186.95	188.55	1.60	*63			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SSD. VBRKN AS ABOVE LITHOLOGY. POSSIBLE CORE LOSS. FRACTURED AS ABOVE. WRMBUR & FECAL PEL LETS.
88	188.55	190.55	2.00	*60			SANDSTONE	SLTY. VFG. VMEL. M. GY. VTHNB. SSD. BRKN AS ABOVE. VERY LITTLE SSD.
89	190.55	191.47	0.92	*51			SANDSTONE	VFG. VMEL. M. GY. VTHNB. BRKN AS ABOVE. LESS SLTST BEDS - MORE SLTST LAMS. POSSIBLE CORE LOSS. GRADING INTO A SSS SLTST AND BACK AGAIN EVERY 75.0CM
89	191.47	192.34	0.87	52			SANDSTONE	VFG. VMEL. M. GY. VTHNB. BRKN AS ABOVE WITH QTZ & MUD. SHEARED FRACTURES.
90	192.34	192.99	0.65	53			SANDSTONE	FG. VMEL. M. GY. VTHNB. BRKN WITH SLTST LAMS. HEAVILY FRACTURED. QTZ AND MUD. SOME BRECCIATED MUD.
90	192.99	193.30	0.31	54			SANDSTONE	VFG. VMEL. M. GY. VTHNB. SLD BEDS ALTERNATE WITH SLTST. QTZ & SHEAR D. MUD FRACTURES. QTZ VEIN.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
90	193.30	194.31	1.01	*55			SILTSTONE	VFG. VMEL. LT-M. GY. VTHNB. SSD. BRKN MIXTURE OF TUFFACEOUS MATERIAL AND SLTS T. SOME VFG SS BEDS. QTZ & SHEARED MUD FRACTURES PARALLEL TO BEDDING. TUFFITE. X-BEDDING - TOPS UP.
91	194.31	194.47	0.16	58			SILTSTONE	VFG. VMEL. LT-M. GY. VTHNB. BRKN AS ABOVE LITHOLOGY. RHYTHMITES - BREAK PARALLEL TO BEDDING.
91	194.47	195.61	1.14	*62			SILTSTONE	VFG. VMEL. LT-M. GY. VTHNB. BRKN AS ABOVE LITHOLOGY; NO LONGER RHYTHMIC. BEDS GRADE FROM LT. GREY TUFF TO DK. GREY SLTST.
91	195.61	195.64	0.03	53	10358		BENTONITE	CLYY. LT. GY. SLD
91	195.64	196.09	0.45	50			MUDSTONE	SLTY. VFG. VMEL. DK. GY. LAM. VBRKN INTERLAM WITH SLTST. RHYTHMITES - BREAK PARALLEL TO BEDDING. SHEARED LISTRIC SURFACES. QTZ & CHLORITE. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	196.09	196.74	0.65	*42	08306	I ROOF	MUDSTONE	SLTY. M. GY. LAM. VSHRD INTERLAMINATED BLACK MUD AND GREY SILT. QUARTZ FRACTURE INFILL. SLIGHTLY CARBO NACEOUS AT BASE. LISTRIC SURFACES. POSS IBLE ROCK LOSS. (LOWER 22CM SAMPLED). I SEAM ROOF ROCK.
92	196.74	196.77	0.03	46	08306	I ROOF	MUDSTONE	CARB. BLK. PHRD POORLY CONSOLIDATED BLACK CARBONACEOUS MUDSTONE. I SEAM ROOF ROCK. SAMPLED.
92	196.77	196.84	0.07	46	08307	I	COAL LOSS	
92	196.84	196.92	0.08	47	08307	I	COAL	C-2. BLK. SHRD SHINEY LISTRIC SURFACES. BORDERLINE C-3 . MODERATELY CLEATED.
92	196.92	196.94	0.02	47	08307	I	MUDSTONE	CARB. BLK. SHRD POORLY CONSOLIDATED.
92	196.94	197.10	0.16	48	08307	I	COAL	C-2. BLK. SHRD EXTREMELY BROKEN AND SHEARED. NUMEROUS LISTRIC SURFACES.
92	197.10	197.14	0.04	49	08307	I	COAL	C-1. BLK. VBRKN WELL CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
92	197.14	197.17	0.03	50	08307	I	COAL	C-3. BLK. VBRKN POORLY CLEATED.
92	197.17	197.22	0.05	50	08307	I	MUDSTONE	CARB. BLK. PHRD VERY SHEARED WITH LISTRIC SURFACES.
92	197.22	197.23	0.01	50	08307	I	COAL	C-6. DK. GY. VBRKN VERY HARD.
92	197.23	197.30	0.07	51	08307	I	COAL	C-1. BLK. VBRKN WELL CLEATED.
92	197.30	197.41	0.11	52	08307	I	COAL	C-2. BLK. VBRKN WELL CLEATED.
92	197.41	197.42	0.01	52	08307	I	COAL	C-1. BLK. VBRKN C-1 FRAGMENTS THROUGHOUT.
92	197.42	197.60	0.18	53	08307	I	COAL	C-2. BLK. VBRKN WELL CLEATED.
93	197.60	197.64	0.04	55	08307	I	COAL	C-3. BLK. VBRKN
93	197.64	197.84	0.20	56	08307	I	COAL	C-2. BLK. VSHRD WELL CLEATED - WITH C-1 BANDS.
93	197.84	198.05	0.21	58	08307	I	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	198.05	198.18	0.13	60	08307	I	ROCK LOSS	
93	198.18	198.27	0.09	61	08307	I	COAL LOSS	
93	198.27	198.30	0.03	61	08307	I	COAL	C-5.BLK.VSHRD
93	198.30	198.38	0.08	*62	08307	I	COAL	C-5
93	198.38	198.66	0.28	62	08307	I	COAL	C-3.BLK.VSHRD MODERATELY CLEATED - WITH BANDS OF C-1 IN PARTS.
93	198.66	198.83	0.17	62	08307	I	COAL	C-2.BLK.SHRD WELL CLEATED - BANDS OF C-1 AND C-3.
93	198.83	198.94	0.11	63	08307	I	COAL	C-1.BLK WELL CLEATED.
93	198.94	199.06	0.12	63	08307	I	COAL	C-2.BLK.PHRD C-1, C-2 AND C-3 FRAGMENTS.
93	199.06	199.15	0.09	63	08307	I	COAL	C-2.BLK.PHRD AS ABOVE.
93	199.15	199.21	0.06	63	08307	I	COAL	C-2.BLK.SHRD MODERATELY CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	199.21	199.23	0.02	63	08307	I	COAL	C-4.BLK.SHRD
93	199.23	199.32	0.09	63	08307	I	COAL	C-2.BLK.SHRD MODERATELY CLEATED.
93	199.32	199.41	0.09	63	08307	I	COAL	C-1.BLK.SHRD WELL CLEATED.
93	199.41	199.43	0.02	63	08307	I	COAL	C-5.BLK.SHRD BANDS OF CARBONACEOUS MUD WITH COAL.
93	199.43	199.57	0.14	63	08307	I	COAL	C-3.BLK.SHRD BANDS OF C-1 WITH C-3.
93	199.57	199.67	0.10	63	08307	I	COAL	C-2.BLK.VSHRD WELL CLEATED - BANDED WITH C-1 AND C-3.
93	199.67	199.72	0.05	64	08307	I	COAL	C-4.BLK.BRKN VERY HARD. C-6 BANDS WITH C-3.
94	199.72	199.80	0.08	64	08308	I	COAL	C-1.BLK.BRKN WELL CLEATED.
94	199.80	199.93	0.13	64	08308	I	COAL	C-2.BLK.BRKN WELL CLEATED.
94	199.93	200.61	0.68	64	08308	I	COAL	C-1.BLK.BRKN WELL CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
94	200.61	200.98	0.37	65	08308 I	COAL	C-1. BLK. SLD WELL CLEATED.
94	200.98	201.23	0.25	65	08308 I	COAL LOSS	
94	201.23	201.46	0.23	65	08308 I	COAL	C-2. BLK. PHRD FRAGMENTS OF C-1, C-2 AND C-3.
94	201.46	201.48	0.02	66	08308 I	COAL	C-1. BLK. SLD WELL CLEATED.
94	201.48	201.50	0.02	66	08308 I	COAL	C-5. BLK. SLD SLIVERS OF C-1. POORLY CLEATED.
94	201.50	201.82	0.32	66	08309 I FLOOR	MUDSTONE	CARB. M. GY. SLD SILTY MUDSTONE WITH PLANT FRAGMENTS. (U PPER 25.0CM SAMPLED).
95	201.82	202.38	0.56	66		MUDSTONE	SLTY. YFG. VMEL. DK. GY. LAM. SSD. BRKN INTERLAM WITH SLTST. GRADING INTO A SLT ST. COAL STRINGERS. PLANT HASH. LOAD CA ST - TOPS UP.
95	202.38	203.20	0.82	67		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
95	203.20	204.08	0.88	*68		SANDSTONE	SLTY. YFG. VMEL. M. GY. VTHNB. SSD. BRKN GRAM SIZE VARIES TO CG. INTERBEDDED WIT H SLTST. PLANT FRAGMENTS COMMON AND MOR M. BURROWS TRACE FOSSILS.
95	204.08	204.60	0.52	68		SANDSTONE	MG. VMEL. S-P. GY. VTHNB. SLD APPEARS MASSIVE WITH FG LAMS. QTZ VEIN.
96	204.60	206.23	1.63	68		SANDSTONE	MG. VMEL. S-P. GY. VTHNB. BRKN AS ABOVE. WITH A FEW BANDS OF SLTST & C HERT PEBBLES AS THE SS GRADES INTO A CO NGLOMERATE.
96	206.23	206.35	0.12	69		CONGLOMERATE	PBL. PR. LT. GY. MAS. BRKN WITH MG-CG SS MATRIX. AVERAGE PEBBLE SI ZE - 5MM. RANGE 3-9MM. CHERT & SLTST MEL L ROUNDED.
97	206.35	207.77	1.42	69		CONGLOMERATE	PBL. PR. LT. GY. MAS. BRKN AS ABOVE. GRADES INTO MG SS.
97	207.77	208.29	0.52	69		SANDSTONE	CG. VMEL. S-P. GY. MAS. BRKN FEW BANDS OF SLTST & CHERT PEBBLES (FRO M CONGLOMERATE) RANDOMLY PLACED.
98	208.29	209.89	1.60	69		SANDSTONE	CG. VMEL. S-P. GY. MAS. VBRKN AS ABOVE. WITH QTZ VEINING. POSSIBLE CO RE LOSS. PEBBLES GRADUALLY DISAPPEAR.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
99	209.89	210.34	0.45	70		SANDSTONE	CG.VMEL.S-P.GY.VBRKN COAL - CORE LOSS. PIECES SHOW A CHANGE IN LITHOLOGY FROM SS TO A MUDDY SLTST.
99	210.34	211.81	1.47	*70		SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.SSD.BRKN INTERLAM WITH MUDST. FEW SS (VFG) BEDS. LOAD CASTS - TOPS UP. SOME BIOTRB. MUD FILLED FRACTURES WITH SOME DISPLACEMEN T (SHEARING). NORM BURROWS AND PLANT HA SH.
100	211.81	212.07	0.26	72		SILTSTONE	SSY.VFG.VMEL.DK.GY.LAM.SSD.VBRKN LOTS OF SHEARED LITRIG SURFACES, AS AB OVE LITHOLOGY. POSSIBLE HELMINTHOPSIS? OR FOSSIL FRAGMENTS. POSSIBLE CORE LOSS
100	212.07	213.37	1.30	*73		MUDSTONE	SLTY.VMEL.BLK.LAM SLTST LAMS. GRADES FROM SSY SLTST TO A SLTY SS. PYRITE DISSEMINATION. BIVALVES - 1-2CM IN SIZE. SOME ALTERED TO PYRIT E.
100	213.37	213.54	0.17	71		SANDSTONE	SLTY.VFG.VMEL.DK.GY.VTHNB.SSD.SLD INTERLAM WITH SLTST. BIVALVES PRESENT - DIFFERENT THAN ABOVE. SLTST RIPUP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
100	213.54	213.73	0.19	71		SANDSTONE	SLTY.VFG.VMEL.DK.GY.VTHNB.SLD AS ABOVE.
101	213.73	215.92	2.19	*68		SANDSTONE	SLTY.VFG.VMEL.M.GY.VTHNB.SSD.BRKN INTERLAM WITH SLTST & MUDST. VARYING AM OUNTS OF SLTST. SOME BIOTRB & PLANT HAS H. LOAD CASTS - TOPS UP.
102	215.92	216.66	0.74	72		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.SLD INTERLAM WITH SLTST AND SOME VFG SS. DI SSEMINATED PYRITE.
102	216.66	217.33	0.67	*74		MUDSTONE	SLTY.VFG.VMEL.BLK.LAM.SSD.SLD AS ABOVE. LOAD CASTS - TOPS UP. INCREAS ING AMOUNTS OF SLTST, DECREASING MUDST.
102	217.33	217.65	0.32	75		SILTSTONE	VFG.VMEL.DK.GY.LAM.SSD.SLD INTERLAM WITH SLTST AND MUDST LAMS. HEL MINTHOPSIS? GRADING INTO A SS.
102	217.65	217.98	0.33	76		SANDSTONE	FG.MOD.M.GY.VTHNB.BIOTR.SLD INTERLAM WITH MUDST & SLTST. ANGULAR QU ARTZ SAND PRESENT - CONTENT FINING UPWA RD, RESEMBLES MILKY MAY.
102	217.98	218.07	0.09	76		SANDSTONE	SLTY.VFG.VMEL.M-DK.GY.VTHNB.SSD.SLD INTERBEDDED WITH SLTST. LOAD CASTS - TO PS UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
103	218.07	218.25	0.18	76			SANDSTONE	MG. VMEL. S-P. GY. MAS. BIOTR. SLD MUDST LAMS.
103	218.25	219.70	1.45	*78			SANDSTONE	VFG. VMEL. M-DK. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. LOAD STRUX -TOP S UP. COAL STRINGER. HELMINTHOPSIS. A L ENSE. FO MG. SS WITH QTZ SAND.
103	219.70	220.21	0.51	*66			SANDSTONE	VFG. VMEL. M-DK. GY. VTHNB. SSD. BRKN AS ABOVE. AGAIN QTZ SAND GRAINS APPEAR IN SOME SS. HELMINTHOPSIS -NO COAL.
104	220.21	221.24	1.03	*73			SANDSTONE	VFG. VMEL. M-DK. GY. VTHNB. SSD. SLD INTERBEDDED WITH SLTST. FG SS & MG SS W ITH QTZ SAND GRAINS. TOPS UP - LOAD CAS TS. WORM BURROWS AND POSSIBLE BIVALVE B URROW. QTZ & CHLORITE SHEARED SURFACES.
104	221.24	221.28	0.04	*67			SANDSTONE	CG. VMEL. S-P. GY. THNB. SLD HIGH IN QTZ CONTENT.
104	221.28	221.43	0.15	67			SANDSTONE	MG. VMEL. LT-M. GY. VTHNB. SLD A FINING UPWARD SEQUENCE OF CG QTZ RICH SS TO A FG QTZ POOR SS. A WORM BURROW.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
104	221.43	222.36	0.93	*69			SANDSTONE	FG. VMEL. LT-DK. GY. VTHNB. BIOTR. SLD INTERBEDDED WITH SLTST AND MG SS WITH Q TZ CLASTS. TOPS UP - LOAD CASTS. MANY B URROWS - ABOUT 7 OR 8 PER LOCM. A TRUNC ATED BURROW - TOPS UP. ALSO RIP-UP CLAS TS.
105	222.36	222.68	0.32	*71			SANDSTONE	SLTY. VFG. VMEL. DK. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. HELMINTHOPSIS I N SLTST. FEW QTZ SAND GRAINS IN SS. TOP S UP - LOAD CASTS.
105	222.68	223.54	0.86	*72			SANDSTONE	FG. VMEL. LT-M. GY. VTHNB. BIOTR. BRKN WITH SLTST/MUDST BEDS - BIOTRB. SS - FI NING UPWARD SEQUENCE. BLACK PELLETS POS SIBLY FECAL ABOUT 1MM SIZE. QTZ SHEARIN G. WORM BURROWS (POSSIBLY BIVALVES). SO ME OF QTZ SAND SIZE GRAINS RANDOMLY PLA CED.
105	223.54	224.44	0.90	71			SANDSTONE	CLYY. MG. VMEL. M. GY. MAS. VBRKN GRADING TO A MASSIVE SS WITH SLTST MISP S. HEAVILY FRACTURED. SHEARED QTZ, CHLO RITE & MUD SURFACES.
105	224.44	224.65	0.21	70			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
106	224.65	225.18	0.53		70		SANDSTONE	CLYY.MG.VMEL.M.GY.VBRKN AS ABOVE. HEAVILY SHEARED. INTERBEDDED WITH SLTST.
106	225.18	225.90	0.72	*69			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN WITH MUDST BEDS. MAY HAVE LOAD CASTS OT RIP-UPS - TOPS UP. QTZ FRACTURING. MIN OR SHEARING. WORM BURROWS. MINOR BIOTRB
106	225.90	226.61	0.71	*69			SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. FINING UPWARD OCCURS. NO BIOTRB.
107	226.61	228.73	2.12	*64			SANDSTONE	MG.VMEL.M-DK.GY.VTHNB.BIOTR.BRKN INTERBEDDED WITH SLTST & FG SS. RIP-UPS AND LOAD CASTS - TOPS UP (SSD). WORM BURROWS & BIOTRB. SOME MINOR FRACTURE DISPLACEMENT. QTZ VEINS AND TRUNCATED BED S. POSSIBLE BIVALVE BIOTRB. LARGE BLACK PELLETS (1.0MM).
108	228.73	228.80	0.07	65			SANDSTONE	FG.VMEL.M-DK.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. SHEARED LISTRIC SURFACES. QTZ FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
108	228.80	230.71	1.91	*66			SANDSTONE	FG.VMEL.M-DK.GY.VTHNB.BIOTR.BRKN AS ABOVE. SOME SSD. LOAD CASTS - TOPS UP. P. FRACTURE DISPLACEMENT (MINOR). WORM BURROWS & FECAL PELLETS. PLANT HASH.
109	230.71	231.64	0.93	*74			SANDSTONE	FG.VMEL.M-DK.GY.VTHNB.BIOTR.BRKN AS ABOVE. (EXACTLY) WITH BANDS OF MG SS (8.0CM).
109	231.64	231.83	0.19	74			SANDSTONE	MG.VMEL.S-P.GY.SLD FINING UPWARDS TO SLTST. BIOTURBATION AT TOP.
109	231.83	232.60	0.77	*74			MUDSTONE	VMEL.BLK.LAM.SSD.BRKN LAMINATIONS OF SLTST. SOME LOAD STRUX. DISSEMINATED PYRITE. MUD & QTZ FRAC FILL. SHEARED LISTRIC SURFACES. PLANT HASH. MUDST GRADES FROM A VFG SS.
110	232.60	234.49	1.89	*65			MUDSTONE	VMEL.BLK.LAM.SLD COAL STRINGERS. PLANT HASH. SHEARED LISTRIC SURFACES. QTZ.
111	234.49	234.60	0.11	70			MUDSTONE	VMEL.BLK.LAM.BRKN AS ABOVE. COAL STRINGERS.
111	234.60	236.48	1.88	*74			MUDSTONE	VMEL.BLK.LAM.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
112	236.48	237.43	0.95	77			MUDSTONE	DK.GY.BRKN HOMOGENEOUS, PYRITE NODULES. MORE PREVA LENT IN MIDDLE OF UNIT. ABUNDANT PLANT HASH AT BASE. PITYOPHYLLUM NORDENSKIOLD I AMONG OTHERS. CALCITE VEIN AT BASE. C OAL STRINGERS AT BASE 1.0-3.0MM THICK.
112	237.43	237.46	0.03	78			COAL	C-6.BLK.SLD HARD.
112	237.46	237.57	0.11	78			MUDSTONE	DK.GY.BRKN ABUNDANT THIN (<0.5MM) WISPY CALCITE ST RINGERS. RARE COAL STRINGERS 1.0-2.0MM.
112	237.57	237.65	0.08	79			MUDSTONE	DK.GY.BRKN AS ABOVE.
112	237.65	238.00	0.35	*79	08310	H/I ROOF	MUDSTONE	DK.GY.BRKN ABUNDANT PYRITE LENSES 1-2CM LONG X 5-1 0MM THICK. ABUNDANT THIN (<0.5MM) COAL STRINGERS. (LOWER 25C M SAMPLED).
112	238.00	238.03	0.03	77	08311	H/I	COAL	C-1.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
112	238.03	238.07	0.04	76	08311	H/I	COAL	C-5.BLK.BRKN
112	238.07	238.10	0.03	76	08311	H/I	COAL	C-1.BLK.BRKN
112	238.10	238.13	0.03	76	08311	H/I	MUDSTONE	CARB.BLK.BRKN ABUNDANT COAL STRINGERS.
112	238.13	238.15	0.02	75	08311	H/I	COAL	C-5.BLK.SLD
112	238.15	238.18	0.03	75	08311	H/I	COAL	C-1.BLK.SLD
112	238.18	238.19	0.01	75	08311	H/I	COAL	C-4.BLK.SLD
112	238.19	238.22	0.03	74	08311	H/I	COAL	C-1.BLK.BRKN
112	238.22	238.24	0.02	74	08311	H/I	COAL	C-5.BLK.SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
112	238.24	238.28	0.04	74	08311 H/I	MUDSTONE	CARB. BLK. SHRD ABUNDANT CALCITE VEINS 1.0MM THICK.
112	238.28	238.30	0.02	73	08311 H/I	COAL	C-4. BLK. SHRD
112	238.30	238.32	0.02	73	08311 H/I	COAL	C-2. BLK. SHRD
112	238.32	238.34	0.02	73	08311 H/I	COAL	C-5. BLK. SLD
112	238.34	238.41	0.07	72	08311 H/I	COAL	C-4. BLK. SHRD
113	238.41	238.63	0.22	71	08311 H/I	COAL	C-3. BLK. PHRD
113	238.63	238.71	0.08	69	08311 H/I	COAL	C-2. BLK. VBRKN
113	238.71	238.76	0.05	68	08311 H/I	COAL	C-1. BLK. BRKN
113	238.76	239.10	0.34	66	08311 H/I	COAL LOSS	
113	239.10	239.20	0.10	63	08311 H/I	COAL	C-4. BLK. PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
113	239.20	239.21	0.01	63	08311 H/I	MUDSTONE	CARB. BLK. SHRD
113	239.21	239.28	0.07	62	08311 H/I	COAL	C-4. BLK. VBRKN
113	239.28	239.36	0.08	61	08311 H/I	COAL	C-3. BLK. VBRKN
113	239.36	239.39	0.03	61	08311 H/I	COAL	C-4. BLK. VBRKN
113	239.39	239.44	0.05	60	08311 H/I	COAL	C-5. BLK. BRKN MUDST INTERLAMPS PRESENT.
113	239.44	239.48	0.04	60	08311 H/I	COAL	C-4. BLK. BRKN
113	239.48	239.51	0.03	59	08311 H/I	MUDSTONE	CARB. BLK. SHRD
113	239.51	239.82	0.31	57	08311 H/I	COAL	C-4. BLK. PHRD MINOR C-3 AND C-2 FRAGMENTS. ABUNDANT M UD MIXED IN.
113	239.82	239.85	0.03	55	08311 H/I	COAL	C-1. BLK. VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
113	239.85	239.89	0.04	55	08311	H/I	COAL	C-3. BLK. PHRD ABUNDANT C-4 AND C-2; MUDST FRAGMENTS.
113	239.89	239.92	0.03	54	08311	H/I	COAL	C-4. BLK. PHRD
113	239.92	240.00	0.08	54	08311	H/I	COAL LOSS	
113	240.00	240.02	0.02	53	08311	H/I	MUDSTONE	CARB. BLK. VSHRD
113	240.02	240.04	0.02	53	08311	H/I	COAL	C-5. BLK. VSHRD
114	240.04	240.06	0.02	53	08311	H/I	COAL	C-5. BLK. VSHRD
114	240.06	240.08	0.02	52	08311	H/I	MUDSTONE	CARB. BLK. VSHRD
114	240.08	240.45	0.37	50	08311	H/I	COAL	C-4. BLK. VSHRD
114	240.45	240.49	0.04	48	08311	H/I	COAL LOSS	
114	240.49	240.52	0.03	47	08312	H/I FLOOR	MUDSTONE	BLK. SHRD H/I SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
114	240.52	240.61	0.09	46	08312	H/I FLOOR	MUDSTONE	SSY. DK. GY. LAM. SSD. BRKN INTERLAMINATED TO THINLY INTERBEDDED FG SS AND MUDST. FLASER BDG. BIVALVE BURR OHS 4.0CM LONG X 0.6CM WIDE. H/I SEAM F LOOR ROCK. SAMPLED.
114	240.61	240.76	0.15	*45	08312	H/I FLOOR	MUDSTONE	SSY. DK. GY. LAM. SSD. BRKN AS ABOVE. (UPPER 13.0CM SAMPLED). H/I S EAM FLOOR ROCK.
114	240.76	240.87	0.11	45			SANDSTONE	CLYY. FG. LT. GY. THNB. SSD. BRKN FG SS WITH MUDST INTERBEDS - FLASER BDG
114	240.87	241.78	0.91	43			SANDSTONE	MG. S-P. GY. MAS. SSD. SLD RARE RIP-UP CLASTS 5.0-20.0MM DIA (MUDS TONE). MODERATE WISPY 1.0-2.0MM CALCITE VEINS.
115	241.78	243.61	1.83	*40			SANDSTONE	FG. VHCL. M-DK. GY. VTHNB. SSD. SLD INTERBEDDED WITH SLTST. TOPS UP - X-BED DIMG. QTZ. & SHEARED SURFACES. PLANT HAS H.
115	243.61	243.71	0.10	46			SANDSTONE	FG. VHCL. M-DK. GY. VTHNB. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
116	243.71	244.00	0.29	*47			SANDSTONE	FG.VHEL.M-DK.GY.VTHNB.SSD.SLD AS ABOVE. QTZ VEINING.
116	244.00	244.23	0.23	47			SANDSTONE	CG.PR.S-P.GY.THNB.SLD A FINING UPWARD SEQUENCE FROM GRANULAR TO CG SS. WITH SMALL PEBBLES (2.0MM) AT BASE. QTZ VEINS.
116	244.23	244.40	0.17	46			SANDSTONE	VCG.PR.S-P.GY.THNB.SLD A FEW LARGE SLTST CLASTS PARALLEL TO BEDDING. LENTICULAR CLASTS - 2.0CM. SHEARED SURFACES.
116	244.40	244.77	0.37	*46			SANDSTONE	CG.VHEL.S-P.GY.THNB.SLD SLTST LAMS & RIP-UP. QTZ VEINING.
116	244.77	245.68	0.91	*46			SILTSTONE	SSY.VFG.VHEL.M-DK.GY.VTHNB.BIOTR BRKN INTERBEDDED WITH MUDST & VFG SS. ABRUPT CONTACT WITH OVERLYING SS. WORM BURROWS & HELMINTHOPSIS. QTZ & MUD SHEARS PARALLEL TO BEDDING.
117	245.68	246.46	0.78	*45			SILTSTONE	SSY.VFG.VHEL.M.GY.VTHNB.BIOTR.SLD INTERBEDDED WITH VFG SS AND MUDST. FECALEL PELLETS. QTZ & MUD SHEAR SURFACE.
117	246.46	247.69	1.23	*60			SILTSTONE	VHEL.M.GY.VTHNB.BIOTR.SLD AS ABOVE WITH LESS SS. PLANT MASH.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
118	247.69	247.94	0.25	64			SILTSTONE	VHEL.M.GY.VTHNB.BIOTR.BRKN AS ABOVE.
118	247.94	248.39	0.45	66			SANDSTONE	FG.VHEL.S-P.GY.MAS.SLD FEW SLTST WISPS. QTZ VEINING. BLACK PELLETS (FECAL?).
118	248.39	249.51	1.12	70			MUDSTONE	SLTY.VHEL.BLK.LAM.BRKN MUD FRACTURE FILL & QTZ SHEARED SURFACE S.
118	249.51	249.69	0.18	73			MUDSTONE	SLTY.VHEL.BLK.LAM.BRKN AS ABOVE. QTZ VEINING.
119	249.69	250.09	0.40	*75	08313	H ROOF	MUDSTONE	SLTY.M-DK.GY.LAM.SHRD INTERLAMINATED BLACK MUD AND SILT. LISTRIFIC SURFACES THROUGHOUT. (LOWER 19.0CM SAMPLED).
119	250.09	250.44	0.35	75	08313	H ROOF	ROCK LOSS	
119	250.44	250.50	0.06	75	08313	H ROOF	MUDSTONE	BLK.MAS.VSHRD POORLY CONSOLIDATED MUD WITH LISTRIFIC SURFACES THROUGHOUT. SAMPLED. H SEAM ROOF ROCK.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
119	250.50	250.58	0.08	75 08314	H	COAL	C-3. BLK. PWRD C-3 WITH MUD PARTINGS AND C-1 SLIVERS.
119	250.58	250.84	0.26	75 08314	H	MUDSTONE	CARB. DK. GY. LAM. SHRD
119	250.84	250.90	0.06	75 08314	H	COAL LOSS	
119	250.90	250.94	0.04	75 08314	H	COAL	C-3. BLK. YSHRD SHINEY LISTRIC SURFACES THROUGHOUT.
119	250.94	251.05	0.11	75 08314	H	COAL	C-4. BLK. YSHRD QUARTZ FRACTURE FILL.
119	251.05	251.33	0.28	75 08314	H	MUDSTONE	CARB. BLK. LAM. SHRD
119	251.33	251.95	0.62	*75 08314	H	MUDSTONE	SLTY. M. GY. MAS. SHRD ABUNDANT PLANT FRAGMENTS. 2.0CM WIDE MASSIVE PYRITIZED BAND AT BASE OF THE INTERVAL.
119	251.95	251.99	0.04	75 08315	H	COAL	C-5. BLK. BRKN
119	251.99	252.21	0.22	75 08315	H	COAL	C-2. BLK. SHRD WELL CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
120	252.21	252.31	0.10	75 08315	H	COAL	C-1. BLK. SHRD WELL CLEATED.
120	252.31	252.37	0.06	75 08315	H	COAL LOSS	
120	252.37	252.47	0.10	75 08315	H	COAL	C-5. BLK. SLD C-1 SLIVERS IN MUDSTONE. MINOR AMOUNTS OF C-6.
120	252.47	252.53	0.06	75 08315	H	COAL	C-1. BLK. SLD WELL CLEATED WITH THIN BANDS OF C-5.
120	252.53	252.85	0.32	75 08315	H	MUDSTONE	CARB. BLK. LAM. SHRD CARBONATE FRACTURE INFILL. ABUNDANT PLANT FRAGMENTS.
120	252.85	252.92	0.07	75 08315	H	COAL	C-3. BLK. SHRD BANDS OF C-1 WITH MUD PARTINGS.
120	252.92	252.98	0.06	75 08315	H	COAL	C-3. BLK. SHRD AS ABOVE.
120	252.98	253.01	0.03	75 08315	H	COAL	C-4. BLK. SHRD
120	253.01	253.06	0.05	75 08315	H	MUDSTONE	CARB. BLK. LAM. SHRD C-1 SLIVERS WITH MUD.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
120	253.06	253.29	0.23	75	08315 H	COAL	C-3. BLK. SHRD C-1 BANDS WITH MUD PARTINGS. CARBONATE FRACTURE FILL.
120	253.29	253.62	0.33	*75	08315 H	COAL	C-4. BLK. SHRD CARBONATE FRACTURE FILL. PLANT FRAGMENT S.
120	253.62	253.87	0.25	75	08315 H	COAL LOSS	
120	253.87	254.35	0.48	75	08316 H FLOOR	MUDSTONE	CARB. BLK. LAM. SHRD ABUNDANT PLANT FRAGMENTS. (UPPER 25.0CM SAMPLED).
121	254.35	255.72	1.37	75		MUDSTONE	SLTY. VMEL. BLK. LAM. BIOTR. BRKN GRADING TO A MUDDY SLTST. SHEARING WITH QTZ & CHLORITE. COAL STRINGERS AND QTZ STRINGERS. PLANT WASH. NILSSONIA TENUI CAULIS & NILSSONIA SCHAUMBERGENSIS.
121	255.72	255.94	0.22	75		SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. BIOTR. SLD INTERBEDDED WITH VFG SS AND MUDSTONE. W ORM BURROWS.
121	255.94	256.39	0.45	*75		SILTSTONE	SSY. VFG. VMEL. DK. GY. VTHNB. BIOTR. SLD AS ABOVE. INCREASING SS. LOAD CASTS - T OPS UP (SSD). FECAL PELLETS.

* DENOTES MEASURED. BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88018

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
122	256.39	257.64	1.25	*74		SILTSTONE	SSY. FG. VMEL. DK. GY. VTHNB. BIOTR. SLD AS ABOVE (SSD). GRADING TO A MORE MASSIVE SS.
122	257.64	258.43	0.79	*76		SANDSTONE	FG. VMEL. S-P. GY. MAS. BIOTR. SLD WITH SLTST LAMS WHICH SHOW BIOTURBATION & FRACTURING. TOPS UP - LOADING STRUCTURE.
123	258.43	258.92	0.49	77		SANDSTONE	FG. VMEL. S-P. GY. MAS. BIOTR. BRKN AS ABOVE. POSSIBLE CORE LOSS.
123	258.92	259.38	0.46	*77		SANDSTONE	FG. VMEL. S-P. GY. MAS. BRKN FEW INTERBEDS OF SLTST. LOADING - TOPS UP.
123	259.38	259.94	0.56	77		SANDSTONE	MG. VMEL. S-P. GY. MAS. BRKN WITH SLTST CLASTS (RIP-UP) LENTICULAR SHAPE (ICH) THROUGHOUT THE SS. POSSIBLE CORE LOSS. SLTST LAMS.
124	259.94	260.51	0.57	77		SANDSTONE	MG. VMEL. S-P. GY. MAS. VBRKN AS ABOVE. LESS RIP-UP MORE SLTST BEDS. TOO BROKEN TO STUDY IN DETAIL. PROBABLE CORE LOSS. END OF HOLE. TD = 260.51M.

* DENOTES MEASURED. BCA
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GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88018

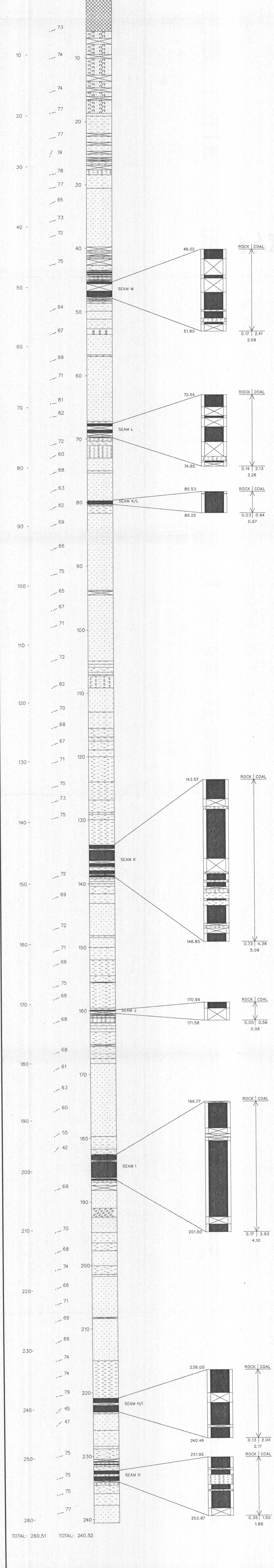
GEOLOGIST : KRAUS DATE : FEB 27/89 DRAWING NO. :

SCALE : 1:200 1:40

NORTHING: 8344349.0 N
 EASTING: 507385.5 E INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

[Symbol]	SANDSTONE	[Symbol]	BENTONITE
[Symbol]	SILTSTONE	[Symbol]	BRECCIA
[Symbol]	COAL	[Symbol]	CARBONACEOUS
[Symbol]	OVERBURDEN	[Symbol]	QUARTZ
[Symbol]	MUDSTONE, CLAYSTONE	[Symbol]	PYRITE
[Symbol]	TUFF	[Symbol]	FERRUGINOUS
[Symbol]	LIMESTONE	[Symbol]	CONGLOMERATE
[Symbol]	CORE LOSS	[Symbol]	FOSSIL BED



TOTAL: 260.51 TOTAL: 240.52

Gulf Canada Resources Limited

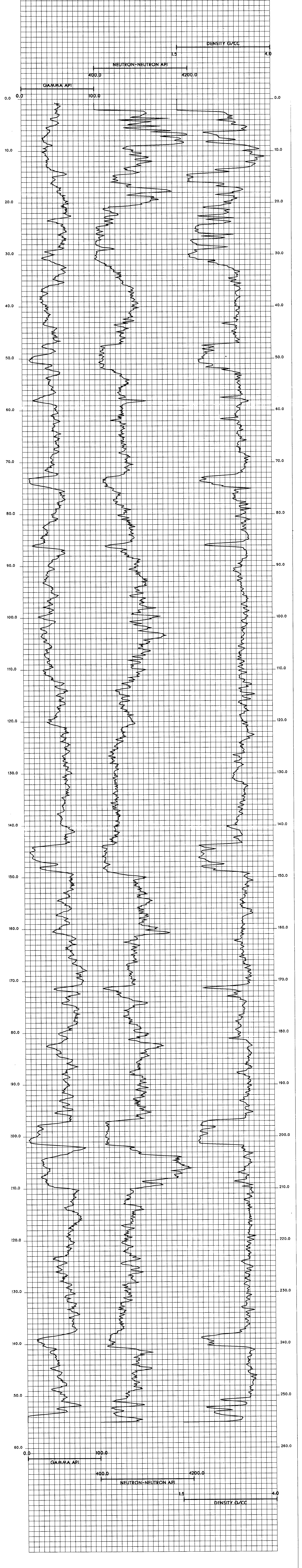
Coal Division

Geophysical Log

Datasource: KPnlRDDH88018 Log Date: 88-07-03 Company: CENTURY Geologist: KRAUS	Province: BC Northing: 6344350.00 Zone: 9 Easting: 507386.00 Measuring Point: GROUND LEVEL	Lat: 571439 Long: 1285239 Elevation: 1602.7
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Scale: 1 to 200.0 Depth Range: 0.0 to 260.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.
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Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88019

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88019

DATE - 02/15/89

- HISTORY -

START DATE - 07/05/88

END DATE - 07/07/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - WALLACE

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS G, GL, GL (OVT), G (OVT), G, GL.

- LOCATION -

PROVINCE - BC
ELEVATION - 1814.25

ZONE - 9
NORTHING - 6344022.04
EASTING - 505694.40

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571428
LONGITUDE - 1285420

- ORIENTATION -

LENGTH - 155.14

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-019

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

$G_u + G_l$

4.17 m

G_l ovt.
 G_u ovt.

2.25 m

5.23 m

$G_u + G_l$

4.37 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000



Gulf Canada Resources Limited

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.66	3.66	76			OVERBURDEN	CASING DEPTH.
1	3.66	4.18	0.52	76			SILTSTONE	M-DK.GY.LAM.VBRKN WEATHERS ORANGE-BROWN TO BATTLESHIP GRE Y. FE STAINING. POSSIBLE ROCK LOSS. VER Y HARD.
1	4.18	4.38	0.20	76			ROCK LOSS	
1	4.38	4.73	0.35	76			SILTSTONE	M-DK.GY.LAM.VBRKN AS ABOVE.
1	4.73	4.93	0.20	76			ROCK LOSS	
1	4.93	5.47	0.54	76			MUDSTONE	SLTY.LT-DK.GY.LAM.VBRKN FE STAINED LAMINATIONS. NUMEROUS MICRO FRACTURES AND CONTORTED LAMINATION. TWI ST-OFF, POSSIBLE ROCK LOSS. VERY HARD.
1	5.47	5.77	0.30	76			ROCK LOSS	
2	5.77	6.87	1.10	76			MUDSTONE	SLTY.LT-DK.GY.LAM.VBRKN AS ABOVE.
2	6.87	7.27	0.40	76			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	7.27	7.79	0.52	76			SILTSTONE	SSY.LT-DK.GY.LAM.BRKN INTERLAMINATED SILTSTONE AND VERY FINE SANDSTONE WITH MINOR MUDSTONE. FE STAIN ED.
2	7.79	7.94	0.15	76			ROCK LOSS	
3	7.94	9.44	1.50	76			SILTSTONE	SSY.LT-DK.GY.LAM.VBRKN TWIST-OFF, POSSIBLE ROCK LOSS.
3	9.44	10.05	0.61	76			ROCK LOSS	
3	10.05	10.30	0.25	*76			SILTSTONE	SSY.M.GY.LAM.VBRKN INTERLAMINATED FINE TO VERY FINE SAND H ITH SILT AND MINOR AMOUNTS OF MUD. MINO R FE STAINING.
3	10.30	10.40	0.10	75			ROCK LOSS	
4	10.40	10.78	0.38	73			SILTSTONE	SSY.M-DK.GY.VTHNB.SSD.VBRKN INTERBEDDED SILT AND FINE SAND. MINOR F E STAINING. LOAD CASTS INDICATE BEDS UP RIGHT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	10.78	10.98	0.20		72		ROCK LOSS	
4	10.98	12.21	1.23	*70			SANDSTONE	SLTY. FG. MOD. LT-H. GY. VTHNB. BRKN TWIST-OFF - POSSIBLE ROCK LOSS. INTERBEDDED FINE AND VERY FINE SAND WITH SILT AND MUD LAMINATIONS. MINOR PYRITE AND FE STAINING.
5	12.21	13.47	1.26	*65			SANDSTONE	SLTY. VFG. LT-H. GY. VTHNB. SLD AS ABOVE.
5	13.47	13.90	0.43	*64			SILTSTONE	SSY. M. GY. VTHNB. BRKN INTERBEDDED SILT, SAND AND LESSER AMOUNTS OF MUD. FE STAINING AND MINOR DISSEMINATED PYRITE. TWIST-OFF, POSSIBLE ROCK LOSS.
5	13.90	14.40	0.50	67			ROCK LOSS	
6	14.40	15.34	0.94	*70			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE WITH LOAD CASTS AND BURROWS INDICATING UPRIGHT BEDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	15.34	16.02	0.68	*68			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE. CORE TWIST-OFF, POSSIBLE ROCK LOSS.
7	16.02	16.66	0.64	*70			SILTSTONE	SSY. M. GY. VTHNB. BRKN INTERBEDDED VERY FINE SAND AND SILT WITH MUD LAMINATIONS. FE STAINING IN PARTS.
7	16.66	16.86	0.20	68			ROCK LOSS	
7	16.86	17.96	1.10	*65			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE BUT BECOMING MORE MASSIVE AND INCREASING MORE MUDDY. LOAD CASTS INDICATE UPRIGHT. NUMEROUS MICRO FRACTURES FILLED WITH QUARTZ AND PARALLELING BEDDING.
8	17.96	18.41	0.45	*64	08258	G ROOF	MUDSTONE	SLTY. M. GY. LAM. BRKN INTERLAMINATED MUD AND SILT. INTERVAL BECOMES MORE SILTY TOWARDS THE BASE. (LOWER 14CM SAMPLED). G SEAM ROOF ROCK.
8	18.41	18.61	0.20	64	08258	G ROOF	ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	18.61	18.72	0.11	63 08258	G ROOF	MUDSTONE	CARB. M. GY. LAM. BRKN ABUNDANT PLANT FRAGS. G SEAM ROOF ROCK. SAMPLED.
8	18.72	18.86	0.14	63 08259	G & G LO	COAL	C-5. BLK. VBRKN
8	18.86	19.56	0.70	63 08259	G & G LO	COAL LOSS	
8	19.56	19.66	0.10	62 08259	G & G LO	COAL	C-4. BLK. VBRKN TWIST-OFF. POSSIBLE ROCK LOSS.
8	19.66	19.69	0.03	62 08259	G & G LO	COAL	C-2. BLK. BRKN TWIST-OFF. WELL CLEATED.
8	19.69	19.74	0.05	61 08259	G & G LO	COAL	C-4. BLK. BRKN
8	19.74	19.96	0.22	61 08259	G & G LO	ROCK LOSS	
8	19.96	20.36	0.40	61 08259	G & G LO	COAL	C-2. BLK. BRKN WELL CLEATED.
8	20.36	20.57	0.21	60 08259	G & G LO	COAL LOSS	
9	20.57	20.64	0.07	60 08259	G & G LO	COAL	C-3. BLK. BRKN MODERATELY CLEATED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	20.64	20.70	0.06	60 08259	G & G LO	COAL	C-3. BLK. BRKN MODERATELY CLEATED.
9	20.70	20.84	0.14	59 08259	G & G LO	COAL LOSS	
9	20.84	20.90	0.06	59 08259	G & G LO	MUDSTONE	CARB. BLK. BRKN UNLITHIFIED.
9	20.90	20.95	0.05	58 08259	G & G LO	COAL	C-5. BLK. BRKN
9	20.95	21.00	0.05	58 08259	G & G LO	COAL LOSS	
9	21.00	21.11	0.11	58 08259	G & G LO	COAL	C-3. BLK. BRKN WELL CLEATED - BORDERLINE C-2. TWIST-OFF
9	21.11	21.14	0.03	57 08259	G & G LO	MUDSTONE	CARB. BLK. BRKN UNLITHIFIED.
9	21.14	21.24	0.10	57 08259	G & G LO	COAL	C-3. BLK. BRKN WELL CLEATED.
9	21.24	21.28	0.04	56 08259	G & G LO	COAL LOSS	
9	21.28	21.41	0.13	56 08260	G & G LO	MUDSTONE	CARB. BLK. BRKN TWIST-OFF.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	21.41	21.51	0.10	56	08260	G & G LO	MUDSTONE	M. GY. LAM. BRKN WEAKLY CARBONACEOUS WITH PLANT FRAGMENT S. MINOR AMOUNTS OF QUARTZ VEINING.
9	21.51	21.90	0.39	55	08260	G & G LO	COAL LOSS	
9	21.90	21.97	0.07	55	08260	G & G LO	COAL	C-4. BLK. BRKN
9	21.97	22.26	0.29	54	08260	G & G LO	COAL LOSS	
9	22.26	22.43	0.17	54	08260	G & G LO	ROCK LOSS	
9	22.43	22.48	0.05	53	08260	G & G LO	MUDSTONE	BLK. BRKN UNLITHIFIED MUD.
9	22.48	22.57	0.09	53	08260	G & G LO	MUDSTONE	BLK. BRKN AS ABOVE.
9	22.57	23.17	0.60	53	08260	G & G LO	COAL LOSS	
9	23.17	23.22	0.05	52	08260	G & G LO	COAL	C-3. BLK. BRKN WELL CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	23.22	23.33	0.11	52	08260	G & G LO	COAL	C-4. BLK. BRKN POORLY CLEATED.
9	23.33	23.69	0.36	51	08260	G & G LO	COAL LOSS	
9	23.69	23.75	0.06	51	08261	G LO FLR	MUDSTONE	CARB. BLK. VBRKN G SEAM FLOOR ROCK. SAMPLED.
9	23.75	23.85	0.10	50	08261	G LO FLR	MUDSTONE	LT. GY. BRKN UNCONSOLIDATED GREY MUD AND CLAY. G. SEA H FLOOR ROCK. SAMPLED.
9	23.85	24.18	0.33	*50	08261	G LO FLR	MUDSTONE	CARB. M-DK. GY. LAM. BRKN PLANT FRAGMENTS. TOP 9CM SAMPLED.
10	24.18	24.22	0.04	53			MUDSTONE	CARB. BLK. BRKN
10	24.22	25.35	1.13	*57			SILTSTONE	SSY. M-DK. GY. VTHNB. SSD. SLD INTERBEDDED SILT, SAND AND MUD. BEDDING CONTORTED BY SSD AND BIOTURBATION. MIN OR. PYRITE.
10	25.35	25.64	0.29	*68			SILTSTONE	SSY. M-DK. GY. VTHNB. SSD. BRKN AS ABOVE. TWIST-OFF. POSSIBLE CORE LOSS
10	25.64	25.66	0.02	60			MUDSTONE	M. GY. BRKN CLAY BED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	25.66	25.84	0.18	53			SILTSTONE	SSY.M.GY.VTHMB.SSD.BRKN INTERBEDDED SILT, SAND AND MUD. BEDDING CONTORTED.
10	25.84	25.91	0.07	45			ROCK LOSS	
10	25.91	26.09	0.18	37			MUDSTONE	CLYY.DK.GY.LAM.SHRD TWIST-OFF - POSSIBLE ROCK LOSS. CLAY RI CH LAMINATED MUDSTONE. NUMEROUS FRACTUR ES AND SHEAR SURFACES.
10	26.09	26.49	0.40	29			ROCK LOSS	
11	26.49	27.11	0.62	21			MUDSTONE	CLYY.DK.GY.LAM.SHRD AS ABOVE.
11	27.11	27.21	0.10	13			ROCK LOSS	
11	27.21	27.86	0.65	*05			SILTSTONE	SSY.M.GY.LAM.SSD.VBRKN INTERLAMINATED SILT, SAND AND MUD. BEDD ING VERY CONTORTED WITH NUMEROUS MICRO FRACTURES.
11	27.86	27.96	0.10	25			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	27.96	28.50	0.54	*45			SANDSTONE	SLTY.FG.MOD.LT-M.GY.LAM.SSD.BRKN FINE TO VERY FINE SAND WITH MUD AND SIL T LAMINATIONS. BEDDING CONTORTED. MINOR FRACTURING.
11	28.50	28.58	0.08	46			ROCK LOSS	
12	28.58	28.67	0.09	48			SANDSTONE	SLTY.FG.MOD.LT-M.GY.LAM.SSD.BRKN AS ABOVE WITH LOAD CASTS INDICATING UPR IGHT BEDS.
12	28.67	28.84	0.17	49			BRECCIA	CLYY.M.GY.VBRKN MUDSTONE BRECCIA WITH CLAY INFILLING FR ACTURES.
12	28.84	28.91	0.07	51			ROCK LOSS	
12	28.91	30.33	1.42	*52			MUDSTONE	SSY.M.GY.VTHNB.SSD.BRKN INTERBEDDED MUD, SILT AND SAND. LOAD CA STS INDICATE BEDS UPRIGHT. NUMEROUS FRA CTURES WITH DISPLACEMENT AT TOP OF INTE RVAL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	30.33	30.48	0.15	49			ROCK LOSS	
12	30.48	30.53	0.05	45			MUDSTONE	CLYY. DK. GY. BRKN CLAY RICH MUD. BAND WITH MINOR QUARTZ VE INING.
12	30.53	30.79	0.26	*42			SANDSTONE	CLYY. MG. PR. LT. GY. VTHNB. SLD PREDOMINANTLY ARGILLACEOUS SAND WITH MI NOR MUD LAMINATIONS AND BEDS.
13	30.79	30.93	0.14	45			SANDSTONE	CLYY. MG. PR. LT. GY. VTHNB. BRKN AS ABOVE WITH THE SAND BECOMING MORE CL AY RICH.
13	30.93	31.00	0.07	48			ROCK LOSS	
13	31.00	31.40	0.40	50			SANDSTONE	CLYY. MG. PR. LT. GY. VTHNB. VBRKN AS ABOVE. POSSIBLE ROCK LOSS.
13	31.40	31.60	0.20	53			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	31.60	32.34	0.74	*56			SANDSTONE	CLYY. MG. PR. LT. GY. VTHNB. BRKN INTERBEDDED ARGILLACEOUS SAND AND BLACK MUD. MUD RIP-UP CLASTS IN PARTS. FRACT URES WITH DISPLACEMENT OCCUR. RARE NORM BURROWS INDICATE TOPS UP.
13	32.34	32.44	0.10	54			ROCK LOSS	
13	32.44	32.51	0.07	51			MUDSTONE	CLYY. DK. GY. VBRKN MUDSTONE BRECCIA WITH ABUNDANT CLAY.
13	32.51	32.53	0.02	49			ROCK LOSS	
13	32.53	32.78	0.25	46			MUDSTONE	SLTY. DK. GY. LAM. VBRKN SILTY MUDSTONE INTERLAMINATED WITH VERY FINE SAND. POSSIBLE ROCK LOSS.
13	32.78	33.18	0.40	44			ROCK LOSS	
14	33.18	34.35	1.17	41			MUDSTONE	SLTY. DK. GY. LAM. BIOTR. VBRKN AS ABOVE WITH FECAL PELLETS IN PARTS. N UMEROUS FRACTURED AREAS WITH CLAY INFIL L.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	34.35	34.50	0.15	39			ROCK LOSS	
14	34.50	34.79	0.29	36			SILTSTONE	CLYY, DK. GY. LAM. BRKN MUDDY SILTSTONE WITH FINE SAND LAMINATIONS, VERY FRACTURED.
14	34.79	34.86	0.07	33			ROCK LOSS	
14	34.86	35.00	0.14	31			MUDSTONE	CLYY, DK. GY. LAM. VBRKN PROBABLE ROCK LOSS, VERY UNCONSOLIDATED MUD.
14	35.00	35.40	0.40	28			ROCK LOSS	
14	35.40	35.48	0.08	25			MUDSTONE	CLYY, M-DK. GY. SLD VERY SOFT CLAY RICH BED.
15	35.48	35.62	0.14	23			MUDSTONE	CLYY, M-DK. GY. BRKN AS ABOVE WITH THE LOWER 4CM BEING MUDST ONE BRECCIA.
15	35.62	35.69	0.07	20			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	35.69	35.80	0.11	17			MUDSTONE	SLTY. M. GY. MAS. BRKN
15	35.80	35.84	0.04	15			ROCK LOSS	
15	35.84	37.38	1.54	*12			MUDSTONE	SSY. M. GY. VTHNB. SSD. BRKN INTERBEDDED MUD, SILT & FINE SAND. ABUNDANT LOAD CASTS INDICATE OVERTURNED BED S. WORM BURROWS COMMON.
15	37.38	37.53	0.15	18			ROCK LOSS	
16	37.53	37.73	0.20	*25			MUDSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE.
16	37.73	37.80	0.07	23			ROCK LOSS	
16	37.80	38.41	0.61	21			MUDSTONE	SSY. M. GY. VTHNB. SSD. VSHRD AS ABOVE. BRECCIATED THROUGHOUT THE INTERVAL ABUNDANT QUARTZ FILLED VEINS. PROBABLE ROCK LOSS.
16	38.41	38.91	0.50	19			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	38.91	39.41	0.50	*17		MUDSTONE	SSY.M.GY.VTHNB.SSD.BRKN INTERBEDDED MUD AND FINE SAND. LOAD CASTS INDICATE OVERTURNED. TWIST-OFF, POSSIBLE ROCK LOSS.
16	39.41	39.86	0.45	15		ROCK LOSS	
16	39.86	40.34	0.48	*12		MUDSTONE	SSY.M.GY.VTHNB.SSD.SLD INTERBEDDED MUD AND FINE SAND. LOAD CASTS INDICATE OVERTURNED.
17	40.34	41.22	0.88	*25		MUDSTONE	SSY.M.GY.VTHNB.SSD.BRKN AS ABOVE WITH WORM BURROWS INDICATE OVERTURNED. LOAD CASTS & SLUMP COMMON. TWIST-OFF - POSSIBLE ROCK LOSS.
17	41.22	41.72	0.50	24		ROCK LOSS	
17	41.72	41.84	0.12	23		MUDSTONE	SSY.M.GY.VTHNB.SSD.VBRKN AS ABOVE EXCEPT BRECCIATED WITH CLAYEY MATRIX.
17	41.84	41.90	0.06	21		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	41.90	42.83	0.93	*20		MUDSTONE	SSY.M.GY.VTHNB.SSD.SLD INTERBEDDED TO LAMINATED MUD. SILTY AND VERY FINE SAND. SMALL SLUMP AND FAULT STRUCTURES. LAM.
18	42.83	43.22	0.39	19		MUDSTONE	SSY.M.GY.VTHNB.SSD.SLD AS ABOVE WITH BEDDING EXTREMELY CONTORTED OR DESTROYED. SAND PODS ARE COMMON. LAM.
18	43.22	43.36	0.14	18		MUDSTONE	SSY.M.GY.VTHNB.SSD.SLD AS ABOVE. LAM.
18	43.36	43.55	0.19	17		MUDSTONE	SSY.M.GY.VTHNB.SSD.SHRD TWIST-OFF - POSSIBLE ROCK LOSS. BRECCIATED IN PARTS. LAM.
18	43.55	44.05	0.50	17		ROCK LOSS	
18	44.05	44.41	0.36	16		MUDSTONE	SSY.M.GY.VTHNB.SSD.VBRKN AS ABOVE NOT BRECCIATED. LAM.
18	44.41	44.49	0.08	15		ROCK LOSS	
18	44.49	44.72	0.23	*14		SANDSTONE	VFG.MOD.LT.GY.VTHNB.SSD.SLD LOAD CASTS INDICATE OVERTURNED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	44.72	44.93	0.21	15			MUDSTONE	SSY. M-DK. GY. LAM. SSD. SHRD INTERLAMINATED MUD AND VERY FINE SAND W ITH SOME SILT. VERY FRACTURED AND BRECC IATED.
18	44.93	45.00	0.07	16			ROCK LOSS	
18	45.00	45.44	0.44	18			MUDSTONE	SSY. M-DK. GY. LAM. SSD. BRKN AS ABOVE WITH CONTORTED AND SOMETIMES D ESTROYED LAMINAE.
18	45.44	45.52	0.08	19			ROCK LOSS	
19	45.52	46.06	0.54	*20			MUDSTONE	SSY. M-DK. GY. LAM. SSD. SHRD AS ABOVE. VERY FRACTURED AND BRECCIATED IN PARTS.
19	46.06	46.14	0.08	20			ROCK LOSS	
19	46.14	47.24	1.10	*20			MUDSTONE	SSY. M-DK. GY. LAM. SSD. BRKN INTERLAMINATED MUD, SILT AND VERY FINE SAND. LOAD CASTS INDICATE BEDS OVERTURN ED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	47.24	47.39	0.15	22			ROCK LOSS	
19	47.39	47.49	0.10	*25			MUDSTONE	SSY. M-DK. GY. LAM. SSD. BRKN AS ABOVE.
19	47.49	47.89	0.40	21			MUDSTONE	CARB. DK. GY. MAS. BRKN PREDOMINANTLY MUD WITH SILT. NUMEROUS M ICRO FRACTURES INFILLED WITH PYRITE AND CEMENT. ABUNDANT COAL STRINGERS. LAM.
19	47.89	47.97	0.08	16			ROCK LOSS	
20	47.97	50.06	2.09	*12			MUDSTONE	CARB. BLK. SHRD AS ABOVE.
20	50.06	50.31	0.25	26			ROCK LOSS	
21	50.31	50.40	0.09	39			MUDSTONE	CARB. BLK. BRKN AS ABOVE.
21	50.40	52.36	1.96	54			MUDSTONE	CARB. BLK. MAS. SLD AS ABOVE WITH RARE PYRITE AND MORE ABUN DANT COAL STRINGERS. PLANT FRAGMENT COM MON. CORE SHEARED IN PARTS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	52.36	53.04	0.68	*68	08262	G LO OVT FLR MUDSTONE	CARB. BLK. LAM. YBRKN POSSIBLE ROCK LOSS. SAMPLED LOWER 25CM. G FLOOR ROCK.
22	53.04	54.45	1.41	67	08263	G LO & G OVT COAL LOSS	
22	54.45	54.52	0.07	67	08263	G LO & G OVT COAL	C-2. BLK. BRKN WELL CLEATED.
22	54.52	54.61	0.09	66	08263	G LO & G OVT COAL	C-2. BLK. BRKN AS ABOVE.
22	54.61	54.76	0.15	65	08263	G LO & G OVT COAL	C-3. BLK. BRKN MODERATELY CLEATED.
22	54.76	54.80	0.04	65	08263	G LO & G OVT COAL	C-4. BLK. BRKN POORLY CLEATED.
22	54.80	55.50	0.70	64	08263	G LO & G OVT COAL LOSS	
22	55.50	56.03	0.53	63	08264	G LO & G OVT MUDSTONE	CARB. BLK. SHRD POORLY CONSOLIDATED BLACK MUD WITH ABUN DANT PLANT FRAGMENTS.
22	56.03	56.14	0.11	63	08264	G LO & G OVT COAL	C-4. BLK. SHRD POOR TO MODERATELY CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	56.14	56.22	0.08	62	08264	G LO & G OVT COAL	C-3. BLK. BRKN BANDS OF C-2 WITH C-4, MODERATELY CLEAT ED.
23	56.22	56.68	0.46	61	08264	G LO & G OVT ROCK LOSS	
23	56.68	57.12	0.44	61	08264	G LO & G OVT MUDSTONE	CARB. BLK. SHRD POSSIBLE ROCK LOSS. STRONGLY CARBONACEO US.
23	57.12	57.51	0.39	60	08264	G LO & G OVT MUDSTONE	CARB. BLK. SHRD THIST-OFF, POORLY CONSOLIDATED MUD WITH ABUNDANT PLANT FRAGMENTS. WEAKLY CARBO NACEOUS.
23	57.51	58.03	0.52	59	08265	G LO & G OVT COAL LOSS	
23	58.03	58.17	0.14	59	08265	G LO & G OVT COAL	C-5. BLK. BRKN MUD WITH C-1 SLIVERS.
23	58.17	58.24	0.07	58	08265	G LO & G OVT COAL	C-3. BLK. BRKN WELL CLEATED. C-3 WITH C-2 BANDS.
23	58.24	58.93	0.69	57	08265	G LO & G OVT COAL LOSS	
23	58.93	59.01	0.08	56	08265	G LO & G OVT ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	59.01	59.19	0.18	56	08265	G LO & G OVT	MUDSTONE	CARB. BLK. VSHRD
23	59.19	59.47	0.28	55	08265	G LO & G OVT	COAL LOSS	
23	59.47	59.72	0.25	54	08265	G LO & G OVT	COAL	C-3. BLK. PWRD FRAGMENTS OF C-1, C-3 AND CARBONACEOUS MUD.
24	59.72	59.87	0.15	54	08265	G LO & G OVT	COAL	C-3. BLK. PWRD WELL CLEATED C-2 BANDS IN PARTS.
24	59.87	60.21	0.34	53	08265	G LO & G OVT	COAL	C-2. BLK. VBRKN TWIST-OFF, WELL CLEATED, C-2 WITH RARE BANDS OF CARBONACEOUS MUD.
24	60.21	61.03	0.82	52	08265	G LO & G OVT	COAL LOSS	
24	61.03	61.08	0.05	51	08265	G LO & G OVT	MUDSTONE	CARB. BLK. VBRKN
24	61.08	61.50	0.42	51	08265	G LO & G OVT	COAL LOSS	
24	61.50	61.53	0.03	50	08265	G LO & G OVT	COAL	C-3. BLK. BRKN WELL CLEATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	61.53	61.63	0.10	49	08265	G LO & G OVT	COAL	C-5. BLK. VBRKN CARBONACEOUS MUD IN PARTS.
24	61.63	61.82	0.19	48	08265	G LO & G OVT	COAL	C-2. BLK. VBRKN WELL CLEATED.
24	61.82	61.90	0.08	48	08265	G LO & G OVT	COAL LOSS	
24	61.90	62.02	0.12	*47	08265	G LO & G OVT	MUDSTONE	CARB. BLK. BRKN
24	62.02	62.06	0.04	44	08265	G LO & G OVT	ROCK LOSS	
24	62.06	63.34	1.28	42	08265	G LO & G OVT	COAL LOSS	
24	63.34	63.41	0.07	39	08265	G LO & G OVT	COAL	C-3. BLK. PWRD
24	63.41	63.53	0.12	36	08265	G LO & G OVT	COAL	C-2. BLK. PWRD WELL CLEATED.
25	63.53	63.71	0.18	34	08265	G LO & G OVT	COAL	C-2. BLK. PWRD WELL CLEATED.
25	63.71	63.83	0.12	31	08265	G LO & G OVT	COAL	C-4. BLK. PWRD POORLY CONSOLIDATED.
25	63.83	64.34	0.51	28	08265	G LO & G OVT	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	64.34	64.63	0.29	25	08265	G LO & G OVT	ROCK LOSS	
25	64.63	64.81	0.18	23	08265	G LO & G OVT	COAL LOSS	
25	64.81	65.26	0.45	20	08266	G OVT RF	MUDSTONE	CARB.BLK.PHRD VERY SHEARED AND POORLY CONSOLIDATED. S AMPLED TOP 25CM. G SEAM ROOF ROCK.
25	65.26	66.18	0.92	*17			MUDSTONE	CARB.BLK.SHRD ABUNDANT PLANT FRAGMENTS.
25	66.18	66.23	0.05	25			ROCK LOSS	
26	66.23	67.10	0.87	*33			MUDSTONE	CARB.BLK.LAM.YBRKN ABUNDANT PLANT FRAGMENTS AND COAL STRIN GERS.
26	67.10	67.15	0.05	33			ROCK LOSS	
26	67.15	67.47	0.32	34			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN INTERLAMINATED BLACK MUD AND LIGHT GREY SILT. LAMINATIONS CONTORTED AND DESTRO YED IN PARTS. LOAD CASTS INDICATE OVERT URNED.
26	67.47	68.16	0.69	*34			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	68.16	68.20	0.04	32			ROCK LOSS	
27	68.20	68.67	0.47	*30			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN AS ABOVE.
27	68.67	68.69	0.02	30			MUDSTONE	BLK.PHRD THIN BLACK MUDSTONE BED. VERY POORLY CO NSOLIDATED.
27	68.69	68.86	0.17	30			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN TWIST-OFF POSSIBLE ROCK LOSS.
27	68.86	68.96	0.10	30			ROCK LOSS	
27	68.96	69.07	0.11	30	10356		BENTONITE	LT.GY.LAM.SHRD LIGHT GREY CLAY BAND WHICH IS SEMI-CONS OLIDATED. FRACTURED AND BRECCIATED THRO UGHOUT.
27	69.07	69.12	0.05	30			ROCK LOSS	
27	69.12	69.72	0.60	*30			MUDSTONE	SLTY.LT-M.GY.LAM.BRKN INTERLAMINATED BLACK MUD WITH GREY SILT IN FINING UPWARDS SEQUENCES. VERY FISS ILE. BEDS OVERTURNED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	69.72	69.76	0.04	31		ROCK LOSS	
27	69.76	69.96	0.20	32		MUDSTONE	SLTY.LT-M.GY.LAM.VBRKN AS ABOVE, POSSIBLE ROCK LOSS.
27	69.96	70.06	0.10	33		ROCK LOSS	
28	70.06	71.75	1.69	*34		MUDSTONE	SLTY.LT-M.GY.LAM.VBRKN INTERLAMINATED BLACK MUD AND LIGHT GREY SILT IN FINING UPWARDS SEQUENCES. VERY FISSILE. BEDS. OVERTURNED. POSSIBLE ROCK LOSS.
28	71.75	72.25	0.50	39		ROCK LOSS	
29	72.25	72.89	0.64	*45		MUDSTONE	SLTY.LT-M.GY.LAM.BRKN AS ABOVE, TWIST-OFF, POSSIBLE ROCK LOSS
29	72.89	73.09	0.20	42		ROCK LOSS	
29	73.09	74.34	1.25	*38		MUDSTONE	SLTY.LT-M.GY.LAM.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	74.34	74.44	0.10	41		ROCK LOSS	
30	74.44	74.79	0.35	*44		MUDSTONE	SLTY.LT-M.GY.LAM.BRKN AS ABOVE, TWIST-OFF, POSSIBLE ROCK LOSS
30	74.79	74.89	0.10	41		ROCK LOSS	
30	74.89	75.63	0.74	*38		MUDSTONE	SLTY.LT-M.GY.LAM.VBRKN AS ABOVE.
30	75.63	75.68	0.05	38		ROCK LOSS	
30	75.68	76.18	0.50	38		MUDSTONE	SLTY.LT-M.GY.LAM.VBRKN AS ABOVE, EXTREMELY BROKEN, POSSIBLE ROCK LOSS.
30	76.18	76.33	0.15	39		ROCK LOSS	
31	76.33	77.08	0.75	*39		MUDSTONE	SLTY.LT-M.GY.LAM.BRKN AS ABOVE.
31	77.08	77.12	0.04	36		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	77.12	77.75	0.63	33			MUDSTONE	SLTY. M. GY. LAM. BIOTR. BRKN INTERLAMINATED BLACK MUD AND GREY SILT. NOT FISSILE AS ABOVE. LAMINATIONS LESS DISTINCT-RELATIVELY FEATURELESS. UNKNO WN BIOTURBATION STRUCTURES. POSSIBLE RO CK LOSS.
31	77.75	77.95	0.20	30			ROCK LOSS	
31	77.95	78.49	0.54	27			MUDSTONE	SLTY. M. GY. LAM. BIOTR. BRKN AS ABOVE.
32	78.49	80.17	1.68	*24			MUDSTONE	SLTY. M. GY. LAM. BRKN INTERLAMINATED BLACK MUD AND GREY SILT. LAMINATIONS NOT VERY DISTINCT. RELATIVELY ELY FEATURELESS. LACKS FISSILITY.
32	80.17	80.27	0.10	25			ROCK LOSS	
32	80.27	80.46	0.19	26			MUDSTONE	SLTY. M. GY. LAM. BIOTR. VBRKN AS ABOVE WITH UNKNOMN BIOTURBATION STRU CTURES. POSSIBLE ROCK LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	80.46	80.56	0.10	27			ROCK LOSS	
33	80.56	80.60	0.04	*28			MUDSTONE	CARB. BLK. VBRKN POSSIBLE ROCK LOSS.
33	80.60	81.10	0.50	27			MUDSTONE	SLTY. M. GY. LAM. VBRKN FAINTLY LAMINATED SILT AND MUD BUT RELAT IVELY FEATURELESS OVERALL. POSSIBLE RO CK LOSS.
33	81.10	81.24	0.14	25			ROCK LOSS	
33	81.24	81.84	0.60	*24			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
33	81.84	81.88	0.04	23			ROCK LOSS	
33	81.88	82.03	0.15	23			MUDSTONE	SLTY. M. GY. LAM. VBRKN AS ABOVE WITH ABUNDANT QUARTZ VEINING.
33	82.03	82.08	0.05	22			ROCK LOSS	
33	82.08	82.68	0.60	22			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE WITH QUARTZ FILLED FRACTURES A T TOP 20CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	82.68	84.39	1.71	*21			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
34	84.39	84.67	0.28	17			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE WITH 2CM WIDE QUARTZ VEIN AT T OP OF INTERVAL.
35	84.67	86.66	1.99	*12			MUDSTONE	SLTY. M. GY. LAM. SLD FAINTLY LAMINATED BLACK MUD AND GREY SI LT. RELATIVELY FEATURELESS OVERALL. 2CM WIDE QUARTZ VEIN AT THE TOP OF THE INT ERVAL. MINOR QUARTZ VEINING IN PARTS UP TO 2CM WIDE.
36	86.66	87.08	0.42	12			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
36	87.08	88.41	1.33	*11			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
37	88.41	88.65	0.24	*05			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
37	88.65	88.82	0.17	05			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE WITH ABUNDANT FRACTURING AND Q UARTZ CEMENT INFILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	88.82	89.76	0.94	05			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE. TWIST-OFF, POSSIBLE ROCK LOSS
37	89.76	90.16	0.40	05			ROCK LOSS	
37	90.16	90.60	0.44	04			MUDSTONE	SLTY. M. GY. LAM. VBRKN AS ABOVE.
37	90.60	90.65	0.05	04			ROCK LOSS	
38	90.65	92.56	1.91	*04			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
38	92.56	92.66	0.10	03			ROCK LOSS	
39	92.66	93.20	0.54	*01			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE. BEDDING NEAR VERTICAL.
39	93.20	94.14	0.94	*08			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
39	94.14	94.22	0.08	11			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	94.22	94.54	0.32	14		MUDSTONE	SLTY. M. GY. LAM. YBRKN FAINTLY LAMINATED BLACK MUD AND GREY SILT BUT RELATIVELY FEATURELESS OVERALL. QUARTZ VEINS UP TO 2CM WIDE OCCUR IN PARTS, PARALLELING AND CROSS-CUTTING BEDDING.
39	94.54	94.59	0.05	17		ROCK LOSS	
40	94.59	96.07	1.48	*20		MUDSTONE	SLTY. M. GY. LAM. YBRKN POSSIBLE ROCK LOSS.
40	96.07	96.57	0.50	20		ROCK LOSS	
40	96.57	96.82	0.25	21		MUDSTONE	SLTY. M. GY. LAM. YBRKN AS ABOVE.
40	96.82	96.92	0.10	21		ROCK LOSS	
41	96.92	97.02	0.10	*22		MUDSTONE	SLTY. M. GY. LAM. YBRKN AS ABOVE, VERY BROKEN WITH ABUNDANT QUARTZ VEINING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	97.02	97.29	0.27	22		MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE WITH 3CM WIDE QUARTZ VEIN AT BOTTOM OF INTERVAL.
41	97.29	97.49	0.20	22		MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE - 1CM WIDE QUARTZ VEIN AT BASE OF INTERVAL.
41	97.49	98.86	1.37	23		MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
41	98.86	98.96	0.10	23		ROCK LOSS	
42	98.96	99.35	0.39	*23		MUDSTONE	SLTY. M. GY. LAM. YBRKN AS ABOVE, THIST-OFF.
42	99.35	99.45	0.10	24		ROCK LOSS	
42	99.45	100.78	1.33	*26		MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE WITH LAMINATIONS BECOMING MORE VISIBLE.
42	100.78	100.88	0.10	25		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	100.88	102.33	1.45	*24			MUDSTONE	SLTY. M. GY. LAM. SSD. YBRKN INTERLAMINATED BLACK MUD AND GREY SILT IN FINING UPWARDS SEQUENCES. SMALL LOAD STRUCTURES. MINOR QUARTZ VEINING. POSS IBLE ROCK LOSS.
43	102.33	102.83	0.50	29			ROCK LOSS	
43	102.83	102.98	0.15	33			MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN INTERLAMINATED BLACK MUD AND GREY SILTS TONE IN FINING UPWARDS SEQUENCES. SMALL LOAD STRUCTURES.
44	102.98	104.49	1.51	*38			MUDSTONE	SLTY. M. GY. LAM. SSD. SLD AS ABOVE. FUS AND LOAD STRUCTURES INDIC ATE BEDS UPRIGHT. TWIST-OFF.
44	104.49	104.99	0.50	38			ROCK LOSS	
44	104.99	105.56	0.57	*37			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
45	105.56	106.26	0.70	*34			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	106.26	106.73	0.47	*27			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
45	106.73	106.87	0.14	29			MUDSTONE	SLTY. M. GY. LAM. YBRKN AS ABOVE.
45	106.87	106.92	0.05	31			ROCK LOSS	
45	106.92	107.60	0.68	34			MUDSTONE	SLTY. M. GY. LAM. SLD AS ABOVE.
46	107.60	109.22	1.62	*36			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
46	109.22	109.55	0.33	*33			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.
47	109.55	111.64	2.09	*42			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE. TWIST-OFF 45CM FROM BASE OF I NTERVAL.
47	111.64	112.14	0.50	39			ROCK LOSS	
48	112.14	112.17	0.03	37			MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	112.17	112.33	0.16	*34			SILTSTONE	LT. GY. VTHNB. SLD LIGHT GREY TUFFITE WITH QUARTZ FRACTURE FILL.
48	112.33	113.96	1.63	*36			MUDSTONE	SLTY. LT-M. GY. LAM. SSD. SLD INTERLAMINATED BLACK MUD AND GREY SILT IN FINING UPWARDS SEQUENCES. MODERATELY FISSILE. LOAD CASTS INDICATE BEDS UPRI GHT.
49	113.96	115.01	1.05	*45			MUDSTONE	SLTY. LT-M. GY. LAM. SSD. BRKN AS ABOVE.
49	115.01	115.11	0.10	51			ROCK LOSS	
49	115.11	115.93	0.82	*58			MUDSTONE	SLTY. LT-M. GY. LAM. SSD. BRKN AS ABOVE WITH MORE FISSILITY.
49	115.93	116.02	0.09	53			ROCK LOSS	
50	116.02	116.74	0.72	*47			MUDSTONE	SLTY. M. GY. LAM. BRKN INTERLAMINATED MUD AND SILT. TWIST-OFF.
50	116.74	116.94	0.20	51			ROCK LOSS	
50	116.94	116.97	0.03	54			MUDSTONE	CARB. BLK. PHRD POORLY CONSOLIDATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	116.97	117.75	0.78	*58	08267	G ROOF	MUDSTONE	SLTY. LT-M. GY. LAM. BRKN MODERATELY CARBONACEOUS WITH ABUNDANT PLANT FRAGMENTS. SAMPLED LOWER 16CM. G/U PR. ROOF ROCK.
50	117.75	117.84	0.09	58	08267	G ROOF	MUDSTONE	CARB. BLK. BRKN G/UPR. ROOF ROCK. SAMPLED ALL.
50	117.84	118.43	0.59	57	08268	G & G LO	COAL LOSS	
50	118.43	118.53	0.10	57	08268	G & G LO	COAL	C-5. BLK. VBRKN C-1 SLIVERS WITH MUDSTONE.
51	118.53	118.69	0.16	56	08268	G & G LO	COAL	C-3. BLK. PHRD
51	118.69	118.74	0.05	56	08268	G & G LO	COAL	C-2. BLK. PHRD WELL CLEATED FRAGMENTS.
51	118.74	118.97	0.23	56	08268	G & G LO	COAL	C-3. BLK. PHRD FRAGMENTS OF C-2, C-4 AND CARBONACEOUS MUD.
51	118.97	119.47	0.50	55	08268	G & G LO	COAL LOSS	
51	119.47	119.54	0.07	55	08268	G & G LO	MUDSTONE	CARB. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	119.54	119.90	0.36	54	08268	G & G LO	COAL LOSS	
51	119.90	120.23	0.33	54	08268	G & G LO	COAL	C-2.BLK.PHRD POORLY CONSOLIDATED - WELL CLEATED C-2.
51	120.23	120.29	0.06	53	08268	G & G LO	COAL	C-4.BLK.PHRD C-2 FRAGMENTS WITH MUD.
51	120.29	120.34	0.05	53	08268	G & G LO	COAL	C-5.BLK.VBRKN
51	120.34	120.45	0.11	53	08268	G & G LO	COAL LOSS	
51	120.45	120.84	0.39	52	08268	G & G LO	ROCK LOSS	
51	120.84	121.35	0.51	52	08268	G & G LO	COAL LOSS	
51	121.35	121.70	0.35	51	08268	G & G LO	COAL	C-4.BLK.VBRKN CONTAINS RARE WELL CLEATED BANDS OF C-2
51	121.70	121.80	0.10	51	08268	G & G LO	COAL	C-2.BLK.BRKN WELL CLEATED.
52	121.80	121.90	0.10	50	08268	G & G LO	COAL	C-2.BLK.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	121.90	122.04	0.14	50	08268	G & G LO	COAL	C-4.BLK.PHRD PONDERED COAL AND MUD.
52	122.04	122.38	0.34	50	08268	G & G LO	COAL LOSS	
52	122.38	122.50	0.12	49	08268	G & G LO	MUDSTONE	CARB.BLK.PHRD SHEARED MUDSTONE - LISTRIC SURFACES.
52	122.50	122.66	0.16	49	08268	G & G LO	COAL LOSS	
52	122.66	122.78	0.12	48	08268	G & G LO	COAL	C-2.BLK.PHRD WELL CLEATED FRAGMENTS.
52	122.78	122.96	0.18	48	08268	G & G LO	COAL	C-4.BLK.VBRKN PREDOMINANTLY C-4 WITH RARE C-2 PARTING S.
52	122.96	123.05	0.09	47	08268	G & G LO	COAL	C-3.BLK.VBRKN MODERATELY CLEATED. PONDERED IN PARTS.
52	123.05	123.36	0.31	*47	08268	G & G LO	COAL	C-5.BLK.BRKN
52	123.36	123.42	0.06	45	08269	G LO FLOOR	MUDSTONE	CARB.BLK.BRKN G SEAM FLOOR ROCK. SAMPLED.
52	123.42	123.45	0.03	44	08269	G LO FLOOR	MUDSTONE	CARB.BLK.VBRKN G SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	123.45	124.25	0.80	43	08269	G LO FLOOR	ROCK LOSS	
53	124.25	124.49	0.24	*42	08269	G LO FLOOR	MUDSTONE	CARB. BLK. SLD ABUNDANT PLANT FRAGMENTS AND SMALL COAL STRINGERS. SAMPLED UPPER 16CM. G SEAM FLOOR ROCK.
53	124.49	125.04	0.55	43			MUDSTONE	CARB. BLK. VSHRD POORLY CONSOLIDATED MUDSTONE WITH NUMER OUS SHINEY LISTRIC SURFACES.
53	125.04	125.85	0.81	43			ROCK LOSS	
53	125.85	125.89	0.04	*44			COAL	C-4. BLK. BRKN GRADATIONAL UPPER CONTACT.
53	125.89	125.96	0.07	39			COAL	C-3. BLK. BRKN
53	125.96	126.01	0.05	37			COAL LOSS	
53	126.01	126.30	0.29	35			ROCK LOSS	
53	126.30	126.42	0.12	33			COAL	C-5. BLK. SLD
53	126.42	126.49	0.07	28			COAL	C-3. BLK. YBRKN MODERATELY CLEATED - TWIST-OFF.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	126.49	127.21	0.72	22			MUDSTONE	CARB. BLK. SHRD SHINEY LISTRIC SURFACES.
53	127.21	127.30	0.09	*17			MUDSTONE	SSY. LT-M. GY. LAM. SSD. SHRD INTERLAMINATED BLACK MUD AND LIGHT GREY FINE SAND AND SILT. AMBIGUOUS TOPS IND ICATORS FROM SSD AND BIOTURBATION. LOAD CASTS AND BURROWING COMMON.
54	127.30	128.37	1.07	*25			MUDSTONE	SSY. LT-M. GY. LAM. SSD. SHRD AS ABOVE, POSSIBLE ROCK LOSS.
54	128.37	128.43	0.06	27			MUDSTONE	CLYY. BLK. BRKN CLAY RICH MUD BED.
54	128.43	129.28	0.85	*30			MUDSTONE	SSY. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED BLACK MUD AND LIGHT GREY FINE SAND AND SILT. ABUNDANT LOAD STRU CTURES AND BIOTURBATION.
55	129.28	130.27	0.99	*38			MUDSTONE	SSY. LT-M. GY. LAM. SSD. BRKN AS ABOVE. AMBIGUOUS TOPS INDICATORS. LI STRIC SHEAR SURFACES PRESENT IN PARTS.
55	130.27	130.35	0.08	34			MUDSTONE	CLYY. BLK. YBRKN CLAY RICH MUDSTONE BRECCIA.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	130.35	131.13	0.78	*30			MUDSTONE	SSY.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED BLACK MUD AND LIGHT GREY FINE SAND AND SILT. ABUNDANT LOAD STRUCTURES INDICATE TOPS UP. RARE RIP-UP CLASTS.
56	131.13	131.20	0.07	28			MUDSTONE	CLYV.BLK.SHRD CLAY RICH BLACK MUD BED, POORLY CONSOLIDATED.
56	131.20	131.93	0.73	*25			MUDSTONE	SSY.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED BLACK MUD AND LIGHT GREY SAND AND SILT. ABUNDANT LOAD CASTS INDICATE TOPS UP. PYRITE FOUND IN TOP 10CM OF INTERVAL.
56	131.93	132.31	0.38	26			SANDSTONE	FG.PR.LT.GY.THNB.BRKN ARGILLACEOUS SALT AND PEPPER SAND. RARE MUDSTONE CLASTS AND UP TO 1CM WIDE MUD BEDS.
56	132.31	132.91	0.60	*27			MUDSTONE	SSY.LT-M.GY.LAM.SSD.BRKN BLACK MUDSTONE WITH LIGHT GREY FINE SAND LAMINAE AND VERY THIN BEDS. LOAD CASTS INDICATE TOPS UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	132.91	133.10	0.19	27			SANDSTONE	FG.PR.LT.GY.VTHNB.SSD.BRKN PREDOMINANTLY ARGILLACEOUS SAND WITH MUD BEDS UP TO 2CM THICK AND RARE MUD CLASTS. LOAD CASTS INDICATE TOPS UP.
57	133.10	133.25	0.15	26			SANDSTONE	FG.PR.LT.GY.VTHNB.SSD.SLD AS ABOVE.
57	133.25	135.18	1.93	*26			SANDSTONE	FG.PR.LT.GY.VTHNB.BIOTR.SLD AS ABOVE WITH ABUNDANT WORM BURROWS INDICATING TOPS UP. BEDDING DESTROYED DUE TO BIOTURBATION IN PARTS.
58	135.18	135.43	0.25	26			SANDSTONE	FG.PR.LT.GY.VTHNB.BIOTR.SLD AS ABOVE WITH ABUNDANT BIOTURBATION. BEDDING CONTORTED OR DESTROYED.
58	135.43	136.29	0.86	*25			SANDSTONE	FG.PR.LT.GY.THNB.SLD VERY ARGILLACEOUS SAND WITH RARE MUD BEDS UP TO 1CM THICK. SAND BECOMES VERY CLAYEY AT BASE.
58	136.29	137.17	0.88	*50			SANDSTONE	FG.PR.LT.GY.THNB.VSHRD AS ABOVE WITH NUMEROUS FRACTURES WITH QUARTZ INFILL. LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	137.17	138.33	1.16		29		MUDSTONE	SSY, LT-M. GY. LAM. SSD. VSHRD INTERLAMINATED SAND AND MUD. VERY SHEARED WITH QUARTZ FRACTURE FILL. BIOTURBATION AND SSD COMMON. TWIST-OFF - POSSIBLE ROCK LOSS. BCA APPROACHING 1 DEGREE, BEDS NEAR VERTICAL.
59	138.33	138.43	0.10		18		ROCK LOSS	
59	138.43	139.24	0.81		*07		SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD SAND WITH VERY THIN MUD BEDS. LOAD CAST S. INDICATE TOPS UP. QUARTZ FRACTURE FILL.
60	139.24	139.92	0.68		*11		SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD AS ABOVE - WORM BURROWING IN PARTS. AMBIGUOUS TOPS INDICATORS.
60	139.92	141.25	1.33		14		SANDSTONE	FG. MOD. LT-M. GY. VTHNB. SSD. VSHRD SANDSTONE INTERBEDDED WITH LESSER AMOUNTS OF BLACK MUD. BIOTURBATION IS ABUNDANT AND HAS DESTROYED BEDDING IN PARTS. QUARTZ AND CARBONATE FRACTURE FILL. POSSIBLE ROCK LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	141.25	142.04	0.79		*17		SANDSTONE	FG. MOD. LT-M. GY. VTHNB. SSD. VSHRD AS ABOVE.
61	142.04	142.48	0.44		19		SANDSTONE	FG. MOD. LT. GY. THNB. SHRD MINOR FRACTURING WITH QUARTZ INFILL. RARE MUD BEDS AND MUD CLASTS.
61	142.48	143.08	0.60		22		SANDSTONE	FG. MOD. LT. GY. THNB. SHRD AS ABOVE - POSSIBLE ROCK LOSS.
61	143.08	143.28	0.20		23		ROCK LOSS	
62	143.28	143.59	0.31		*24		SILTSTONE	SSY. M. GY. VTHNB. SSD. VBRKN INTERBEDDED SILT SAND AND MUD. SHALL LOAD FRACTURES.
62	143.59	144.25	0.66		27		SANDSTONE	FG. MOD. LT. GY. THNB. VBRKN SHEARED AND FRACTURED WITH QUARTZ INFILL. POSSIBLE ROCK LOSS.
62	144.25	144.98	0.73		*30		SANDSTONE	FG. PR. LT-M. GY. VTHNB. SSD. VBRKN INTERBEDDED SAND, SILT AND BLACK MUD. LOAD CASTS INDICATE TOPS UP. MINOR BIOTURBATION.
63	144.98	145.57	0.59		*28		SANDSTONE	FG. PR. LT-M. GY. VTHNB. SSD. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	145.57	145.89	0.32	27			SANDSTONE	FG.MOD.LT.GY.MAS.BRKN
63	145.89	146.00	0.11	26			SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.VBRKN POSSIBLE ROCK LOSS. INTERBEDDED SAND AND SILT. SHEARED AND BROKEN. QUARTZ FRACTURE FILL.
63	146.00	146.20	0.20	25			ROCK LOSS	
63	146.20	146.37	0.17	24			SANDSTONE	SLTY.FG.PR.LT.GY.VTHNB.VBRKN AS ABOVE.
63	146.37	147.01	0.64	*23			SANDSTONE	SLTY.FG.MOD.LT.GY.THNB.SSD.BRKN SANDSTONE WITH RARE SILTSTONE BEDS UP TO 2CM THICK. RARE SILTSTONE RIP-UP CLASTS (UP TO 1CM LONG). MINOR FRACTURING WITH QUARTZ INFILL.
64	147.01	148.44	1.43	*22			SANDSTONE	SLTY.FG.MOD.LT.GY.THNB.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	148.44	148.77	0.33	*38			SANDSTONE	MG.PR.LT.GY.VTHNB.SSD.BRKN SANDSTONE WITH BAND OF MUDSTONE RIP-UP CLASTS. CLASTS AVERAGE 4MM IN DIAMETER WITH MAXIMUM OF 3CM IN LENGTH. ANGULAR CLASTS, TEND TO BE IMBRICATED.
64	148.77	148.97	0.20	32			SANDSTONE	FG.MOD.LT.GY.MAS.VBRKN QUARTZ FILLED FRACTURES IN PARTS.
65	148.97	149.65	0.68	27			SANDSTONE	FG.MOD.LT.GY.THNB.SSD.BRKN AS ABOVE WITH RARE MUDSTONE BEDS. LOAD CASTS INDICATE BEDS UPRIGHT. POSSIBLE ROCK LOSS.
65	149.65	150.78	1.13	*21			SANDSTONE	FG.MOD.LT.GY.MAS.SSD.BRKN AS ABOVE.
66	150.78	150.90	0.12	*40			SANDSTONE	FG.MOD.LT.GY.VTHNB.SHRD AS ABOVE WITH MUD LAMINATIONS.
66	150.90	151.30	0.40	41			SANDSTONE	FG.MOD.LT.GY.VTHNB.SSD.BRKN SANDSTONE WITH ABUNDANT MUDSTONE RIP-UP CLASTS (PSEUDO CONGLOMERATE). CLASTS SUB- ROUND AND AVERAGE 1CM IN DIAMETER WITH A MAXIMUM OF 4CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	151.30	152.54	1.24	*42			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. BRKN SANDSTONE WITH RARE RIP-UP CLASTS. POSSIBLE ROCK LOSS.
66	152.54	152.74	0.20		45		ROCK LOSS	
67	152.74	153.51	0.77	*48			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. SLD AS ABOVE WITH MUD LAMINATIONS AND BEDS UP TO 2CM. WIDE.
67	153.51	154.17	0.66	44			SANDSTONE	FG. MOD. LT. GY. THNB. SSD. YBRKN AS ABOVE. SAND BECOMES MORE ARGILLACEOUS.
67	154.17	154.52	0.35	39			SANDSTONE	FG. PR. LT-M. GY. LAM. SSD. YBRKN INTERLAMINATED MUD, SILT AND VERY FINE SAND. LOAD CASTS INDICATE UPRIGHT BEDS. CARBONATE FRACTURE FILL. POSSIBLE ROCK LOSS.
67	154.52	154.66	0.14	37			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88019

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	154.66	154.80	0.14	*35			SANDSTONE	FG. PR. LT-M. GY. LAM. SSD. YBRKN AS ABOVE WITH A 3CM WIDE QUARTZ VEIN AT THE TOP OF THE INTERVAL.
68	154.80	154.88	0.08	35			BRECCIA	BLK. YSHRD MUDSTONE BRECCIA WITH ABUNDANT CLAY.
68	154.88	155.14	0.26	35			SANDSTONE	FG. PR. LT-M. GY. LAM. SSD. YBRKN INTERLAMINATED MUD, SILT AND VERY FINE SAND. POSSIBLE ROCK LOSS. END OF HOLE. TD = 155.14 M.

* DENOTES MEASURED BCA
NEWPAGE

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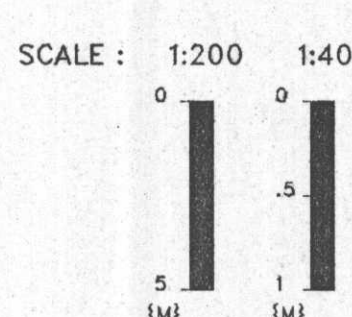
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88019

GEOLOGIST : WALLACE

DATE : FEB 21/89

DRAWING NO. :

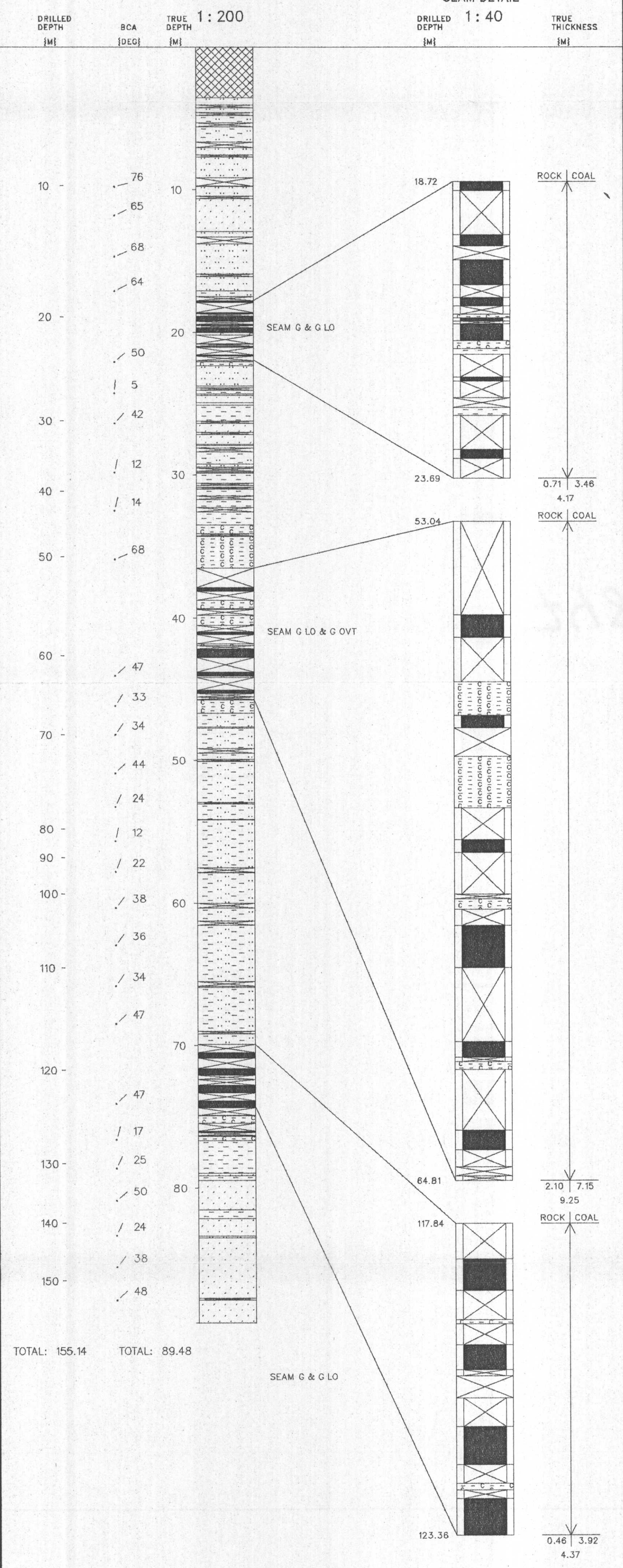
LITHOLOGIC SYMBOLS



	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

NORTHING: 6344022.0 N
 EASTING: 505694.3 E
 INCLINATION: 90.0°

SEAM DETAIL



Gulf Canada Resources Limited

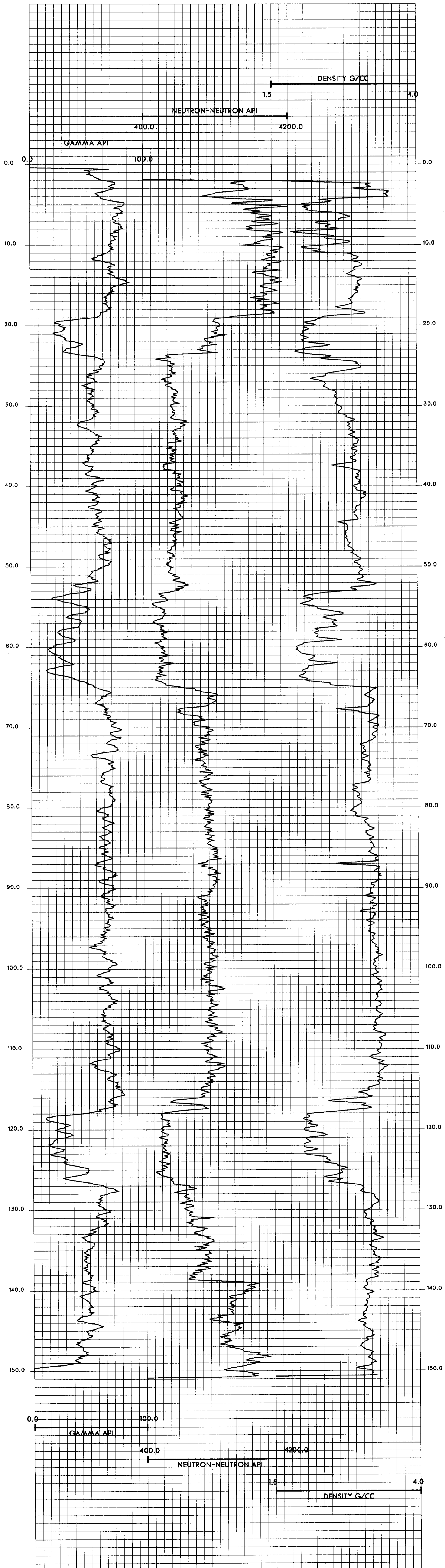
Coal Division

Geophysical Log

Datasource: KPNLRDDH88019	Province: BC	Northing: 6344020.00	Lat: 571428
Log Date: 88-07-03	Zone: 9	Easting: 505694.00	Long: 1285420
Company: CENTURY	Measuring Point: GROUND LEVEL		Elevation: 1814.2
Geologist: WALLACE			

Scale: 1 to 200.0	Comments: 1. LOGGED THROUGH RODS 2.
Depth Range: 0.0 to 155.0	
True Thickness: NO	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88020

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88020

DATE - 02/15/89

- HISTORY -

START DATE - 07/04/88

END DATE - 07/05/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - ETMANSKI

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - INTERSECTED J, I, H SEAMS.

- LOCATION -

PROVINCE - BC

ELEVATION - 1530.78

LICENCE/LEASE NUMBER - 7145

ZONE - 9

NORTHING - 6344976.92

EASTING - 507600.29

LATITUDE - 571459

LONGITUDE - 1285227

- ORIENTATION -

LENGTH - 135.55

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 4.57

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-020

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

J

0.53 m

I

0.85 m

H

2.05 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	48			OVERBURDEN	CASING DEPTH.
1	4.57	6.37	1.80	48			ROCK LOSS	
1	6.37	7.15	0.78	48			SILTSTONE	SSY. M. GY. VBRKN VERY LARGE ANGULAR FRAGMENTS MIXED IN WITH OVERBURDEN. MUSHED UP ROCK. SOME FRAGMENT POSSIBLY PICKED UP BY DRILL. POSSIBLE CORE LOSS - TWIST OFF.
1	7.15	7.57	0.42	48			ROCK LOSS	
1	7.57	8.51	0.94	*48			SILTSTONE	SSY. M. GY. VTHNB. VBRKN TWIST-OFF - POSSIBLE CORE LOSS. INTERBEDDED SLTST & SS AND MUDST BEDS AS WELL. SOME DISCONTINUOUS BEDS.
1	8.51	8.81	0.30	43			ROCK LOSS	
2	8.81	10.03	1.22	*36			SILTSTONE	SSY. M. GY. VTHNB. VBRKN AS ABOVE. SOME BEDS ARE WHISPIER THIN. SHEAR SURFACES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	10.03	10.28	0.25	35			ROCK LOSS	
2	10.28	11.00	0.72	*34			SANDSTONE	SLTY. M. GY. VTHNB MAINLY SS BEDS WITH SLTST. WHISPIER THIN BEDS THROUGHOUT. SHEAR SURFACES. ODD CARBONATE VEINS. VTHN MUD PARTINGS.
2	11.00	11.10	0.10	36			ROCK LOSS	
3	11.10	11.42	0.32	37			SANDSTONE	SLTY. FG. M. GY. VTHNB. VBRKN AS ABOVE.
3	11.42	11.47	0.05	39			ROCK LOSS	
3	11.47	12.49	1.02	*41			SANDSTONE	SLTY. FG. GY. VTHNB. BRKN AS ABOVE.
3	12.49	12.64	0.15	42			ROCK LOSS	
3	12.64	13.18	0.54	43			SANDSTONE	SLTY. FG. GY. VTHNB. VBRKN AS ABOVE. VERY FRACTURED AND BROKEN, FILLED IN WITH MUD.
3	13.18	13.23	0.05	45			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	13.23	13.28	0.05	46		MUDSTONE	SLTY. DK. GY. PMRD VERY GROUND UP MUDSTONE LIKE PASTE.
4	13.28	13.96	0.68	*47		MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN SHEAR ZONE. VERY BROKEN UP, MUD IN PLACES. ODD CARBONATE VEIN. ALTERNATING BEDS OF SLTST & MUDST.
4	13.96	14.06	0.10	47		ROCK LOSS	
4	14.06	15.04	0.98	*46		MUDSTONE	SLTY. DK. GY. VTHNB. BRKN AS ABOVE.
4	15.04	15.19	0.15	45		ROCK LOSS	
5	15.19	15.88	0.69	*44		MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE.
5	15.88	15.98	0.10	44		ROCK LOSS	
5	15.98	16.20	0.22	44		MUDSTONE	SLTY. DK. GY. VTHNB. VSHRD VERY BROKEN UP TO TINY PIECES IT IS LIKE CHUNKY MUD.
5	16.20	16.25	0.05	44		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	16.25	16.50	0.25	45		MUDSTONE	SLTY. DK. GY. VTHNB. BRKN ALTERNATING BEDS OF SLTST & MUDST. ALMOST PARALLEL BEDDING BUT ODD BED HAS HAD MOVEMENT IN IT.
5	16.50	16.55	0.05	45		ROCK LOSS	
5	16.55	17.19	0.64	*45		MUDSTONE	SLTY. DK. GY. VTHNB. SLD AS ABOVE.
6	17.19	18.64	1.45	*37		MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE.
6	18.64	18.89	0.25	42		ROCK LOSS	
6	18.89	19.11	0.22	*48		MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE. ODD CARBONATE VEINS.
6	19.11	19.16	0.05	48		ROCK LOSS	
7	19.16	19.45	0.29	*47		MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN ALTERNATING BEDS OF MUDST & SLTST, BUT MOSTLY MUD. ODD CARBONATE VEIN. START OF THE COASTER ZONE. BADLY BROKEN UP, SHEARED SURFACES. ODD MUD PARTINGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	19.45	19.50	0.05	49			ROCK LOSS	
7	19.50	20.06	0.56	51			MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE.
7	20.06	20.11	0.05	54			ROCK LOSS	
7	20.11	20.73	0.62	*56			MUDSTONE	SLTY. DK. GY. VTHNB. XBDG. BRKN AS ABOVE. MINOR X-BEDDING.
7	20.73	20.83	0.10	56			ROCK LOSS	
8	20.83	22.13	1.30	*56			MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE.
8	22.13	22.38	0.25	57			ROCK LOSS	
8	22.38	23.03	0.65	*58			MUDSTONE	SLTY. DK. GY. VTHNB. SLD AS ABOVE.
9	23.03	24.34	1.31	*52			MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE.
9	24.34	24.59	0.25	49			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	24.59	25.20	0.61	*46			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN AS ABOVE.
9	25.20	25.30	0.10	46			ROCK LOSS	
10	25.30	25.55	0.25	*46			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN AS ABOVE.
10	25.55	25.60	0.05	47			ROCK LOSS	
10	25.60	26.52	0.92	49			MUDSTONE	SLTY. DK. GY. VTHNB. VSHRD AS ABOVE.
10	26.52	26.72	0.20	50			ROCK LOSS	
10	26.72	27.11	0.39	*52			MUDSTONE	SLTY. DK. GY. VTHNB. VBRKN AS ABOVE. J SEAM ROOF ROCK. NOT SAMPLED
10	27.11	27.16	0.05	52			ROCK LOSS	
10	27.16	27.20	0.04	53 99999	J		COAL	C-4. BLK. VBRKN J SEAM.
10	27.20	27.23	0.03	53 99999	J		COAL	C-5. BLK. VBRKN J SEAM.
10	27.23	27.81	0.58	54 99999	J		COAL LOSS	J SEAM.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	27.81	27.99	0.18	*54			MUDSTONE	CARB. BLK. BRKN CARBONATE MUDSTONE WITH COAL STRINGERS. A FEW CARBONATE VEINS. J SEAM FLOOR ROCK. NOT SAMPLED.
11	27.99	29.12	1.13	*54			SILTSTONE	CLYY. DK. GY. VTHNB. SSD. BRKN INTERBEDDED SLTST AND MUDST. MAINLY SLTST. LISTRIC SURFACES. ODD CARBONATE VEINS AND COAL STRINGERS.
11	29.12	29.22	0.10	57			ROCK LOSS	
11	29.22	29.80	0.58	60			MUDSTONE	DK. GY. BRKN FRACTURED CORE. PLANT WASH. ODD CARBONATE VEINS.
11	29.80	29.90	0.10	63			ROCK LOSS	
11	29.90	30.13	0.23	66			SILTSTONE	CLYY. M. GY. VTHNB. SSD. SLD. MINOR CARBONATE VEINS. SSD OCCURRING. SHEAR ZONE - LISTRIC SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	30.13	32.02	1.89	*69			SILTSTONE	CLYY. M. GY. VTHNB. SSD. VBRKN SHEAR ZONE - LISTRIC SURFACES. MAJOR SS BEDS IN PLACES. ALTERNATING BEDS BETWEEN SLTST & MUDST. CARBONATE VEINS THROUGHOUT. CORE FRACTURED HEAVILY IN PLACES.
12	32.02	32.12	0.10	61			ROCK LOSS	
13	32.12	33.23	1.11	53			SILTSTONE	CLYY. M. GY. VTHNB. SSD. SHRD AS ABOVE. SS BEDS MIXED IN.
13	33.23	33.33	0.10	45			ROCK LOSS	
13	33.33	34.11	0.78	*36			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. SSD. VBRKN MAINLY VFG SS BEDS WITHIN. VTHIN TO LAMINATED BEDS OF SLTST. FRACTURED HEAVILY - FILLED WITH CARBONATE & QTZ. MAJOR SHEAR ZONE - LISTRIC SURFACE.
13	34.11	34.26	0.15	42			ROCK LOSS	
14	34.26	34.81	0.55	*48			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	34.81	34.91	0.10		52		ROCK LOSS	
14	34.91	36.04	1.13	*56			SANDSTONE	SLTY.VFG.LT.GY.VTHNB.SSD.VBRKN AS ABOVE. SECTION 30.0CM FROM END. BADLY SHEARED TO CRUMBLY BITS.
14	36.04	36.17	0.13		47		ROCK LOSS	
15	36.17	37.39	1.22	*38			SANDSTONE	SLTY.VFG.LI.GY.VTHNB.SSD.VBRKN AS ABOVE. TOPS UP INDICATOR. MAJOR FRACTURE ZONE.
15	37.39	37.49	0.10		42		ROCK LOSS	
15	37.49	38.13	0.64	*46			SANDSTONE	SLTY.VFG.LT.GY.VTHNB.SSD.BRKN AS ABOVE. TOPS UP INDICATOR. MAJOR FRACTURE ZONE.
16	38.13	39.39	1.26	*48			SANDSTONE	SLTY.VFG.LT.GY.VTHNB.WRMBU.BRKN AS ABOVE. TOPS UP INDICATOR. CARBONATE VEIN BRECCIATED. WORM BURROW.
16	39.39	39.77	0.38	*54			SANDSTONE	SLTY.VFG.LT.GY.VTHNB.SSD.BRKN AS ABOVE.
16	39.77	39.82	0.05		54		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	39.82	41.03	1.21		54		SANDSTONE	SLTY.VFG.LT.GY.VTHNB.VSHRD AS ABOVE. FECAL PELLETS IN PLACES. SHEAR RED SO BAD IT IS A POWDER.
17	41.03	41.23	0.20		54		ROCK LOSS	
17	41.23	41.85	0.62		54		SILTSTONE	SSY.M.GY.VBRKN VERY BADLY FRACTURED - FILLED WITH QTZ & CARBONATE VEINS. MAJOR SHEAR ZONE. LISTRIC SURFACES. INTERBEDDING SS & SILTST. MAINLY SS. HARD TO SEE BEDS DUE TO THE AMOUNT OF FRACTURES.
17	41.85	41.95	0.10		54		ROCK LOSS	
18	41.95	43.93	1.98	*54			SILTSTONE	SSY.M.GY.WRMBU.BRKN HEAVILY FRACTURED - FILLED WITH QTZ & CARBONATE. MANY VEINS DISPLACED BY FURTHER FRACTURES. SHEAR ZONE, LISTRIC SURFACES. WORM BURROWS. BIOTR. FECAL PELLET S.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	43.93	44.19	0.26	53			SILTSTONE	SSY.M.GY.SLD HEAVILY FRACTURED - FILLED WITH QTZ & CARBONATE. DISPLACED BY FURTHER FRACTURING.
19	44.19	44.27	0.08	52			SILTSTONE	SSY.LT.GY.SLD BADLY FRACTURED SLTST - FILLED WITH CARBONATE AND CLASTS OF SLTST TO FORM BRECCIA. ANGULAR CLASTS.
19	44.27	45.71	1.44	*51			SILTSTONE	SSY.M.GY.VTHNB.SSD.BRKN MAINLY SLTST WITH VERY THIN BEDS OF SS & MUDST. QTZ & CARBONATE VEINS THROUGHOUT. SSD THROUGHOUT. HEAVILY FRACTURED. DISPLACEMENT. SHEAR ZONE, LISTRIC SURFACES.
19	45.71	45.86	0.15	49			ROCK LOSS	
20	45.86	47.22	1.36	*47			SILTSTONE	SSY.M.GY.VTHNB.NRMBU.VBRKN AS ABOVE.
20	47.22	47.32	0.10	46			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	47.32	47.60	0.28	*44			SILTSTONE	SSY.M.GY.VTHNB.BRKN AS ABOVE.
21	47.60	49.44	1.84	*31			SILTSTONE	SSY.M.GY.VTHNB.SLD AS ABOVE. ODD MUDST BED.
22	49.44	49.76	0.32	34			SILTSTONE	SSY.M.GY.VTHNB.VBRKN AS ABOVE. ODD MUDST BED.
22	49.76	49.81	0.05	36			ROCK LOSS	
22	49.81	51.25	1.44	39			SILTSTONE	SSY.M.GY.VTHNB.VBRKN AS ABOVE. MAJOR QTZ & CARB VEINS.
22	51.25	51.35	0.10	41			ROCK LOSS	
23	51.35	53.20	1.85	*44			SILTSTONE	SSY.M.GY.VTHNB.VBRKN AS ABOVE.
23	53.20	53.30	0.10	38			ROCK LOSS	
24	53.30	53.63	0.33	*32			SILTSTONE	SSY.LT.GY.VTHNB.SLD AS ABOVE.
24	53.63	55.22	1.59	*48			SILTSTONE	SSY.LT.GY.VTHNB.SLD AS ABOVE. 39.0CM FROM END OF SECTION. A BAND OF 4.0CM OF RECRYSTALLIZATION, VERY LIGHT IN COLOUR.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	55.22	56.43	1.21	*43		SILTSTONE	SSY.LT.GY.VTHNB.VBRKN MAINLY SILTSTONE WITH MINOR SS. VERY LI GHT IN COLOUR DUE TO TUFFACEOUS, TUFFIT E SILTSTONE. ODD CARBONATE & QTZ VEIN - FRACTURE FILL. SHEAR SURFACES.
25	56.43	56.60	0.17	52		ROCK LOSS	
25	56.60	57.07	0.47	60		SILTSTONE	SSY.LT.GY.VTHNB.VBRKN AS ABOVE.
25	57.07	57.12	0.05	69		ROCK LOSS	
26	57.12	59.06	1.94	*78		SILTSTONE	SSY.LT.GY.VTHNB.BRKN AS ABOVE.
27	59.06	59.73	0.67	*32		SILTSTONE	SSY.LT.GY.VTHNB.SLD AS ABOVE.
27	59.73	60.99	1.26	*36		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
27	60.99	61.14	0.15	37		ROCK LOSS	
28	61.14	62.22	1.08	*39		SILTSTONE	SSY.LT.GY.LAM.VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	62.22	62.42	0.20	37		ROCK LOSS	
28	62.42	63.07	0.65	*34		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
29	63.07	65.05	1.98	*34		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
29	65.05	65.20	0.15	40		ROCK LOSS	
30	65.20	65.32	0.12	*46		SILTSTONE	SSY.LT.GY.LAM.VBRKN AS ABOVE.
30	65.32	67.00	1.68	*46		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
31	67.00	68.21	1.21	*47		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
31	68.21	68.90	0.69	46		SILTSTONE	SSY.LT.GY.LAM.BRKN AS ABOVE.
32	68.90	70.82	1.92	*45		SILTSTONE	SSY.LT.GY.LAM.SLD AS ABOVE.
33	70.82	71.08	0.26	46		SILTSTONE	SSY.LT.GY.VTHNB.VBRKN AS ABOVE.
33	71.08	71.13	0.05	47		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	71.13	71.25	0.12	48			SILTSTONE	SSY. LT. GY. LAM. VBRKN AS ABOVE.
33	71.25	71.29	0.04	49	10362		BENTONITE	LT. GY. PWRD BENTONITE #10362.
33	71.29	72.16	0.87	50			SILTSTONE	SSY. LT. GY. LAM. VBRKN TUFACEOUS SILTSTONE. SHEAR ZONE - LIST RIC. LAMINATED BEDS OF SS. CARBONATE VE INS.
33	72.16	72.31	0.15	51			ROCK LOSS	
33	72.31	73.24	0.93	*52			SILTSTONE	SSY. LT. GY. LAM. VBRKN AS ABOVE.
33	73.24	73.39	0.15	53			ROCK LOSS	
33	73.39	73.40	0.01	55	10363		BENTONITE	LT. GY. PWRD BENTONITE #10363.
33	73.40	73.43	0.03	56			SILTSTONE	SSY. LT. GY. BRKN TUFACEOUS SILTSTONE. CARBONATE VEIN.
34	73.43	73.56	0.13	*58			SILTSTONE	SSY. LT. GY. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.56	73.57	0.01	56	10364		BENTONITE	LT. GY. VSHRD BENTONITE #10364.
34	73.57	74.36	0.79	53			SILTSTONE	SSY. M. GY. SSD. VBRKN SLTST WITH SMALL AMOUNT OF TUFFITE. QTZ & CARBONATE FILLED FRACTURES ALSO BAND S. OF MUDST. DISPLACEMENT IN BEDS & VEINS.
34	74.36	74.51	0.15	51			ROCK LOSS	
34	74.51	75.25	0.74	*48			SILTSTONE	SSY. M. GY. VBRKN AS ABOVE.
34	75.25	75.38	0.13	44			ROCK LOSS	
35	75.38	75.49	0.11	40			SILTSTONE	SSY. M. GY. VBRKN AS ABOVE.
35	75.49	75.99	0.50	*36			SILTSTONE	SSY. M. GY. BRKN AS ABOVE.
35	75.99	76.13	0.14	51			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	76.13	77.41	1.28	*67			MUDSTONE	SLTY. DK. GY. VSHRD HEAVILY FRACTURED & SHEARED LISTRIC SURFACES THROUGHOUT. MASHED UP MUDST AND S LIST. SHEAR ZONE. CLASTS OF BROKEN UP S LIST IN PLACES JUST A CRUMBLY MATERIAL.
36	77.41	78.75	1.34	*83			MUDSTONE	SLTY. DK. GY. VSHRD AS ABOVE. FAULT.
36	78.75	79.47	0.72	72			MUDSTONE	SLTY. DK. GY. VSHRD AS ABOVE. TWIST-OFF, POSSIBLE CORE LOSS
37	79.47	80.01	0.54	*60			SANDSTONE	VFG. PR. M. GY. LAM. SSD. BRKN INTERLAMINATED FINE SAND AND MUD. LOAD CASTS INDICATE TOPS UP. MODERATELY FRAC TURED.
37	80.01	80.55	0.54	61	08270	I ROOF	SANDSTONE	FG. PR. M. GY. VTHNB. SHRD INTERBEDDED ARGILLACEOUS SAND AND MUD. QUARTZ FRACTURE FILL. SAMPLED LOWER 15. OCH. I SEAM ROOF ROCK.
37	80.55	80.65	0.10	61	08270	I ROOF	MUDSTONE	M. GY. SHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	80.65	80.68	0.03	62	08271	I	COAL	C-5. BLK. VSHRD
37	80.68	80.74	0.06	62	08271	I	MUDSTONE	CARB. BLK. VSHRD HEAVILY CARBONACEOUS.
37	80.74	81.18	0.44	63	08271	I	COAL LOSS	
37	81.18	81.58	0.40	63	08271	I	COAL	C-3. BLK. PWRD COAL IS INTENSELY SHEARED. SHINEY LISTRIC SURFACES ON ALL FRAGMENTS.
38	81.58	81.60	0.02	64	08271	I	COAL	C-3. BLK. PWRD AS ABOVE.
38	81.60	82.28	0.68	64	08272	I FLOOR	MUDSTONE	SLTY. M. GY. MAS. SHRD NUMEROUS FRACTURES IN CORE. FLOOR ROCK. SAMPLED TOP 25. OCH.
38	82.28	82.85	0.57	*65			MUDSTONE	SSY. LT-M. GY. LAM. SHRD INTERLAMINATED MUD AND FINE SAND. QUARTZ Z FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	82.85	83.20	0.35	66			SANDSTONE	FG. PR. LT-M. GY. LAM. SLD BRECCIATED INTERLAMINATED ARGILLACEOUS SAND AND MUD. SMALL AMOUNTS OF QUARTZ F RACTURE FILL. ABUNDANT CLAY FRACTURE FI LL.
39	83.20	84.39	1.19	68			SANDSTONE	SLTY. MG. M. GY. VSHRD BADLY SHEARED SS. CLASTS OF SLTST THROU GHOUT. LISTRIC SURFACES WILL BREAK AND CRUMBLE ANYWHERE.
39	84.39	84.59	0.20	68			ROCK LOSS	
39	84.59	85.30	0.71	*69			SANDSTONE	SLTY. MG. M. GY. VTHNB. SLD SS WITH SLTST BEDS. SLTST BEDS FADE IN AND OUT. ODD QTZ FILLED FRACTURES. SHEA RED SURFACES.
40	85.30	85.80	0.50	*69			SANDSTONE	SLTY. MG. M. GY. VTHNB. SLD AS ABOVE.
40	85.80	87.24	1.44	70			SANDSTONE	CLYY. MG. M. GY. VTHNB. VBRKN BADLY SHEARED SS. MUDST CLASTS THROUGH UT. QTZ VEINS. SHEAR ZONE - LISTRIC SUR FACES WILL CRUMBLE ANYWHERE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	87.24	87.44	0.20	70			ROCK LOSS	
41	87.44	87.61	0.17	70			SILTSTONE	SSY. M. GY. VTHNB. WRMBU. BRKN INTERBEDDED SLTST & SS. MAJOR BIOTRB. S HEAR ZONE - LISTRIC SURFACES. HEAVILY F RACTURED. ODD CARBONATE VEIN. DISCONTIN UOUS BEDS. BIOTRB.
41	87.61	89.38	1.77	*71			SILTSTONE	SSY. M. GY. VTHNB. BIOTR. VBRKN AS ABOVE. WRMBUR.
41	89.38	89.58	0.20	71			ROCK LOSS	
42	89.58	90.81	1.23	*72			SANDSTONE	SLTY. FG. LT. GY. LAM. VBRKN MAINLY SS WITH ODD BED OF SLTST. VERY F RACTURED & BROKEN. A FEW SHEAR SURFACES . SS IS THIN BEDDED.
42	90.81	91.01	0.20	72			ROCK LOSS	
42	91.01	91.72	0.71	*73			SANDSTONE	SLTY. FG. LT. GY. LAM. VBRKN AS ABOVE. CARBONATE VEIN.
42	91.72	91.82	0.10	75			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	91.82	93.31	1.49	*77			SANDSTONE	SLTY. FG. LT. GY. LAM. VSHRD AS ABOVE.
43	93.31	93.61	0.30	78			ROCK LOSS	
43	93.61	93.86	0.25	78			SANDSTONE	SLTY. FG. LT. GY. LAM. VSHRD AS ABOVE.
43	93.86	93.96	0.10	79			ROCK LOSS	
44	93.96	95.43	1.47	*79			SANDSTONE	SLTY. VFG. LT. GY. LAM. VBRKN AS ABOVE. ODD CARBONATE VEIN.
44	95.43	95.70	0.27	75			ROCK LOSS	
44	95.70	95.98	0.28	*71			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. BRKN AS ABOVE.
45	95.98	96.76	0.78	*68			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. BRKN INTERBEDDED SS & SLTST. SHEAR ZONE - LI STRIC SURFACES. CARBONATE VEINS.
45	96.76	96.91	0.15	*72			SANDSTONE	SLTY. FG. LT. GY. VTHNB. SLD SLTST & SS RECRYSTALLIZED TO GIVE A WHI TISH LOOK. CARBONATE VEIN.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	96.91	97.53	0.62	*69			SANDSTONE	SLTY. MG. M. GY. VTHNB. VBRKN SS & SLTST VERY FRACTURED AND MUSHED UP . SHEAR ZONE - LISTRIC SURFACES. CARBON ATE VEINS. DISCONTINUOUS BEDS.
45	97.53	97.63	0.10	69			ROCK LOSS	
45	97.63	97.80	0.17	69			SANDSTONE	SLTY. MG. M. GY. VTHNB. SLD AS ABOVE.
45	97.80	98.00	0.20	*70			SANDSTONE	CLYY. MG. M. GY. VTHNB. BRKN SS & MUDST ALTERNATING BEDS. DISPLACEMEN T OCCURS. DISCONTINUOUS BEDS. VERY FRAC TURED IN PLACES. ODD CARBONATE VEIN.
46	98.00	99.34	1.34	*72			SANDSTONE	CLYY. MG. M. GY. VTHNB. BRKN AS ABOVE.
46	99.34	99.77	0.43	*75			SILTSTONE	SSY. DK. GY. BRKN MAINLY SLTST WITH BANDS OF SS THROUGHOU T. DISCONTINUOUS BEDS.
46	99.77	99.97	0.20	76			MUDSTONE	DK. GY. YBRKN MUDST BADLY FRACTURED AND BROKEN UP. MA JOR SHEAR ZONE. LISTRIC SURFACES. CRUMB LY WHEN BROKEN.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	99.97	100.07	0.10	77			ROCK LOSS	
47	100.07	100.33	0.26	78			MUDSTONE	DK.GY.SHRD AS ABOVE.
47	100.33	100.68	0.35	79			MUDSTONE	CARB.DK.GY.VSHRD VERY BADLY SHEARED. CARBONIZED MUDST. LISTRIC SURFACES. ODD COAL STRINGER.
47	100.68	100.79	0.11	80			ROCK LOSS	
47	100.79	101.09	0.30	81			MUDSTONE	DK.GY.SHRD MUDST BADLY FRACTURED & SHEARED. SHEAR ZONE - LISTRIC SURFACES. CRUMBLY WHEN BROKEN.
47	101.09	102.10	1.01	*82			SILTSTONE	CLYY.M.GY.VTHNB.SLD ALTERNATING BEDS OF SLTST & MUDST ALSO SS BEDS AS WELL. DISCONTINUOUS BEDS. PYRITE, TOPS UP INDICATORS.
48	102.10	103.73	1.63	*78			SILTSTONE	CLYY.M.GY.VTHNB.SSD.SLD ALTERNATING BEDS OF SLTST AND MUDST. A FEW BEDS OF SS. PYRITE. MAJOR SSD. LOTS OF TOPS UP INDICATORS. WORM BURROWS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	103.73	104.26	0.53	*76			SILTSTONE	CLYY.M.GY.VTHNB.SSD.SLD AS ABOVE.
49	104.26	106.06	1.80	*76			SANDSTONE	CLYY.FG.LT.GY.VTHNB.SLD MAINLY SS WITH MUDST BANDS THROUGHOUT. CHURNED UP WHEN LAID DOWN FOR MAJOR TOPS UP INDICATORS IN PLACES. BEDS ARE TOTALLY DISTORTED.
49	106.06	106.37	0.31	75			SANDSTONE	CLYY.MG.LT.GY.LAM.SLD SS BEDDED WITH MANY LAMINATIONS OF MUDST.
50	106.37	106.67	0.30	73			SANDSTONE	CLYY.MG.LT.GY.LAM.SLD AS ABOVE.
50	106.67	107.14	0.47	*72			SANDSTONE	CLYY.MG.LT.GY.LAM.SLD AS ABOVE.
50	107.14	108.34	1.20	*64			SANDSTONE	CLYY.MG.MOD.LT-M.GY.VTHNB.WRMBU.SLD MOSTLY SS WITH ODD MUDST BEDS. BEDS HAVE BEEN DISTORTED. DISCONTINUOUS BEDS. RIP-UP CLASTS - MUDST. ANGULAR BIOTRB. WORM BURROWS. QTZ VEINS. BIOTRB.
51	108.34	109.57	1.23	*78			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.WRMBU.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	109.57	110.40	0.83	*74			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.WRMBU.SLD AS ABOVE.
52	110.40	112.50	2.10	*76			SANDSTONE	CLYY.MG.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE. FECAL PELLETS, SHEARED. WRMBU R.
53	112.50	114.36	1.86	*84			MUDSTONE	SSY.M.GY.VTHNB.SSD.BRKN SANDY MUDSTONE - CAN SEE LAYERS BUT VERY DARK IN COLOR. SSD TOPS UP INDICATOR. SHEAR ZONE - LISTRIC SURFACE. A FEW QZ VEIN. ODD MUD PARTINGS.
54	114.36	114.66	0.30	*85	08273	H ROOF	MUDSTONE	SLTY.M.GY.LAM.BRKN ABUNDANT CARBONIZED PLANT FRAGMENTS. SAMPLED LOWER 25.0CM. H SEAM. ROOF. ROCK.
54	114.66	114.80	0.14	85	08274	H	COAL	C-2. BLK. SHRD HELL. CLEATED. C-2. WITH C-3. PARTINGS.
54	114.80	114.91	0.11	85	08274	H	COAL LOSS	
54	114.91	114.99	0.08	84	08274	H	MUDSTONE	CARB. DK. GY. LAM. SLD ABUNDANT PLANT FRAGMENTS.
54	114.99	115.14	0.15	84	08274	H	COAL	C-4. BLK. VBRKN BANDS OF C-3 AND C-5. POORLY CLEATED.
54	115.14	115.46	0.32	84	08274	H	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	115.46	115.51	0.05	84	08275	H	MUDSTONE	CARB. BLK. BRKN ABUNDANT PLANT FRAGMENTS.
54	115.51	115.64	0.13	83	08275	H	MUDSTONE	CARB. DK. GY. SHRD TWIST-OFF - POSSIBLE ROCK LOSS. WEAKLY CARBONACEOUS. PYRITE.
54	115.64	115.88	0.24	83	08275	H	MUDSTONE	CARB. BLK. SHRD STRONGLY CARBONACEOUS. ABUNDANT PLANT FRAGMENTS. BANDS OF C-5. IN PARTS.
54	115.88	116.22	0.34	*83	08275	H	MUDSTONE	CARB. DK. GY. SHRD WEAKLY CARBONACEOUS WITH ABUNDANT PLANT FRAGMENTS.
54	116.22	116.40	0.18	82	08275	H	COAL LOSS	
54	116.40	116.52	0.12	82	08275	H	COAL	C-5. BLK. SHRD
54	116.52	116.68	0.16	81	08275	H	MUDSTONE	CARB. BLK. SHRD ABUNDANT PLANT FRAGMENTS.
55	116.68	116.75	0.07	81	08275	H	MUDSTONE	CARB. BLK. SHRD AS ABOVE.
55	116.75	116.85	0.10	80	08276	H	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	116.85	116.96	0.11	80	08276 H	COAL	C-4. BLK. SHRD POORLY CLEATED.
55	116.96	117.16	0.20	79	08276 H	COAL	C-2. BLK. SHRD WELL CLEATED WITH BANDS OF C-1 AND C-3. OVERALL C-2.
55	117.16	117.26	0.10	79	08276 H	COAL	C-3. BLK. VBRKN SMALL AMOUNTS OF QUARTZ FRACTURE FILL. MODERATELY CLEATED.
55	117.26	117.33	0.07	78	08276 H	COAL	C-4. BLK. SHRD
55	117.33	117.57	0.24	78	08276 H	COAL	C-2. BLK. BRKN WELL CLEATED. QUARTZ FRACTURE FILL AT THE BOTTOM 3.0CM OF THE INTERVAL.
55	117.57	117.81	0.24	77	08276 H	COAL LOSS	
55	117.81	117.90	0.09	77	08276 H	MUDSTONE	CARB. BLK. SHRD VERY SOFT.
55	117.90	117.95	0.05	76	08276 H	COAL	C-3. BLK. PHRD WELL CLEATED FRAGMENTS. VERY SHEARED.
55	117.95	118.03	0.08	76	08276 H	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	118.03	118.63	0.60	*75	08277 H FLOOR	MUDSTONE	SLTY. LT-M. GY. LAM. SSD. SHRD INTERLAMINATED BLACK MUD SILT, AND VERY FINE SAND. BEDDING CONTORTED SLIGHTLY DUE TO SSD. MINOR AMOUNTS OF QUARTZ FRA CTURE FILL. FLOOR ROCK, SAMPLED TOP 25. 0CM. H SEAM FLOOR ROCK.
56	118.63	119.73	1.10	*73		SILTSTONE	SSY. M. GY. VTHNB. BRKN ALTERNATING BEDS OF SLTST & SS BEDS DIS TORTED. BIOTRB. SHEAR ZONE - LISTRIC SUR FACES. CARBONATE VEINS 8.0MM IN SECTION CARBONATE HAS MADE THE SLTST VERY LT IN COLOR - REACTS WITH HCL. DIAGENETIC RE CRYSTALLIZED CARBONATE.
56	119.73	120.48	0.75	*79		SANDSTONE	SLTY. VFG. M. GY. VTHNB. BRKN SS ARE THE MAIN BEDS WITH A FEW SLTST & EDS. SHEAR ZONE - LISTRIC SURFACES. TOP S UP INDICATOR. BIVALVES.
56	120.48	120.72	0.24	79		SILTSTONE	SSY. LT. GY. VTHNB. SLD CARBONATE HAS AFFECTED THE SSY SLTST. R EACH WITH LTCC. HELMINTHOPSIS. DIAGENET IC RECRYSTALLIZED CARBONATE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	120.72	121.42	0.70	*80			SILTSTONE	SSY.M.GY.VTHNB.BRKN INTERBEDDED SS AND SLTST MAINLY SLTST. SHEAR ZONE - LISTRIC SURFACES. GRADED BEDDING IN PLACES WITHIN THE SS. VERY SM ALL CARBONATE VEINS.
57	121.42	121.95	0.53	*87			SILTSTONE	SSY.PR.M.GY.VTHNR.SLD AS ABOVE.
57	121.95	122.73	0.78	*82			SILTSTONE	SSY.M.GY.LAM.SLD SLTST WITH LAMINATED BEDS OF SS THROUGH OUT. CARBONATE VEINS.
58	122.73	124.37	1.64	*78			SILTSTONE	SSY.M.GY.VTHNB.BRKN INTERBEDDED SLTST & SS, REALLY CHURNED UP - BIOTRB. DISCONTINUOUS BEDS. SS GOES FROM VFG TO MG A FEW CLASTS. SHEAR SURFACES - LISTRIC SURFACES.
58	124.37	124.70	0.33	*79			SILTSTONE	SSY.M.GY.VTHNB.WRMBU.BRKN AS ABOVE.
59	124.70	126.65	1.95	*74			SILTSTONE	SSY.M.GY.VTHNB.BRKN AS ABOVE. TWIST-OFF. BIOTRB. CARBONATE VEIN.
60	126.65	127.41	0.76	*72			SILTSTONE	SSY.M.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	127.41	128.68	1.27	*74			SILTSTONE	SSY.M.GY.VTHNB.WRMBU.SLD AS ABOVE. BIOTRB.
61	128.68	129.19	0.51	*73			SILTSTONE	SSY.M.GY.VTHNB.WRMBU.BRKN AS ABOVE. SOME MUDST BEDS. HELMINTHOPSIS.
61	129.19	129.46	0.27	76			SILTSTONE	SSY.LT.GY.VTHNB.XBDG.SLD DIAGENETIC RECRYSTALLIZED CARBONATE. X-BEDDED SLTST & SS BEDS.
61	129.46	130.08	0.62	*79			SILTSTONE	SSY.M.GY.VTHNB.WRMBU.SLD INTERBEDDED SLTST & SS WITH SOME MUDST. DISCONTINUOUS BEDS. VERY CHURNED UP. BIOTRB. WORM BURROWS.
61	130.08	130.40	0.32	*79			SILTSTONE	CLYY.M.GY.VTHNB.WRMBU.SLD SLTST & MUDST INTERBEDDED, LOTS OF HELMINTHOPSIS. SHEAR SURFACES.
61	130.40	130.74	0.34	75			SILTSTONE	CLYY.M.GY.VTHNB.BRKN AS ABOVE.
62	130.74	132.59	1.85	*71			MUDSTONE	SLTY.DK.GY.VTHNB.BRKN MUDST WITH ODD FAINT BED OF SLTST. SHEAR SURFACES - LISTRIC SURFACES. CORE FRACTURED THROUGHOUT. HELMINTHOPSIS.

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88020

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	132.59	132.74	0.15	70			MUDSTONE	SLTY. DK. GY. VTHNB. SLD AS ABOVE.
63	132.74	134.81	2.07	*69			MUDSTONE	SLTY. DK. GY. VTHNB. BRKN AS ABOVE. PYRITE.
64	134.81	135.55	0.74	*64			MUDSTONE	SSY. DK. GY. VTHNB. BRKN MAINLY MUDST WITH SS MIXED IN. COARSE G RAIN. SANDSTONE. A FEW RIP-UP MUDST CLASTS. END OF HOLE. ID = 135.55M.

* DENOTES MEASURED BCA
NEWPAGE

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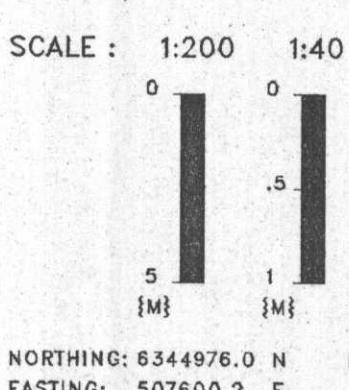
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88020

GEOLOGIST : ETMANSKI

DATE : FEB 21/89

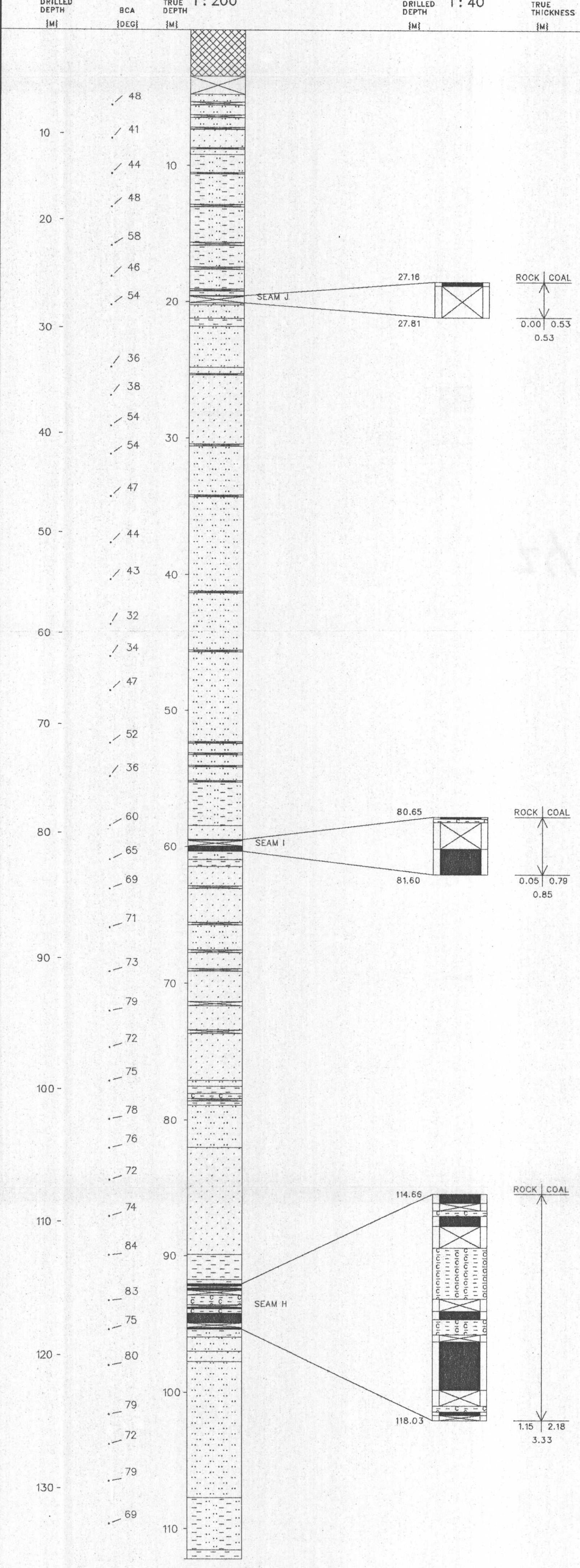
DRAWING NO. :

LITHOLOGIC SYMBOLS



	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL

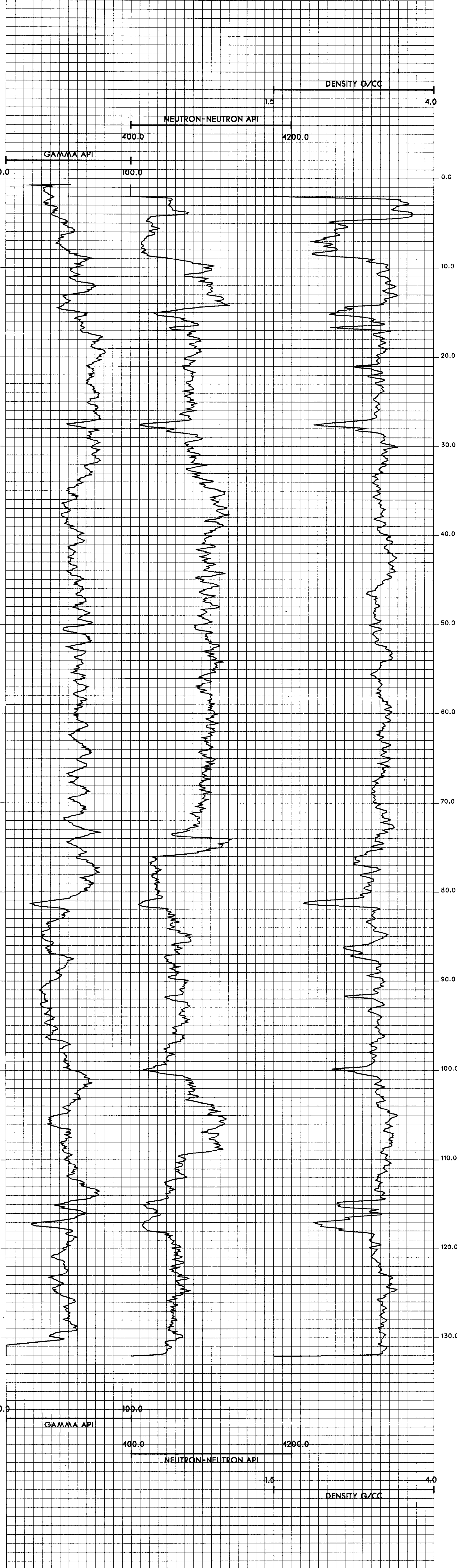


TOTAL: 135.55 TOTAL: 112.21

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88020 Log Date: 88-07-05 Company: CENTURY Geologist: ETMANSKI	Province: BC Northing: 6344980.00 Lat: 571459 Zone: 9 Easting: 507600.00 Long: 1285227 Measuring Point: GROUND LEVEL Elevation: 1530.7																									
Scale: 1 to 200.0 Depth Range: 0.0 to 137.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.																									
Logs Plotted:																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Axis Range</th> <th style="text-align: left;">Axis Length</th> <th style="text-align: left;">Smoothing Points</th> <th style="text-align: left;">Tool</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td>1. GAMMA API</td> <td>0.0 to 100.0</td> <td>7.0</td> <td>31</td> <td>9055A</td> <td></td> </tr> <tr> <td>2. NEUTRON-NEUTRON API</td> <td>400.0 to 4200.0</td> <td>9.0</td> <td>9</td> <td>9055A</td> <td></td> </tr> <tr> <td>3. DENSITY G/CC</td> <td>1.5 to 4.0</td> <td>9.0</td> <td>15</td> <td>9030AA</td> <td></td> </tr> </tbody> </table>	Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments	1. GAMMA API	0.0 to 100.0	7.0	31	9055A		2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A		3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA			
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments																					
1. GAMMA API	0.0 to 100.0	7.0	31	9055A																						
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A																						
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA																						



KPNLRDDH88021

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88021

DATE - 02/15/89

- HISTORY -

START DATE - 07/04/88

END DATE - 07/05/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - I SEAM INTERSECTED AT 29.77 M. H SEAM AT 73.16 M.

- LOCATION -

PROVINCE - BC
ELEVATION - 1654.17

ZONE - 9
NORTHING - 6343411.21
EASTING - 506647.21

LICENCE/LEASE NUMBER - 7151

LATITUDE - 571408
LONGITUDE - 1285324

- ORIENTATION -

LENGTH - 99.56

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 3.05
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-021

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

I



4.49 m

H

2.86 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



Gulf Canada Resources Limited

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.05	3.05	84			OVERBURDEN	CASING DEPTH.
1	3.05	3.45	0.40	84			ROCK LOSS	
1	3.45	4.49	1.04	84			SILTSTONE	SSY.M.GY.LAM.BIOTR.BRKN WITH INTERLAMINATED LT GREY VFG SS. BUR ROWS INDICATE TOPS UP.
1	4.49	5.42	0.93	*84			SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE WITH SS INTERLAM. DECREASE TOWARDS BASE.
2	5.42	7.28	1.86	84			SILTSTONE	M-DK.GY.LAM.BRKN WITH MINOR SANDY INTERLAM. GRADES IN AND OUT OF A MUDST.
2	7.28	7.63	0.35	84			ROCK LOSS	
3	7.63	8.25	0.62	85			MUDSTONE	M-DK.GY.LAM.SSD.VBRKN WITH SILTY INTERLAM. MINOR SSD AND SMALL SCALE DEWATERING STRUCTURES.
3	8.25	9.19	0.94	*85			MUDSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE.
3	9.19	9.22	0.03	85			MUDSTONE	CLYY.M.GY.SLD VERY SOFT AND UNCONSOLIDATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	9.22	9.52	0.30	85			MUDSTONE	M-DK.GY.LAM.SSD.SLD MINOR SLTST LAMS INCREASING TOWARDS BASE.
4	9.52	11.29	1.77	*85			SILTSTONE	SSY.LT-M.GY.LAM.BIOTR.SLD INTERLAMINATED WITH VFG SS. BECOMES VERY SANDY IN PARTS. LOAD STRUCTURES INDICATE TOPS UP.
4	11.29	11.59	0.30	*86			SILTSTONE	SSY.LT-M.GY.LAM.BIOTR.SLD AS ABOVE.
5	11.59	11.91	0.32	86			SILTSTONE	SSY.LT-M.GY.LAM.BIOTR.SLD AS ABOVE. HIGH ANGLE FRACTURES ARE QTZ FILLED.
5	11.91	12.06	0.15	86			ROCK LOSS	
5	12.06	13.76	1.70	*86			SANDSTONE	FG.WEL.LT.GY.LAM.BIOTR.BRKN INTERLAMINATED WITH SLTST. QTZ FRACTURE FILL AT TOP. BURROWS INDICATE TOPS UP. SLTST LAMS DECREASE TOWARDS BASE. TWIST-OFF AT TOP.
6	13.76	14.16	0.40	86			SANDSTONE	FG.WEL.LT.GY.VTHNB.SLD MINOR LAMS OF SILTSTONE CONTAINING PLAN T HASH.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	14.16	14.27	0.11	86		SANDSTONE	FG.WEL.LT.GY.VTHNB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
6	14.27	14.85	0.58	*86		SANDSTONE	FG.WEL.LT.GY.THNB.SLD MINOR SLTST LAMS. SHARP BASAL CONTACT W ITH SLTST.
6	14.85	15.61	0.76	*86		SILTSTONE	M.GY.LAM.BIOTR.BRKN INTERLAMINATED WITH LT GREY VFG SS AND MUDST. QTZ FRACTURE FILL. TRUNCATIONS I NDICATE TOPS UP.
7	15.61	16.62	1.01	*87		SILTSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE.
7	16.62	16.91	0.29	87		SILTSTONE	M.GY.LAM.BIOTR.SHRD VERY BROKEN TO SHEARED SLTST. POSSIBLE CORE LOSS.
7	16.91	17.24	0.33	87		SANDSTONE	FG.WEL.LT.GY.VTHNB.BRKN MINOR SLTST LAMS. QTZ FRACTURE FILL.
8	17.24	17.69	0.45	88		SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.SLD QTZ FRACTURE FILL. SLTST LAMS INCREASE TOWARDS BASE. GRADATIONAL BASAL CONTACT . BURROW INDICATES TOPS UP.
8	17.69	17.99	0.30	*88		SILTSTONE	M.GY.LAM.BIOTR.SLD AS ABOVE. BECOMES MUDDY TOWARDS BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	17.99	18.09	0.10	85		SILTSTONE	M.GY.LAM.BIOTR.VBRKN AS ABOVE.
8	18.09	19.23	1.14	*81		MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN INTERLAMINATED WITH SLTST. FECAL PELLET S WITHIN.
9	19.23	19.94	0.71	82		MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN AS ABOVE. VERY BROKEN NEAR BASE. POSSIB LE CORE LOSS.
9	19.94	21.12	1.18	83		MUDSTONE	SLTY.M-DK.GY.LAM.BIOTR.BRKN WITH SILTY LAMINATIONS AT TOP. BECOMING SANDY AT BASE. MINOR SMALL SCALE FRACTU RE OFFSETS.
10	21.12	21.83	0.71	*84		SANDSTONE	VFG.WEL.LT-M.GY.LAM.BRKN INTERLAMS OF FG SS, SLTST AND MUDST. MI NOR SMALL SUB-ROUNDED RIP-UP CLASTS AT BASE.
10	21.83	22.79	0.96	86		SILTSTONE	LT.GY.LAM.BRKN WITH FINE MUDST LAMS. LOOKS LIKE TUFFIT E ABOVE I-SEAM.
10	22.79	23.10	0.31	88		SILTSTONE	LT.GY.LAM.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	23.10	25.10	2.00	*90			SILTSTONE	LT.GY.LAM.VBRKN AS ABOVE. NUMEROUS THIN BENTONITE BANDS HIGHLY FRACTURED WITH CALCITE INFILL. FECAL PELLETS.
12	25.10	25.40	0.30	89			SILTSTONE	LT.GY.LAM.VBRKN AS ABOVE.
12	25.40	25.57	0.17	88			ROCK LOSS	
12	25.57	25.60	0.03	87	10359		BENTONITE	LT.GY.SHRD VERY SOFT AND WAXY. SAMPLE TAKEN.
12	25.60	26.12	0.52	86			MUDSTONE	DK.GY.LAM.BRKN SLTST LAMS. CALCAREOUS FRACTURE FILL.
12	26.12	26.49	0.37	84			ROCK LOSS	
12	26.49	27.17	0.68	83			MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
13	27.17	28.65	1.48	*82			MUDSTONE	DK.GY.LAM.BRKN MINOR SLTST LAMINATIONS. PLANT FRAGS IN CREASE TOWARDS BASE.
13	28.65	29.00	0.35	82			MUDSTONE	DK.GY.LAM.BIOTR.BRKN NUMEROUS PLANT FRAGS THROUGHOUT.
13	29.00	29.37	0.37	81			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	29.37	29.77	0.40	81	08278	I ROOF	MUDSTONE	DK.GY.LAM.VBRKN CONTAINS PLANT FRAGS. SAMPLED LOWER 25C M.I SEAM ROOF ROCK.
14	29.77	29.85	0.08	81	08279	I	COAL LOSS	
14	29.85	29.99	0.14	80	08279	I	COAL	C-3.BLK.BRKN C-1 AND C-2 BANDS UP TO 2.0MM THICK ALS O. CONTAINS CARB MUDST THROUGHOUT.
14	29.99	30.02	0.03	80	08279	I	MUDSTONE	M.BN.SLD VERY SOFT. UNCONSOLIDATED.
14	30.02	30.18	0.16	80	08279	I	COAL LOSS	
14	30.18	30.26	0.08	80	08279	I	COAL	C-4.BLK.VSHRD POSSIBLE CORE LOSS. LISTRIC SURFACES TH ROUGHOUT.
14	30.26	30.40	0.14	79	08279	I	COAL	C-3.BLK.VBRKN
14	30.40	30.46	0.06	79	08279	I	COAL	C-2.BLK.VBRKN A GOOD CLEAT AND CONCOIDAL FRACTURES.
14	30.46	30.52	0.06	79	08279	I	COAL	C-1.BLK.VBRKN NUMEROUS CONCOIDAL FRACTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	30.52	30.59	0.07	78	08279	I	COAL	C-1.BLK.BRKN AS ABOVE.
14	30.59	30.64	0.05	78	08279	I	COAL	C-2.BLK.BRKN
14	30.64	30.70	0.06	78	08279	I	COAL	C-3.BLK.BRKN MINOR C-1 AND C-5 THROUGHOUT.
14	30.70	30.77	0.07	77	08279	I	COAL	C-2.BLK.BRKN
14	30.77	30.78	0.01	77	08279	I	COAL	C-4.BLK.BRKN
14	30.78	31.15	0.37	77	08279	I	COAL LOSS	
14	31.15	31.28	0.13	76	08280	I	MUDSTONE	M.GY.BRKN TWIST-OFF AT TOP. POSSIBLE CORE LOSS.
14	31.28	31.33	0.05	76	08280	I	COAL	C-4.BLK.BRKN
14	31.33	31.50	0.17	76	08280	I	COAL LOSS	
14	31.50	31.62	0.12	75	08280	I	MUDSTONE	CARB.BLK.BRKN NUMEROUS COAL BANDS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	31.62	31.73	0.11	75	08280	I	COAL	C-3.BLK.VBRKN CARB MUDST THROUGHOUT.
14	31.73	31.82	0.09	75	08280	I	COAL	C-1.BLK.VBRKN CONCOIDAL FRACTURE THROUGHOUT. WELL DEV ELOPED CLEAT.
15	31.82	31.87	0.05	75	08280	I	COAL	C-1.BLK.VBRKN AS ABOVE.
15	31.87	32.03	0.16	74	08280	I	COAL LOSS	
15	32.03	32.20	0.17	74	08280	I	COAL	C-5.BLK.SHRD LYSTRIC SURFACES THROUGHOUT. MUDST THRO UGHOUT TWIST-OFF AT TOP INDICATES, POSS IBLE CORE LOSS.
15	32.20	32.26	0.06	74	08280	I	COAL	C-1.BLK.BRKN
15	32.26	32.31	0.05	73	08280	I	MUDSTONE	CARB.BLK.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
15	32.31	32.35	0.04	73	08280 I	COAL	C-2. BLK. BRKN
15	32.35	32.57	0.22	73	08280 I	COAL LOSS	
15	32.57	32.73	0.16	72	08280 I	MUDSTONE	CARB. BLK. LAM. BRKN COALY STRINGERS THROUGHOUT.
15	32.73	32.83	0.10	72	08281 I	COAL	C-1. BLK. BRKN CONCOIDAL FRACTURES.
15	32.83	32.85	0.02	72	08281 I	MUDSTONE	CARB. BLK. BRKN
15	32.85	32.91	0.06	71	08281 I	COAL	C-2. BLK. BRKN WELL DEVELOPED CLEAT GOOD CONCOIDAL.
15	32.91	32.97	0.06	71	08281 I	COAL	C-1. BLK. BRKN AS ABOVE.
15	32.97	33.01	0.04	71	08281 I	COAL	C-2. BLK. BRKN AS ABOVE.
15	33.01	33.12	0.11	70	08281 I	COAL	C-1. BLK. BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA	SEAM ID	LITHOLOGY	DESCRIPTION
15	33.12	33.25	0.13	70	08281 I	COAL	C-2. BLK. VBRKN AS ABOVE.
15	33.25	33.63	0.38	69	08281 I	COAL LOSS	
15	33.63	33.69	0.06	69	08281 I	COAL	C-3. BLK. SHRD LITRIC SURFACES. POSSIBLE CORE LOSS.
15	33.69	33.85	0.16	69	08281 I	COAL	C-1. BLK. VBRKN CONCOIDAL FRACTURES.
15	33.85	33.90	0.05	68	08281 I	COAL	C-2. BLK. VBRKN AS ABOVE.
15	33.90	34.29	0.39	68	08281 I	COAL	C-1. BLK. BRKN AS ABOVE.
16	34.29	34.34	0.05	68	08281 I	COAL	C-1. BLK. BRKN AS ABOVE.
16	34.34	34.42	0.08	67	08281 I	COAL	C-5. BLK. BRKN NUMEROUS MUDST. PARTINGS.
16	34.42	34.44	0.02	67	08281 I	COAL	C-3. BLK. BRKN
16	34.44	34.46	0.02	67	08281 I	COAL	C-2. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BQX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	34.46	34.51	0.05	66	08282	I FLOOR	MUDSTONE	CARB. BLK. SLD NUMEROUS COALY STRINGERS AND PLANT FOSS ILS. I SEAM FLOOR ROCK. SAMPLED.
16	34.51	34.96	0.45	*66	08282	I FLOOR	MUDSTONE	DK. GY. SLD PLANT FRAGS THROUGHOUT. SAMPLED TOP 20C M. I SEAM FLOOR ROCK.
16	34.96	36.21	1.25	76			MUDSTONE	DK. GY. LAM. SSD. SLD MINOR SAND BANDS 1CM THICK THROUGHOUT. TOWARDS BASE BECOMES SILTY.
17	36.21	36.74	0.53	*86			SANDSTONE	SLTY. FG. MEL. LT-M. GY. LAM. SLD INTERLAMINATED SAND AND SILT. GRADING I NTO SS AT BASE. MINOR PLANT HASH. RIP-U P CLASTS.
17	36.74	37.81	1.07	*82			SANDSTONE	FG. MEL. LT. GY. THNB. BRKN MINOR SILTY BANDS ASSOCIATED WITH RIP-U P CLASTS.
17	37.81	38.21	0.40	83			ROCK LOSS	
17	38.21	38.50	0.29	84			SANDSTONE	FG. MEL. LT. GY. THNB. VBRKN AS ABOVE.
18	38.50	38.78	0.28	85			SANDSTONE	FG. MEL. LT. GY. THNB. SLD AS ABOVE. RIP-UPS AT BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BQX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	38.78	38.89	0.11	*86			SILTSTONE	DK. GY. LAM. VBRKN GRADES FROM MUDST AT BASE TO SLTST AT T OP. SHARP CONTACTS. SAND LAMINATION WIT HIN.
18	38.89	40.46	1.57	*74			SANDSTONE	PYR. FG. MEL. LT. GY. VTHNB. BRKN NUMEROUS MUD AND SILT SUB-ROUNDED RIP-U P CLASTS UP TO 7CM (AVERAGING 1.5CM). D ISSEMINATED PYRITE WITHIN. RIP-UP CLAST S.
19	40.46	41.11	0.65	77			SANDSTONE	FG. MEL. LT-M. GY. THNB. BRKN MINOR SLTST BANDS WITHIN HIGH ANGLE FRA CTURES.
19	41.11	42.13	1.02	79			SANDSTONE	FG. MEL. LT-M. GY. THNB. BRKN AS ABOVE. MINOR RIP-UPS THROUGHOUT.
19	42.13	42.18	0.05	82			SILTSTONE	M. GY. LAM. SLD INTERLAMINATED WITH VFG SS.
19	42.18	44.24	2.06	85			ROCK LOSS	
20	44.24	45.64	1.40	*88			SANDSTONE	FG. MEL. LT-M. GY. VTHNB. VBRKN AT TOP IS SS WITH SLTST RIP-UPS. TOWAR S BASE BECOMES INTERLAMINATED SAND AND SILT. MINOR MUD FILLED FRACTURES AND CO ALY STRINGERS. SILT INCREASES TOWARDS B ASE. TWIST-OFFS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH8B021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	45.64	45.93	0.29		88		SILTSTONE	M.GY.LAM.SLD MINOR VFG SS AND MUD LAMS. GRADATIONAL UPPER AND LOWER CONTACT.
21	45.93	47.29	1.36		88		MUDSTONE	SLTY.DK.GY.SLD GRADES FROM SLTST AT TOP TO MUDST AND B ACK TO SLTST AT BASE.
21	47.29	47.42	0.13		87		SILTSTONE	SSY.M.GY.LAM.SLD GRADES INTO A SS WITH SLTST LAMS.
21	47.42	47.97	0.55	*	87		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.SLD WITH SLTST LAMINATIONS. HIGH ANGLE FRACT URES ARE QTZ FILLED.
22	47.97	48.56	0.59	*	89		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.WRMBU.SLD AS ABOVE WITH 1CM QTZ VEIN AT BASE.
22	48.56	49.98	1.42	*	88		SANDSTONE	FG.WEL.LT-M.GY.VTHNB.BIOTR.BRKN AS ABOVE. SILT LAMS INCREASE TOWARDS BA SE. BECOMES VFG SS AT BASE.
23	49.98	50.71	0.73	*	86		SANDSTONE	FG.WEL.LY-M.GY.LAM.WRMBU.BRKN INTERLAMINATED SS AND SLTST. WORM BURRO MS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH8B021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	50.71	51.49	0.78		86		SANDSTONE	FG.WEL.LT.GY.VTHNB.BIOTR.BRKN MINOR LAMINATIONS OF SLTST. MG IN PARTS
23	51.49	51.91	0.42	*	85		SANDSTONE	FG.WEL.LT.GY.VTHNB.BRKN AS ABOVE WITH .5CM QTZ VEIN, AT 100 DEG REES TO BEDDING. RIP-UP CLASTS.
24	51.91	52.63	0.72		86		SANDSTONE	FG.WEL.LT.GY.VTHNB.SLD AS ABOVE. RIP-UP CLASTS.
24	52.63	54.06	1.43	*	88		SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.BRKN INTERBEDDED WITH SLTST. MINOR COALIFIED MATERIAL ON SOME BEDDING PLANES. NUMER OUS WORM BURROWS UP TO 19CM. PLANT HASH THROUGHOUT.
25	54.06	54.40	0.34		88		SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.BRKN AS ABOVE.
25	54.40	56.13	1.73	*	87		SANDSTONE	FG.WEL.LT-M.GY.LAM.BIOTR.SLD AS ABOVE. VERY SILTY IN PARTS. PLANT HA SH THROUGHOUT.
26	56.13	57.41	1.28	*	84		SILTSTONE	M.GY.LAM.BIOTR.SLD INTERLAMINATED WITH VFG SS AND MUDST. M INOR PLANT FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	57.41	58.21	0.80	84		MUDSTONE	PYR. DK. GY. SLD MINOR DISSEMINATED PYRITE. MINOR PLANT HASH.
27	58.21	60.35	2.14	83		MUDSTONE	DK. GY. BIOTR. SLD MINOR PLANT HASH. SOME OF WHICH IS COAL IFIED. HELMINTHOPSIS.
28	60.35	60.46	0.11	83		MUDSTONE	DK. GY. LAM. SLD MINOR SLTST. LAMINATIONS. MINOR PLANT FR. AGMENTS.
28	60.46	61.81	1.35	82		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE.
28	61.81	62.27	0.46	*82		SANDSTONE	VFG. M. GY. LAM. HRMBU. SLD INTERLAMINATED WITH SLTST. BECOMES VERY SILTY TOWARDS BASE. PLANT FRAGS THRU HOUT.
29	62.27	62.48	0.21	84		SILTSTONE	M. GY. LAM. SSD. SLD WITH SANDY LAMS. MINOR PLANT FRAGS. SOM E OF WHICH ARE COALIFIED. SHARP BASAL C ONTACT WITH SANDSTONE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	62.48	63.17	0.69	*86		SANDSTONE	FG. MEL. LT-M. GY. LAM. HRMBU. SLD INTERLAMINATED WITH SLTST. BURROWS AND FECAL PELLETS WITHIN. COALIFIED PLANT M ATERIAL ON MANY BEDDING SURFACES. RIP-U P CLASTS.
29	63.17	64.36	1.19	*84		SANDSTONE	FG. MEL. LT-M. GY. LAM. BIOTR. SLD VERY MINOR COALIFIED PLANT MATERIAL. VE RY SILTY IN PARTS. TOPS UP.
30	64.36	65.21	0.85	*85		SANDSTONE	FG. MEL. LT-M. GY. LAM. SLD INTERLAMINATED WITH SLTST. NUMEROUS COA LIFIED PLANT FRAGS.
30	65.21	66.05	0.84	85		MUDSTONE	PYR. DK. GY. LAM. SLD PLANT FRAGS. PYRITE BLEBS WITHIN. GRADE S AT BASE TO SS.
30	66.05	66.19	0.14	*86		SANDSTONE	YFG. MEL. LT-M. GY. LAM. BRKN AT TOP SS WITH MUDST LAMS. GRADES INTO SLTST AT BASE. TWIST-OFF AT BASE. POSSI BLE CORE LOSS.
30	66.19	66.29	0.10	85		ROCK LOSS	
30	66.29	66.52	0.23	84		MUDSTONE	PYR. DK. GY. SLD PLANT FRAGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	66.52	68.51	1.99	*83			MUDSTONE	PYR.DK.GY.SLD PYRITE THROUGHOUT. MINOR PLANT FRAGS.
31	68.51	69.04	0.53	80			MUDSTONE	PYR.DK.GY.SLD AS ABOVE.
32	69.04	70.43	1.39	*77			MUDSTONE	DK.GY.LAM.BIOTR.SLD MINOR SLTY LAMS. MINOR PLANT FRAGS. HEL MINTHOPSIS.
33	70.43	72.01	1.58	77			MUDSTONE	DK.GY.LAM.SLD AS ABOVE.
33	72.01	72.43	0.42	77			MUDSTONE	DK.GY.LAM.SLD AS ABOVE. MINOR CALCAREOUS FRACTURE FIL L.
34	72.43	73.10	0.67	78	08283	H ROOF	MUDSTONE	DK.GY.BRKN PLANT FRAGS. SOME OF WHICH ARE COALIFIE D. LISTRIC SURFACES NEAR BASE. SAMPLED LOWER 19CM. H SEAM ROOF ROCK.
34	73.10	73.16	0.06	78	08283	H ROOF	MUDSTONE	CARB.BLK.BRKN MINOR THIN COALY BANDS THROUGHOUT. H SE AM. ROOF. ROCK. SAMPLED.
34	73.16	73.26	0.10	78	08284	H	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.26	73.57	0.31	78	08284	H	COAL	C-2.BLK.BRKN GOOD CLEAT. SOME CONCORDAL FRACTURES. M INOR C-4 LAMS.
34	73.57	73.65	0.08	78	08284	H	COAL	C-2.BLK.VBRKN POSSIBLE CORE LOSS.
34	73.65	74.10	0.45	78	08284	H	COAL LOSS	
34	74.10	74.12	0.02	79	08284	H	MUDSTONE	CARB.BLK.VBRKN
34	74.12	74.14	0.02	79	08284	H	COAL	C-3.BLK.VBRKN MUD WITHIN.
34	74.14	74.21	0.07	79	08284	H	COAL	C-6.DK.GY.VBRKN BONE COAL.
34	74.21	74.26	0.05	79	08284	H	COAL	C-5.BLK.SHRD APPEARS TO BE INTERMIXED CARB MUDST AND C-3.
34	74.26	74.29	0.03	79	08284	H	COAL	C-2.BLK.VBRKN
34	74.29	74.38	0.09	80	08284	H	COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	74.38	74.40	0.02	80	08284	H	MUDSTONE	CARB. BLK. VBRKN
34	74.40	74.56	0.16	80	08284	H	COAL	C-3. BLK. VBRKN
34	74.56	74.67	0.11	80	08284	H	COAL LOSS	
34	74.67	74.79	0.12	80	08285	H	MUDSTONE	CLYY. M-DK. GY. BRKN SOFT. AND. POORLY. CONSOLIDATED.
35	74.79	74.90	0.11	81	08285	H	COAL	C-4. BLK. BRKN INTERBEDDED C-6. AND. C-1. QTZ. THROUGHOUT
35	74.90	74.92	0.02	81	08285	H	MUDSTONE	CARB. BLK. BRKN
35	74.92	74.98	0.06	81	08285	H	COAL	C-4. BLK. VBRKN
35	74.98	75.14	0.16	81	08285	H	MUDSTONE	CARB. BLK. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	75.14	75.23	0.09	81	08286	H	COAL	C-3. BLK. VBRKN
35	75.23	75.30	0.07	81	08286	H	COAL	C-5. BLK. VBRKN
35	75.30	75.48	0.18	82	08286	H	COAL LOSS	
35	75.48	75.54	0.06	82	08286	H	COAL	C-3. BLK. VBRKN
35	75.54	75.70	0.16	82	08286	H	COAL	C-1. BLK. SLD CONCOIDAL FRACTURES THROUGHOUT.
35	75.70	75.76	0.06	82	08286	H	COAL	C-3. BLK. SLD
35	75.76	75.94	0.18	82	08286	H	COAL	C-2. BLK. SLD
35	75.94	76.07	0.13	83	08286	H	COAL	C-1. BLK. SLD CONCOIDAL FRACTURES, QTZ STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	76.07	76.31	0.24	83	08287	H FLOOR	MUDSTONE	DK.GY.BRKN PLANT FRAGS THROUGHOUT. MINOR QTZ STRINGS AND COALY LENSES. H SEAM FLOOR ROCK SAMPLED.
35	76.31	76.42	0.11	83			COAL	C-4.BLK.SHRD QTZ WITHIN. VERY SHEARED.
35	76.42	76.59	0.17	83			MUDSTONE	CARB.BLK.SLD QTZ AND THIN COALY LAMS THROUGHOUT. PLANT FRAGS.
35	76.59	76.79	0.20	83			MUDSTONE	PYR.DK.GY.SLD NUMEROUS PLANT FRAGS AND DISSEMINATED PYRITE.
36	76.79	76.90	0.11	84			SILTSTONE	PYR.DK.GY.LAM.SLD PLANT FRAGS. QUITE CLAYEY.
36	76.90	77.01	0.11	84			MUDSTONE	CARB.BLK.LAM.SLD VERY THINLY LAMINATED. COAL THROUGHOUT, PLANT FRAGS THROUGHOUT.
36	77.01	77.17	0.16	*84			SILTSTONE	CLYY.M-DK.GY.LAM.SLD NUMEROUS PLANT FRAGS.
36	77.17	77.27	0.10	83			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.27	77.40	0.13	82			COAL	C-2.BLK.LAM.SLD GOOD CLEAT WITH SOME CONCAIDAL FRACTURE S. MUDST LAMS WITHIN. PYRITE BLEBS.
36	77.40	77.47	0.07	82			COAL LOSS	
36	77.47	78.06	0.59	81			SILTSTONE	M.GY.LAM.BRKN INTERLAMINATED WITH MUDSTONE. MINOR PLANT FRAGS.
36	78.06	78.96	0.90	*80			SILTSTONE	M.GY.LAM.SSD.BRKN INTERLAMINATED WITH YFG SS. COARSENS TO HARD BASE TO A LAMINATED SANDSTONE. VERY MINOR PLANT FRAGS IN SILTY AREAS. LOAD CASTS INDICATE TOPS UP.
37	78.96	80.86	1.90	*87			SANDSTONE	FG.WEL.LT.GY.VTHNB.SLD WITH SLTST LAMS. MINOR RIP-UPS AT TOP < 0.5 CM. AT BASE ARE NUMEROUS SUB-ROUNDED SLTST CLASTS UP TO 2CM (AVERAGING 1CM). SHARP CONTACT WITH CONGLOMERATE AT BASE.
37	80.86	81.11	0.25	84			CONGLOMERATE	PBL.PR.LT-M.GY.VTHNB.SLD ROUNDED TO SUB-ROUNDED MUD AND SLTST CLASTS UP TO 3CM, (AVERAGING 1.5CM) IN A MATRIX OF MG SS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	81.11	82.78	1.67	*80			SANDSTONE	MG. MOD. LT. GY. VTHNB. SSD. SLD. SLTST LAMS WITHIN. FECAL PELLETS. SHARP BASAL CONTACT WITH MUDST.
38	82.78	82.97	0.19	81			MUDSTONE	DK. GY. SLD. VERY MINOR PLANT HASH. GRADES INTO SLTS AT BASE.
38	82.97	83.23	0.26	82			SILTSTONE	M. GY. LAM. SLD. PLANT FRAGS. THROUGHOUT.
39	83.23	84.12	0.89	84			SILTSTONE	M. GY. LAM. SLD. AT TOP IS VFG. SS WITH MUDST. RIP-UP. FINES TOWARD BASE TO AN INTERLAMINATED MUDST AND SLTST. PLANT FRAGS.
39	84.12	84.70	0.58	85			MUDSTONE	SLTY. DK. GY. LAM. BRKN. MINOR SILTY LAMS. BIVALVE. STAFFINELLA? GRADES INTO SS. AT BASE.
39	84.70	85.30	0.60	*86			SANDSTONE	VFG. MEL. M. GY. VTHNB. SLD. GRADES IN AND OUT OF SLTST. IN SILTY PARTS THERE ARE NUMEROUS SAND LENSES. PLANT FRAGS AND MINOR RIP-UPS WITHIN SANDS TONE.
40	85.30	86.31	1.01	*89			SANDSTONE	VFG. MEL. M. GY. VTHNB. SLD. AS ABOVE. SHARP BASAL CONTACT WITH SNOWFLAKE ZONE. FECAL PELLETS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	86.31	86.43	0.12	89			MUDSTONE	LT-M. GY. BRKN. MUDST CONTAINING RECRYSTALLIZED CARBONATE. SNOWFLAKE ZONE.
40	86.43	86.53	0.10	88			ROCK LOSS	
40	86.53	87.17	0.64	*88			SANDSTONE	VFG. MEL. LT-M. GY. LAM. BIOTR. BRKN. INTERLAMINATED VFG. SS & MUDST. PLANT FRAGS. FECAL PELLETS & HELMINTHOPSIS. THROUGHOUT. VERY SANDY IN PARTS. TWIST-OFF AT BASE. GRADES TO MUDST AT BASE.
40	87.17	87.50	0.33	87			MUDSTONE	DK. GY. LAM. SLD. INTERLAMINATED WITH SLTST. PLANT FRAGS. BECOMES SILTY TOWARDS BASE.
41	87.50	87.59	0.09	86			SANDSTONE	VFG. MEL. LT-M. GY. LAM. SLD. WITH VERY FINE LAMINATIONS OF SLTST.
41	87.59	87.85	0.26	86			MUDSTONE	LT-M. GY. BIOTR. SLD. SNOWFLAKE ZONE. MUDST WITH RECRYSTALLIZED CARBONATE. MINOR CALCITE VEINING. HELMINTHOPSIS WITHIN. VERY HARD.
41	87.85	87.94	0.09	85			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	87.94	89.76	1.82	*84			MUDSTONE	PYR. DK. GY. LAM. BIOTR. BRKN INTERLAMINATED WITH SLTST. PLANT FRAG & HELMINTHOPSIS WITHIN. DISSEMINATED PYRITE THROUGHOUT.
42	89.76	90.22	0.46	84			MUDSTONE	PYR. DK. GY. LAM. BIOTR. BRKN AS ABOVE WITH BIVALVE SHELLS. STAFFINEL LA?
42	90.22	91.82	1.60	85			MUDSTONE	PYR. DK. GY. LAM. BIOTR. BRKN AS ABOVE.
43	91.82	92.88	1.06	85			MUDSTONE	PYR. DK. GY. LAM. BIOTR. BRKN AS ABOVE WITH BIVALVES. TWIST-OFF AT BASE. POSSIBLE CORE LOSS.
43	92.88	93.57	0.69	86			ROCK LOSS	
43	93.57	94.39	0.82	86			MUDSTONE	DK. GY. LAM. BRKN NUMEROUS PLANT FRAGS. COALY STRINGERS AND COAL BANDS UP TO 1CM THROUGHOUT.
44	94.39	95.23	0.84	86			MUDSTONE	DK. GY. LAM. VBRKN AS ABOVE.
44	95.23	95.39	0.16	87			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	95.39	95.77	0.38	87			MUDSTONE	CARB. BLK. BRKN WITH MANY FINE C-2 AND C-5 LAMINATIONS.
44	95.77	96.19	0.42	88			MUDSTONE	CARB. DK. GY. LAM. SLD NUMEROUS PLANT FRAGS AND SHEAR SURFACES - COALY IN PARTS. SHARP BASAL CONTACT WITH SS.
44	96.19	96.44	0.25	*88			SANDSTONE	VFG. WEL. LT-M. GY. THNB. SLD HIGH ANGLE FRACTURE IS CALCITE FILLED.
45	96.44	96.62	0.18	87			SANDSTONE	VFG. WEL. LT-M. GY. THNB. SLD AS ABOVE.
45	96.62	97.31	0.69	86			SANDSTONE	VFG. WEL. LT-M. GY. THNB. BRKN AS ABOVE. GRADES TO SLTST. AT BASE.
45	97.31	97.45	0.14	85			MUDSTONE	DK. GY. LAM. BRKN NUMEROUS PLANT FRAGMENTS.
45	97.45	97.55	0.10	83			ROCK LOSS	
45	97.55	97.97	0.42	82			MUDSTONE	CARB. BLK. LAM. BRKN NUMEROUS C-2 AND C-5 LAMINATIONS AND BANDS.
45	97.97	98.13	0.16	81			MUDSTONE	DK. GY. LAM. BRKN PLANT FRAGS. SHARP BASAL CONTACT.

* DENOTES MEASURED BCA

PROJECT: KPM BLOCK: LR DATA SOURCE: DDH88021

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	98.13	98.46	0.33	*80			SANDSTONE	VFG. LT-M. GY. VTHNB. SLD FG AT TOP VFG AT BASE.
46	98.46	99.56	1.10	80			SANDSTONE	VFG. LT-M. GY. THNB. SLD WITHIN ARE THREE CDS W/ SHARP CONTACTS BETWEEN FG SS AND THE UPPER SLTST. CAL CITE VEINING AT BASE. END OF HOLE. TD = 99.56M.

* DENOTES MEASURED BCA
NEWPAGE

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GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88021

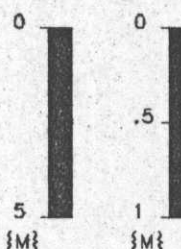
GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40



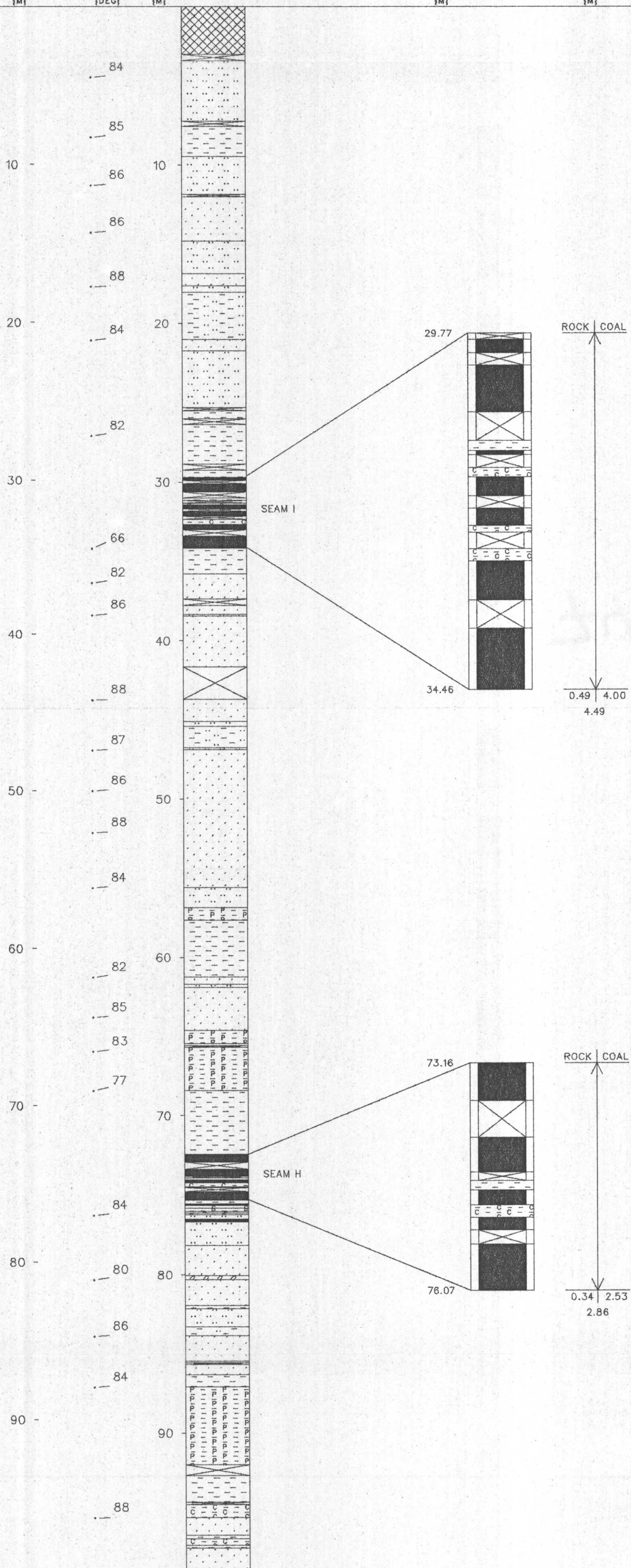
NORTHING: 6343411.0 N
 EASTING: 506647.1 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL

DRILLED DEPTH 1:200 TRUE DEPTH 1:40
 {M} {DEG} {M} {M} TRUE THICKNESS {M}



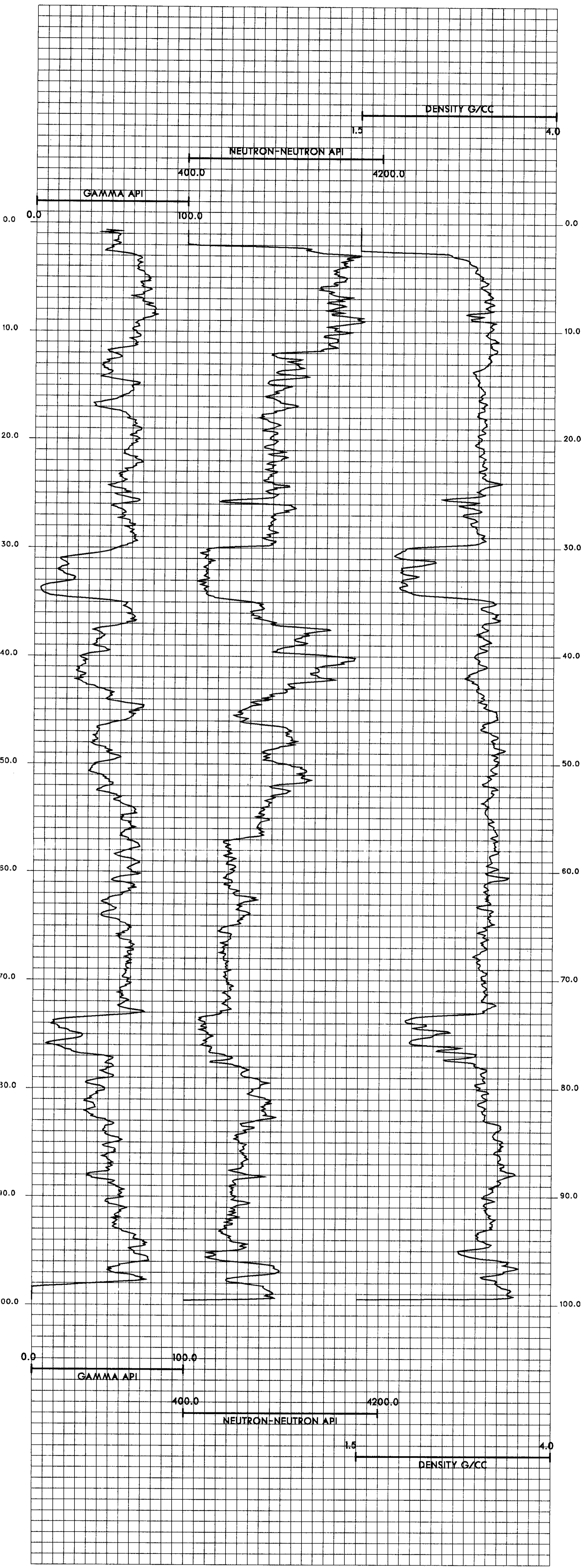
TOTAL: 99.56 TOTAL: 98.64

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Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88021 Log Date: 88-07-05 Company: CENTURY Geologist: MURRAY	Province: BC Northing: 6343410.00 Lat: 571408 Zone: 9 Easting: 506647.00 Long: 1285324 Measuring Point: GROUND LEVEL Elevation: 1654.1																								
Scale: 1 to 200.0 Depth Range: 0.0 to 104.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.																								
Logs Plotted:																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Axis Range</th> <th style="text-align: left;">Axis Length</th> <th style="text-align: left;">Smoothing Points</th> <th style="text-align: left;">Tool</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td>1. GAMMA API</td> <td>0.0 to 100.0</td> <td>7.0</td> <td>31</td> <td>9055A</td> <td></td> </tr> <tr> <td>2. NEUTRON-NEUTRON API</td> <td>400.0 to 4200.0</td> <td>9.0</td> <td>9</td> <td>9055A</td> <td></td> </tr> <tr> <td>3. DENSITY G/CC</td> <td>1.5 to 4.0</td> <td>9.0</td> <td>15</td> <td>9030AA</td> <td></td> </tr> </tbody> </table>	Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments	1. GAMMA API	0.0 to 100.0	7.0	31	9055A		2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A		3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA		
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments																				
1. GAMMA API	0.0 to 100.0	7.0	31	9055A																					
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A																					
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA																					



KPNLRDDH88022

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88022

DATE - 02/15/89

- HISTORY -

START DATE - 07/05/88

END DATE - 07/05/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - ONE SEAM INTERSECTED: 0?

- LOCATION -

PROVINCE - BC
ELEVATION - 1665.58

ZONE - 9
NORTHING - 6342274.25
EASTING - 505620.28

LICENCE/LEASE NUMBER - 7148

LATITUDE - 571332
LONGITUDE - 1285425

- ORIENTATION -

LENGTH - 99.26

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 2.13
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-022

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

K



0.92 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



GULF CANADA CORPORATION

COAL DIVISION MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH88022 SEAM : 0? INTERVAL(M) : 52.44 - 53.39 ELEVATION(M) : 1665.6
 GEOLOGIST : KRAUS SCALE: 1:40 DATE : JAN 25/89 DRAWING NO. :

SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.							
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL MJ/KG		
	52.44	↑ [Log Diagram] ↓		(0.68) 0.40													
	53.39			(0.11) 0.12 (0.11)	65.2	8318	130	0.92 / 0.00 0.92	0.92 / 0.00 0.92	1.33	34.32	6.20	98.15	1.40	22.05		

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	2.13	2.13		72		OYERBURDEN	CASING DEPTH.
1	2.13	3.13	1.00		72		ROCK LOSS	
1	3.13	5.20	2.07	*72			SANDSTONE	FER.MG.VNEL.S-P.GY.MAS.SSD.BRKN SLTST LAMS & A RIP-UP. FE STAINED. QTZ VEINS. LOAD CASTS - TOPS UP. POSSIBLE C ORE LOSS.
2	5.20	6.63	1.43	*74			SANDSTONE	FER.MG.VNEL.S-P.GY.MAS.SSD.BRKN AS ABOVE.
2	6.63	6.73	0.10	72			SILTSTONE	SSY.WEL.M-DK.GY.VTHNB.SSD.SLD INTERBEDDED WITH MG SS WHICH HAS SLTST RIP-UPS.
2	6.73	6.98	0.25	70			SANDSTONE	VFG.VNEL.M.GY.VTHNB.BRKN INTERLAM WITH SLTST.
3	6.98	8.08	1.10	*68			SANDSTONE	FG.VNEL.M.GY.VTHNB.SSD.VBRKN INTERBEDDED WITH VFG SS AND SLTST. LOAD CASTS - TOPS UP. POSSIBLE CORE LOSS. Q TZ FRACTURE FILL PARALLEL TO BEDDING.
3	8.08	8.24	0.16	67			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	8.24	8.98	0.74	66			SANDSTONE	FG.VNEL.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST (HAS SS RIP-UPS) . SOME THIN BEDS. TOPS UP - LOAD CASTS. SOME BIOTRB.
4	8.98	11.01	2.03	*65			SANDSTONE	MG.VNEL.S-P.GY.MAS.SLD SLTST LAMS AND RIP-UPS. QTZ VEIN. SS GR ADUAL FINES TO FG SS WITH PLANT HASH.
5	11.01	11.17	0.16	66			SANDSTONE	MG.VNEL.S-P.GY.MAS.BRKN AS ABOVE.
5	11.17	11.29	0.12	66			ROCK LOSS	
5	11.29	12.96	1.67	*67			SANDSTONE	MG.VNEL.M.GY.MAS.SSD INTERBEDDED WITH SLTST. SLTST RIP-UP. B URROWS (WORM? AND BIVALVES) BIOTRB. THI CK QTZ VEINS - 1.0CM.
6	12.96	14.26	1.30	67			SANDSTONE	FG.VNEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. TOPS UP. BIOTRB.
6	14.26	14.34	0.08	68			ROCK LOSS	
6	14.34	15.09	0.75	*68			SANDSTONE	FG.VNEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. SS ALTERNATES FROM VFG TO MG. BIOTRB.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	15.09	17.22	2.13	*71			SANDSTONE	MG.VHEL.M.GY.VTHNB.SSD.BRKN AS ABOVE LITHOLOGY. HEAVILY FRACTURED AND NO QTZ FILLED. LOAD CASTS - TOPS UP. POSSIBLE CORE LOSS.
7	17.22	17.25	0.03	71			ROCK LOSS	
8	17.25	17.39	0.14	72			SANDSTONE	MG.VHEL.M.GY.VTHNB.SSD.BRKN AS ABOVE.
8	17.39	18.05	0.66	*72			SANDSTONE	FG.VHEL.M.GY.VTHNB.SSD.BRKN WITH SLTST BEDS. QTZ VEINING. MINOR FRACTURE DISPLACEMENT. TOPS UP - LOAD CAST S.
8	18.05	18.79	0.74	72			SANDSTONE	FG.VHEL.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. BIOTRB - BURROWS. TOPS UP - LOADING STRUX. QTZ FRACTURE FILL.
8	18.79	19.24	0.45	72			SANDSTONE	FG.VHEL.M.GY.MAS.SSD.BRKN FEN SLTST BEDS. TOPS UP.
9	19.24	20.19	0.95	*72			SANDSTONE	FG.VHEL.M.GY.MAS.SSD.VBRKN SLTST LAMS. QTZ VEINING. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	20.19	20.44	0.25	70			ROCK LOSS	
9	20.44	21.50	1.06	68			SANDSTONE	FG.VHEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. SS RANGE FROM VFG TO CG. A 1CM BAND OF BRECCIATED MUD. SOME SHEARED SURFACES PARALLEL TO BEDDING.
10	21.50	23.57	2.07	*66			SANDSTONE	FG.VHEL.M.GY.MAS.SSD.BRKN AS ABOVE. SOME BIOTRB.
11	23.57	24.60	1.03	*68			SANDSTONE	FG.VHEL.M.GY.VTHNB.SSD.VBRKN POSSIBLE CORE LOSS. TOPS UP - LOAD STRUX. QTZ VEINS. SLTST LAMS.
11	24.60	25.43	0.83	67			SILTSTONE	SSY.VFG.VHEL.M-DK.GY.VTHNB.SSD.VBRKN INTERBEDDED WITH VFG SS. QTZ FRACTURE FILL. SS GRADES OUT. SHEARED SURFACES. LOADING - TOPS UP.
12	25.43	25.63	0.20	*66			SILTSTONE	SSY.VFG.VHEL.M-DK.GY.VTHNB.BIOTRB SLD AS ABOVE.
12	25.63	25.84	0.21	68			SANDSTONE	CG.VHEL.S-P.GY.VTHNB.SSD.SLD INTERBEDDED WITH SLTST. FINING UPWARD IN BEDS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	25.84	26.70	0.86	69			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. BRKN INTERLAM WITH SLTST. PYRITE NODULES. SOME MUD FRACTURE FILL.
12	26.70	27.48	0.78	71			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. BRKN AS ABOVE LITHOLOGY. TOPS UP.
13	27.48	29.50	2.02	73			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. BRKN AS ABOVE. SOME BIOTRB. HELMINTHOPSIS. C QUALIFIED PLANT MATTER.
14	29.50	31.00	1.50	*75			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. VBRKN POSSIBLE CORE LOSS. SLTST & YFG SS LAMI NATIONS. DISSEMINATED PYRITE. SLTST RIP-UPS.
14	31.00	31.18	0.18	74			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. VBRKN AS ABOVE. VERY SHEARED.
14	31.18	31.32	0.14	73			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. VBRKN AS ABOVE. VERY BROKEN INCREASING SLTST CONTENT.
15	31.32	32.22	0.90	*72			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. BRKN AS ABOVE. TOPS UP - LOADING STRUX. QTZ VEINING.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	32.22	32.36	0.14	72			SILTSTONE	SSY. YFG. VMEL. M-DK. GY. VTHNB. SSD. SLD WITH MUDST RIP-UPS. LOTS OF QTZ VEINING
15	32.36	32.47	0.11	72			SILTSTONE	SSY. YFG. VMEL. M-DK. GY. VTHNB. SSD. SLD AS ABOVE.
15	32.47	32.69	0.22	72			MUDSTONE	M. GY. VBRKN NOT LITHIFIED. HIGHLY SHEARED.
15	32.69	32.94	0.25	72			ROCK LOSS	
15	32.94	33.31	0.37	72			SANDSTONE	SLTY. MG. VMEL. M. GY. SSD. BRKN WITH SLTST. HIGHLY FRACTURED - QTZ INFILL.
15	33.31	33.42	0.11	72			SANDSTONE	FG. VMEL. M. GY. MAS. SLD WITH QTZ VEIN.
16	33.42	34.91	1.49	72			BRECCIA	SSY. M-DK. GY. BRKN SHEARED SURFACES AND QTZ PRESENT. MUD & SS (FG).
16	34.91	35.39	0.48	72			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. BRKN INTERLAM WITH MUDST & YFG SS. SHEARED SURFACES.
16	35.39	35.64	0.25	72			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	35.64	37.58	1.94	*72			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. VBRKN AS ABOVE ALSO WITH MUD FRACTURE FILL & CALCITE. SOME PYRITE DISSEMINATION. VERY SHEARED (LITRIC SURFACES).
17	37.58	37.83	0.25	72			ROCK LOSS	
18	37.83	38.50	0.67	71			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. VBRKN AS ABOVE. QTZ VEINS (NO CALCITE). POSSIBLE CORE LOSS.
18	38.50	39.06	0.56	71			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. VBRKN AS ABOVE.
18	39.06	39.23	0.17	70			ROCK LOSS	
18	39.23	40.05	0.82	70			SANDSTONE	SLTY. FG. MEL. M. GY. MAS. VBRKN LAMINATIONS OF SLTST. QTZ VEINS. ALSO VERY SHEARED.
19	40.05	40.39	0.34	70			SANDSTONE	SLTY. FG. MEL. M. GY. MAS. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	40.39	41.55	1.16	69			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. VBRKN POSSIBLE CORE LOSS. INTERLAM WITH SLTST COAL STRINGERS; PLANT HASH. QTZ VEINS. NILSSONIA TENUICAUUS.
19	41.55	41.63	0.08	69			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SSD. SLD AS ABOVE.
20	41.63	42.08	0.45	68			MUDSTONE	SLTY. VMEL. BLK. LAM. SSD. BRKN AS ABOVE.
20	42.08	43.70	1.62	*68			SANDSTONE	FG. VMEL. M-DK. GY. LAM. SSD. SLD INTERLAMINATED WITH MUDST. LOAD CASTS - TOPS UP. QTZ VEINS. WORM BURROW, SOME BIOTRB. SOME SHEARING. COALIFIED PLANT FRAGMENTS.
21	43.70	44.59	0.89	*68			SANDSTONE	FG. VMEL. M-DK. GY. VTHNB. SSD. SLD AS ABOVE (SS RANGES FROM FG - CG).
21	44.59	45.74	1.15	71			SANDSTONE	MG. VMEL. M-DK. GY. VTHNB. SSD. SLD AS ABOVE. QTZ FRACTURE FILL. SOME BIOTR B; WORM BURROWS.
22	45.74	47.22	1.48	*75			SANDSTONE	FG. VMEL. M-DK. GY. VTHNB. BIOTR. SLD AS ABOVE. BURROWS. HELMINTHOPSIS. SOME COALIFIED PLANT FRAGMENTS. TOPS UP, LOADING STRUCTURES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	47.22	47.57	0.35	72	10365	BENTONITE	CLYY.LT.GY GRADES INTO BENTONITE - QTZ VEINS,
22	47.57	47.60	0.03	69	10365	BENTONITE	CLYY.LT.GY GRADES INTO BENTONITE - QTZ VEINS.
22	47.60	47.73	0.13	66		BRECCIA	CLYY.LT-M.GY.SLD BRECCIATED MUDST AND TUFFITE. LOTS OF Q TZ.
23	47.73	49.79	2.06	62		SILTSTONE	VHEL.DK.GY.MAS.BRKN QTZ FRACTURE FILL PARALLEL TO BEDDING AND SOME BRECCIATED MUD FRACTURE FILL. SHEARED SURFACES.
24	49.79	50.58	0.79	59		SILTSTONE	VHEL.DK.GY.MAS.BRKN AS ABOVE. BECOMING FINER. A MUDST BIVAL VE.
24	50.58	51.16	0.58	56		SILTSTONE	VHEL.DK.GY.MAS.BRKN AS ABOVE. VERY FRACTURED WITH QTZ FILL. GRADES INTO A FG SS.TILL HEAVILY FRACTURED.
24	51.16	51.29	0.13	52	10366	BENTONITE	CLYY.LT.GY.SLD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	51.29	51.68	0.39	*49		BRECCIA	LT.GY.SLD SILTSTONE & FG SS. HEAVILY FRACTURED & QTZ FILLED.
24	51.68	51.78	0.10	62		ROCK LOSS	
25	51.78	52.14	0.36	*75		MUDSTONE	SLTY.M.GY.LAM.VBRKN ABUNDANT QUARTZ FRACTURE INFILL.
25	52.14	52.19	0.05	75		ROCK LOSS	
25	52.19	52.44	0.25	75	08317 0? ROOF	MUDSTONE	CARB.DK.GY.LAM.BRKN WEAKLY CARBONACEOUS WITH ABUNDANT PLANT FRAGMENTS. N? SEAM ROOF ROCK. SAMPLED.
25	52.44	52.52	0.08	75	08318 0?	COAL LOSS	
25	52.52	52.68	0.16	75	08318 0?	COAL	C-3.BLK.SHRD QUARTZ FRACTURE FILL WITH PYRITE BLEBS TOWARDS THE TOP. LISTRIC SURFACES. MODE RATE TO WELL CLEATED.
25	52.68	52.93	0.25	75	08318 0?	COAL	C-3.BLK.PHRD C-3 BORDERLINE WITH C-2.
25	52.93	53.04	0.11	75	08318 0?	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	53.04	53.13	0.09	74	08318	0?	COAL	C-4.BLK.PHRD
25	53.13	53.16	0.03	74	08318	0?	COAL LOSS	
25	53.16	53.23	0.07	74	08318	0?	COAL	C-3.BLK.PHRD
25	53.23	53.28	0.05	74	08318	0?	COAL	C-6.BLK.BRKN VERY HARD. MINOR QUARTZ FRACTURE FILL.
25	53.28	53.39	0.11	74	08318	0?	COAL LOSS	
25	53.39	53.70	0.31	*74	08319	0? FLOOR	MUDSTONE	SLTY.M.GY.LAM.BRKN M? SEAM FLOOR ROCK. UPPER 25.0CM SAMPLE D.
26	53.70	55.72	2.02	*67			MUDSTONE	VMEL.BLK.LAM.SSD.BRKN DISSEMINATED PYRITE. QTZ FRACTURE FILL PARALLEL TO BEDDING. GRADUALLY SLTST BE DS APPEAR. LOAD CASTS - TOPS UP. SHEARI NG.
26	55.72	55.78	0.06	65			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	55.78	56.14	0.36	*63			MUDSTONE	SLTY.VMEL.DK.GY.LAM.SSD.BRKN INTERLAM WITH SLTST. SHEARING (RHYTHMIC) . QTZ FRACTURE FILL.
27	56.14	56.34	0.20	48			BRECCIA	DK.GY.SLD A BAND OF BRECCIATED QTZ, MUDSTONE AND MUD. CHANGE IN BCA'S.
27	56.34	56.75	0.41	*32			MUDSTONE	SLTY.VMEL.DK.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. SOME BIOTRB.
27	56.75	57.86	1.11	*32			MUDSTONE	SLTY.VMEL.DK.GY.VTHNB.SSD.SLD AS ABOVE.
28	57.86	59.02	1.16	*33			MUDSTONE	SLTY.VMEL.DK.GY.VTHNB.SSD.SLD AS ABOVE WITH PYRITE NODULES. OVERTURNE D - LOAD CASTS.
28	59.02	59.22	0.20	33			BRECCIA	SSY.M.GY.SLD FG SS BRECCIATED WITH QTZ FRACTURE FILL
28	59.22	59.76	0.54	32			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.BRKN INTERLAM WITH SLTST. SHEARING ON SURFAC ES. OVERTURNED - LOADING STRUX.
28	59.76	59.80	0.04	32			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	59.80	59.90	0.10		31		SILTSTONE	FG.VMEL.M.GY.VTHNB.SSD.SLD INTERBEDDED WITH VFG SS.
29	59.90	60.49	0.59		31		SILTSTONE	FG.VMEL.M.GY.VTHNB.SSD.SLD AS ABOVE - TOPS O/T. QTZ VEINS PARALLEL TO BEDDING.
29	60.49	61.97	1.48		*30		SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. SLTST GRADES OUT. TOPS UNDETERMINED. GRADING TO A MG S. S. SHEARED SURFACES.
30	61.97	62.86	0.89		*31		SANDSTONE	MG.VMEL.S-P.GY.THNB.SSD.SLD FEW SLTST LAMINATIONS. TOPS UNDETERMINATE.
30	62.86	63.97	1.11		31		SANDSTONE	MG.VMEL.S-P.GY.THNB.SSD.SLD AS ABOVE. TOPS O/T - SLUMP FEATURE. QTZ FRACTURE PARALLEL TO BEDDING. SHEARED SURFACES.
31	63.97	65.46	1.49		*30		SANDSTONE	MG.VMEL.S-P.GY.THNB.SSD.BRKN AS ABOVE.
31	65.46	65.79	0.33		31		SANDSTONE	MG.VMEL.S-P.GY.THNB.SSD.SLD AS ABOVE.
31	65.79	65.98	0.19		31		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	65.98	66.76	0.78		32		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE.
32	66.76	66.95	0.19		32		ROCK LOSS	
32	66.95	67.79	0.84		*33		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS.
32	67.79	67.98	0.19		31		ROCK LOSS	
33	67.98	68.32	0.34		29		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE.
33	68.32	68.51	0.19		27		ROCK LOSS	
33	68.51	70.16	1.65		*25		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. OVERTURNED.
34	70.16	70.89	0.73		26		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE.
34	70.89	72.14	1.25		*28		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE.
35	72.14	73.97	1.83		*28		SANDSTONE	MG.VMEL.S-P.GY.VTHNB.SSD.BRKN AS ABOVE. OVERTURNED. LOADING & BURROWS

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	73.97	74.81	0.84	*25			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SSD.SLD AS ABOVE. O/T.
36	74.81	75.19	0.38	23			SANDSTONE	MG.VWEL.S-P.GY.MAS.SLD FEW SLTST LAMS. BURROWS. SHEARING.
36	75.19	75.95	0.76	*21			SANDSTONE	MG.VWEL.S-P.GY.MAS.SLD AS ABOVE. SHEARING WITH QTZ FILL. A SLU MP FEATURE INDICATES TOPS UP.
37	75.95	77.90	1.95	*29			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SSD.BRKN SLTST LAMINATIONS. SOME CG SS BEDS. QTZ VEINING. SHEARED SURFACES. SLUMP. O/T. MINOR FRACTURE DISPLACEMENT BEFORE QTZ VEINING.
38	77.90	78.30	0.40	29			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.VBRKN SLTST LAMS. QTZ VEINING. SHEARED SURFAC ES. POSSIBLE CORE LOSS.
38	78.30	78.46	0.16	28			ROCK LOSS	
38	78.46	79.80	1.34	*28			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SSD.VBRKN AS ABOVE.
39	79.80	81.35	1.55	*30			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.VBRKN AS ABOVE. GRADING TO A MASSIVE SS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	81.35	81.70	0.35	27			SANDSTONE	MG.VWEL.S-P.GY.MAS.BRKN SHEARED & QTZ SURFACES PARALLEL TO BEDD ING.
40	81.70	83.83	2.13	*23			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.SLD AS ABOVE.
41	83.83	84.90	1.07	23			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.BRKN AS ABOVE.
41	84.90	85.75	0.85	*23			SANDSTONE	MG.VWEL.S-P.GY.MAS.SSD.BRKN AS ABOVE. SLIGHT SSD INDICATES O/T.
41	85.75	85.77	0.02	22			ROCK LOSS	
42	85.77	86.37	0.60	22			SANDSTONE	MG.VWEL.S-P.GY.VTHNB.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
42	86.37	87.71	1.34	*21			SANDSTONE	FG.VWEL.M.GY.VTHNB.SSD.VBRKN INTERLAMINATIONS OF SLTST. SLUMP FEATUR E INDICATES O/T. POSSIBLE CORE LOSS.
42	87.71	87.82	0.11	17			ROCK LOSS	
43	87.82	89.77	1.95	*13			SANDSTONE	FG.VWEL.M.GY.VTHNB.SSD.VBRKN AS ABOVE. SLUMP - O/T. QTZ FRACTURING P ARALLEL TO BEDDING. SOME BIOTURBATION.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	89.77	90.47	0.70	16			SANDSTONE	FG.VMEL.M.GY.VTHNB.BIOTR.BRKN AS ABOVE.
44	90.47	91.89	1.42	*19			SANDSTONE	FG.VMEL.M.GY.VTHNB.SLD SLTST LAMS. QTZ VEINING. A LOAD STRUX I NDICATES TOPS O/T.
45	91.89	92.43	0.54	19			SANDSTONE	FG.VMEL.M.GY.VTHNB.SLD AS ABOVE. O/T.
45	92.43	93.41	0.98	*18			SANDSTONE	FG.VMEL.M.GY.VTHNB.BIOTR.SLD INTERBEDDED WITH SLTST. BURROWS INDICAT E.O/T. POSSIBLY BIVALVE BURROWING.
45	93.41	93.91	0.50	15			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.SLD AS ABOVE. LESS BIOTRB. BURROWS - O/T.
46	93.91	95.08	1.17	*12			SANDSTONE	FG.VMEL.M.GY.VTHNB.BIOTR.SLD AS ABOVE. BURROM - O/T. HEAVILY BURROME D.
46	95.08	95.93	0.85	12			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. FEW OR NO BURROWS. QTZ FRACTU RE FILL. SLUMP - O/T.
47	95.93	96.32	0.39	12			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.BRKN AS ABOVE. QTZ SHEARED SURFACES.
47	96.32	96.39	0.07	13			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88022

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	96.39	97.74	1.35	*13			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.VBRKN AS ABOVE. BURROWS. QTZ VEINS PARALLEL T O BEDDING (SHEARING). POSSIBLE CORE LOS S.
47	97.74	97.81	0.07	14			ROCK LOSS	
48	97.81	99.26	1.45	*16			SANDSTONE	FG.VMEL.M.GY.VTHNB.SSD.VBRKN AS ABOVE. SLUMP INDICATES O/T. FRACTURE D HEAVILY WITH QTZ FILL. PROBABLE CORE LOSS. END OF HOLE. TD = 99.26 M.

* DENOTES MEASURED BCA
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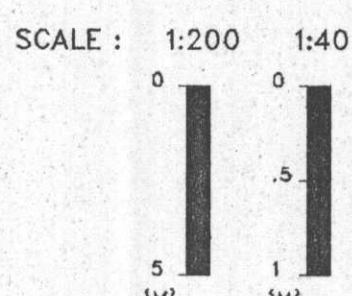
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88022

GEOLOGIST : KRAUS

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

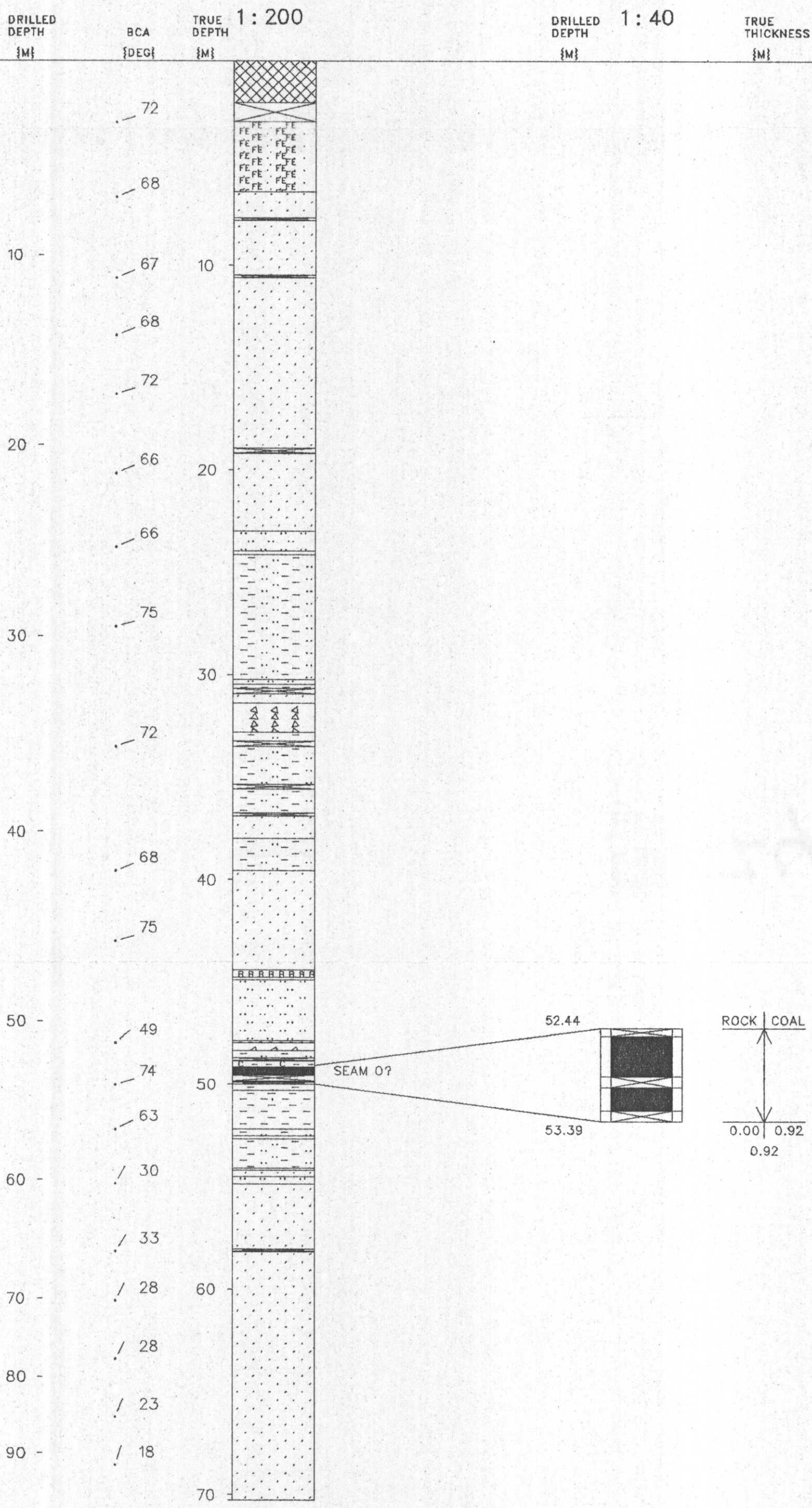


NORTHING: 8342274.0 N
 EASTING: 505620.2 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



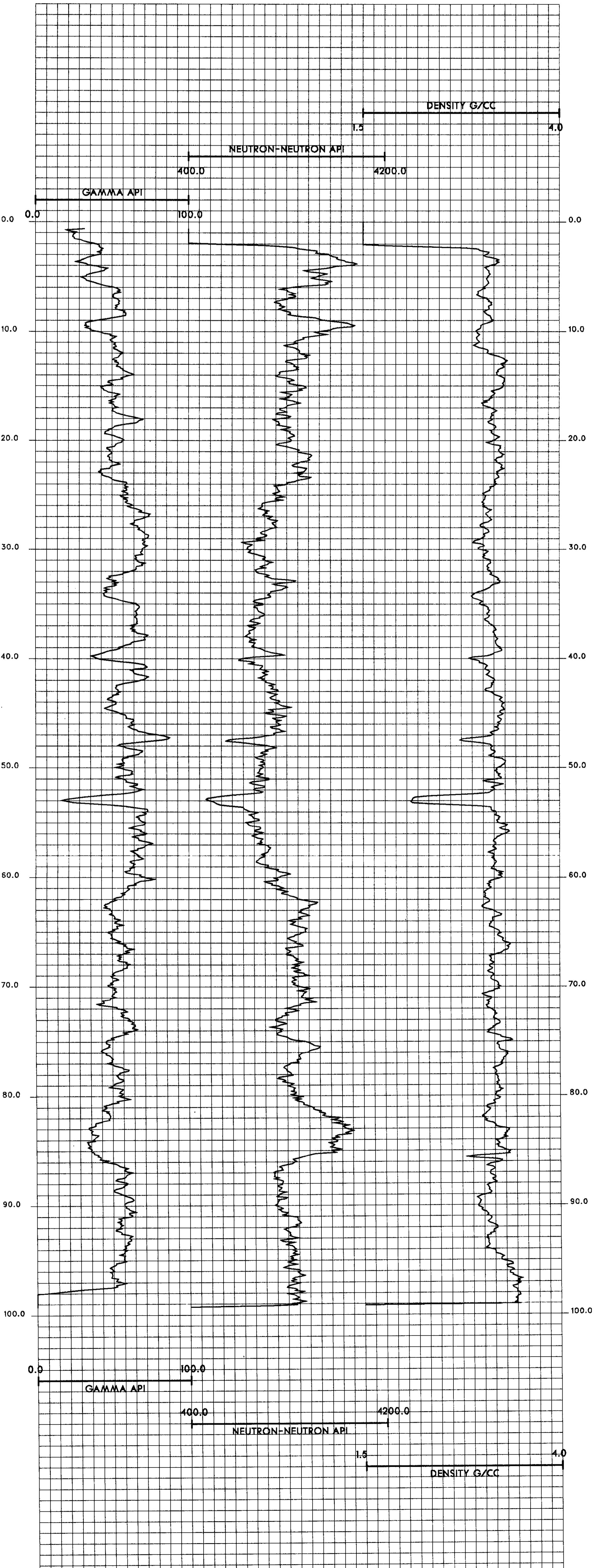
748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88022 Log Date: 88-07-06 Company: CENTURY Geologist: KRAUS	Province: BC Northing: 6342270.00 Lat: 571332 Zone: 9 Easting: 505620.00 Long: 1285425 Measuring Point: GROUND LEVEL Elevation: 1665.5	
Scale: 1 to 200.0 Depth Range: 0.0 to 104.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



<PNLRDDH88023

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88023

DATE - 02/15/89

- HISTORY -

START DATE - 07/06/88

END DATE - 07/07/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - MATTHEWS

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED: ?, P?, O?. TWO CASING DEPTHS DUE TO LOST CIRC.

- LOCATION -

PROVINCE - BC

ELEVATION - 1573.58

LICENCE/LEASE NUMBER - 7145

ZONE - 9

NORTHING - 6343395.95

EASTING - 507899.95

LATITUDE - 571408

LONGITUDE - 1285209

- ORIENTATION -

LENGTH - 98.88

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 11.89

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** O INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-023

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

?

1.61 m

P?

1.84 m

O?

1.55 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	9.10	9.10	82			OVERBURDEN	THERE ARE 2 CASING DEPTHS, #1 AT 9.10M, #2 AT 11.89M. CORE BEGINS AT 9.10M.
1	9.10	9.14	0.04	82			SANDSTONE	CG.PR.M.BN.THNB.BRKN OXIDIZED, LITHIC SS, MINOR AMOUNTS OF P EBBLES AVERAGE 5.0MM. CORE LOSS.
1	9.14	9.21	0.07	82			CONGLOMERATE	PR.LY-M.GY.BRKN MPPL-CPPL CONGL OF LITHIC CLASTS. MIN = 3MM, MAX = 22MM, CLASTS = CHERT, SUBAN GULAR TO SUBROUNDED, MG SANDY MATRIX. M ATRIX SUPPORTED. POSSIBLE CORE LOSS.
1	9.21	9.71	0.50	82			ROCK LOSS	
1	9.71	9.76	0.05	82			MUDSTONE	SLTY.M.GY.THNB.BRKN POSSIBLE CORE LOSS. CORE TWIST-OFF.
1	9.76	10.26	0.50	82			ROCK LOSS	
1	10.26	10.31	0.05	82			SANDSTONE	MG.MOD.LT.GY.THNB.BRKN COAL STRINGER, C-2 INTERMIXED WITH CALC ITE FRACTURE FILL, SUBROUNDED TO SUBANG ULAR PARTICLES. POSSIBLE CORE LOSS. COR E TWIST-OFF.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	10.31	10.71	0.40	82			ROCK LOSS	
1	10.71	10.78	0.07	82			SILTSTONE	M.GY.THNB.BRKN POSSIBLE CORE LOSS. CALCITE VEIN.
1	10.78	11.18	0.40	82			ROCK LOSS	
1	11.18	11.21	0.03	82			SANDSTONE	FG.WEL.M-DK.GY.THNB.BRKN
1	11.21	11.25	0.04	82			SANDSTONE	VCG.PR.M.GY.VBRKN LITHIC SS, SUBROUNDED TO SUBANGULAR PAR TICLES. POSSIBLE CORE LOSS.
1	11.25	11.35	0.10	82			ROCK LOSS	
1	11.35	12.98	1.63	82	99998	?	COAL LOSS	
1	12.98	13.01	0.03	82			SILTSTONE	SSY.M.GY.VBRKN POSSIBLE CORE LOSS.
1	13.01	13.18	0.17	82			ROCK LOSS	
1	13.18	13.46	0.28	82			SANDSTONE	FG.WEL.LT-M.GY.THNB.SLD

* DENOTES MEASURED BCA

FORM
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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH INTRVAL TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	13.46	13.65	0.19	82		SANDSTONE	FG.WEL.M.GY.THNB.SSD.BRKN ARGILLACEOUS WISPS & LAMELLAE. SSV UNCO NSOLIDATED MUD WITH BROKEN ANGULAR FRAG S OF HOST RX. THROUGH SS.
1	13.65	14.32	0.67	82		SANDSTONE	CLYY.FG.LT.GY.THKB.SSD.SLD MUDDY SS WITH ARGILLACEOUS WISPS. QTZ & CALCITE VEIN. RIP-UP CLASTS.
1	14.32	14.39	0.07	82		SANDSTONE	CLYY.FG.LT.GY.THKB.SLD AS ABOVE.
2	14.39	14.65	0.26	82		SANDSTONE	FG.LT-M.GY.THNB.SLD ARGILLACEOUS WISPS. RIP-UP CLASTS.
2	14.65	14.83	0.18	82		SANDSTONE	FG.LT-M.GY.THNB.SLD AS ABOVE, GRADES INTO A MUDDY SS.
2	14.83	14.95	0.12	82		SANDSTONE	CLYY.FG.LT.GY.THNB.SLD
2	14.95	15.05	0.10	82		BRECCIA	LT.GY.THNB.BRKN ARGILLACEOUS & SS. SUBROUNDED FRAGMENTS , MUD MATRIX.
2	15.05	15.09	0.04	82		SANDSTONE	CLYY.FG.LT.GY.THNB.BRKN CARBONACEOUS ARGILLACEOUS LAMINATION.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH INTRVAL TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	15.09	16.05	0.96	82		SANDSTONE	FG.LT.GY.THKB.SLD ARGILLACEOUS WISPS & LAM.
2	16.05	16.09	0.04	82		SANDSTONE	CLYY.FG.LT.GY.VTHNB.BRKN
2	16.09	16.47	0.38	82		SANDSTONE	MG.WEL.M.GY.THNB.SLD ARGILLACEOUS LAM & WISPS. RIP-UP CLASTS
3	16.47	16.77	0.30	82		SANDSTONE	FG.WEL.M.GY.THNB.SLD ARGILLACEOUS WISPS & LAM. RIP-UP CLASTS
3	16.77	16.93	0.16	*82		MUDSTONE	DK.GY.LAM.SLD ALT LAM OF MUDST & SS.
3	16.93	17.21	0.28	81		SANDSTONE	MG.MOD.LT.GY.THNB.SLD
3	17.21	17.38	0.18	80		SANDSTONE	CLYY.MG.MOD.LT.GY.THNB.SLD ARGILLACEOUS WISPS. SMALL WISP & PEBBLE ZONE 3.0CM THICK.
3	17.38	18.51	1.13	78		SANDSTONE	CLYY.MG.MOD.LT.GY.THKB.SSD.SLD AS ABOVE. SMALL ARGILLACEOUS WISP ZONE LAST 4.0CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	18.51	18.63	0.11		77		SANDSTONE	MG. MOD. LT. GY. THNB. BRKN ARGILLACEOUS WISPS & CARBONACEOUS ZONES OF PLANT MATERIAL.
4	18.63	19.68	1.06		76		SANDSTONE	CLYY. MG. MOD. LT. GY. THKB. SLD ARGILLACEOUS WISPS & PERIODICALLY ARGILLACEOUS CARBONACEOUS LAM. CONTAINING PLANT MATERIAL.
4	19.68	19.80	0.12		74		SANDSTONE	CLYY. MG. MOD. LT. GY. THNB. BRKN AS ABOVE.
4	19.80	20.16	0.36		73		SANDSTONE	CLYY. MG. MOD. LT. GY. THNB. SLD ARGILLACEOUS WISPS & WISPS OF CARBONACEOUS MATERIAL.
4	20.16	20.47	0.31		72		SANDSTONE	CLYY. MG. MOD. LT. GY. THNB. SLD AS ABOVE.
5	20.47	22.53	2.06	*	70		SANDSTONE	CLYY. MG. MOD. LT. GY. VTHKB. SLD ARGILLACEOUS WISPS. FINING UPWARD SEQUENCES COMMONLY FOUND.
6	22.53	22.84	0.31	*	74		SANDSTONE	CLYY. MG. MOD. LT. GY. THNB. SLD FEW ARGILLACEOUS WISPS. GRADED BEDDING AT 23.27 - 23.36. DEPTHS TAKEN FROM DRILLER'S MARKER.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	22.84	22.95	0.11		75		SANDSTONE	CLYY. CG. MOD. LT. GY. THNB. SLD AS ABOVE. DECREASE IN CLYY PERCENTAGE.
6	22.95	23.18	0.23		76		SANDSTONE	CG. MOD. LT. GY. THNB. SLD ARGILLACEOUS CARBONACEOUS ZONE APPROX 2 .0CM, ZONE IS DISCONTINUOUS.
6	23.18	23.27	0.08		77		SANDSTONE	FG. MEL. LT. GY. THNB. SLD COAL C-2 STRINGERS OCCUPYING SAME SPACE AS CALCITE VEINS. FEW ARGILLACEOUS WISPS.
6	23.27	23.29	0.02		78		SANDSTONE	GRAN. PR. M. GY. VTHNB. SLD PYRITE.
6	23.29	23.42	0.13		78		SANDSTONE	FG. MEL. M. GY. THNB. SLD FEW ARGILLACEOUS WISPS. ZONES OF RIP-UP. COAL STRINGER C-2 CALCITE VEINS.
6	23.42	23.47	0.05		79		CONGLOMERATE	M. GY. THNB. SLD SMALL CONGLOMERATE ZONE WITH SANDY MATRIX. MATRIX SUPPORTED. CLAST SIZE MIN - 3MM, MAX - 13MM. CLASTS ARE MAINLY ELONGATE.
6	23.47	23.93	0.46		80		SANDSTONE	FG. MEL. LT. GY. THKB. SLD CALCITE VEINS, ARGILLACEOUS WISPS & LAM

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	23.93	23.96	0.03	81		BRECCIA	LT. GY. BRKN SMALL BRECCIATED ZONE WITH ANGULAR SS C LASTS & CALCITE & QTZ INFILL.
6	23.96	24.28	0.32	82		SANDSTONE	FG. MEL. LT. GY. SLD ARGILLACEOUS MISPS.
7	24.28	26.48	2.20	*83		SANDSTONE	FG. MEL. M. GY. THKB. SSD. SLD ARGILLACEOUS LAM & MISPS. WRMBUR, BLACK PELLETS.
7	26.48	26.99	0.50	82		SANDSTONE	FG. MEL. M. GY. THKB. SSD. SLD ARGILLACEOUS LAM & MISPS. SMALL BENTONI TE LAYER 3.0-4.0MM THICK.
8	26.99	28.82	1.83	82		SANDSTONE	FG. MEL. LT. GY. THKB. SSD. SLD AS ABOVE.
8	28.82	28.84	0.02	81		COAL	C-2. BLK. SLD CALCITE FRACTURE FILL.
8	28.84	29.04	0.20	81		SANDSTONE	FG. MEL. LT. GY. THKB. SSD. SLD ARGILLACEOUS MISPS & LAM.
9	29.04	29.38	0.34	80		SANDSTONE	FG. MEL. M. GY. THKB. SSD. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	29.38	31.10	1.72	80		SANDSTONE	FG. MEL. M. GY. THKB. SSD. SLD COAL STRINGERS, POSSIBLE C-2 OR C-3 (VE RY THIN). PLANT HASH (NILSSONIA). SMALL FAULTS.
10	31.10	31.58	0.48	79		SANDSTONE	MG. MOD. M. GY. THNB. SSD. SLD ARGILLACEOUS MISPS & LAM.
10	31.58	31.70	0.13	78		MUDSTONE	DK. GY. THNB. SLD SSY. MISPS & LAM.
10	31.70	32.21	0.51	78		SANDSTONE	FG. MEL. LT. GY. LAM. SSD. SLD ALT. LAM. OF. SS. & MUDST.
10	32.21	32.23	0.02	77		SANDSTONE	FG. MEL. LT. GY. THNB. SLD ARGILLACEOUS MISPS.
10	32.23	32.45	0.22	77		SANDSTONE	FG. MEL. LT. GY. THNB. SLD AS ABOVE & LAM. GRADING INTO NEXT UNIT.
10	32.45	32.55	0.10	*76		MUDSTONE	DK. GY. THNB. SLD SHARP CONTACT WITH NEXT UNIT.
10	32.55	33.00	0.45	75		SANDSTONE	SLTY. VFG. MEL. LT. GY. LAM ALT. LAM. OF. SS. & MUDST.
10	33.00	33.10	0.10	73		MUDSTONE	DK. GY. THNB. BRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	33.10	33.96	0.86	*72			MUDSTONE	SLTY. DK. GY. THNB. SSD. SLD LT GREY SLTY LAM THROUGHOUT.
11	33.96	35.01	1.05	73			SILTSTONE	SSY. MEL. LT. GY. LAM. SSD. SLD SHEAR, ALT LAM OF MUDST & SLTST.
12	35.01	36.97	1.95	*74			MUDSTONE	DK. GY. LAM. SLD ALT LAM OF LT GREY SLTY MUDST & DK GREY MUDST.
13	36.97	37.81	0.84	*69			MUDSTONE	SSY. M. GY. LAM. SSD. BRKN INTERLAMINATED BLACK MUD, SILT AND FINE SAND. SMALL LOAD. CASTS.
13	37.81	38.05	0.24	74			ROCK LOSS	
13	38.05	38.73	0.68	*79			MUDSTONE	SSY. M. GY. LAM. SSD. BRKN AS ABOVE.
13	38.73	39.03	0.30	79			ROCK LOSS	
13	39.03	39.39	0.36	79	08331 P?	ROOF	MUDSTONE	SLTY. M. GY. LAM. BRKN WEAKLY CARBONACEOUS IN PARTS. ABUNDANT PLANT FRAGMENT. SAMPLED LOWER 25.0CM. N SEAM ROOF ROCK.
13	39.39	39.42	0.03	79	08332 P?		COAL	C-6 DK. GY. VBRKN VERY HARD.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	39.42	39.95	0.53	79	08332 P?		COAL LOSS	
13	39.95	39.99	0.04	79	08332 P?		MUDSTONE	CARB. BLK. PMRD POORLY CONSOLIDATED BLACK MUD.
13	39.99	40.13	0.14	79	08332 P?		COAL LOSS	
13	40.13	40.15	0.02	79	08332 P?		COAL	C-3. BLK. VBRKN WELL CLEATED.
14	40.15	40.17	0.02	79	08332 P?		COAL	C-2. BLK. VBRKN WELL CLEATED.
14	40.17	40.31	0.14	79	08332 P?		COAL	C-5. BLK. VSHRD BANDS OF C-3. VERY SHEARED WITH NUMEROUS S. LITRIG SURFACES. BORDERLINE C-4 IN P ARTS.
14	40.31	40.80	0.49	80	08332 P?		COAL LOSS	
14	40.80	40.85	0.05	80	08332 P?		COAL	C-3. BLK. VBRKN WELL CLEATED.
14	40.85	40.92	0.07	80	08332 P?		COAL	C-3. BLK. PMRD FRAGMENTS OF C-2 WITH C-3.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	40.92	40.99	0.07	80	08332 P?	COAL	C-4. BLK. VBRKN CORE BORDERLINE POWDERED. C-6 BANDS WIT H C-4.
14	40.99	41.15	0.16	80	08332 P?	COAL	C-5. BLK. VBRKN ABUNDANT QUARTZ FRACTURE FILL. BANDS OF C-6 AND C-3 BUT OVERALL C-5.
14	41.15	41.26	0.11	80	08332 P?	COAL LOSS	
14	41.26	41.40	0.14	80	08333 P? FLOOR	MUDSTONE	CARB. BLK. BRKN ABUNDANT PLANT FRAGS. N SEAM FLOOR ROCK . SAMPLED.
14	41.40	41.67	0.27	80	08333 P? FLOOR	MUDSTONE	CARB. BLK. BRKN AS ABOVE. SHEARED IN PARTS WITH SOME QU ARTZ FRACTURE FILL. SAMPLED TOP 11.0CM. N SEAM FLOOR ROCK.
14	41.67	42.35	0.68	*80		MUDSTONE	CARB. BLK. LAM. BIOTR. BRKN AS ABOVE. FECAL PELLETS IN PARTS.
15	42.35	42.53	0.18	80		MUDSTONE	CARB. BLK. LAM. BRKN AS ABOVE. QUARTZ FRACTURE FILL.
15	42.53	42.58	0.05	80		MUDSTONE	CARB. BLK. LAM. SHRD UNCONSOLIDATED MUD WITH NARROW C-2 PART ING.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	42.58	42.89	0.31	80		ROCK LOSS	
15	42.89	43.11	0.22	79		SANDSTONE	FG. PR. LT. GY. YTHNB. SSD. VSHRD INTERBEDDED SAND AND SILT. QUARTZ FRACT URE FILL. CONTORTED BEDDING. LOAD CASTS INDICATE TOPS UP.
15	43.11	43.16	0.05	79		COAL	C-4. BLK. VBRKN
15	43.16	43.20	0.04	79		MUDSTONE	CARB. BLK. VBRKN POSSIBLE ROCK LOSS.
15	43.20	44.38	1.18	*79		MUDSTONE	SSY. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED MUD, SILT AND SAND. RARE QUARTZ VEINING.
16	44.38	44.52	0.14	75		MUDSTONE	SLTY. LT. GY. LAM. SLD ALT. LAM. OF SLTY. MUDST. & DK. GREY MUDST. CALCITE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	44.52	46.20	1.68	*70		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD SMALL BENTONITE LAYER 5MM THICK, ARGILLACEOUS LAM & WISPS SHEAR, VERY MUDDY SS FRACTURE FAULT DISPLACEMENT. CALCITE FRACTURE FILL.
17	46.20	47.21	1.01	70		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD ARGILLACEOUS WISPS & SOME LAM.
17	47.21	47.59	0.38	70		ROCK LOSS	
17	47.59	47.72	0.13	70		SANDSTONE	CLYY.FG.MEL.LT.GY.THNB.VBRKN LARGE QTZ FRACTURE FILL.
17	47.72	48.51	0.79	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD ARGILLACEOUS WISPS & DISCONTINUOUS BEDDING.
18	48.51	50.57	2.07	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD ARGILLACEOUS WISPS & LAM.
19	50.57	52.67	2.10	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD AS ABOVE, TALC & CALCITE FRACTURE FILL.
20	52.67	53.52	0.85	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	53.52	54.68	1.15	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD AS ABOVE. SHEARED.
21	54.68	54.90	0.22	71		SANDSTONE	CLYY.FG.MEL.LT.GY.THKB.SLD AS ABOVE WITH PLANT FRAGS.
21	54.90	56.36	1.46	72		SILTSTONE	LT.GY.LAM.SLD ALT LAM OF SLTST & DK GREY MUDST. CALCITE FRACTURE FILL. SHEARED.
21	56.36	56.49	0.13	72		SILTSTONE	LT.GY.LAM.BRKN AS ABOVE.
21	56.49	56.55	0.06	72		BRECCIA	ANGULAR FRAG OF LOST ROCK, QTZ & CALCITE MATRIX.
22	56.55	57.80	1.25	*72		SILTSTONE	CLYY.LT.GY.LAM.SLD ALT LAM OF LT GREY SLTST & DK GREY MUDST. CARBONACEOUS FILMS, CALCITE AND QTZ FRACTURE FILLS, SHEARED.
22	57.80	58.42	0.62	70		MUDSTONE	DK.GY.THNB.SLD SLTY WISPS & LAM, TALC QTZ, CALCITE FRACTURE FILL.
23	58.42	58.77	0.35	68		MUDSTONE	DK.BLK.THNB.BRKN PLANT HASH, CARBONACEOUS FILM, CARBONACEOUS MUD. C-3, C-4 COAL PARTINGS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	58.77	59.17	0.40	65			ROCK LOSS	
23	59.17	59.30	0.13	63			MUDSTONE	DK.BLK.THNB.BRKN SHEARED. CARBONACEOUS C-3, C-4 COAL PARTINGS. POSSIBLE CORE LOSS.
23	59.30	59.35	0.05	61			MUDSTONE	DK.BLK.THNB.BRKN CARBONACEOUS MUDST, SHEARED PYRITE, CAL CITE.
23	59.35	59.37	0.02	59	99999	0?	COAL	C-4.DK.BLK.BRKN
23	59.37	60.29	0.92	57	99999	0?	COAL LOSS	
23	60.29	60.52	0.23	54	99999	0?	ROCK LOSS	
23	60.52	60.62	0.10	52	99999	0?	MUDSTONE	DK.BLK.BRKN SHEARED. TALC FRACTURE FILL. CARBONACEOUS.
23	60.62	60.69	0.07	50	99999	0?	MUDSTONE	CARB.DK.BLK.BRKN CARBONACEOUS.
23	60.69	60.96	0.27	48	99999	0?	ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	60.96	60.99	0.03	45	99999	0?	COAL	C-5.DK.BLK.BRKN SHEARED.
23	60.99	61.32	0.33	43	99999	0?	COAL LOSS	
23	61.32	61.47	0.15	41			MUDSTONE	SLTY.M.GY.BRKN TALC. CALCITE FRACTURE FILL. SHEARED.
23	61.47	61.80	0.33	39			MUDSTONE	LT.BLK.THNB.BRKN SHEARED. TALC FRACTURE FILL.
23	61.80	61.86	0.06	36			MUDSTONE	LT.BLK.THNB.SHRD
23	61.86	62.01	0.15	34			MUDSTONE	DK.BLK.THNB CARBONACEOUS CALCITE FRACTURE FILL. COAL STRINGERS & PARTINGS, C-3 & C-4 CALCITE.
24	62.01	63.37	1.36	32			MUDSTONE	SLTY.LT.GY.LAM.SSD.SLD ALT LAM OF LT GREY SLTY MUDST & DK GREY MUDST. CALCITE & QTZ FRACTURE FILLS. MINOR AMOUNT OF SHEAR. THE FIRST 5.0CM HAS C-5 PARTICLES.
24	63.37	63.81	0.44	29			MUDSTONE	LT.GY.LAM.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 17

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	63.81	65.31	1.50	*27			MUDSTONE	DK. GY. LAM. SLD FRACTURE DISPLACEMENT, ALT LAM OF MUDST & LT GREY SLTY MUDST. CALCITE FRACTURE FILL. DEWATERING.
25	65.31	65.79	0.48	31			MUDSTONE	SLTY. LT. GY. LAM. SLD ALT LAM OF SLTY MUDST & DK GREY MUDST. DEWATERING.
26	65.79	66.25	0.46	*36			MUDSTONE	DK. GY. LAM. SSD. SLD CALCITE FRACTURE FILL. ALT LAM OF LT GR EY SLTY MUDST & DK GREY MUDST.
26	66.25	66.95	0.70	36			MUDSTONE	SLTY. LT. GY. LAM. SLD ALT LAM OF SLTY MUDST & DK GREY MUDST.
26	66.95	67.14	0.19	37			BRECCIA	LT. GY. SLD SLTY SSS ANGULAR FRAGMENTS IN CALCITE, QTZ MATRIX.
26	67.14	67.38	0.24	37			ROCK LOSS	
26	67.38	67.56	0.18	37			SANDSTONE	CLYY. FG. MEL. LT. GY. THNB. BRKN MUDDY. SS.
26	67.56	67.81	0.25	38			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	67.81	67.95	0.14	38			BRECCIA	LT. GY. SLD ANGULAR FRAGMENTS OF HOST ROCK IN CALCI TE QTZ MATRIX.
26	67.95	68.01	0.06	39			MUDSTONE	SLTY. LT. GY. THNB. SLD TALC FRACTURE FILL.
27	68.01	69.30	1.29	39			MUDSTONE	SLTY. LT. GY. THKB. SLD QTZ & CALCITE FRACTURE FILL. SHEARED.
27	69.30	69.83	0.53	39			MUDSTONE	SLTY. LT. GY. THKB. SLD AS ABOVE.
28	69.83	71.87	2.04	40			SANDSTONE	CLYY. FG. MEL. LT. GY. THKB. SLD CALCITE & QTZ FRACTURE FILLS (SAMPLE OF GOLD NEEDLES FROM LARGE FRACTURE TO BE TAKEN). ARGILLACEOUS MISPS & RIP-UP IN LAST 10.0CM OF CORE.
29	71.87	72.14	0.27	40			SANDSTONE	FG. MEL. LT. GY. THNB. SLD ARGILLACEOUS MISPS.
29	72.14	72.24	0.10	41			SANDSTONE	CG. MEL. LT. GY. THNB. SLD CALCITE & QTZ FRACTURE FILL. ARGILLACED US. MISPS.
29	72.24	72.84	0.60	41			SANDSTONE	CG. MEL. LT. GY. THNB. SLD AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	72.84	73.18	0.34	41			SANDSTONE	SLTY. FG. MEL. LT. GY. THNB. BRKN AS ABOVE. SHEARED.
29	73.18	73.38	0.20	42			ROCK LOSS	
29	73.38	74.00	0.62	42			SILTSTONE	CLYY. MEL. LT. GY. LAM. SSD. SLD ALT. LAM. OF LT. GREY SLTST. & DK. GREY MUDES T. FAULT DISPLACEMENT.
30	74.00	75.08	1.08	43			MUDSTONE	DK. GY. LAM. SSD. BRKN ALT. LAM. OF LT. GREY SLTST. & DK. GREY MUDES T.
30	75.08	75.39	0.31	43			MUDSTONE	DK. GY. SSD. BRKN LT. GREY SLTY. MISPS & LAM.
30	75.39	75.69	0.30	43			MUDSTONE	DK. GY. SSD. SLD SSS. MISPS, FRACTURE DISPLACEMENT. RIP-U P. CLASTS.
31	75.69	76.62	0.93	44			MUDSTONE	DK. GY. LAM. SSD. SLD CALCITE FRACTURE FILL, ALT. LAM. OF MUDST & SLTY. MUDST. SSS. DEWATERING STRUCTURE
31	76.62	76.73	0.11	44			BRECCIA	LT. GY. SLD ANGULAR CLASTS OF HOST ROCK. CALCITE & QTZ MATRIX.

* DENOTES MEASURED. BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	76.73	76.75	0.02	45			MUDSTONE	DK. GY. VTHNB. SLD
31	76.75	76.76	0.01	45			BENTONITE	LT. GY. VTHNB. SLD
31	76.76	76.86	0.10	46			ROCK LOSS	
31	76.86	77.41	0.55	*46			MUDSTONE	DK. GY. LAM. SLD SHEARED, ALT. LAM. OF LT. GREY. SLTY. MUD. & DK. GREY MUDST.
31	77.41	77.42	0.01	46			BENTONITE	LT. GY. VTHNB. BRKN
31	77.42	77.67	0.25	46			MUDSTONE	DK. GY. LAM. SLD PLANT HASH, TWO SMALL BANDS OF COAL C-3 & C-2.
32	77.67	77.81	0.14	47			MUDSTONE	DK. GY. THNB. BRKN PLANT MATERIAL, LT. GREY. SLTY. MISPS.
32	77.81	78.11	0.30	47			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	78.11	78.14	0.03		47		MUDSTONE	LT. GY. THNB. BRKN SHEARED.
32	78.14	78.25	0.11		47		MUDSTONE	LT. GY. THNB. BRKN PLANT MATERIAL, SHEARED.
32	78.25	78.45	0.20		47		ROCK LOSS	
32	78.45	78.76	0.31		48		MUDSTONE	DK. GY. THNB. BRKN LT. GREY SLTY WISPS. SMALL COAL PARTICLE S IN CORE. SOME PLANT MATERIAL.
32	78.76	78.86	0.10		48		ROCK LOSS	
32	78.86	79.25	0.39		*48		MUDSTONE	DK. GY. THNB. SLD PLANT HASH, LT. GREY MUDST WISPS & LAM.
32	79.25	79.42	0.17		50		MUDSTONE	DK. GY. THNB. COAL PARTINGS C-3, CALCITE FRACTURE FILL, SHEARED, PLANT HASH.
32	79.42	80.02	0.60		52		MUDSTONE	DK. GY. THNB. SLD PLANT HASH, SHEARED, TALC & CALCITE FRACTURE FILL. COAL STRINGERS.
33	80.02	80.12	0.10		54		MUDSTONE	DK. GY. THNB. SLD LT. GREY ARGILLACEOUS WISPS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	80.12	80.95	0.83		57		MUDSTONE	DK. BLK. THKB. SLD COAL C-4 TO C-3 PARTINGS. CALCITE & QTZ FRACTURE FILL.
33	80.95	81.25	0.30		59		ROCK LOSS	
33	81.25	81.30	0.05		61		MUDSTONE	M. GY. THNB. BRKN SHEARED.
33	81.30	81.98	0.68		63		MUDSTONE	DK. GY. THKB. SSD. SLD COAL PARTING C-4.
34	81.98	82.61	0.63		65		MUDSTONE	DK. GY. THKB. SLD QTZ & CALCITE FRACTURE FILL, SHEARED.
34	82.61	83.57	0.96		68		SILTSTONE	CLYY. DK. GY. THKB. BIOTR. SLD COAL PARTINGS C-4 - C-2, PYRITE.
35	83.57	83.70	0.13		*70		MUDSTONE	DK. GY. HAS. SLD CALCITE FRACTURE FILL. PLANT HASH.
35	83.70	84.01	0.31		64		MUDSTONE	DK. GY. THNB. BRKN AS ABOVE. COAL PARTINGS C-3 - C-2.
35	84.01	84.80	0.79		57		ROCK LOSS	
35	84.80	86.18	1.38		51		SANDSTONE	MG. MOD. LT. GY. VTHKB. SLD COAL FRAGMENTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	86.18	87.41	1.23		44		SANDSTONE	MG. MOD. LT. GY. VTHKB. SLD CALCITE FRACTURE FILL. SLIGHT BRECCIATI ON LIKE APPEARANCE HALF WAY THROUGH BOX FEW ARGILLACEOUS NISPS & LAM.
36	87.41	88.13	0.72		37		SANDSTONE	MG. MOD. LT. GY. VTHKB. SLD AS ABOVE.
37	88.13	89.01	0.88		31		SANDSTONE	MG. MOD. LT. GY. VTHKB. SLD CALCITE FRACTURE FILL. ARGILLACEOUS LAM & NISPS.
37	89.01	89.99	0.98		24		MUDSTONE	DK. GY. LAM. SSD. SLD ALT LAM OF MUDST & LT GREY SLTST.
38	89.99	90.09	0.10		17		MUDSTONE	DK. GY. LAM. SSD. SLD AS ABOVE.
38	90.09	91.85	1.76	*10			MUDSTONE	DK. GY. LAM. SSD. SLD AS ABOVE. FRACTURE DISPLACEMENT, SHEARE D. DENATERING.
39	91.85	92.82	0.97		13		MUDSTONE	DK. GY. LAM. SSD. SLD FRACTURE DISPLACEMENT, AS ABOVE.
39	92.82	93.71	0.89		17		MUDSTONE	DK. GY. LAM. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88023

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	93.71	94.31	0.60	*20			MUDSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
40	94.31	94.61	0.30		20		ROCK LOSS	
40	94.61	95.94	1.33		20		SANDSTONE	MG. MOD. LT. GY. THKB. SLD MAX RIP-UP CLASTS 0.05CM. MIN RIP-UP CL AST 0.01CM. FEW ARGILLACEOUS NISPS.
41	95.94	96.00	0.06		20		SANDSTONE	MG. MOD. LT. GY. THKB. SLD AS ABOVE.
41	96.00	97.83	1.83		20		SANDSTONE	MG. MOD. LT. GY. THKB. SLD AS ABOVE.
42	97.83	98.88	1.05		20		SANDSTONE	MG. MOD. LT. GY. THKB. SLD AS ABOVE. COAL PARTICLES IN LAST 15.0CM OF BOX. END OF HOLE. TD = 98.88 M.

* DENOTES MEASURED BCA
NEWPAGE

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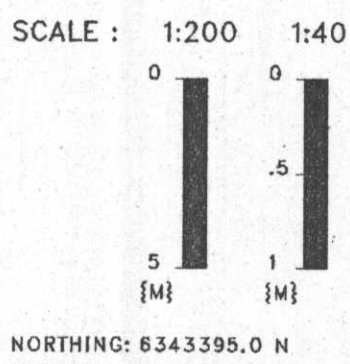
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88023

GEOLOGIST : MATTHEWS

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

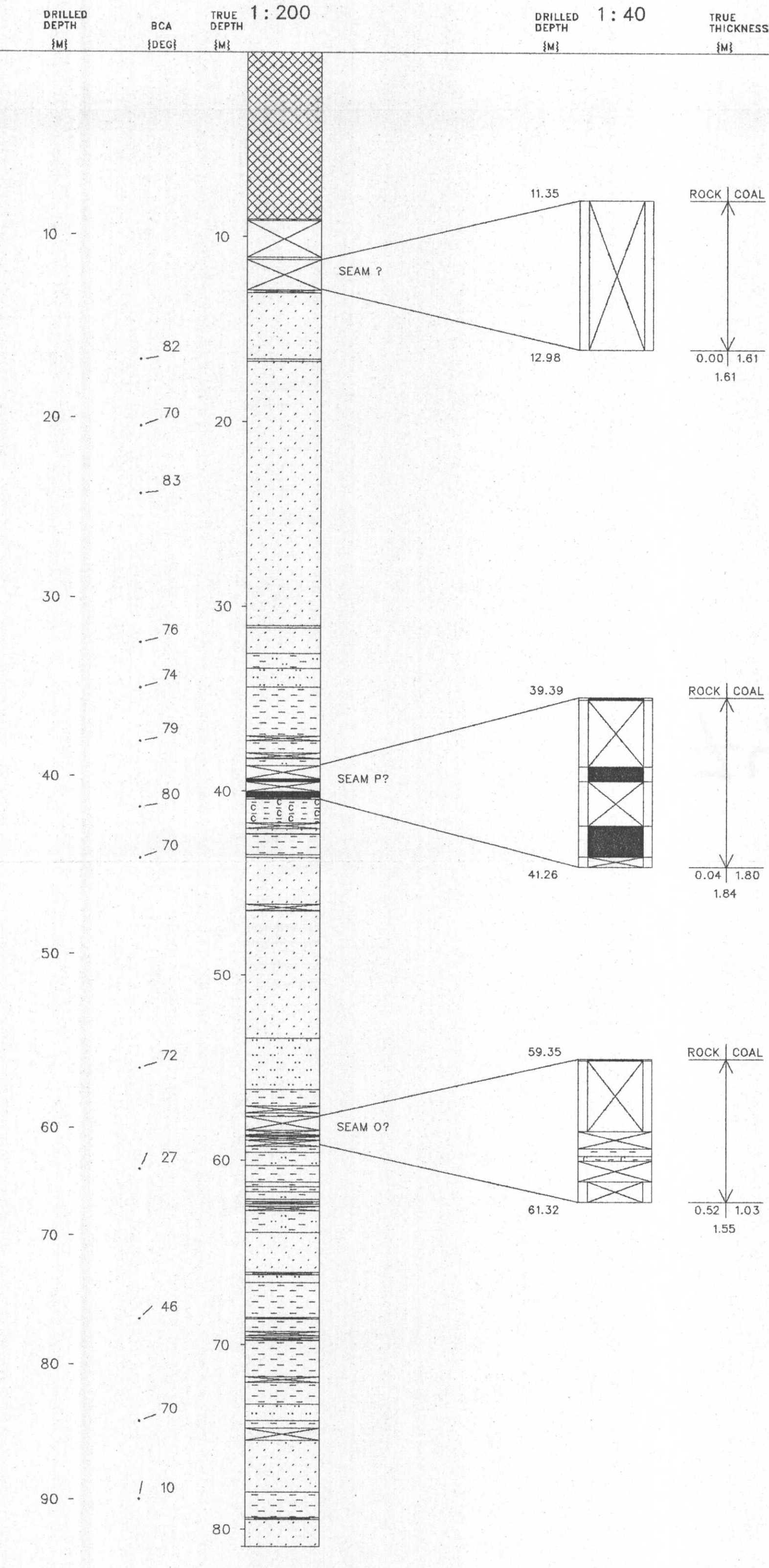


NORTHING: 6343395.0 N
 EASTING: 507899.9 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



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Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: **KPNLRDDH88023**

Province: BC Northing: 6343400.00 Lat: 571408

Log Date: 88-07-06

Zone: 9 Easting: 507900.00 Long: 1285209

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1573.5

Geologist: MATTHEWS

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 100.0

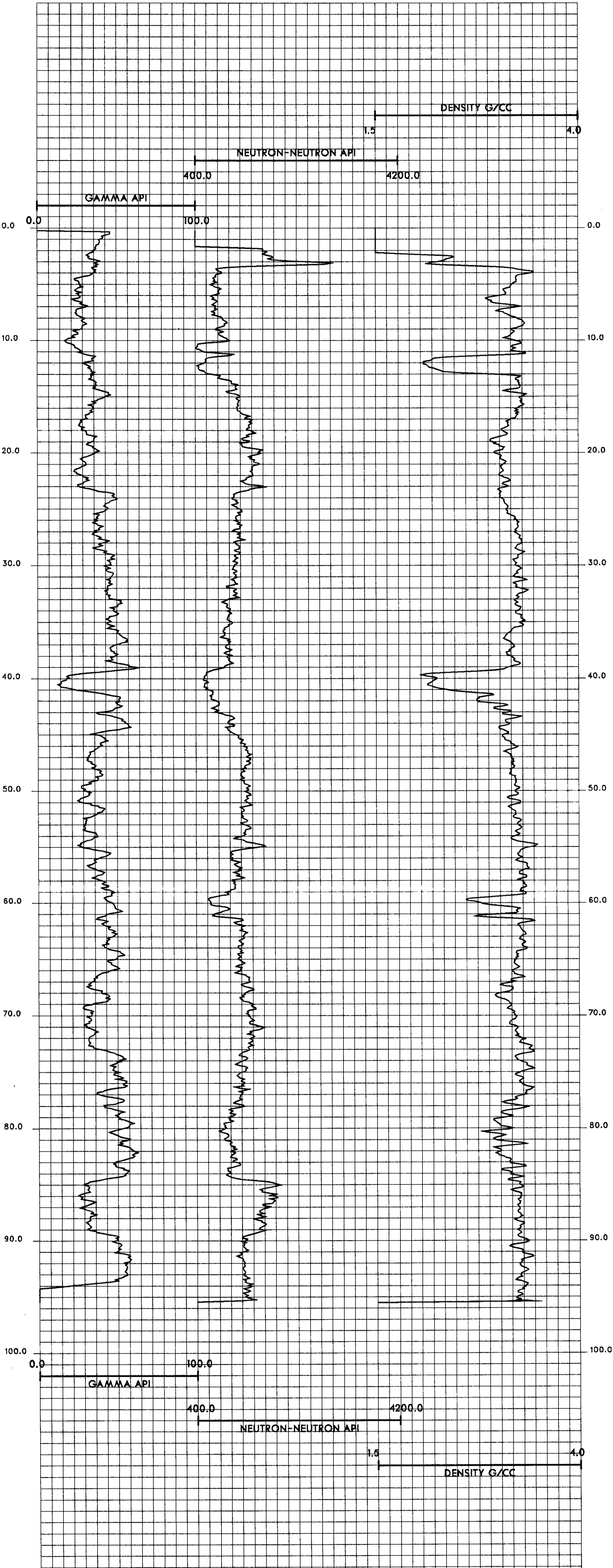
1. LOGGED THROUGH RODS

True Thickness: NO

2.

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88024

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88024

DATE - 02/15/89

- HISTORY -

START DATE - 07/06/88

END DATE - 07/07/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEE

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS: ?, P.

- LOCATION -

PROVINCE - BC
ELEVATION - 1639.06

ZONE - 9
NORTHING - 6342395.85
EASTING - 506335.17

LICENCE/LEASE NUMBER - 7147

LATITUDE - 571336
LONGITUDE - 1285342

- ORIENTATION -

LENGTH - 105.84

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 9.75
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-024

SEAM

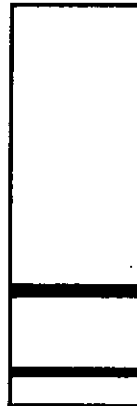
TRUE SEAM THICKNESS
(Coal + Rock)

?

2.23 m

P

1.82 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	9.75	9.75		27		OVERBURDEN	CASING DEPTH.
1	9.75	9.83	0.08		27		SANDSTONE	M.GY.VBRKN CORE IS GRANULAR SIZED WITH ENOUGH CLAY TO HOLD IT IN FORM.
1	9.83	10.33	0.50		27		ROCK LOSS	
1	10.33	10.45	0.12		27		SANDSTONE	FG.M.GY.VBRKN CORE IS ROUNDED PIECES, OCC QTZ VEIN.
1	10.45	10.61	0.16		27		ROCK LOSS	
1	10.61	10.77	0.16		27		MUDSTONE	CLYY.M.GY.VBRKN OCC SS PEBBLES WITHIN CLAY, FAULT GOUGE
1	10.77	11.27	0.50		27		ROCK LOSS	
1	11.27	11.71	0.44	*	27		SILTSTONE	M-DK.GY.LAM.BRKN SLIGHTLY DISTORTED BEDS. WITH MUDST WIS PS, NUMEROUS CLAY FILLED FRACTURES.
1	11.71	12.05	0.34		30		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	12.05	12.66	0.61		34		SILTSTONE	SSY.M.GY.LAM.VBRKN NUMEROUS CLAY FILLED FRACTURES UP TO 2C M THICK, RARE QTZ FRACTURE FILL.
1	12.66	13.22	0.56		37		ROCK LOSS	
2	13.22	13.44	0.22		41		SILTSTONE	M.GY.LAM.VBRKN RUBBLE, OCC QTZ FRACTURE FILL.
2	13.44	13.94	0.50		45		ROCK LOSS	
2	13.94	14.33	0.39		49		SANDSTONE	VFG.LT-M.GY.VTHNB.BRKN WITH OCC SLTST INTERBEDS, 1-2MM SLTST R IP-UPS, SLIGHTLY DISTORTED BEDDING, OCC CLAY & QTZ FRACTURE FILL.
2	14.33	15.24	0.91	*	53		SILTSTONE	SSY.M.GY.VTHNB.BRKN LAM-VTHNB, ALMOST VFG SS, DISCONTINUOUS MUDST WISPS, CLAY FRACTURE FILL, COARS ENS TOWARD BASE.
2	15.24	16.00	0.76		53		ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	16.00	17.37	1.37		53		SANDSTONE	FG.LT-M.GY.VBRKN ABUNDANT CLAY FILLED FRACTURES, SS BECOMES BRECCIA IN PLACES, 1MM MUDST BLEBS AT 79.0CM FROM TOP.
3	17.37	17.55	0.18		53		SANDSTONE	FG.LT-M.GY.SLD AS ABOVE, LOAD CASTS SHOWS TOPS UP.
4	17.55	18.22	0.67	*53			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN OCC VFG SS LAM, MUCH CLAY FRACTURE FILL, FAIR CONSOLIDATION BREAKS EASILY BY HAND, SHEAR SURFACES, RARE QTZ FRACTURE FILL.
4	18.22	18.35	0.13		54		MUDSTONE	LT.GY.BRKN CLAY, SOFT, MODERATELY CONSOLIDATED.
4	18.35	18.65	0.30		55		ROCK LOSS	
4	18.65	19.68	1.03		57		SANDSTONE	FG.LT-M.GY.BRKN AS SS ABOVE.
5	19.68	19.85	0.17		58		SANDSTONE	FG.LT-M.GY.BRKN AS SS ABOVE.
5	19.85	20.10	0.25		59		ROCK LOSS	
5	20.10	20.25	0.15		61		MUDSTONE	LT.GY.BRKN CLAY, SOFT, MODERATELY CONSOLIDATED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	20.25	20.50	0.25		62		ROCK LOSS	
5	20.50	20.74	0.24		64		SANDSTONE	FG.M.GY.LAM.BRKN WITH DISCONTINUOUS SLTST LAM AND RIP-UP, LAM TO VTHNB.
5	20.74	20.92	0.18	*65			SANDSTONE	VFG.M.GY.LAM.BRKN GRADES TO SLTST TOWARDS BASE. QTZ VEINING, LISTRIC SURFACES.
5	20.92	21.29	0.37		62		SANDSTONE	FG.LT-M.GY.VTHNB.BRKN MG SS INTERBED, CLAY & QTZ FRACTURE FILL.
5	21.29	21.54	0.25		60		ROCK LOSS	
5	21.54	21.76	0.22		57		MUDSTONE	LT.GY.BRKN CLAY, MODERATELY CONSOLIDATED, SOFT.
5	21.76	21.96	0.20		55		ROCK LOSS	
5	21.96	22.37	0.41		52		SANDSTONE	VFG.M.GY.LAM.BRKN BECOMES VTHNB TOWARDS BASE, NUMEROUS FAULTS WITH <1CM DISPLACEMENTS, SOME CLAY INFILL.

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	22.37	23.26	0.89	*49			SANDSTONE	FG.LT-M.GY.VTHNB.SSD.BRKN INTERBEDDED FG & MG.SS, POOR LOAD CASTS SHOW TOPS UP. LISTRIC SURFACES. CLAY & SOME QTZ FRACTURE FILL. SLTST RIP-UPS AND DISCONTINUOUS LAM NEAR BASE.
6	23.26	23.45	0.19	51			SANDSTONE	VFG.M.GY.LAM.SLD WITH SLTST WISPS, CLAY FRACTURE FILL ES P TOWARDS BASE.
6	23.45	23.61	0.16	52			SANDSTONE	MG.LT.GY.BRKN QTZ AND CLAY FRACTURE FILL.
6	23.61	24.61	1.00	54			ROCK LOSS	
6	24.61	24.92	0.31	55			SANDSTONE	MG.LT.GY.VBRKN AS ABOVE.
6	24.92	26.42	1.50	57			ROCK LOSS	
6	26.42	26.61	0.19	59			SANDSTONE	MG.LT.GY.VBRKN AS ABOVE.
6	26.61	27.10	0.49	61			ROCK LOSS	
7	27.10	27.32	0.22	62			SANDSTONE	VFG.M.GY.BRKN GRADES FROM SLTST TO FG SS, HIGHLY (CLA Y FILLED) FRACTURED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	27.32	29.06	1.74	64			SANDSTONE	MG.LT.GY.BRKN MUCH CLAY FRACTURE FILL REDUCING THE SS CONSOLIDATION AND MAKING IT MODERATELY HARD. OCC. ZONES OF MULCHED CORE - GRAI NS WITH CLAY HOLDING THEM TOGETHER.
8	29.06	29.28	0.22	66			SANDSTONE	MG.LT.GY.BRKN AS ABOVE.
8	29.28	29.57	0.29	68			SANDSTONE	MG.LT.GY.BRKN WELL CONSOLIDATED. HARD. NO CLAY FILL.
8	29.57	30.60	1.03	*70			SANDSTONE	MG.LT.GY.MB.BRKN RARE IMM MUDST CLAST.
8	30.60	30.70	0.10	70			SILTSTONE	M.GY.LAM.SLD FG SS INTERLAM, SLIGHTLY DISTORTED BEDS
8	30.70	30.86	0.16	69			SANDSTONE	MG.LT.GY.VBRKN WITH <1CM TO 4CM SLTST RIP-UP CLASTS, S UB-ANGULAR TO ROUNDED.
8	30.86	31.53	0.67	69			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	31.53	31.60	0.07	68			CONGLOMERATE	LT.GY.VBRKN MG SS MATRIX, SHARP CONTACT WITH SS ABOVE, DK GREY TO ALMOST WHITE CHERT PEBBLES, 2MM TO 1CM SIZED CLASTS.
8	31.60	31.72	0.12	68			ROCK LOSS	
9	31.72	32.23	0.51	67			CONGLOMERATE	LT.GY.MB.VBRKN INTERBEDDED MG SS (WITH NUMEROUS CHERT PEBBLES) AND CONGL, THNB TO MB.
9	32.23	32.61	0.38	67			CONGLOMERATE	LT.GY.MB.BRKN AS ABOVE. SOME CGL BEDS HAVE A GRANULAR MATRIX AND SOME HAVE A MG TO CG MATRIX, BEDDING BOUNDARIES ARE NOT DISTINCT.
9	32.61	33.46	0.85	66			CONGLOMERATE	LT.GY.MB.BRKN AS ABOVE BUT LESS AND THINNER MG SS INT ERBEDS.
10	33.46	34.80	1.34	66			CONGLOMERATE	LT.GY.MB.BRKN AVERAGE PEBBLE SIZE 7.5MM. MATRIX VARIES FROM FG TO MG, OCC BAND (1CM THK) OF 2MM GRANULES, 8CM THICK MG SS BED AT 1.17M FROM TOP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	34.80	35.12	0.32	65			ROCK LOSS	
10	35.12	35.25	0.13	64			CONGLOMERATE	LT.GY.MB.VBRKN AS ABOVE.
10	35.25	35.40	0.15	64			CONGLOMERATE	LT.GY.MB.SLD AS ABOVE.
11	35.40	36.75	1.35	63			CONGLOMERATE	LT.GY.MB.BRKN AS ABOVE. MG TO CG SS BED (9CM THICK) WITH OCC PEBBLE AT 95.0CM FROM TOP.
11	36.75	36.88	0.13	63			SANDSTONE	VFG.M.GY.BRKN ABUNDANT CLAY FRACTURE FILL.
11	36.88	37.38	0.50	63			ROCK LOSS	
11	37.38	37.64	0.26	62			SILTSTONE	M-DK.GY.BRKN MUDDY, QTZ VEINING AT TOP AND CLAY FRACTURE FILL THROUGHOUT. NUMEROUS LITRIFIC SURFACES.
11	37.64	37.84	0.20	62			SILTSTONE	SSY.M.GY.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	37.84	38.07	0.23	*61			SANDSTONE	VFG.M.GY.LAM.BRKN INTERLAM WITH SLTST, LISTRIC SURFACES, QTZ/CLAY FRACTURE FILL.
12	38.07	38.27	0.20	62			SANDSTONE	VFG.M.GY.LAM.VBRKN AS ABOVE WITH MORE CLAY FRACTURE FILL.
12	38.27	38.53	0.26	63			ROCK LOSS	
12	38.53	38.71	0.18	64			SANDSTONE	VFG.M.GY.LAM.BRKN AS ABOVE BUT NO CLAY FRACTURE FILL.
12	38.71	39.37	0.66	65			SILTSTONE	M-DK.GY.LAM.BRKN LAM TO VTHNB, WITH MUDST LAM, LISTRIC S URFACES. ABUNDANT COALIFIED PLANT HASH AND WOOD.
12	39.37	39.70	0.33	66			SILTSTONE	SSY.M.GY.LAM.BRKN MUDST LAM NEAR TOP, VFG SS INTERLAM. TO WARDS BASE.
12	39.70	40.68	0.98	67			ROCK LOSS	
13	40.68	40.97	0.29	68			SILTSTONE	M.GY.LAM.VBRKN NUMEROUS LISTRIC SURFACES, MUDST LAM, 2 ONE OF CRENLATED BEDS WITH QTZ VEINING , COALIFIED WOOD.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	40.97	41.45	0.48	69			SANDSTONE	VFG.M.GY.VBRKN RUBBLE, CLAY AND QTZ ON SOME SURFACES.
13	41.45	41.76	0.31	70			SANDSTONE	SLTY.VFG.M.GY.BRKN NUMEROUS CLAY FRACTURE FILLS.
13	41.76	42.27	0.51	71			SILTSTONE	SSY.M.GY.VTHNB.BRKN VTHNB TO LAM, SLIGHTLY DISTORTED BEDDIN G, CLAY FRACTURE FILL, BCM CLAY BAND WI TH SLTST BRECCIA @ BASE.
14	42.27	42.54	0.27	*72			SANDSTONE	VFG.M.GY.LAM.BRKN GRADES FROM MOSTLY SLTST WITH VFG SS. I NTERLAM. TO VFG SS WITH FG SS LAMS. MIN OR SSD.
14	42.54	43.59	1.05	72			SANDSTONE	FG.LT-M.GY.VTHNB.BRKN WITH SOME MG SS INTERBEDS, SLTST LAM NE AR TOP, OCC CLAY FRACTURE FILL, SOME LA M BANDS. LOAD CAST SHOWS TOPS UP.
14	43.59	43.85	0.26	72			SANDSTONE	FG.LT.GY.VTHNB.BRKN ABUNDANT CLAY FILLED FRACTURES.
14	43.85	44.11	0.26	72			SANDSTONE	SLTY.VFG.LT-M.GY.VTHNB.BRKN INTERBEDDED WITH FG SS, SOME CLAY FILLE D FRACTURES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	44.11	44.22	0.11	72			SANDSTONE	FG.LT.GY.VTHNB.BRKN INTERBEDDED WITH VFG SS, SLIGHTLY DISTURBED BEDDING.
15	44.22	44.67	0.45	72			SANDSTONE	VFG.LT.GY.VTHNB.BRKN LAM TO VTHNB, CLAY FRACTURE FILL, LISTRIC SURFACES.
15	44.67	45.21	0.54	73			SANDSTONE	VFG.LT.GY.VTHNB.BRKN AS ABOVE.
15	45.21	45.33	0.12	73			MUDSTONE	CLAY FAULT GOUGE, MODERATELY CONSOLIDATED, SOFT.
15	45.33	45.70	0.37	73			SILTSTONE	SSY.M.GY.VTHNB.BRKN SOME MUDDY LAMS, CLAY FILLED FRACTURES.
15	45.70	45.87	0.17	73			SILTSTONE	SSY.M.GY.VTHNB.VBRKN AS ABOVE.
16	45.87	47.57	1.70	*73			SANDSTONE	VFG.M-DK.GY.LAM.BRKN INTERLAM WITH SLTST, MINOR SSD, SOME CLAY & QTZ FILLED FRACTURES.
16	47.57	47.70	0.13	73			SANDSTONE	VFG.M-DK.GY.LAM.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	47.70	48.36	0.66	72			SANDSTONE	VFG.M-DK.GY.LAM.SSD.BRKN INTERBEDDED WITH SLTST, OCC FRACTURE AS ABOVE.
17	48.36	48.62	0.26	72			SANDSTONE	VFG.M-DK.GY.LAM.VBRKN AS ABOVE, SHEARED.
17	48.62	48.82	0.20	72			SANDSTONE	VFG.M-DK.GY.LAM.BRKN AS ABOVE.
17	48.82	48.97	0.15	72			SANDSTONE	VFG.M-DK.GY.LAM.VBRKN AS ABOVE, SHEARED.
17	48.97	49.44	0.47	71			ROCK LOSS	
17	49.44	50.16	0.72	*71			SANDSTONE	VFG.M-DK.GY.LAM.BRKN AS ABOVE.
18	50.16	50.90	0.74	77			SANDSTONE	VFG.M-DK.GY.VTHNB.SSD.BRKN WITH SLTST BEDS AND OCC MUDST LAM, SOME PLANT FRAGMENT, DISTURBED BEDDING.
18	50.90	52.13	1.23	*83			SANDSTONE	VFG.M-DK.GY.LAM.SSD.BRKN AS ABOVE, OCC PLANT FRAGMENTS, QTZ FRACTURE SURFACE.
18	52.13	52.33	0.20	82			SANDSTONE	VFG.M-DK.GY.LAM.VBRKN AS ABOVE, NUMEROUS LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	52.33	53.32	0.99	82			SANDSTONE	VFG.M-DK.GY.VTHNB.BIOTR.BRKN PLANT FRAGMENTS, SOME LISTRIC SURFACES, BIOTRB ZONE WITH POSSIBLE BIVALVE.
19	53.32	53.58	0.26	81			SANDSTONE	VFG.M-DK.GY.VBRKN FAULT GOUGE, ABUNDANT CLAY.
19	53.58	53.88	0.30	80			SANDSTONE	VFG.M-DK.GY.VTHNB.BRKN SLIGHTLY DISTURBED BEDS.
19	53.88	53.91	0.03	79			SANDSTONE	VFG.M-DK.GY.VTHNB.VBRKN AS ABOVE.
19	53.91	54.03	0.12	79			SANDSTONE	VFG.M-DK.GY.VTHNB.VBRKN AS ABOVE.
20	54.03	56.05	2.02	*78			SANDSTONE	FG.M.GY.VTHNB.BIOTR.BRKN VFG SS PREDOMINATES @ TOP BUT FG SS BEC OMES PREDOMINANT VERY QUICKLY GOING DOWN N THE INTERVAL, ZONES OF BIOTRB, OCC PL ANT FRAGMENTS, MINOR SSD, INTERBEDDED V FG & FG SS, OCC LAM.
21	56.05	56.18	0.13	77			SANDSTONE	VFG.M.GY.VTHNB.BRKN INTERBEDDED VFG SS & FG SS, IRREGULARLY ORIENTED MUDST WISPS.
21	56.18	56.49	0.31	76			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	56.49	56.57	0.08	75			SANDSTONE	VFG.M.GY.VBRKN AS ABOVE.
21	56.57	57.00	0.43	74			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN INTERBEDDED VFG & FG SS, MINOR SSD.
21	57.00	57.20	0.20	72			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN AS ABOVE.
21	57.20	57.51	0.31	71			SANDSTONE	VFG.M.GY.VTHNB.VBRKN AS ABOVE.
21	57.51	57.81	0.30	70			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN AS ABOVE.
21	57.81	58.06	0.25	69			SANDSTONE	FG.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH VFG SS, BIOTRB ZONES.
21	58.06	58.19	0.13	*68			SANDSTONE	FG.M.GY.LAM.BRKN INTERBEDDED WITH VFG SS, SLIGHTLY DISTO RTED BEDDING.
22	58.19	59.97	1.78	*70			SANDSTONE	FG.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH VFG SS, BANDS OF LAMIN ATED BEDDING (6CM THICK AND 15 TO 30 CM APART), OCC PLANT FRAGMENTS.
22	59.97	60.17	0.20	72			SANDSTONE	VFG.M.GY.VTHNB.BRKN INTERBEDDED WITH FG SS, SLTST LAM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	60.17	60.75	0.58		73		SANDSTONE	VFG.M.GY.VTHNB.BRKN INTERBEDDED WITH SSY SLTST, MUOBT WISPS, BEDDING VARIES FROM LAM TO VTHNB, CLAY FILLED FRACTURES.
23	60.75	61.14	0.39	*75			SANDSTONE	VFG.M.GY.LAM.BRKN WITH SLTST INTERLAM, MUOBT WISPS, BEDDING MORE REGULAR THAN ABOVE.
23	61.14	61.48	0.34	75			SANDSTONE	VFG.M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST, IRREGULAR BEDDING THICKNESS, OCCASIONAL FRACTURE.
23	61.48	61.53	0.05	76			BRECCIA	M.GY.VBRKN CLAY WITH NUMEROUS QTZ PEBBLES, POSSIBLE CORE LOSS.
23	61.53	61.97	0.44	76			ROCK LOSS	
23	61.97	62.64	0.67	76			SANDSTONE	SLTY.VFG.M-DK.GY.LAM.BRKN SLTST INTERLAM, OCC PLANT WASH, OCC PYRITE BLEBS, RIBBED TEXTURES TO CORE SOME LAM WASHED OUT A BIT (CLAY?).
24	62.64	63.17	0.53	77			SILTSTONE	SSY.M-DK.GY.LAM.BRKN INTERLAM WITH VFG SS, MINOR SSD. PLANT FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	63.17	63.90	0.73	77			SANDSTONE	VFG.M-DK.GY.LAM.BRKN INTERLAM WITH SLTST, PLANT FRAGMENTS: BAIERA FURCATA, MINOR SSD. CORE TWIST-OFF AT TOP.
24	63.90	64.52	0.62	77			SILTSTONE	SSY.M-DK.GY.LAM.BRKN INTERLAM WITH VFG SS, SS BECOMES PREDOMINANT TOWARDS BASE, PLANT FRAGS AS ABOVE.
25	64.52	66.07	1.55	78			SANDSTONE	VFG.M-DK.GY.LAM.SSD.BRKN INTERLAM WITH SSY SLTST, LOAD CASTS SHOWS TOPS UP, PLANT FRAGS; POSSIBLE CZEKANOWSKIA RIGIDA.
25	66.07	66.50	0.43	*78			SANDSTONE	FG.M.GY.LAM.SSD.BRKN INTERLAM WITH VFG SS, LOAD CASTS SHOWS TOPS UP, PLANT WASH.
26	66.50	67.50	1.00	*72			SANDSTONE	VFG.M.GY.VTHNB.SSD.BRKN WITH FG SS LAM & MUDDY SLTST LAM, LOAD CASTS SHOWS TOPS UP, PLANT WASH, SOME FRACTURING (WITH CLAY FILL) TOWARDS BASE.
26	67.50	68.30	0.80	72			SILTSTONE	M.GY.LAM.BRKN LAM TO VTHNB, WITH MUDDY AND SSY LAMS, NUMEROUS CLAY FILLED FRACTURES, MORE MUDDY TOWARDS BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	68.30	68.40	0.10	72			MUDSTONE	DK.GY.VSHRD SOME COAL STRINGERS AND BANDS OF SLTY M UDST.
27	68.40	68.45	0.05	71			MUDSTONE	DK.GY.VSHRD AS ABOVE BUT A LITTLE MORE CONSOLIDATED
27	68.45	68.49	0.04	71			COAL	C-4.BLK.VSHRD WITH CARB.MUDST.
27	68.49	68.79	0.30	71			ROCK LOSS	
27	68.79	68.89	0.10	71			MUDSTONE	DK.GY.VBRKN BECOMES SLTY DOWNWARDS, TWIST-OFF AT TO P - CORE LOSS.
27	68.89	69.19	0.30	71			ROCK LOSS	
27	69.19	69.39	0.20	71			MUDSTONE	LT.BN.VBRKN FAULT GOUGE? CLAYEY WITH MUDST.PEBBLES, BECOMES SSSY TEXTURE DOWNWARDS.
27	69.39	70.39	1.00	70			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	70.39	70.50	0.11	70			MUDSTONE	DK.GY.VBRKN WITH LISTRIC SURFACES, TWIST-OFFS - CORE LOSS.
27	70.50	71.00	0.50	70			ROCK LOSS	
27	71.00	71.09	0.09	70			MUDSTONE	CARB.SHRD POORLY CONSOLIDATED, SOME COALY SURFACE S. PROBABLE CORE LOSS.
27	71.09	72.09	1.00	70			ROCK LOSS	
27	72.09	72.21	0.12	69			MUDSTONE	DK.GY.LAM.VBRKN TWIST-OFF. POSSIBLE CORE LOSS.
27	72.21	72.27	0.06	69			ROCK LOSS	
27	72.27	72.84	0.57	*69			MUDSTONE	DK.GY.LAM.SSD.BRKN SLTST INTERLAM, MINOR SSD, LISTRIC SURF ACES, PLANT HASH.
27	72.84	72.89	0.05	70			MUDSTONE	CLYY.DK.GY.VSHRD
27	72.89	73.14	0.25	71			MUDSTONE	SLTY.DK.GY.LAM.BRKN ABUNDANT LISTRIC SURFACES, PLANT HASH.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	73.14	73.63	0.49	*72	08320 ?	ROOF MUDSTONE	SLTY. M. GY. LAM. SHRD THIST-OFF NEAR TOP OF INTERVAL. H SEAM ROOF ROCK. LOWER 25.0CM SAMPLED.
28	73.63	73.71	0.08	72	08321 ?	COAL LOSS	
28	73.71	73.87	0.16	72	08321 ?	COAL	C-3. BLK. SHRD MODERATELY CLEATED. ABUNDANT PYRITE AND QUARTZ FRACTURE FILL.
28	73.87	73.93	0.06	72	08321 ?	COAL	C-4. BLK. PWRD C-3 FRAGMENTS IN PARTS.
28	73.93	74.00	0.07	72	08321 ?	MUDSTONE	CARB. BLK. VSHRD POORLY CONSOLIDATED.
28	74.00	74.06	0.06	72	08321 ?	COAL	C-3. BLK. VSHRD LISTRIC SURFACES. MODERATELY CLEATED. P. YRITE.
28	74.06	74.10	0.04	72	08321 ?	COAL	C-5. BLK. VSHRD
28	74.10	74.26	0.16	72	08321 ?	ROCK LOSS	
28	74.26	74.37	0.11	73	08321 ?	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	74.37	74.40	0.03	73	08322 ?	MUDSTONE	CARB. M. GY. VSHRD WEAKLY CARBONACEOUS.
28	74.40	74.56	0.16	73	08322 ?	MUDSTONE	SLTY. M. GY. VBRKN POSSIBLE ROCK LOSS. PYRITE AND QUARTZ F RACTURE FILL.
28	74.56	74.65	0.09	73	08322 ?	ROCK LOSS	
28	74.65	74.77	0.12	73	08322 ?	COAL LOSS	
28	74.77	74.82	0.05	73	08322 ?	ROCK LOSS	
28	74.82	74.93	0.11	73	08322 ?	MUDSTONE	CARB. BLK. SHRD
28	74.93	74.98	0.05	73	08323 ?	COAL LOSS	
28	74.98	75.10	0.12	73	08323 ?	COAL	C-4. BLK. VSHRD SHINEY LISTRIC SURFACES.
28	75.10	75.15	0.05	73	08323 ?	COAL	C-5. BLK. VSHRD ABUNDANT QUARTZ VEINING. C-4 BANDS AND MUD PARTINGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	75.15	75.23	0.08	73	08323	?	COAL LOSS	
28	75.23	75.43	0.20	73	08323	?	COAL	C-2.BLK.SHRD WELL CLEATED, GRADING INTO C-3 AT BASE OF INTERVAL.
28	75.43	75.49	0.06	73	08323	?	COAL LOSS	
28	75.49	75.54	0.05	73	08323	?	MUDSTONE	CARB.BLK.SHRD
28	75.54	75.57	0.03	74	08323	?	COAL LOSS	
28	75.57	75.67	0.10	74	08323	?	COAL	C-2.BLK.SHRD WELL CLEATED, BORDERLINE C-1.
29	75.67	75.85	0.18	74	08323	?	COAL	C-4.BLK.PNRD FRAGMENTS OF WELL CLEATED C-3 AND C-4.
29	75.85	75.96	0.11	74	08323	?	COAL LOSS	
29	75.96	76.22	0.26	74	08324	?	FLOOR MUDSTONE	CARB.M.GY.BRKN PROGRESSIVELY LESS CARBONACEOUS TOWARDS BASE. M SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	76.22	76.32	0.10	74			MUDSTONE	SLTY.M.GY.VBRKN SHEARED WITH LISTRIC SURFACES.
29	76.32	76.62	0.30	74			ROCK LOSS	
29	76.62	77.89	1.27	*74			MUDSTONE	SLTY.M.GY.LAM.SLD INTERLAMINATED MUD, SILT AND VERY FINE SAND (PREDOMINANTLY MUD). ABUNDANT PLANT FRAGMENTS. OVERALL WEAKLY CARBONACEOUS.
30	77.89	78.10	0.21	72			SILTSTONE	SSY.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH VFG.SS. SS HAS A SLIGHTLY MOTTLED LOOK.
30	78.10	78.22	0.12	69			SANDSTONE	VFG.LT-M.GY.VTHNB.BRKN SLTST WHISPS GIVE MOTTLED APPEARANCE, PLANT HASH.
30	78.22	79.81	1.59	*67			SANDSTONE	FG.LY-M.GY.VTHNB.BRKN INTERBEDDED WITH VFG.SS (CONTAINING SLT ST.LAM). OCC MG.SS.BED. RARE PLANT FRAG- MENTS. OCC QTZ FRACTURE FILL. SOME DIS- TURBED BEDS.
31	79.81	80.55	0.74	69			SANDSTONE	MG.LY-M.GY.VTHNB.BRKN INTERBEDDED WITH FG TO VFG.SS (WITH SLT ST.LAM). BEDDING THICKNESS VARIES FROM 2.0 TO 6.0CM.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	80.55	80.98	0.43		71		SANDSTONE	MG.LT-M.GY.THNB.BRKN OCC DISCONTINUOUS MUDDY WISP, SOME LISTRIC SURFACES.
31	80.98	81.49	0.51		74		SANDSTONE	MG.LT-M.GY.THNB.BRKN AS ABOVE. FINES A BIT TOWARDS BASE.
31	81.49	81.68	0.19		76		SANDSTONE	VFG.LT-M.GY.LAM.SLD INTERLAM WITH SLTST, FAIRLY SHARP CONTACT WITH ABOVE PLANT FOSSILS: NILSSONIA CANADENSIS, PITYOPHYLLUM NORDENSKIOLDII (ABUNDANT).
32	81.68	81.89	0.21	*	78		SILTSTONE	M-DK.GY.LAM.BRKN MUDDY, SSS INTERLAM NEAR TOP, ABUNDANT PLANT FRAGMENTS INCLUDING PITYOPHYLLUM NORDENSKIOLDII.
32	81.89	82.46	0.57		78		MUDSTONE	DK.GY.LAM.BRKN WITH <1CM COAL STRINGERS, QTZ VEINS AT TOP, GRADATIONAL CONTACT WITH ABOVE ABUNDANT PLANT MASH, LISTRIC SURFACES.
32	82.46	82.57	0.11		78		SILTSTONE	M-DK.GY.LAM.VBRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 24

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	82.57	82.63	0.06		78		MUDSTONE	DK.GY.LAM.BRKN FRACTURED WITH CLAY FILL.
32	82.63	83.61	0.98		78		ROCK LOSS	
32	83.61	83.74	0.13		78		SILTSTONE	LT-M.GY.LAM LAM TO VTHNB, PLANT MASH, TWIST-OFF AT TOP - CORE LOSS?
32	83.74	83.90	0.16		78		MUDSTONE	DK.GY.LAM.BRKN WITH SOME SLTST LAM, LISTRIC SURFACES. ABUNDANT PLANT MASH.
32	83.90	84.14	0.24		78		MUDSTONE	DK.GY.LAM.BRKN AS ABOVE BUT HIGHLY FRACTURED WITH CLAY FILL, SOFT, LISTRIC SURFACES.
32	84.14	84.43	0.29		78		SILTSTONE	LT-M.GY.VTHNB.BRKN HIGHLY FRACTURED AT TOP, IRREGULAR MUDDY WISPS.
32	84.43	84.58	0.15		78		MUDSTONE	CARB.DK.GY.VSHRD WITH COAL STRINGERS.
32	84.58	85.08	0.50		78		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	85.08	85.75	0.67	78			MUDSTONE	DK.GY.SHRD ABUNDANT FRACTURES, LISTRIC SURFACES, B REAKS APART EASILY, OCC COAL STRINGERS & QTZ VEINS.
33	85.75	86.05	0.30	78			ROCK LOSS	
33	86.05	86.22	0.17	78			SILTSTONE	M.GY.SLD WITH MUDST LAM, NUMEROUS QTZ FRACTURE F ILL.
33	86.22	86.29	0.07	77			MUDSTONE	CARB.DK.GY.VSHRD
33	86.29	86.59	0.30	77			MUDSTONE	DK.GY.SHRD FRACTURED, LISTRIC SURFACES, EASILY BRO KEN.
33	86.59	86.79	0.20	77			ROCK LOSS	
33	86.79	87.09	0.30	77			MUDSTONE	M-DK.GY.VBRKN LISTRIC SURFACES, SOME SLTST BEDS.
33	87.09	87.39	0.30	77			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	87.39	87.41	0.02	77			COAL	C-6.BLK.VSHRD WITH CARB MUDST.
33	87.41	87.61	0.20	77			MUDSTONE	CLYY.M-DK.GY.SHRD MUCH CLAY, POORLY CONSOLIDATED.
34	87.61	87.73	0.12	77			MUDSTONE	CLYY.M-DK.GY.SHRD AS ABOVE.
34	87.73	87.76	0.03	77			COAL	C-5.BLK.VSHRD WITH CARB MUDST BANDS.
34	87.76	88.06	0.30	77			ROCK LOSS	
34	88.06	88.17	0.11	77			MUDSTONE	CLYY.M.GY.SHRD AS MUDST ABOVE.
34	88.17	88.75	0.58	77			SANDSTONE	VFG.LT-M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST.LAM. HIGHLY (CLA Y FILLED) FRACTURED.
34	88.75	89.84	1.09	*77			SANDSTONE	VFG.LT-M.GY.VTHNB.SSD.BRKN OCC FG SS BEDS, LOAD CAST SHOW TOPS UP. SLUMP FEATURES. PLANT WASH.
35	89.84	90.20	0.36	76			SANDSTONE	VFG.LY-M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH FG SS, BIOTRB ZONE, LO AD CASTS - TOPS UP.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	90.20	90.38	0.18	75		SANDSTONE	VFG.LT-M.GY.VTHNB.BRKN AS ABOVE.
35	90.38	90.45	0.07	74		SANDSTONE	VFG.LT-M.GY.VBRKN
35	90.45	90.73	0.28	72		ROCK LOSS	
35	90.73	91.64	0.91	71		SANDSTONE	FG.LT-M.GY.VTHNB.SSD.BRKN WITH VFG.SS.INTERBEDS, MINOR SSD, SOFT SEDIMENT FAULTING, WORM BURROW?, LISTRIC SURFACES.
35	91.64	92.10	0.46	*70		SANDSTONE	VFG.LT-M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST, LISTRIC SURFACE S. SOME BEDS OF PLANT FRAG.
36	92.10	93.52	1.42	74		SANDSTONE	VFG.M.GY.VTHNB.BRKN LAM TO VTHNB, INTERBEDDED WITH SLTST, A BUNDANT PLANT FRAGS.
36	93.52	94.18	0.66	*79		SILTSTONE	SSY.M.GY.VTHNB.BRKN INTERBEDDED WITH MUDDY LAMS, BEDS OF ABUNDANT PLANT FRAGS.
37	94.18	94.83	0.65	79		MUDSTONE	SLTY.M.GY.LAM.SLD INTERLAMINATED SILT AND BLACK MUD. FRACTURED TOWARDS BASE WITH RARE QUARTZ INFILL.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	94.83	95.55	0.72	79		MUDSTONE	SLTY.M.GY.LAM.SLD THIST-OFF AT TOP - POSSIBLE ROCK LOSS.
37	95.55	95.82	0.27	79	08328 P ROOF	MUDSTONE	CARB.BLK.SHRD 2.5CM THICK C-3 COAL BAND NEAR TOP, COAL STRINGERS. L SEAM ROOF ROCK. SAMPLED.
37	95.82	95.90	0.08	79	08329 P	COAL LOSS	
37	95.90	96.00	0.10	79	08329 P	COAL	C-3.BLK.SHRD C-2 BANDED WITH MUD.
37	96.00	96.06	0.06	79	08329 P	COAL	C-5.BLK.SHRD
37	96.06	96.16	0.10	79	08329 P	COAL	C-3.BLK.VSHRD VERY BROKEN WITH FRAGMENTS OF WELL CLEATED C-3 AND C-2.
38	96.16	96.19	0.03	79	08329 P	COAL	C-2.BLK.BRKN WELL CLEATED.
38	96.19	96.30	0.11	79	08329 P	COAL LOSS	
38	96.30	96.39	0.09	79	08329 P	MUDSTONE	CARB.BLK.VBRKN BORDERLINE C-5. ABUNDANT PLANT FRAGMENT S.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 29

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	96.39	96.53	0.14	79	08329 P	COAL LOSS	
38	96.53	96.59	0.06	80	08329 P	COAL	C-3.BLK.BRKN MODERATELY CLEATED WITH MUDSTONE PARTIN GS.
38	96.59	96.71	0.12	80	08329 P	COAL	C-2.BLK.BRKN
38	96.71	96.74	0.03	80	08329 P	MUDSTONE	CARB.BLK.VBRKN BORDERLINE C-5.
38	96.74	96.86	0.12	80	08329 P	COAL	C-4.BLK.PMRD FRAGMENTS AT C-4, C-3 AND C-2.
38	96.86	96.92	0.06	80	08329 P	COAL	C-3.BLK.PMRD FRAGMENTS OF C-2 AND C-3. PYRITE.
38	96.92	97.03	0.11	80	08329 P	COAL	C-2.BLK.VBRKN WELL CLEATED.
38	97.03	97.12	0.09	80	08329 P	COAL	C-2.BLK.PMRD AS ABOVE.
38	97.12	97.35	0.23	80	08329 P	COAL	C-1.BLK.BRKN BORDERLINE C-2 IN PARTS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	97.35	97.67	0.32	80	08329 P	COAL LOSS	
38	97.67	97.73	0.06	80	08330 P FLOOR	MUDSTONE	CARB.BLK.VBRKN L SEAM FLOOR ROCK. SAMPLED.
38	97.73	98.20	0.47	*80	08330 P FLOOR	SANDSTONE	SLTY.FG.PR.LT-M.GY.LAM.BRKN INTERLAMINATED LIGHT GREY SAND, SILT AND BLACK MUD. SHARP LOWER CONTACT. SAMPL ED TOP 19CM. L SEAM FLOOR ROCK.
38	98.20	98.25	0.05	76		MUDSTONE	M.GY.LAM.BIOTR.BRKN LAMINATIONS DISRUPTED. PYRITE. WEAKLY S HEARED.
39	98.25	98.60	0.35	*72		MUDSTONE	M.GY.LAM.BIOTR.BRKN AS ABOVE.
39	98.60	98.91	0.31	73		ROCK LOSS	
39	98.91	98.97	0.06	74		MUDSTONE	SLTY.BLK.VBRKN A MIXTURE OF UNCONSOLIDATED MUD, LITHIF IED MUD CLASTS AND COAL FRAGMENTS.
39	98.97	99.01	0.04	75		COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	99.01	99.08	0.07	75			MUDSTONE	SLTY.DK.GY.BRKN
39	99.08	99.41	0.33	76			MUDSTONE	SLTY.DK.GY.BRKN ABUNDANT PLANT FRAGMENTS.
39	99.41	99.60	0.19	77			SANDSTONE	SLTY.FG.PR.LY-M.GY.LAM.BIOTR.BRKN INTERLAMINATED SAND AND SILT. BEDDING C ONTORTED POSSIBLY DUE TO BIOTURBATION.
39	99.60	100.12	0.52	*78			MUDSTONE	SLTY.M.GY.LAM.BIOTR.BRKN INTERLAMINATED MUD AND SILT. FECAL PELL ETS.
39	100.12	100.21	0.09	78			SANDSTONE	LT.GY.YTHNB.BRKN ARGILLACEOUS SANDSTONE WITH MUD LAMINAT IONS.
40	100.21	100.33	0.12	78			SANDSTONE	FG.LT.GY.YTHNB.BRKN WITH FINER GRAINED SS LAM.
40	100.33	100.48	0.15	79			SANDSTONE	CLYY.VFG.LT.GY.BRKN POORLY CONSOLIDATED, SOFT, FAULT GOUGE? VFG SS BEDS NEAR BASE.
40	100.48	100.58	0.10	79			SANDSTONE	FG.LT-M.GY.YTHNB.SLD INTERBEDDED WITH BANDS OF INTERLAM VFG SS & FG SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	100.58	100.64	0.06	79			SANDSTONE	CLYY.VFG.LT.GY.BRKN AS CLAY ABOVE.
40	100.64	100.89	0.25	79			SANDSTONE	VFG.LT-M.GY.LAM.BRKN INTERBEDDED WITH FG SS, FRACTURED, LIST RIC SURFACES.
40	100.89	101.73	0.84	79			ROCK LOSS	
40	101.73	101.80	0.07	79			SANDSTONE	FG.LT.GY.LAM.VBRKN WITH FINER GRAINED INTERLAMS.
40	101.80	101.92	0.12	80			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE.
40	101.92	102.10	0.18	80			SANDSTONE	VFG.M.GY.LAM.BRKN INTERLAM WITH SLTST, SOME CLAY FILLED F RACTURE.
40	102.10	102.88	0.78	*80			SILTSTONE	SSY.M.GY.YTHNB.BRKN WITH MUDST LAM. OCC PLANT HASH.
41	102.88	103.24	0.36	79			SANDSTONE	VFG.LT-M.GY.YTHNB.BRKN LAM TO YTHNB. INTERBEDDED WITH FG SS.
41	103.24	103.41	0.17	79			SANDSTONE	FG.LT.GY.YTHNB.SSD.SLD WITH VFG LAMS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88024

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	103.41	103.54	0.13	78			SANDSTONE	VFG.LT-M.GY.BIOTR.BRKN
41	103.54	104.99	1.45	*77			SANDSTONE	FG.LT.GY.VTHNB.SSD.BRKN INTERBEDDED WITH FG SS WITH SLTST LAM, SOME ZONES OF SSD AND BIOTRB AND SOFT S EDIMENT FAULTING.
42	104.99	105.25	0.26	77			SANDSTONE	VFG.M.GY.VTHNB.BRKN LAM TO VTHNB, SOME LISTRIC SURFACES, FG SS INTERBEDS.
42	105.25	105.82	0.57	*77			SANDSTONE	SLTY.VFG.M.GY.VTHNB.SLD SLTST INTERBEDS, SOME DISTURBED BEDDING
42	105.82	105.84	0.02	77			SANDSTONE	FG.LT.GY.SLD END OF HOLE. TD = 105.77 M.

* DENOTES MEASURED BCA
NEPAGE

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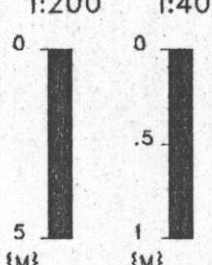
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88024

GEOLOGIST : LEE

DATE : FEB 21/89

DRAWING NO. :

SCALE : 1:200 1:40



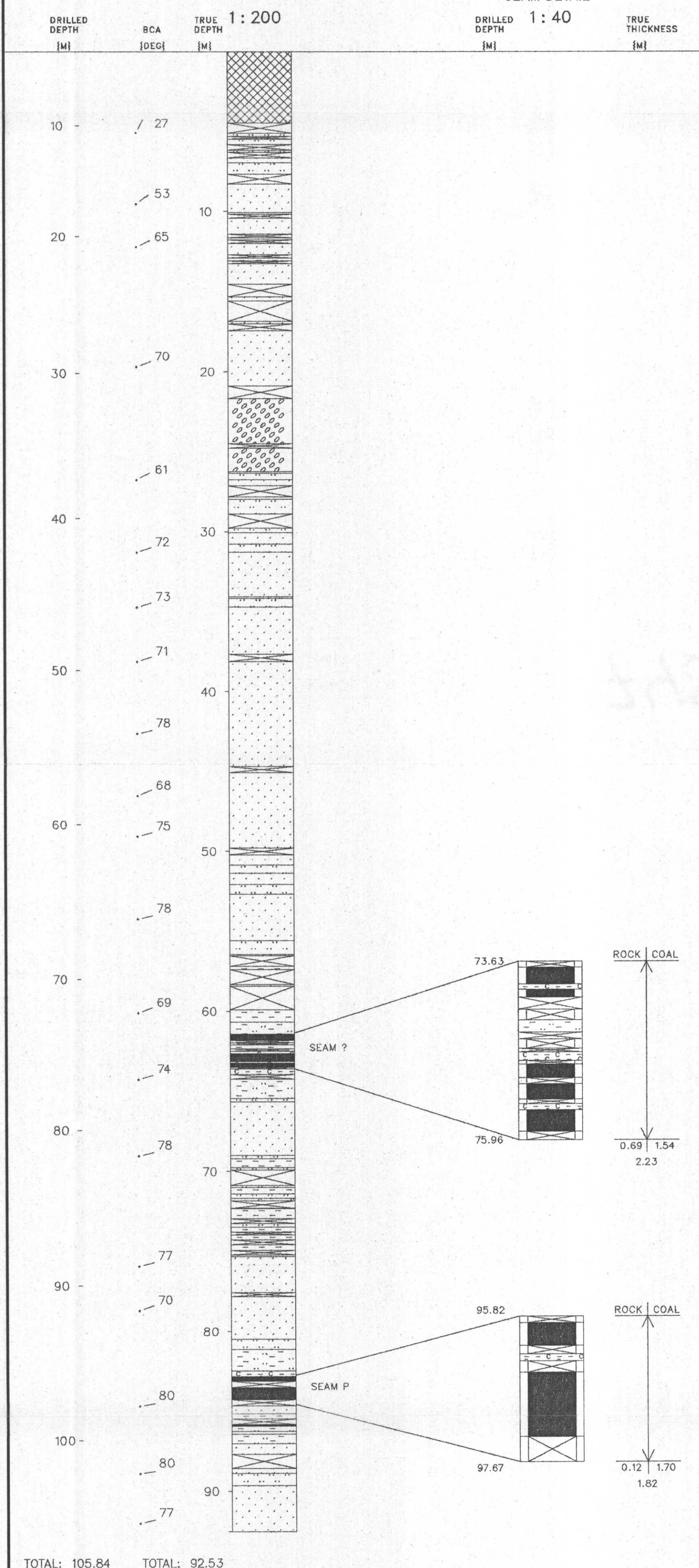
NORTHING: 6342395.0 N
 EASTING: 506335.1 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88024

Province: BC

Northing: 6342400.00

Lat: 571336

Log Date: 88-07-08

Zone: 9

Easting: 506335.00

Long: 1285342

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1639.0

Geologist: LEE

Scale: 1 to 200.0

Comments:

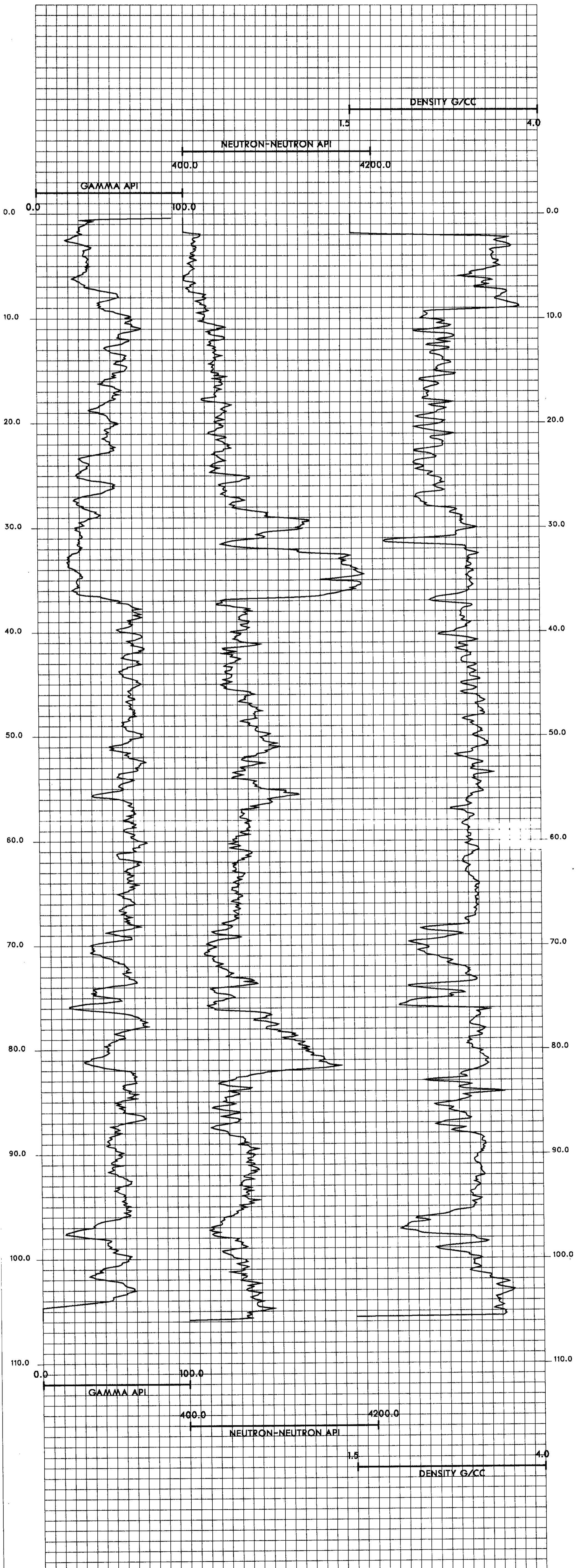
1. LOGGED THROUGH RODS
- 2.

Depth Range: 0.0 to 110.0

True Thickness: NO

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88025

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH88025

DATE - 02/15/89

- HISTORY -

START DATE - 07/05/88
END DATE - 07/07/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - ETMANSKI

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAM ? AT 30.11 M.

- LOCATION -

PROVINCE - BC
ELEVATION - 1640.23

ZONE - 9
NORTHING - 6342487.06
EASTING - 507089.56

LICENCE/LEASE NUMBER - 7147

LATITUDE - 571338
LONGITUDE - 1285257

- ORIENTATION -

LENGTH - 102.11

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

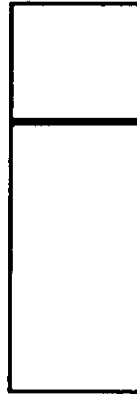
SCHEMATIC PROFILE

DDH88-025

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

?



1.54 m

SCALE

NOTE: Seams less than 0.5 m thick are not shown.

1:2000



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
1	0.00	4.57	4.57		55		OVERBURDEN	CASING DEPTH.
1	4.57	5.72	1.15	*55			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. YBRKN VERY BROKEN CORE FE STAINING. THIST-OFF F - POSSIBLE CORE LOSS. INTERBEDDED SS & SLTST. QTZ FILLED FRACTURES, IN PLACE S. CORE CRUNCHED BADLY.
1	5.72	6.40	0.68		62		ROCK LOSS	
1	6.40	6.57	0.17		70		SANDSTONE	SLTY. FG. LT. GY. LAM. BRKN SS BEDS WITH MINOR LAMINATED SLTST BEDS , QTZ FILLED FRACTURES.
2	6.57	7.19	0.62	*78			SANDSTONE	SLTY. FG. LT. GY. LAM. BRKN AS ABOVE.
2	7.19	7.63	0.44		76		ROCK LOSS	
2	7.63	8.23	0.60		74		SANDSTONE	SLTY. FG. LT. GY. LAM. YBRKN AS ABOVE. IN PLACES BADLY BROKEN.
2	8.23	8.52	0.29	*72			SANDSTONE	SLTY. FG. LT. GY. LAM. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	8.52	8.88	0.36	*73			SILTSTONE	SSY. M. GY. VTHNB. BRKN ALTERNATING BEDS OF SLTST & SS - SS VFG
3	8.88	9.40	0.52	*76			SILTSTONE	SSY. M. GY. VTHNB. YBRKN AS ABOVE. PYRITE.
3	9.40	10.48	1.08		75		ROCK LOSS	
3	10.48	11.23	0.75	*74			MUDSTONE	DK. GY. YBRKN INTERBEDDED MUDST. CORE VERY FRACTURED. QTZ VEINS. VERY SHEARED.
3	11.23	11.28	0.05		66		MUDSTONE	CARB. DK. GY. PWRD CARBONIZED MUDST.
3	11.28	11.65	0.37	*58			MUDSTONE	SLTY. DK. GY. VTHNB. VSHRD ALTERNATING BEDS OF MUDST & SLTY. VERY SHEARED - LISTRIC SURFACE. CORE FRACTUR ED HEAVILY, ALMOST A PASTE IN PLACES. T MIST-OFF - POSSIBLE CORE LOSS.
3	11.65	12.60	0.95		63		ROCK LOSS	
4	12.60	13.26	0.66		67		MUDSTONE	SLTY. DK. GY. VTHNB. VSHRD AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	13.26	13.56	0.30	72		SANDSTONE	CLYY.FG.M.GY.LAM.BRKN BADLY SHEARED SS WILL CRUMBLE IN ONE'S HAND.
4	13.56	13.72	0.16	*77		SANDSTONE	CLYY.FG.M.GY.LAM.BRKN BEDDED SS WITH ODD MUDST BED, LAMINATED MUDST.
4	13.72	13.98	0.26	76		SANDSTONE	CLYY.FG.M.GY.LAM.BRKN AS ABOVE.
4	13.98	15.36	1.38	76		ROCK LOSS	
5	15.36	15.56	0.20	75		MUDSTONE	M.GY.VBRKN UNCONSOLIDATED MUD LIKE A PASTE.
5	15.56	17.01	1.45	*74		MUDSTONE	DK.GY.VTHNB.BRKN BANDED MUDST - DK & LT LAYERS. VERY CRU MBLY. SHEAR ZONE - LISTRIC SURFACE. COR E FRACTURED. TWIST-OFF, POSSIBLE CORE L OSS. ODD SS LAYERS.
5	17.01	17.55	0.54	69		ROCK LOSS	
6	17.55	19.52	1.97	*63		MUDSTONE	DK.GY.VTHNB.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	19.52	20.12	0.60	70		MUDSTONE	DK.GY.VTHNB.SLD AS ABOVE. TWIST-OFF.
7	20.12	22.17	2.05	*78		MUDSTONE	SSY.DK.GY.VTHNB.BRKN SANDY MUDSTONE. VERY SOFT, EASILY BROKE N. ALTERNATING LAYERS OF SS & MUDST COR E HEAVILY FRACTURED. SHEAR SURFACES - L ISTRIC SURFACE. SHEAR TO MUD PARTING. A FEM PLANT FRAGMENTS.
8	22.17	22.86	0.69	*70		MUDSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE. TWIST-OFF, POSSIBLE CORE LOSS
8	22.86	24.18	1.32	73		MUDSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE.
9	24.18	25.62	1.44	*77		MUDSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE. VERY SHEARED IN PLACES.
9	25.62	25.81	0.19	75		COAL	C-5.BLK.VSHRD C-5.
9	25.81	25.88	0.07	74		MUDSTONE	SLTY.DK.GY.VTHNB.SLD INTERBEDDED MUOST & SLTST. CORE HEAVILY FRACTURED (CRACKED). SHEAR ZONE, LISTR IC SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	25.88	27.57	1.69	*72			MUDSTONE	SLTY. DK. GY. YTHNB. YBRKN AS ABOVE - ODD COAL STRINGER, ODD QTZ V EIN. PLANT FRAGMENTS - PLANT HASH.
10	27.57	27.97	0.40	68			ROCK LOSS	
11	27.97	28.00	0.03	64			MUDSTONE	CARB. BLK. BRKN
11	28.00	28.02	0.02	59			COAL	C-4. BLK. PMRD
11	28.02	28.25	0.23	*55			MUDSTONE	SLTY. M. GY. LAM. SLD PLANT FRAGMENTS, HEAKLY CARBONACEOUS.
11	28.25	28.36	0.11	56			MUDSTONE	CARB. M-DK. GY. YBRKN HEAKLY SHEARED.
11	28.36	28.66	0.30	57			ROCK LOSS	
11	28.66	28.79	0.13	58			MUDSTONE	M. GY. BRKN PLANT FRAGMENTS, BECOMES CARBONACEOUS T OWARDS BASE.
11	28.79	28.86	0.07	59			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	28.86	28.95	0.09	61			COAL	C-5. BLK. BRKN PLANT FRAGMENTS. CARBONACEOUS MUD PARTI NGS.
11	28.95	29.48	0.53	62			ROCK LOSS	
11	29.48	29.58	0.10	63			MUDSTONE	CARB. BLK. SHRD THIST-OFF - POSSIBLE ROCK LOSS. 1 CM TH ICK QUARTZ VEIN AT TOP.
11	29.58	29.95	0.37	64	08334	? ROOF	MUDSTONE	CARB. BLK. SLD THIST-OFF AT TOP - POSSIBLE ROCK LOSS. QUARTZ AND CARBONATE FRACTURE FILL AT T HE BOTTOM 3CM OF THE INTERVAL. LOWER 9C M. SAMPLED. O SEAM ROOF ROCK.
11	29.95	30.07	0.12	65	08334	? ROOF	MUDSTONE	CARB. BLK. SHRD THIST-OFF AT THE TOP - POSSIBLE ROCK LO SS. O SEAM ROOF ROCK, SAMPLED.
11	30.07	30.11	0.04	66	08334	? ROOF	MUDSTONE	CARB. DK. GY. BRKN VERY HARD - BORDERLINE C-6.
11	30.11	30.66	0.55	67	08335	?	COAL LOSS	
11	30.66	30.72	0.06	69	08335	?	COAL	C-5. BLK. BRKN BANDS OF C-4 WITH C-5.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	30.72	30.75	0.03	70	08335	?	MUDSTONE	CARB. BLK. BRKN VERY SOFT.
11	30.75	30.98	0.23	71	08335	?	COAL LOSS	
11	30.98	31.04	0.06	72	08335	?	COAL	C-2. BLK. VBRKN MELL. CLEATED.
11	31.04	31.28	0.24	73	08335	?	COAL LOSS	
11	31.28	31.42	0.14	75	08335	?	MUDSTONE	CARB. BLK. VBRKN TWIST-OFF - POSSIBLE ROCK LOSS. VERY HA RD. TOWARDS BASE. BORDERLINE C-6.
11	31.42	31.58	0.16	76	08335	?	COAL LOSS	
12	31.58	31.61	0.03	77	08335	?	COAL	C-3. BLK. VBRKN FRAGMENTS OF MELL. CLEATED C-2 WITH C-5.
12	31.61	31.74	0.13	78	08335	?	COAL LOSS	
12	31.74	31.82	0.08	79	08336	?	FLOOR MUDSTONE	SLTY. M-DK. GY. VBRKN O SEAM FLOOR ROCK. SAMPLED.
12	31.82	32.02	0.20	81	08336	?	FLOOR SANDSTONE	VFG. PR. LT. GY. VTHNB. BRKN ARGILLACEOUS SAND AND SILT. SAMPLED UP FR. 17CM. O SEAM FLOOR ROCK.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	32.02	33.50	1.48	*82			SANDSTONE	SLTY. VFG. PR. M-DK. GY. VTHNB. BRKN VERY ARGILLACEOUS SAND, INTERBEDDED WIT H SILT AND MUD.
13	33.50	34.85	1.35	*66			MUDSTONE	SSY. M. GY. VTHNB. VBRKN SANDY MUDSTONE, MAINLY MUDSTONE WITH BA NDS OF SS THROUGHOUT. CORE HEAVILY FRAC TURED. SHEAR ZONE - LISTRIC SURFACES. I N PLACES SHEARED TO A MUD PARTING. ODD SLIST. CLASTS. - ROUNDED.
13	34.85	35.07	0.22	66			ROCK LOSS	
13	35.07	35.61	0.54	*65			MUDSTONE	SSY. M. GY. VTHNB. VBRKN AS ABOVE.
13	35.61	36.33	0.72	66			ROCK LOSS	
14	36.33	38.12	1.79	*67			MUDSTONE	SSY. M. GY. VTHNB. VBRKN AS ABOVE.
14	38.12	38.21	0.09	68			MUDSTONE	SSY. M. GY. VTHNB. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	38.21	40.08	1.87	*70		MUDSTONE	SSY.M.GY.VTHNB.BRKN SANDY MUDSTONE - ALMOST EVENLY ALTERNATING BANDS OF MUDSTONE & SANDSTONE, MUDSTONE HAS A SANDY APPEARANCE. CORE HEAVILY FRACTURED. SHEAR SURFACES. OOD CARBONATE VEIN. A FEW SLTST CLASTS. SOME PLANT FRAGMENTS.
16	40.08	40.73	0.65	66		MUDSTONE	SSY.M.GY.VTHNB.BRKN AS ABOVE.
16	40.73	41.05	0.32	*62		SANDSTONE	CLYY.FG.LT.GY.VTHNB.VBRKN SS INTERBEDDED WITH MUDST. BADLY BROKEN UP.
16	41.05	41.67	0.62	62		SANDSTONE	SLTY.FG.LT.GY.SLD BEDDED SS WITH LAMINATED LAYERS OF SLTST. A FEW SHEAR SURFACES.
17	41.67	42.43	0.76	*63		SANDSTONE	SLTY.FG.LT.GY.SLD AS ABOVE.
17	42.43	42.77	0.34	71		SANDSTONE	SLTY.FG.LT.GY.BRKN SANDSTONE WITH CONGLOMERATE BANDS THROUGHOUT. CONGLOMERATE IS OF CHERT SLTST. AVERAGE SIZE IS ABOUT 0.5CM LARGE, ABOUT 3.0CM ROUNDED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	42.77	42.82	0.05	*79		SILTSTONE	M.GY.SLD SLTST BAND - SHARP CONTACT.
17	42.82	43.81	0.99	*60		SANDSTONE	SLTY.MG.LT.GY.SLD BEDDED SANDSTONE WITH BANDS OF SLTST CLASTS, ALSO CLAST THROUGHOUT, GRADED BEDDING OF SS IN PLACES, ROUNDED CLASTS, ELONGATED. SHEAR SURFACES.
18	43.81	43.96	0.15	*70		SANDSTONE	SLTY.MG.LT.GY.SLD AS ABOVE.
18	43.96	45.54	1.58	*69		SANDSTONE	SLTY.MG.LT.GY.VBRKN AS ABOVE.
18	45.54	45.90	0.36	69		ROCK LOSS	
19	45.90	45.94	0.04	69		SANDSTONE	SLTY.MG.LT.GY.BRKN AS ABOVE.
19	45.94	47.45	1.51	68		SANDSTONE	SLTY.MG.LT.GY.SLD AS ABOVE. A FEW BANDS OF SLTST. VERY THIN. SHARP CONTACTS BETWEEN.
19	47.45	47.46	0.01	68		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	47.46	47.93	0.47	*68			SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. SLD MEDIUM TO COARSE GRAIN SANDSTONE WITH A SHARP CONTACT DIVIDING THE BEDS. ROUND SLTST RIP-UP CLASTS THROUGHOUT. GRADED BEDDING WITHIN THE SS. COAL PARTICLES C-4. QTZ AROUND BIVALVES AS WELL, THIS AREA HAS REALLY BEEN CHURNED UP.
20	47.93	48.90	0.97	*68			SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. SLD AS ABOVE.
20	48.90	49.26	0.36	*74			SILTSTONE	SSY. M. GY. VTHNB. SLD SANDY SILTSTONE PARTING. CORE FRACTURED.
20	49.26	49.73	0.47	72			SANDSTONE	SLTY. MG. M. GY. VTHNB. YBRKN AS ABOVE SANDSTONE.
20	49.73	49.87	0.14	70			ROCK LOSS	
21	49.87	50.18	0.31	68			SANDSTONE	SLTY. MG. M. GY. VTHNB. SLD AS ABOVE SANDSTONE.
21	50.18	50.51	0.33	*66			SILTSTONE	SSY. LT. GY. VTHNB. BRKN RECRYSTALLIZED CARBONATE THROUGHOUT. LAYERS OF SLTST & SS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	50.51	51.15	0.64	69			SANDSTONE	SLTY. MG. VPR. M. GY. VTHNB. BRKN MEDIUM TO COARSE GRAIN SS WITH SHARP CONTACTS DIVIDING THE DIFFERENT GRAIN SIZES. SLTST RIP-UP CLASTS. COALIFIED BIVALVES THROUGHOUT. COAL PARTICLE C-4. QTZ AROUND BIVALVES.
21	51.15	51.78	0.63	*73			SANDSTONE	SLTY. MG. VPR. LT. GY. BRKN MEDIUM TO COARSE GRAIN SANDSTONE WITH RIP-UP CLASTS THROUGHOUT. VERY POORLY SORTED. CLASTS ARE ROUNDED AND 1.0-3.0CM IN SIZE.
21	51.78	51.85	0.07	70			ROCK LOSS	
22	51.85	53.56	1.71	*66			SANDSTONE	SLTY. MG. LT. GY. BRKN AS ABOVE. CLASTS INCREASE TO 2-7CM IN SIZE. A FEW ARE ELONGATED.
22	53.56	53.87	0.31	69			SANDSTONE	SLTY. MG. LT. GY. BRKN AS ABOVE. ELONGATED CLASTS - 2-7CM IN SIZE.
23	53.87	54.46	0.59	*72			SANDSTONE	SLTY. MG. LT. GY. BRKN AS ABOVE. RIP-UP CLASTS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	54.46	55.08	0.62	74			SANDSTONE	SLTY. VFG. LT. GY. BRKN FINE GRAIN SANDSTONE WITH ROUND AND ELO NGATED RIP-UP CLASTS. EXCELLENT EXAMPLE OF TOPS UP INDICATOR.
23	55.08	55.34	0.26	77			ROCK LOSS	
23	55.34	55.88	0.54	*79			SANDSTONE	SLTY. FG. M. GY. SSD. BRKN MAINLY SS WITH INTERBEDDED SLTST SSD WI TH MINOR BITORB, TOPS UP INDICATOR.
24	55.88	56.61	0.73	*64			SANDSTONE	SLTY. FG. M. GY. SSD. BRKN AS ABOVE.
24	56.61	57.43	0.82	*66			SANDSTONE	SLTY. FG. M. GY. SSD. BRKN AS ABOVE.
24	57.43	57.72	0.29	*59			SANDSTONE	SLTY. MG. LT. GY. VTHNB. BRKN MEDIUM GRAIN SANDSTONE WITH RIP-UP CLAS TS THROUGHOUT. QTZ VEINS WITHIN COAL ST. RINGERS, CLASTS 1-2CM IN SIZE.
24	57.72	57.95	0.23	59			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	57.95	58.18	0.23	59			SANDSTONE	SLTY. FG. LT. GY. VTHNB. SLD AS ABOVE. RIP-UP CLASTS.
25	58.18	58.23	0.05	59			SILTSTONE	SSY. LT. GY. VTHNB. SLD SILTSTONE & SS BEDS WITH HELMINTHOPSIS THROUGHOUT.
25	58.23	58.78	0.55	*59			SANDSTONE	SLTY. VFG. LT. GY. VTHNB. BRKN VFG TO FG SS BEDS, GRADED BEDS WITH ODD SLTST. BED. A FEW RIP-UP CLASTS.
25	58.78	59.45	0.67	*61			SANDSTONE	SLTY. FG. LT. GY. VTHNB. BRKN MAINLY SS WITH SLTST BANDS THROUGHOUT. COAL STRINGER WITH QTZ AROUND THEM, A F EW RIP-UP CLASTS.
25	59.45	59.66	0.21	*56			SANDSTONE	SLTY. MG. LT. GY. LAM. SLD COARSE GRAINED SS TO MG SS. GRADED BEDD ING, ODD BED OF SLTST - LAMINATED, A FE W RIP-UP CLASTS 1-3CM IN SIZE. SHEAR SU RFACES.
25	59.66	59.83	0.17	*58			SANDSTONE	SLTY. MG. LT. GY. SLD AS ABOVE. RIP-UP CLASTS.
25	59.83	59.93	0.10	61			ROCK LOSS	
26	59.93	61.99	2.06	*64			SANDSTONE	SLTY. MG. LT. GY. SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	61.99	62.70	0.71	*69		SANDSTONE	SLTY. MG. LT. GY. SLD AS ABOVE.
27	62.70	64.05	1.35	*72		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD FINE GRAINED SS WITH ODD BED OF LAMINATED SLTST. GRADED BEDDING IN PLACES.
27	64.05	64.25	0.20	74		ROCK LOSS	
28	64.25	65.75	1.50	*76		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE. CLASTS - SLTST ELONGATED WITH RANDOM PLACED RIP-UP CLASTS.
28	65.75	66.20	0.45	70		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
28	66.20	66.43	0.23	64		ROCK LOSS	
29	66.43	68.18	1.75	*58		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE FAIR AMOUNT OF QTZ VEINS. RIP-UP CLASTS.
30	68.18	68.80	0.62	65		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
30	68.80	70.17	1.37	*72		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE. LAYERS OF ROUNDED RIP-UP CLASTS 1-2 CM IN SIZE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	70.17	70.38	0.21	72		ROCK LOSS	
31	70.38	71.85	1.47	*72		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE. RIP-UP CLASTS, 2-8 CM IN SIZE. ROUNDED. RANDOMLY PLACED. SHEAR SURFACES.
31	71.85	72.33	0.48	74		SANDSTONE	SLTY. VFG. LT. GY. LAM. SLD VERY FINE GRAIN SANDSTONE WITH RIP-UP CLASTS 1-3 CM IN SIZE. ROUNDED SMALL QTZ PEBBLE 0.5CM IN SIZE.
32	72.33	72.69	0.36	*76		SANDSTONE	SLTY. VFG. LT. GY. SLD AS ABOVE.
32	72.69	72.83	0.14	77		ROCK LOSS	
32	72.83	74.47	1.64	*78		SANDSTONE	SLTY. VFG. LT. GY. SLD SS WITH VERY THIN BEDS OF SLTST. REDUCING TO LAMINATIONS IN PLACES. SHEAR SURFACES. ODD RIP-UP CLASTS - QTZ FILLED FRACTURE.
33	74.47	74.90	0.43	*79		SANDSTONE	SLTY. FG. LT. GY. LAM. SLD SS WITH VERY THIN BEDS OF SLTST. REDUCING TO LAMINATIONS IN PLACES. SHEAR SURFACES. ODD RIP-UP CLASTS. CLASTS ROUNDED 1-7CM IN SIZE - RANDOMLY PLACED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	74.90	76.49	1.59	*74			SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
33	76.49	76.60	0.11		73		ROCK LOSS	
34	76.60	77.94	1.34	*72			SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
34	77.94	78.65	0.71	*71			SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
35	78.65	79.28	0.63	*68			SANDSTONE	SLTY. FG. LT. GY. LAM. SLD AS ABOVE.
35	79.28	79.52	0.24		66		ROCK LOSS	
35	79.52	79.94	0.42		63		CONGLOMERATE	M. GY. BRKN CONGLOMERATE MADE UP OF CHERT SLTST. MU DST. SUB-ROUNDED BY A MEDIUM GRAIN SS. MATRIX. CONGLOMERATE AVERAGE SIZE IS 0.5 TO 2.5 CM. QTZ FILLED FRACTURES THROUGH OUT.
35	79.94	80.08	0.14	*61			SANDSTONE	SLTY. FG. LT. GY. LAM. SLD SS. MATRIX WITH LAMINATED SLTST. BEDS.
35	80.08	80.68	0.60		66		CONGLOMERATE	M. GY. BRKN AS ABOVE CGL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	80.68	80.81	0.13	*71			SANDSTONE	SLTY. FG. LT. GY. LAM. BRKN SS PARTING WITH LAMINATED SLTST BEDS.
36	80.81	80.99	0.18		71		CONGLOMERATE	M. GY. BRKN CONGLOMERATE MADE UP OF CHERT SLTST. MU DST. SUB-ROUNDED BY A MEDIUM GRAIN SS. MATRIX. CONGLOMERATE AVERAGE SIZE IS 0.5 TO 2.5 CM. QTZ FILLED FRACTURES THROUGH OUT.
36	80.99	82.41	1.42		71		CONGLOMERATE	M. GY. BRKN AS ABOVE.
37	82.41	83.12	0.71		71		CONGLOMERATE	M. GY. BRKN AS ABOVE.
37	83.12	83.38	0.26		71		ROCK LOSS	
37	83.38	83.43	0.05		71		SILTSTONE	SSY. M. GY. VBRKN SANDY SILTSTONE WITH QTZ VEINS AND FE S TAINING. THIS ROCK LOOKS LIKE IT DOES N OT BELONG HERE.
37	83.43	84.43	1.00	*71			SANDSTONE	PBLY. M. GY. BRKN MEDIUM GRAIN SS WITH SLTST CHERT CLASTS PLACED RANDOMLY. THIS SANDSTONE BEDS ALTERNATE WITH BANDS OF CGL MADE UP OF CHERT SLTST. MU DST. AVERAGE SIZE 0.5 TO 2.5 CM. GRADED BEDDING IN CONGLOMERATE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	84.43	85.18	0.75	*72			SANDSTONE	PBLY. M. GY. BRKN AS ABOVE.
38	85.18	86.00	0.82	70			SANDSTONE	SLTY. FG. M. GY. VTHNB. VBRKN INTERBEDDED SS & SLTST. SHEAR ZONE - LISTRIC SURFACES. CORE FRACTURES IN PLACE S.
38	86.00	86.27	0.27	*68			SANDSTONE	SLTY. FG. M. GY. VTHNB. VBRKN AS ABOVE.
38	86.27	86.58	0.31	73			ROCK LOSS	
39	86.58	87.22	0.64	*79			SANDSTONE	SLTY. FG. M. GY. VTHNB. VBRKN AS ABOVE.
39	87.22	88.18	0.96	78			SANDSTONE	CLYY. VFG. M. GY. VTHNB. VBRKN MUDDY SANDSTONE WITH LAMINATED LAYERS OF SLTY SANDSTONE IS MAINLY VERY FINE GR AIN. ODD COAL STRINGER. SHEAR ZONE - LISTRIC SURFACES. CORE FRACTURED. MUDST BEDS THROUGHOUT AS WELL.
39	88.18	88.37	0.19	77			ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	88.37	90.27	1.90	*76			SANDSTONE	CLYY. VFG. M. GY. VTHNB. VBRKN AS ABOVE.
40	90.27	90.45	0.18	64			SANDSTONE	CLYY. VFG. M. GY. VTHNB. BRKN AS ABOVE.
41	90.45	92.46	2.01	*51			SANDSTONE	CLYY. VFG. M. GY. VTHNB. BRKN AS ABOVE.
42	92.46	93.13	0.67	58			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN ALTERNATING BEDS OF SLTST AND SS WITH SSD THROUGHOUT. SHEAR ZONE - LISTRIC SURFACES. GREATER CONCENTRATION OF SS IN PLACES.
42	93.13	94.46	1.33	*66			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE.
42	94.46	94.95	0.49	67			ROCK LOSS	
43	94.95	96.38	1.43	*68			SILTSTONE	SSY. M. GY. VTHNB. SSD. BRKN AS ABOVE.
43	96.38	96.56	0.18	66			SILTSTONE	SSY. M. GY. VTHNB. VBRKN AS ABOVE.
44	96.56	97.17	0.61	*64			SILTSTONE	SSY. M. GY. VTHNB. VBRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88025

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	97.17	98.25	1.08	68			ROCK LOSS	
44	98.25	99.29	1.04	*72			SILTSTONE	SSY.H.GY.VTHNB.BIOTR.VBRKN AS ABOVE, BIOTRB.
45	99.29	101.13	1.84	*70			SILTSTONE	SSY.DK.GY.VTHNB.BRKN SILTSTONE, SANDSTONE AND MUDSTONE BEDS INTERBEDDED. IN PLACES MUDSTONE IS SOFT . SHEAR ZONE - LISTRIC SURFACES. PLANT FRAGMENTS WITHIN THE MUDSTONE LAYERS.
46	101.13	102.11	0.98	*71			SILTSTONE	SSY.DK.GY.VTHNB.BRKN AS ABOVE, END OF HDLE, TD = 102.11 M.

* DENOTES MEASURED BCA
NEWPAGE

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GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88025

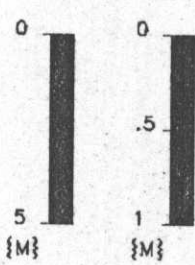
GEOLOGIST : ETMANSKI

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40

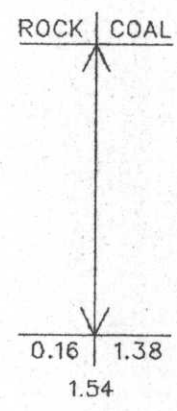
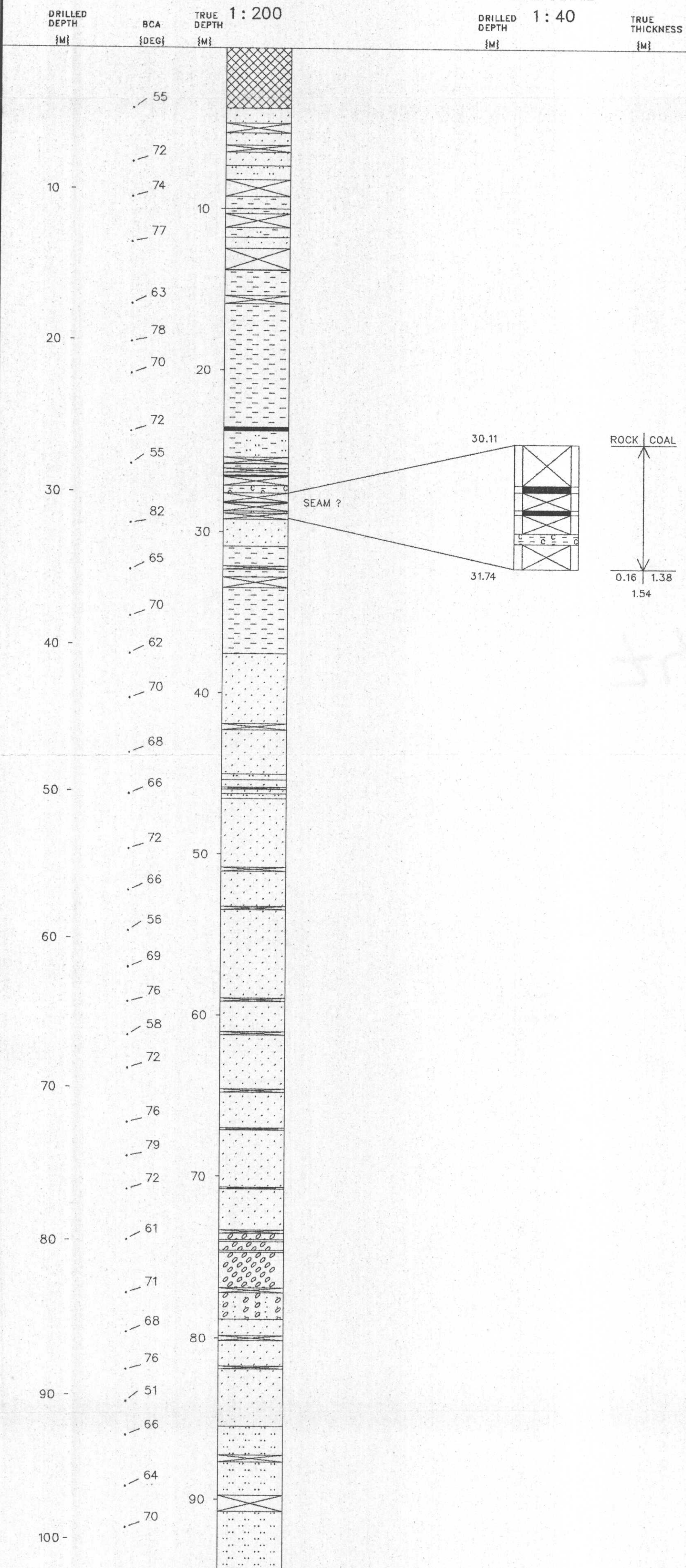


NORTHING: 6342487.0 N
 EASTING: 507089.5 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



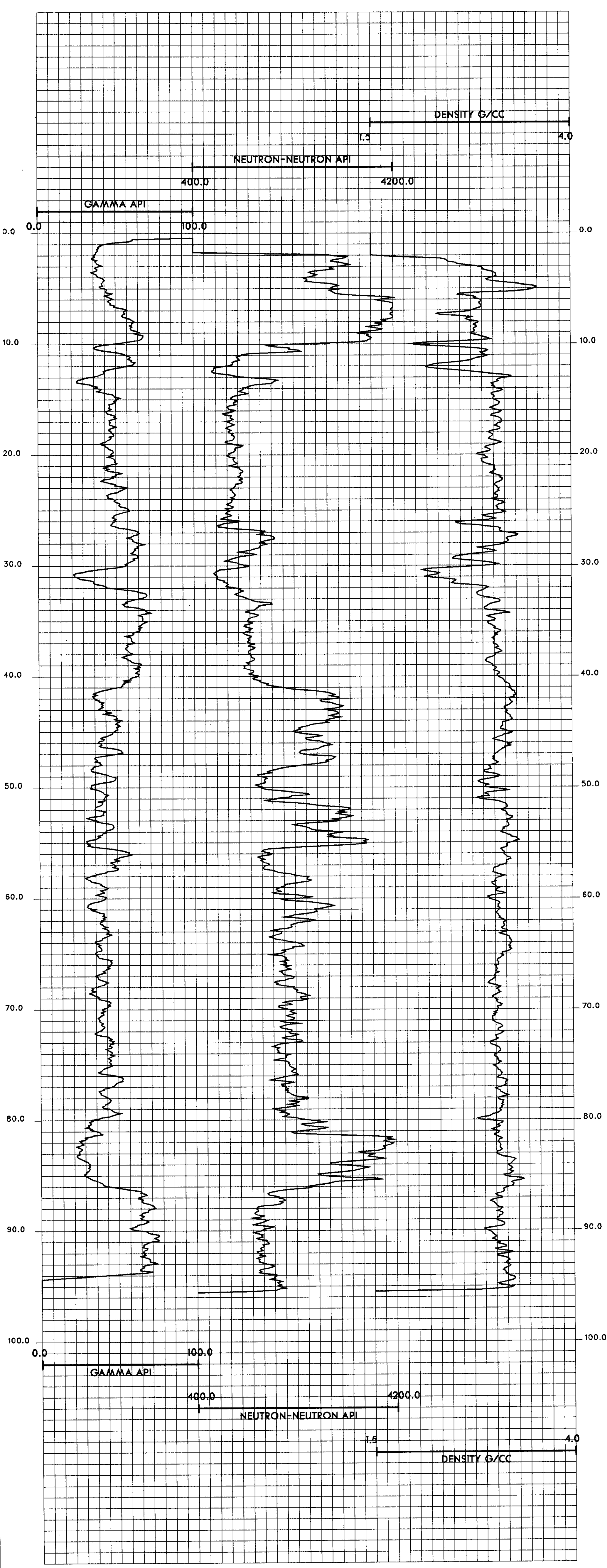
748

Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88025 Log Date: 88-07-08 Company: CENTURY Geologist: ETMANSKI	Province: BC Northing: 6342490.00 Lat: 571338 Zone: 9 Easting: 507090.00 Long: 1285257 Measuring Point: GROUND LEVEL Elevation: 1640.2	
Scale: 1 to 200.0 Depth Range: 0.0 to 100.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88026

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88026

DATE - 02/15/89

- HISTORY -

START DATE - 07/08/88
END DATE - 07/10/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTS SEAMS L?, K/L, K, J & I. PROBABLE FAULT
AT 174M. REPEATS ROCK INTERVAL BETWEEN SEAMS H AND
I. H SEAM NOT INTERSECTED.

- LOCATION -

PROVINCE - BC
ELEVATION - 1539.66

ZONE - 9
NORTHING - 6344068.20
EASTING - 507973.77

LICENCE/LEASE NUMBER - 7145

LATITUDE - 571430
LONGITUDE - 1285204

- ORIENTATION -

LENGTH - 222.00
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 24.38
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-026

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

K/L

1.51 m

K

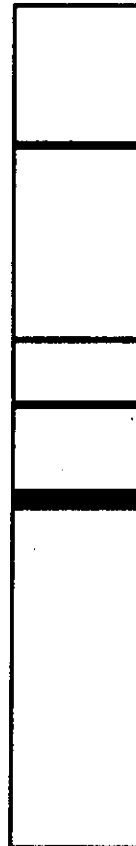
1.00 m

J

1.56 m

I

4.80 m



NOTE: Seams less than 0.5 m thick are not shown.

SCALE

1:2000

Gulf Canada Resources Limited



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	9.14	9.14	78			OVERBURDEN	CASING DEPTH. ADDITIONAL CASING ADDED DURING DRILLING TO 24.38.
1	9.14	10.14	1.00	78			ROCK LOSS	
1	10.14	10.57	0.43	78			OVERBURDEN	M-DK.GY.BRKN TILL. SS BOULDERS WITHIN.
1	10.57	11.27	0.70	78			ROCK LOSS	
1	11.27	12.74	1.47	78			OVERBURDEN	M-DK.GY.BRKN TILL. SS PEBBLES AND BOULDERS WITHIN INT ERMIXED MUD AND CLAY. CORE LOSS PROBABL E.
1	12.74	14.49	1.75	78			ROCK LOSS	
2	14.49	15.64	1.15	78			OVERBURDEN	M-DK.GY.BRKN AS ABOVE.
2	15.64	17.39	1.75	78			ROCK LOSS	
2	17.39	18.22	0.83	78			OVERBURDEN	M-DK.GY.BRKN AS ABOVE.
2	18.22	18.72	0.50	78			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	18.72	19.02	0.30	78			OVERBURDEN	DK.GY.BRKN AS ABOVE.
3	19.02	20.42	1.40	78			ROCK LOSS	
3	20.42	21.59	1.17	78			OVERBURDEN	DK.GY.BRKN AS ABOVE.
3	21.59	23.08	1.49	78			ROCK LOSS	
3	23.08	23.28	0.20	78	99999 L?		COAL LOSS	
3	23.28	23.69	0.41	78			OVERBURDEN	DK.GY.BRKN TILL MOSTLY MUD AND CLAY. COAL SPOIL HI THIN.
4	23.69	23.83	0.14	78			SANDSTONE	CLYY.FG.VPR.M.GY.BRKN VERY POORLY CONSOLIDATED.
4	23.83	24.02	0.19	78			MUDSTONE	CLYY.M.GY.BRKN VERY SOFT AND VERY POORLY CONSOLIDATED.
4	24.02	24.20	0.18	78			SILTSTONE	M-DK.GY.LAM.SSD.BRKN PLANT FRAGS WITHIN.
4	24.20	24.43	0.23	78			MUDSTONE	CLYY.M.GY.BRKN VERY SOFT. POORLY CONSOLIDATED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	24.43	25.45	1.02	78			MUDSTONE	CLYY.M.GY.BRKN UNCONSOLIDATED IN PARTS. VERY CLAYEY IN PARTS.
4	25.45	25.56	0.11	78			MUDSTONE	CARB.BLK.LAM.BRKN VERY THIN COALY PARTINGS.
4	25.56	25.74	0.18	78			MUDSTONE	M.GY.BRKN MINOR SHEARED SURFACES.
5	25.74	25.99	0.25	78			MUDSTONE	M-DK.GY.LAM.VBRKN FAIRLY SOFT. NUMEROUS PLANT FRAGS WITHI N. MINOR COALIFIED PLANT MATERIAL.
5	25.99	27.63	1.64	*78			MUDSTONE	M-DK.GY.LAM.BRKN AS ABOVE. BECOMES LESS COALY AND FOSSIL FEROUS TOWARDS BASE.
6	27.63	27.93	0.30	78			SANDSTONE	FG.MOD.LT-M.GY.BRKN QTZ & CALCITE THROUGHOUT, INTERMIXED WITH CLAY. BRECCIATED IN APPEARANCE.
6	27.93	28.60	0.67	*78			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.BRKN AT TOP MUD IS CLAYEY. TOWARDS BASE BECOMES SLTY THEN SANDY. SOFT, POORLY CONSOLIDATED. MINOR CALCAREOUS STRINGERS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
6	28.60	28.89	0.29	76			SANDSTONE	CLYY.FG.PR.M.GY.VTHNB.BRKN MUDST LAMINATIONS WITHIN. CALCAREOUS VEINING.
6	28.89	29.07	0.18	76			SANDSTONE	CLYY.FG.PR.M.GY.VTHNB.VBRKN AS ABOVE.
6	29.07	29.47	0.40	75			SANDSTONE	HG.MOD.LT-M.GY.MAS.BRKN HIGH ANGLE FRACTURES ARE QTZ AND CALCITE FILLED.
7	29.47	31.48	2.01	*71			SANDSTONE	FG.MOD.LT-M.GY.MAS.BRKN GRADES IN AND OUT OF POORLY SORTED MG.S.S. MUDST RIP-UPS UP TO 3CM. AVERAGE 1CM AT BASE, SAND IS THINLY BEDDED.
8	31.48	31.83	0.35	65			SANDSTONE	HG.MOD.LT-M.GY.VTHNB.BRKN MINOR MUDST LAMS. RIP-UP CLASTS.
8	31.83	33.41	1.58	*61			SANDSTONE	CLYY.FG.PR.M.GY.LAM.BRKN LAMINATED MUDST WITHIN. VERY MINOR COAL Y. QTZ BLEBS. RIP-UP CLASTS.
9	33.41	34.85	1.44	*68			SANDSTONE	CLYY.FG.PR.LT-M.GY.VTHNB.BRKN AS ABOVE. RIP-UP CLASTS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	34.85	35.33	0.48	*61			SANDSTONE	FG. PR. LT-M. GY. THNB. BRKN AS ABOVE MINOR COALY PARTINGS TOWARDS BASE. BECOMES VERY CLAYEY. SHARP BASAL CONTACT WITH MUDST.
9	35.33	35.34	0.01	64			MUDSTONE	DK. GY. SLD
10	35.34	35.61	0.27	*66	08337	K/L ROOF	MUDSTONE	CARB. BLK. LAM. SHRD PYRITE AT BASE. SAMPLED LOWER 25CM. K/L SEAM ROOF ROCK.
10	35.61	35.65	0.04	67	08338	K/L	COAL	C-5. BLK. SHRD
10	35.65	35.71	0.06	67	08338	K/L	COAL	C-4. BLK. SHRD
10	35.71	35.73	0.02	67	08338	K/L	COAL LOSS	
10	35.73	35.78	0.05	67	08338	K/L	MUDSTONE	CARB. BLK. SHRD SHINEY LISTRIC SURFACES.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	35.78	35.94	0.16	67	08338	K/L	COAL	C-3. BLK. BRKN MODERATE TO WELL CLEATED. BORDERLINE C-2. QUARTZ FRACTURE FILL. MINOR PYRITE.
10	35.94	36.00	0.06	68	08338	K/L	MUDSTONE	CARB. W. GY. BRKN VERY HARD - RESEMBLES C-6.
10	36.00	36.04	0.04	68	08338	K/L	COAL	C-4. BLK. BRKN
10	36.04	36.10	0.06	68	08338	K/L	COAL	C-3. BLK. BRKN MODERATELY CLEATED. BANDS OF C-2 AND C-4.
10	36.10	36.14	0.04	68	08338	K/L	COAL	C-4. BLK. BRKN
10	36.14	36.21	0.07	68	08338	K/L	COAL	C-3. BLK. BRKN MODERATELY CLEATED. QUARTZ VEINING. BORDERLINE C-2 AT BASE.
10	36.21	36.39	0.18	69	08338	K/L	COAL LOSS	
10	36.39	36.45	0.06	69	08338	K/L	COAL	C-2. BLK. BRKN WELL CLEATED.
10	36.45	36.60	0.15	70	08338	K/L	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	36.60	36.74	0.14	*70	08338	K/L	MUDSTONE	CARB. BLK. BRKN VERY SOFT TOWARDS THE BASE.
10	36.74	36.82	0.08	71	08338	K/L	COAL LOSS	
10	36.82	36.89	0.07	72	08338	K/L	COAL	C-4. BLK. BRKN BANDS OF C-1 AND PYRITE IN MUD. QUARTZ FRACTURE INFILL.
10	36.89	36.93	0.04	72	08338	K/L	COAL	C-6. BLK. BRKN VERY HARD.
10	36.93	37.10	0.17	73	08338	K/L	COAL LOSS	
10	37.10	37.16	0.06	74	08338	K/L	COAL	C-4. BLK. BRKN RARE BANDS OF C-1 AND C-6.
10	37.16	37.22	0.06	75	08338	K/L	COAL LOSS	
10	37.22	37.80	0.58	*78	08339	K/L FLOOR	MUDSTONE	CARB. M-DK. GY. SHRD PLANT FRAGS. OCCASIONAL C-1 BAND (<1CM) K/L SEAM FLOOR ROCK. UPPER 25 CM SAMP LED.
11	37.80	37.85	0.05	77			COAL	C-2. BLK. SLD GOOD CLEAT. SOME CONCOIDAL FRACTURES. Q TZ THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	37.85	37.92	0.07	77			MUDSTONE	CARB. BLK. SLD COALY LAMS THROUGHOUT, PLANT FRAGS.
11	37.92	37.98	0.06	77			MUDSTONE	DK. GY. SLD QTZ VEINS THROUGHOUT.
11	37.98	38.27	0.29	76			MUDSTONE	CLYY. M. GY. SLD MINOR PLANT FRAGS. FAIRLY SOFT. POORLY CONSOLIDATED.
11	38.27	39.78	1.51	*73			MUDSTONE	M. GY. LAM. BRKN AS ABOVE. PLANT HASH. MINOR COALIFIED P LANT FRAGS. GRADES TO CLYY. SS. AT BASE.
12	39.78	41.26	1.48	*73			SANDSTONE	FG. MOD. M. GY. VTHNB. BRKN FAIRLY ARGILLACEOUS. MUD AND SILT LAMS WITHIN. MINOR COALIFIED PLANT FRAGS. MU D RIP-UPS ARE ELONGATE UP TO 1.5CM.
12	41.26	41.61	0.35	68			SANDSTONE	FG. MOD. M. GY. VTHNB. BRKN AS ABOVE. RIP-UP CLASTS.
12	41.61	41.77	0.16	67			SANDSTONE	YCG. MOD. LT. GY. THNB. BRKN SILT AND UNCONSOLIDATED MUDST PARTINGS WITHIN.
13	41.77	41.88	0.11	66			SANDSTONE	YCG. MOD. LT. GY. THNB. SLD MG. SS. WITHIN GRAINS ARE OF CHERT AND Q TZ.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	41.88	42.00	0.12	65			MUDSTONE	DK. GY. LAM. SLD VERY SOFT, POORLY CONSOLIDATED. SHARP CONTACTS AT TOP AND BASE.
13	42.00	43.76	1.76	*60			SANDSTONE	YCG. MOD. LT-M. GY. THNB. BRKN GRAINS CONSIST OF WHITE QTZ AND GREY CHERT. 1CM. QTZ VEIN AT BASE. WITHIN IS A 4CM BAND OF POORLY CONSOLIDATED. MUDST WITH MINOR COALY PARTINGS.
14	43.76	44.01	0.25	67			SANDSTONE	YCG. MOD. LT-M. GY. THNB. BRKN AS ABOVE. MINOR VERY THIN MUDST PARTING S. QTZ VEIN AT TOP.
14	44.01	44.13	0.12	68			MUDSTONE	DK. GY. SHRD UNCONSOLIDATED CLAY AND MUD WITH SS. FRAGMENTS WITHIN.
14	44.13	44.71	0.58	70			SANDSTONE	YCG. MOD. LT-M. GY. THNB. BRKN SS AS ABOVE. MINOR VERY THIN COALY MUD PARTINGS. SHARP BASAL CONTACT WITH ARGILLACEOUS SS.
14	44.71	45.56	0.85	*75			SANDSTONE	CLYY. FG. PR. M. GY. LAM. BRKN VERY ARGILLACEOUS SS WITH NUMEROUS THIN MUDST PARTINGS. NUMEROUS PLANT FRAGS WITHIN MUDST BANDS AT BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	45.56	47.07	1.51	79			SANDSTONE	MG. MOD. LT-M. GY. THKB. SLD SILTY TO MUDDY IN PARTS. HIGH ANGLE QTZ FRACTURE FILL.
15	47.07	47.68	0.61	*83			SANDSTONE	MG. MOD. LT-M. GY. THKB. SLD AS ABOVE.
16	47.68	48.40	0.72	85			SANDSTONE	MG. MOD. LT-M. GY. THKB. SLD AS ABOVE. MINOR SLTST LAMS. MINOR SMALL RIP-UPS AVERAGE 0.5CM. 1CM. THICK QTZ VEIN AT TOP. RIP-UP CLASTS.
16	48.40	49.85	1.45	*87			MUDSTONE	SSY. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH VFG SS. MINOR COALIFIED PLANT HASH. SAND CONTENT INCREASES TOWARDS BASE. 2CM. CALCITE VEIN HALF MARY THROUGH INTERVAL.
17	49.85	50.06	0.21	83			MUDSTONE	SSY. DK. GY. LAM. SSD. BRKN AS ABOVE WITH SAND LENSES. TOPS APPEAR UPRIGHT.
17	50.06	50.13	0.07	82			SANDSTONE	FG. WEL. LT-M. GY. LAM. SSD. SLD WITH DK GREY SLTST LAMS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
17	50.13	51.84	1.71	77		SANDSTONE	FG.HEL.LT-M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST. SLTST ARE NUMEROUS PLANT FRAGS. QTZ VEINS THROUGH OUT. SAND BECOMES ARGILLACEOUS NEAR BASE.
18	51.84	53.03	1.19	*70		SANDSTONE	MG.MOD.LT-M.GY.THNB.BRKN WITH LAMINATIONS OF ARGILLACEOUS SS. CLAYEY IN PARTS. SLTST RIP-UPS ARE PRESENT BUT RARE.
18	53.03	53.99	0.96	74		SANDSTONE	MG.MOD.LT-M.GY.THKB.BRKN AS ABOVE. CONTAINS SLTST RIP-UPS UP TO 5CM. QTZ VEIN AT BASE.
19	53.99	56.00	2.01	80		SANDSTONE	MG.MOD.LT-M.GY.THKB.BRKN AS ABOVE. VERY ARGILLACEOUS IN PARTS. RIP-UPS AVERAGE 1CM.
20	56.00	58.02	2.02	*87		SANDSTONE	MG.HEL.LT-M.GY.THKB.BRKN AS ABOVE. ARGILLACEOUS IN PARTS. MINOR QTZ AND SAND FRACTURE FILL. RIP-UP CLASTS.
21	58.02	58.89	0.87	83		SANDSTONE	MG.HEL.LT-M.GY.THKB.BRKN SS AS ABOVE WITH NUMEROUS MUD AND SILT RIP-UPS. HIGH ANGLE QTZ FRACTURE FILL.
21	58.89	59.59	0.70	80		SANDSTONE	MG.HEL.LT-M.GY.THKB.BRKN AS ABOVE. RIP-UP CLASTS.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	59.59	59.74	0.15	79		ROCK LOSS	
21	59.74	60.02	0.28	78		SILTSTONE	M.GY.LAM.SSD.VBRKN CONTACT WITH ABOVE SAND NOT SEEN. POSSIBLE CORE LOSS. QTZ THROUGHOUT.
21	60.02	60.22	0.20	78		ROCK LOSS	
21	60.22	60.37	0.15	77		SANDSTONE	MG.HEL.LT-M.GY.THNB.BRKN AS SAND ABOVE WITH MINOR COALY STRINGERS. RIP-UP CLASTS.
22	60.37	61.32	0.95	75		SANDSTONE	MG.HEL.LT-M.GY.THKB.VBRKN COALY STRINGERS AT TOP. MINOR SLTST BAN DS. 4 CM THICK WITHIN. RIP-UP CLASTS AT BASE. QTZ THROUGHOUT.
22	61.32	61.67	0.35	73		SILTSTONE	M.GY.BRKN FINE QTZ VEINING THROUGHOUT.
22	61.67	62.27	0.60	*72		SILTSTONE	M.GY.LAM.SSD.BRKN INTERLAMINATED WITH FG SS. LOAD STRUCTURES INDICATE TOPS UP.
23	62.27	63.45	1.18	*70		SILTSTONE	M.GY.LAM.SSD.BRKN AS ABOVE. TOPS UP. MINOR PLANT HASH. MINOR SLTST LAMS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	63.45	63.63	0.18	70			ROCK LOSS	
23	63.63	63.69	0.06	70			SILTSTONE	M.GY. LAM. SSD. YBRKN TWIST-OFFS AND RUBBLE. POSSIBLE CORE LO SS.
23	63.69	63.89	0.20	70			ROCK LOSS	
23	63.89	64.77	0.88	71			SILTSTONE	M.GY. LAM. SSD. BRKN INTERLAMINATED WITH FG SS. PLANT HASH W ITHIN SLTST. TOPS UP. MINOR RIP-UPS IN SAND.
24	64.77	64.89	0.12	71			SILTSTONE	M.GY. LAM. SLD SAND WITHIN. CONTAINS RIP-UPS.
24	64.89	65.61	0.72	*71			SANDSTONE	FG. MOD. LT-M.GY. THNB. BRKN SLTST BANDS THROUGHOUT UP TO 8CM BUT AV ERAGE 2CM THICK. PLANT HASH THROUGH OUT SILT. SLTST RIP-UP IN SAND.
24	65.61	66.79	1.18	72			SANDSTONE	MG. MOD. LT-M.GY. THNB. BRKN AS ABOVE.
25	66.79	67.38	0.59	74			SANDSTONE	MG. MOD. LT-M.GY. THNB. BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	67.38	67.49	0.11	74	10367		BENTONITE	LT. GY. LAM. BRKN SOFT AND WAXY. SAMPLE TAKEN.
25	67.49	68.09	0.60	*75			SILTSTONE	LT. GY. LAM. BRKN AT BASE ARE UP TO 17, CLOSELY SPACED AS H LAYERS. VERY THIN MUDST LAMS THROUGH OUT.
25	68.09	68.46	0.37	74			SANDSTONE	MG. MOD. LT-M.GY. THNB. BRKN AS SANDSTONE ABOVE. SHARP BASAL CONTACT WITH SCOUR SURFACE IN MUDST BELOW. TOP S UP. RIP-UP CLASTS.
25	68.46	68.64	0.18	73			SILTSTONE	CLYY. DK. GY. LAM. BRKN VERY MINOR VFG SS WITHIN.
25	68.64	68.87	0.23	73			SILTSTONE	CLYY. DK. GY. LAM. SSD. BRKN AS ABOVE WITH BIVALVES, STAFFINELLA?
26	68.87	71.03	2.16	*70			MUDSTONE	CLYY. DK. GY. LAM. SSD. BRKN AS ABOVE WITH BIVALVES AND PLANT HASH T HROUGHOUT.
27	71.03	71.53	0.50	69			MUDSTONE	CLYY. DK. GY. LAM. SSD. BRKN AS ABOVE. STAFFINELLA.
27	71.53	72.43	0.90	69			MUDSTONE	CLYY. DK. GY. LAM. SSD. BRKN AS ABOVE. LISTRIC SURFACES. BIVALVES AN D PLANT HASH.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	72.43	73.06	0.63	69		SANDSTONE	CG. WEL. LT-M. GY. THNB. BRKN MG AT TOP, GRADES TO CG TOWARDS BASE.
28	73.06	74.67	1.61	*68		SANDSTONE	CG. WEL. LT-M. GY. THNB. BRKN WITH VERY THIN MUDST LAMS. RIP-UPS OCCUR AT BASE. SHARP BASAL CONTACT.
28	74.67	75.15	0.48	68		MUDSTONE	DK. GY. LAM. BRKN NUMEROUS PLANT FRAGS WITHIN. THOSE IDENTIFIED ARE: NILSSONIA SCHAUMBERGENSIS, NILSSONIA TENUICAILIS. MINOR LISTRIC SURFACES.
29	75.15	77.33	2.18	69		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE INCLUDING PTEROPHYLLUM PLICATUM.
30	77.33	78.11	0.78	70		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE.
30	78.11	79.50	1.39	*70		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE. AT BASE LISTRIC SURFACES AND CARBONATE CRYSTALLIZATION APPEARS. SPHENOPTERIS.
31	79.50	80.51	1.01	72		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE. WITHIN IS VERY THIN BENTONITE WITH 9.0CM LIGHT GREY MUDST ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	80.51	81.59	1.08	74		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE. MINOR COALIFIED PLANT MATERIAL.
32	81.59	82.18	0.59	76		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE.
32	82.18	82.36	0.18	77		MUDSTONE	DK. GY. LAM. VBRKN AS ABOVE.
32	82.36	83.12	0.76	78		MUDSTONE	DK. GY. LAM. BRKN AS ABOVE.
32	83.12	83.22	0.10	78		SILTSTONE	DK. GY. LAM. BRKN MUDST LAMS.
32	83.22	83.42	0.20	79		ROCK LOSS	
32	83.42	83.50	0.08	79		MUDSTONE	DK. GY. LAM. VBRKN POSSIBLE CORE LOSS.
32	83.50	83.80	0.30	79		ROCK LOSS	
32	83.80	84.16	0.36	80		MUDSTONE	DK. GY. LAM. BRKN GRADES TO SILTSTONE IN PARTS. FOSSILS AS MUDST ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	84.16	86.36	2.20	82			MUDSTONE	DK. GY. LAM. BRKN NUMEROUS PLANT FRAGS WITHIN. LISTRIC SURFACES.
34	86.36	86.84	0.48	*85			MUDSTONE	SLTY. M. GY. LAM. SLD ABUNDANT PLANT FRAGMENTS.
34	86.84	87.47	0.63	76	08340	K ROOF	MUDSTONE	SLTY. M. GY. LAM. BRKN AS ABOVE. BECOMES WEAKLY CARBONACEOUS TOWARD THE BASE. SAMPLED LOWER 22CM. K SEAM ROOF ROCK.
34	87.47	87.50	0.03	71	08340	K ROOF	MUDSTONE	SLTY. M. GY. LAM. VSHRD SHINEY LISTRIC SURFACES. K SEAM ROOF ROCK. SAMPLED.
34	87.50	87.58	0.08	70	08341	K	COAL LOSS	
34	87.58	87.65	0.07	69	08341	K	COAL	C-4. BLK. PHRD EXTREMELY SHEARED. SHINEY LISTRIC SURFACES.
34	87.65	87.72	0.07	68	08341	K	COAL	C-2. BLK. PHRD VERY WELL CLEATED FRAGMENTS.
34	87.72	87.86	0.14	66	08341	K	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	87.86	88.11	0.25	63	08341	K	MUDSTONE	CARB. M. GY. SHRD TWIST-OFF IN THE MIDDLE OF THE INTERVAL INCREASINGLY CARBONACEOUS TOWARDS THE BASE.
34	88.11	88.18	0.07	60	08341	K	COAL LOSS	
34	88.18	88.21	0.03	59	08341	K	COAL	C-3. BLK. YBRKN
34	88.21	88.31	0.10	58	08341	K	COAL	C-3. BLK. PHRD MODERATELY CLEATED FRAGMENTS.
34	88.31	88.35	0.04	57	08341	K	COAL	C-5. BLK. VSHRD BORDERLINE WITH C-6 (VERY HARD). QUARTZ FRACTURE INFILL.
34	88.35	88.51	0.16	56	08341	K	COAL LOSS	
34	88.51	88.55	0.04	54	08341	K	MUDSTONE	CARB. BLK. VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	88.55	88.59	0.04	53	08341	K	MUDSTONE	CARB. M. GY. VSHRD ABUNDANT CARBONATE FRACTURE FILL.
35	88.59	88.64	0.05	53	08341	K	COAL	C-5. BLK. YBRKN BORDERLINE CARBONACEOUS MUD.
35	88.64	88.77	0.13	51	08342	K FLOOR	MUDSTONE	CARB. BLK. BRKN K SEAM FLOOR ROCK. SAMPLED.
35	88.77	88.79	0.02	50	08342	K FLOOR	MUDSTONE	LT. GY. BRKN TUFFITE LAYER. K SEAM FLOOR ROCK. SAMPL ED.
35	88.79	89.03	0.24	*48	08342	K FLOOR	MUDSTONE	CARB. M. GY. BRKN ABUNDANT PLANT FRAGMENTS. 1 CM WIDE PYR ITE BAND AT THE BASE OF THE INTERVAL. S AMPLED UPPER 10CM. K SEAM FLOOR ROCK.
35	89.03	89.15	0.12	51			MUDSTONE	CARB. M. GY. BRKN AS ABOVE.
35	89.15	89.44	0.29	55			MUDSTONE	SLTY. M. GY. LAM. BRKN
35	89.44	89.82	0.38	60			SANDSTONE	FG. MOD. LT. GY. THNB. BRKN CARBONATE FRACTURE FILL. FAULT STRUCTUR E AT THE TOP OF THE INTERVAL.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	89.82	90.36	0.54	*68			SANDSTONE	FG. MOD. LT. GY. VTHNB. SHRD SANDSTONE INTERBEDDED WITH SILTY AND MUD LAMINATIONS.
36	90.36	92.40	2.04	*60			SANDSTONE	YFG. WEL. LT-M. GY. LAM. SSD. BRKN INTERLAM. OF SLTST. BEDDING IS VERY WAV EY. BCA IS APPROXIMATE. WITHIN ARE NUME ROUS THIN QTZ VEINS WITH SOME OFFSETS T HROUGHOUT. TOWARDS BASE SAND COARSENS T O FG. SS. LISTRIC SURFACES.
37	92.40	92.86	0.46	*68			SANDSTONE	YFG. WEL. LT-M. GY. LAM. SSD. BRKN INTERLAM. OF SLTST. QTZ FRACTURE FILL A T TOP.
37	92.86	93.89	1.03	*74			SANDSTONE	FG. WEL. LT-M. GY. VTHNB. SSD. BRKN SLTST LAMS. QTZ VEINS THROUGHOUT. SHARP BASAL EROSIONAL CONTACT. TOPS UP.
37	93.89	94.53	0.64	*75			SILTSTONE	LY-M. GY. LAM. SSD. SLB INTERLAM. OF VFG SS. GRADES TO VFG SS A T BASE. MINOR QTZ FRACTURE FILL AT TOP.
38	94.53	95.25	0.72	*78			SANDSTONE	FG. WEL. LT. GY. THNB. SSD. BRKN SLTST LAMINATIONS. SHEAR SURFACES. AT TO P.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	95.25	96.46	1.21	*79			SANDSTONE	FG-MEL.LT.GY.THNB.SLD MINOR SLTST LAMS TOWARDS BASE. SHARP BASAL CONTACT WITH INTERLAMINATED SS AND SLTST.
38	96.46	96.56	0.10	81			SILTSTONE	LT-M.GY.LAM.SLD INTERLAMINATED WITH VFG SS.
39	96.56	98.09	1.53	*84			SILTSTONE	M.GY.LAM.SSD.VBRKN AS ABOVE WITH SHEAR SURFACES. TOWARDS BASE BECOMES PREDOMINATELY INTERLAM SS AND SLTST. SHARP BASAL CONTACT WITH FAIRLY CLEAN FG SS.
39	98.09	98.59	0.50	*79			SANDSTONE	FG-MEL.LT-M.GY.THNB.SLD MINOR LAMINATIONS OF SLTST. MINOR QTZ FRACTURE FILL.
40	98.59	98.70	0.11	79			SANDSTONE	FG-MEL.LT-M.GY.VTHNB.BRKN AS ABOVE. SHARP BASAL CONTACT WITH MG'S.
40	98.70	99.07	0.37	78			SANDSTONE	MG.VMEL.LT-M.GY.MAS.BRKN MINOR QTZ FRACTURE FILL.
40	99.07	100.69	1.62	*77			SANDSTONE	MG.VMEL.LT-M.GY.THNB.BRKN AS ABOVE. FINES TOWARDS BASE TO FG SS WITH SLTST LAMS. QTZ AND MUD FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	100.69	100.89	0.20	75			SANDSTONE	FG.VMEL.LT-M.GY.THNB.BRKN AS ABOVE.
41	100.89	102.03	1.14	74			SILTSTONE	M.GY.LAM.XBDG.BRKN AT TOP IS INTERLAMINATED SLTST AND SS. FINES DOWNWARD TO INTERLAMINATED SLTST AND MUDST. LOOKS LIKE COASTER LITHOLOGY. X-BEDS INDICATE TOPS UP. MINOR QTZ AND MUD FRACTURE FILL.
41	102.03	102.78	0.75	72			MUDSTONE	H-DK.GY.LAM.BRKN INTERLAMINATED WITH SLTST. COASTERS. NUMEROUS QTZ AND MUD FILLED FRACTURES WITH ACCOMPANYING SMALL SCALE OFFSETS. APPEARS BRECCIATED AT BASE.
42	102.78	103.46	0.68	*70			MUDSTONE	H-DK.GY.LAM.BRKN AS ABOVE. BRECCIATED NEAR BASE. LISTRIC SURFACES. COASTERS.
42	103.46	103.54	0.08	70			MUDSTONE	H-DK.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS. COASTERS.
42	103.54	103.75	0.21	69			MUDSTONE	H-DK.GY.LAM.BRKN APPEARS TO BE COASTERS BUT VERY FRACTURED FILLED WITH MUD.
42	103.75	103.84	0.09	69			MUDSTONE	CARB.BLK.SHRD COALY PIECES WITH QTZ WITHIN.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	103.84	104.18	0.34	*69			MUDSTONE	DK. GY. LAM. BRKN THERE APPEARS TO BE A SMALL SCALE FOLD HERE. BCA'S GO FROM 69 DEGREES ABOVE TO NEAR VERTICAL, TO 50 DEGREES BELOW IN A SPACE OF 12CM. J SEAM ROOF ROCK. NOT SAMPLED.
42	104.18	104.30	0.12	69	99998	J	COAL LOSS	
42	104.30	104.62	0.32	69	99998	J	ROCK LOSS	
42	104.62	104.74	0.12	69	99998	J	MUDSTONE	CARB. BLK. LAM. VBRKN QTZ THROUGHOUT. SHEARED SURFACES.
42	104.74	105.00	0.26	69	99998	J	MUDSTONE	CARB. BLK. LAM. SHRD AS ABOVE.
42	105.00	105.06	0.06	69	99998	J	COAL	C-3. BLK. VBRKN SHEARED SURFACES. J SEAM.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	105.06	105.24	0.18	69	99998	J	COAL	C-4. BLK. VBRKN QTZ THROUGHOUT. J SEAM.
43	105.24	105.85	0.61	70	99998	J	COAL LOSS	
43	105.85	105.92	0.07	70			MUDSTONE	CARB. BLK. SHRD J SEAM FLOOR ROCK. NOT SAMPLED.
43	105.92	106.18	0.26	70			MUDSTONE	DK. GY. VBRKN SHEARED SURFACES THROUGHOUT. POSSIBLE C ORE LOSS.
43	106.18	106.50	0.32	70			ROCK LOSS	
43	106.50	106.53	0.03	70			MUDSTONE	CARB. BLK. VSHRD
43	106.53	107.55	1.02	*70			MUDSTONE	DK. GY. LAM. VBRKN SLTST LAMINATIONS INCREASE TOWARDS BASE PLANT. HASH THROUGHOUT. SHEARED SURFAC ES.
44	107.55	107.94	0.39	72			MUDSTONE	M-DK. GY. LAM. BRKN AS ABOVE. MUD FRACTURE FILL, APPEARS BR ECCATED AT TOP. LISTRIC SURFACES. GRAD ES INTO SLTST AT BASE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	107.94	108.98	1.04	73		SANDSTONE	FG.WEL.LT-M.GY.MAS.VBRKN MUDST RIP-UPS AT TOP. HIGH ANGLE FRACTURE ARE FILLED WITH BOTH QTZ AND CALCITE
44	108.98	109.40	0.42	75		SANDSTONE	FG.WEL.LT-M.GY.MAS.VBRKN AS ABOVE.
45	109.40	109.50	0.10	76		BRECCIA	MH.SLD QTZ AND CALCITE BRECCIA WITH MUDST RIP-UPS. GOOD CALCITE CRYSTAL GROWTH.
45	109.50	111.36	1.86	*78		SANDSTONE	VFG.WEL.M.GY.YTHNB.SSD.BRKN INTERBEDDED VFG SS, FG SS AND SLTST. NUMEROUS BURROWS AND LOAD STRUCTURES INDICATE TOPS UP. CALCITE FRACTURE FILL THROUGHOUT. AVERAGE BCA. SHEARED SURFACES. BECOMES SLTY TOWARDS BASE.
46	111.36	111.58	0.22	*84		SILTSTONE	M.GY.LAM.SSD.BRKN INTERLAMINATED SLTST AND SS. CALCAREOUS FRACTURE FILL AND ASSOCIATED SMALL SCALE OFFSETS.
46	111.58	113.25	1.67	82		SILTSTONE	M.GY.LAM.WRMBU.BRKN AS ABOVE. BECOMES PREDOMINATELY INTERLAMINATED SS AT BASE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	113.25	114.76	1.51	*78		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED WITH SLTST. CALCITE FRACTURE FILL THROUGHOUT. FECAL PELLET.
47	114.76	115.29	0.53	76		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. MINOR FRACTURE OFFSETS.
47	115.29	115.44	0.15	75		ROCK LOSS	
48	115.44	115.93	0.49	74		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.VBRKN AS ABOVE. HIGHLY FRACTURED WITH CALCAREOUS INFILL AND OFFSETS. POSSIBLE CORE LOSS.
48	115.93	116.00	0.07	74		ROCK LOSS	
48	116.00	117.29	1.29	*72		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE. FECAL PELLETS, BURROWS INDICATE TOPS UP. FRACTURES ARE LESS PREVALENT HERE.
49	117.29	117.96	0.67	71		SANDSTONE	VFG.WEL.LT-M.GY.LAM.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	117.96	119.33	1.37	*70		SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. BRKN AS ABOVE. WITHIN IS MINOR RECRYSTALLIZED CARBONATE.
50	119.33	120.88	1.55	*77		SANDSTONE	VFG. MEL. LT-M. GY. LAM. SSD. BRKN INTERLAM. OF SLTST AND MUD. CALCAREOUS FILLED FRACTURES INCREASE TOWARDS BASE. APPEARS BRECCIATED IN PARTS.
50	120.88	121.34	0.46	77		SANDSTONE	VFG. MEL. LT. GY. YTHNB. SSD. BRKN VFG SS AND SILT WITH MUDST LAMINATIONS.
51	121.34	123.37	2.03	*76		SILTSTONE	LT. GY. LAM. XBDG. BRKN WITH INTERLAMINATIONS OF VFG SS AND MUD ST. X-BEDS INDICATE TOPS UP. FRACTURE FILL IS CALCITE AND MUD.
52	123.37	123.90	0.53	80		SILTSTONE	LT. GY. LAM. XBDG. BRKN AS ABOVE.
52	123.90	125.31	1.41	*83		SILTSTONE	LT. GY. LAM. XBDG. BRKN AS ABOVE. NEAR BASE ARE UP TO 9 VERY THIN (2MM) ASH LAYERS. TUFFITE.
53	125.31	125.56	0.25	73		SILTSTONE	LT. GY. MAS. BRKN TUFFACEOUS SILTSTONE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	125.56	125.70	0.14	70		MUDSTONE	LT. GY. LAM. SHRD TUFFITE WITH ABUNDANT QUARTZ VEINING PARALLEL BEDDING.
53	125.70	125.95	0.25	*68		MUDSTONE	SLTY. LT-M. GY. LAM. SSD. SLD INTERLAMINATED LIGHT TUFFACEOUS SILT LAYERS AND MUD. DEMATERING STRUCTURE.
53	125.95	126.58	0.63	*67		MUDSTONE	SLTY. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED BLACK MUD AND GREY SILT. DEMATERING STRUCTURES.
53	126.58	126.91	0.33	67		ROCK LOSS	
53	126.91	127.33	0.42	68 08343	I ROOF	MUDSTONE	SLTY. M. GY. LAM. VSHRD ABUNDANT PLANT FRAGMENTS AND CARBONATE FRACTURE FILL. SAMPLED LOWER 25.0CM. I SEAM ROOF ROCK.
53	127.33	127.57	0.24	68 08344	I	COAL LOSS	
53	127.57	127.65	0.08	68 08344	I	COAL	C-4. BLK. VSHRD SHINEY LISTRIC SURFACES.
54	127.65	127.67	0.02	68 08344	I	COAL	C-4. BLK. VSHRD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	127.67	127.85	0.18	68	08344	I	COAL	C-3. BLK. VSHRD MODERATELY CLEATED.
54	127.85	128.08	0.23	68	08344	I	COAL	C-2. BLK. PHRD WELL CLEATED FRAGMENTS.
54	128.08	128.14	0.06	68	08344	I	COAL	C-2. BLK. PHRD WELL CLEATED FRAGMENTS.
54	128.14	128.17	0.03	68	08344	I	COAL	C-3. BLK. BRKM MODERATELY CLEATED.
54	128.17	128.20	0.03	68	08344	I	COAL LOSS	
54	128.20	128.24	0.04	68	08344	I	MUDSTONE	CARB. BLK. SHRD
54	128.24	128.29	0.05	69	08344	I	COAL	C-5. BLK. SHRD
54	128.29	128.34	0.05	69	08344	I	COAL	C-4. BLK. VSHRD
54	128.34	128.41	0.07	69	08344	I	COAL	C-3. BLK. SHRD MODERATELY CLEATED.
54	128.41	128.49	0.08	69	08344	I	COAL	C-4. BLK. PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	128.49	128.55	0.06	69	08344	I	COAL	C-3. BLK. PHRD MODERATELY CLEATED, C-3 FRAGMENTS.
54	128.55	128.66	0.11	69	08344	I	COAL	C-3. BLK. VSHRD SHINEY LISTRIC SURFACES.
54	128.66	128.82	0.16	69	08344	I	COAL	C-2. BLK. VSHRD SHINEY LISTRIC SURFACES. WELL CLEATED.
54	128.82	129.37	0.55	69	08344	I	COAL LOSS	
54	129.37	129.45	0.08	69	08344	I	COAL	C-4. BLK. VSHRD BORDERLINE C-5.
55	129.45	129.51	0.06	69	08344	I	COAL	C-4. BLK. VSHRD SHINEY LISTRIC SURFACES. BORDERLINE C-3 AT BASE.
55	129.51	129.58	0.07	70	08344	I	COAL	C-4. BLK. VSHRD BORDERLINE C-3 IN PARTS. QUARTZ FRACTUR E INFILL.
55	129.58	129.68	0.10	70	08344	I	COAL	C-3. BLK. SHRD MODERATELY CLEATED.
55	129.68	130.02	0.34	70	08344	I	COAL	C-2. BLK. SHRD WELL CLEATED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	130.02	130.06	0.04	70	08344	I	COAL	C-5. BLK. SHRD
55	130.06	130.21	0.15	70	08344	I	COAL	C-3. BLK. SHRD MODERATELY TO POORLY CLEATED. OCCASIONA L C-1 BAND <1CM.
55	130.21	130.55	0.34	70	08344	I	COAL LOSS	
55	130.55	130.69	0.14	70	08344	I	COAL	C-2. BLK. VBRKN WELL CLEATED, C-2 FRAGMENTS.
55	130.69	130.73	0.04	70	08345	I	COAL	C-1. BLK. VBRKN VERY WELL CLEATED.
55	130.73	130.96	0.23	71	08345	I	COAL LOSS	
55	130.96	131.02	0.06	71	08345	I	COAL	C-2. BLK. VBRKN
55	131.02	131.34	0.32	71	08345	I	COAL	C-1. BLK. BRKN WELL CLEATED.
56	131.34	132.20	0.86	71	08345	I	COAL	C-1. BLK. BRKN AS ABOVE.
56	132.20	132.41	0.21	72	08345	I	COAL	C-2. BLK. PHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	132.41	132.44	0.03	72	08345	I	COAL	C-1. BLK. VBRKN WELL CLEATED.
56	132.44	132.49	0.05	72	08346	I FLOOR	MUDSTONE	CARB. M. GY. VBRKN VERY HARD. QUARTZ FRACTURE INFILL. SHAR P UPPER CONTACT. I SEAM FLOOR ROCK. SAM PLED.
56	132.49	133.11	0.62	*72	08346	I FLOOR	MUDSTONE	SLTY. M. GY. LAM. SHRD CARBONACEOUS IN PARTS. ABUNDANT PLANT F RAGMENTS. SAMPLED UPPER 20CM. I SEAM FL OOR ROCK.
57	133.11	133.75	0.64	*72			SILTSTONE	SSY. M. GY. LAM. SSD. BRKN INTERBEDDED WITH FG SS. 1CM THICK HIGH ANGLE CALCITE VEIN WITHIN. BECOMES VERY SANDY TOWARDS BASE.
57	133.75	134.91	1.16	73			SANDSTONE	FG. MEL. LT. M. GY. THMB. VBRKN SILTY AT TOP, COARSENS DOWNWARDS TO FG SS. HIGH ANGLE FRACTURES ARE CALCITE FI LLED. RIP-UP CLASTS.
58	134.91	135.54	0.63	74			SANDSTONE	HG. MEL. LT. GY. MAS. BRKN MINOR CALCITE VEINING AND MUD FRACTURE FILL. GRADES INTO CONGLOMERATE BELOW.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	135.54	135.84	0.30	74			CONGLOMERATE	PBLY. MG. MOD. LT. GY. MAS. SLD WITH LIGHT COLOURED 'CHERT' AND DK MUDST. SUB-ANGULAR CLASTS AVERAGE 1CM. PEBBLE S. DO NOT TOUCH. MATRIX IS MG. SS.
58	135.84	136.15	0.31	74			SANDSTONE	MG. MEL. LT. GY. MAS. SLD MINOR MUD FRACTURE FILL.
58	136.15	136.88	0.73	75			SANDSTONE	MG. MEL. LT. GY. MAS. SLD AS ABOVE.
59	136.88	138.26	1.38	76			SANDSTONE	MG. MEL. LT. GY. MAS. SLD AS ABOVE. CALCITE FRACTURE FILL.
59	138.26	138.44	0.18	77			SANDSTONE	MG. MEL. LT. GY. MAS. VBRKN MUD RIP-UPS FROM MUD BELOW. SHARP BASAL CONTACT.
59	138.44	138.92	0.48	*77			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH FG SS AND SLTST. TO PS ARE UP.
60	138.92	139.81	0.89	75			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE. MINOR CALCITE VEINS.
60	139.81	140.87	1.06	*71			MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN AS ABOVE WITH HELMINTHOPHYSIS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	140.87	141.55	0.68	73			MUDSTONE	SLTY. DK. GY. LAM. BRKN WITH VERY MINOR SILTY LAMINATIONS.
61	141.55	142.88	1.33	75			MUDSTONE	PYR. DK. GY. LAM. BRKN AS ABOVE. PYRITE BLEBS BECOMES SANDY TO WARDS BASE. PLANT HASH NEAR BASE.
62	142.88	143.88	1.00	*77			MUDSTONE	SLTY. DK. GY. LAM. HRMBU. SLD INTERLAMINATED WITH VFG SS AND SLTST. B URRONS INDICATE TOPS UP.
62	143.88	144.05	0.17	78			SILTSTONE	M. GY. LAM. SLD ZONE CONTAINING NUMEROUS VERY SMALL BIV ALVES (3MM). VERY HARD.
62	144.05	145.08	1.03	79			MUDSTONE	SLTY. DK. GY. LAM. SLD SANDY NEAR TOP WHERE NUMEROUS MUD RIP-UPS OCCUR. GRADES DOWNWARD TO INTERLAMINATED MUD AND SS WITH SAND LENSES AND HELMINTHOPHYSIS.
63	145.08	146.75	1.67	81			MUDSTONE	SLTY. DK. GY. LAM. SSD. SLD INTERLAMINATED WITH SLTY AND VFG SS. L OAD STRUCTURES INDICATE TOPS UP. HELMIN THOPHYSIS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	146.75	147.16	0.41	83		SANDSTONE	MG. MOD. LT-M. GY. VTHNB. SLD FG AT TOP. VERY COARSE AT BASE. SHARP E ROSIONAL CONTACT WITH SILT BELOW. TOPS UP.
63	147.16	147.20	0.04	84		SILTSTONE	DK. GY. LAM. SLD
64	147.20	147.71	0.51	84		SANDSTONE	CG. MOD. LT. GY. THNB. SLD WITHIN ARE SLTST BANDS UP TO 4CM. SUB-R OUNDED SLTST RIP-UPS UP TO 5CM. 2CM CAL CITE VEIN. SHARP BASAL CONTACT WITH VER Y FG SS.
64	147.71	148.12	0.41	*85		SANDSTONE	VFG. WEL. M. GY. VTHNB. RIPMK. SLD INTERBEDDED WITH SLTST. POSSIBLE RIPPLE MARKS. COALIFIED PLANT MATERIAL NEAR B ASE.
64	148.12	149.29	1.17	*78		SANDSTONE	VFG. WEL. M. GY. VTHNB. SSD. SLD AS ABOVE, HELMINTHOPSIS.
65	149.29	150.72	1.43	*70		SANDSTONE	VFG. WEL. M. GY. VTHNB. HRMBU. SLD AS ABOVE. WITH SPECKLED SAND. SOMEWHAT ANALAGOUS TO MILKY HAY. HELMINTHOPSIS. MINOR COALIFIED PLANT FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	150.72	151.01	0.29	72		SANDSTONE	CG. MOD. LT-M. GY. THNB. SSD. BRKN SLTST LAMS AND RIP-UPS WITHIN. LOAD STR UCTURES INDICATE TOPS UP. SHARP BASAL C ONTACT.
65	151.01	151.07	0.06	73		MUDSTONE	DK. GY. LAM. BRKN MINOR SANDY LAMS.
65	151.07	151.11	0.04	73		BRECCIA	WH. BRKN QTZ AND CALCITE BRECCIA. MUD AND SILT. R IP-UPS WITHIN.
65	151.11	151.12	0.01	73		BRECCIA	WH. BRKN AS ABOVE.
65	151.12	151.32	0.20	74		SANDSTONE	FG. MOD. M. GY. LAM. SSD. BRKN INTERLAMINATED WITH MUDST. COALIFIED MA TERIAL WITHIN MUDST.
66	151.32	152.14	0.82	*75		SANDSTONE	FG. WEL. M. GY. VTHNB. HRMBU. BRKN AS ABOVE.
66	152.14	152.57	0.43	76		SANDSTONE	MG. WEL. LT-M. GY. THNB. SLD MUDST RIP-UPS BOTH ANGULAR AND ROUNDED UP TO 5CM. SHARP BASAL CONTACT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	152.57	153.42	0.85		77		SANDSTONE	VFG. MEL. M. GY. LAM. SSD. SLD. INTERLAMINATED WITH MUDDY AND SLTST. BURROWS AND HELMINTHOPSIS THROUGHOUT. WITHIN IS A 3CM BAND OF SPECKLED SS. SOMEWHAT LIKE MILKY WAY.
67	153.42	154.12	0.70		78		SANDSTONE	VFG. MEL. M. GY. THNB. SSD. BRKN AS ABOVE WITH SPECKLED SAND AND BURROWS
67	154.12	155.53	1.41	*80			SANDSTONE	FG. MEL. LT-M. GY. THNB. BIOTR. BRKN WITH MUDDY BANDS AND LAMS. SPECKLED SAND. BIVALVE AND BURROWS CONCENTRATED TOWARDS THE BASE.
68	155.53	157.18	1.65	*80			SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE. SHELL FRAGS NEAR TOP, DECREASING TOWARDS BASE. BURROWS THROUGHOUT.
68	157.18	157.48	0.30		80		SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE.
69	157.48	159.60	2.12	*79			SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE WITH FECAL PELLETS AND BURROWS TOPS UP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	159.60	160.20	0.60	*80			SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE. BURROWS. POSSIBLE RIPPLE MARKS IN SOME SAND BANDS.
70	160.20	161.58	1.38		78		SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE WITH SOME MUDDY RIP-UP CLASTS.
71	161.58	163.22	1.64	*75			SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE.
71	163.22	163.67	0.45		79		SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN AS ABOVE.
72	163.67	165.74	2.07	*83			SANDSTONE	FG. MOD. LT-M. GY. THNB. BIOTR. BRKN BANDS AND LAMINATIONS OF MUDDY. BIVALVE BURROWS THROUGHOUT. MUD FRACTURE FILL. CALCITE VEIN AT BASE. VERY MUDDY AT BASE.
73	165.74	166.16	0.42	*73			SANDSTONE	VFG. MOD. M. GY. LAM. BIOTR. BRKN SANDY MUDDY AT TOP BECOMING SS WITH MUD LAMINATIONS TOWARDS BASE. CALCITE VEIN WITHIN.
73	166.16	167.69	1.53		75		SANDSTONE	PYR. FG. MEL. LT-M. GY. THNB. BIOTR. BRKN WITH MUDDY LAMINATIONS. QZ VEINING AND HELMINTHOPSIS. 3-4CM ZONE OF DISSEMINATED PYRITE AT TOP.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	167.69	169.13	1.44	*77			SANDSTONE	PYR. FG. MEL. LT-M. GY. VTHNB. BIOTR. BRKN AS ABOVE. TOWARDS BASE BEDDING IS VERY WAVY POSSIBLE FOLD.
74	169.13	169.41	0.28	*30			SANDSTONE	FG. MEL. LT-M. GY. VTHNB. BIOTR. BRKN AS ABOVE. BEDDING IS STEEP. TOPS ARE UP SHARP. BASAL CONTACT WITH MUOIST. BELOW.
74	169.41	169.64	0.23	28			MUDSTONE	DK. GY. LAM. BRKN LISTRIC SURFACES THROUGHOUT.
75	169.64	171.52	1.88	*20			MUDSTONE	PYR. DK. GY. LAM. VBRKN LISTRIC SURFACES THROUGHOUT. MINOR PYRITE.
76	171.52	172.01	0.49	26			MUDSTONE	PYR. DK. GY. LAM. VBRKN MINOR SLTST LAMS WITHIN. VERY FINE QTZ AND CALCITE VEINS THROUGHOUT.
76	172.01	172.94	0.93	*30			MUDSTONE	PYR. DK. GY. LAM. VBRKN AS ABOVE. QTZ AND CALCITE. INCREASE TOWARDS BASE. HELMINTHOSIS WITHIN.
76	172.94	173.09	0.15	47			BRECCIA	MM. BRKN QTZ AND CALCITE BRECCIA WITH NUMEROUS MUD RIP-UPS. POSSIBLE FAULT ZONE?

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	173.09	173.39	0.30	*54			MUDSTONE	DK. GY. LAM. BRKN LISTRIC SURFACES THROUGHOUT. QTZ AND CALCITE VEINS THROUGHOUT.
77	173.39	174.09	0.70	*67			MUDSTONE	DK. GY. LAM. BRKN WITH SLTST LAMINATIONS. QTZ AND CALCITE BRECCIA AND VEINS THROUGHOUT. FAULT ZONE? CONTACT WITH LOWER SS NOT SEEN.
77	174.09	174.93	0.84	64			ROCK LOSS	
77	174.93	175.87	0.94	61			SANDSTONE	MG. MEL. LT-M. GY. MAS. BRKN NUMEROUS QTZ AND CALCITE VEINS WITHIN.
77	175.87	176.29	0.42	59			SANDSTONE	MG. MEL. LT-M. GY. MAS. BRKN AS ABOVE.
78	176.29	178.45	2.16	55			SANDSTONE	MG. MEL. LT-M. GY. MAS. SLD SMALL SUB-ANGULAR MUOIST. RIP-UP CLAST AVERAGE 4MM. CALCITE VEINING THROUGHOUT.
79	178.45	178.84	0.39	51			SANDSTONE	MG. MEL. LT-M. GY. MAS. BRKN AS ABOVE.
79	178.84	180.54	1.70	47			SANDSTONE	MG. MEL. LT-M. GY. MAS. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
79	180.54	181.79	1.25	42			ROCK LOSS	
80	181.79	181.96	0.17	40			SANDSTONE	MG.WEL.LT-M.GY.MAS.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
80	181.96	182.73	0.77	38			SANDSTONE	MG.WEL.LT-M.GY.MAS.BRKN AS ABOVE.
80	182.73	183.73	1.00	35			SANDSTONE	MG.WEL.LT-M.GY.MAS.BRKN AS ABOVE WITH VERY MINOR COALIFIED MATERIAL.
81	183.73	185.75	2.02	*30			SANDSTONE	MG.WEL.LT-M.GY.MAS.BRKN AS ABOVE. TOWARDS BASE MUD AND SLTST BANDS 1-2 CM THICK. RIP-UPS AVERAGE 1CM. QTZ AND CALCITE VEINS THROUGHOUT.
82	185.75	186.35	0.60	*33			SANDSTONE	MG.WEL.LT-M.GY.THMB.BRKN AS ABOVE. RIP-UPS THROUGHOUT. SHARP BASAL CONTACT.
82	186.35	187.77	1.42	*45			SILTSTONE	M-DK.GY.LAM.SSD.BRKN INTERLAMINATIONS OF SS. CALCITE VEINING
83	187.77	188.76	0.99	*50			SILTSTONE	M-DK.GY.LAM.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	188.76	189.71	0.95	52			SILTSTONE	CLYY.M-DK.GY.LAM.SSD.BRKN AS ABOVE. BECOMES MUDDY TOWARDS BASE. MINOR CALCITE VEINING.
84	189.71	190.41	0.70	*53			SILTSTONE	CLYY.M-DK.GY.LAM.SSD.BRKN AS ABOVE HELMINTHOPSIS.
84	190.41	191.74	1.33	54			MUDSTONE	PYR.DK.GY.LAM.BRKN PYRITE BLEBS WITHIN.
85	191.74	192.80	1.06	56			MUDSTONE	PYR.DK.GY.LAM.BRKN AS ABOVE. CALCITE VEINING. GRADES TO A SANDY SLTST AT BASE.
85	192.80	193.63	0.83	*57			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN INTERLAMS OF SS AND SLTST. HELMINTHOPSIS.
86	193.63	194.73	1.10	57			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN AS ABOVE.
86	194.73	195.56	0.83	*58			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN AS ABOVE. HELMINTHOPSIS. THIS APPEARS TO BE A REPEAT OF SECTION IN BOXES 60-63
87	195.56	197.68	2.12	*53			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
88	197.68	197.73	0.05		54		MUDSTONE	SLTY. M. GY. LAM. SSD. BRKN AS ABOVE. HIATUS IN DRILLING. REST OF BOX DOES NOT CONTAIN CORE.
89	197.73	198.64	0.91	*55			MUDSTONE	PYR. DK. GY. LAM. BRKN INTERLAM. OF SAND AND SILT. PYRITE WITH IN. HELMINTHOPSIS. GRADATIONAL BASAL CONTACT.
89	198.64	199.07	0.43		56		SANDSTONE	FG. MOD. M. GY. YTHNB. SLD ANGULAR WHITE QTZ CLASTS WITHIN. MUDST AT TOP SS AT BASE. QTZ GRAINS AVG 2MM. SLTST RIP-UPS AT BASE.
89	199.07	199.84	0.77		57		SANDSTONE	FG. MOD. M. GY. THNB. BRKN WITH SLTST BANDS AND LAMINATIONS. MINOR RIP-UPS THROUGHOUT. SAND IS M-CG IN PARTS.
90	199.84	200.78	0.94		58		SANDSTONE	FG. MOD. M. GY. THNB. BRKN AS ABOVE. RIP-UP CLASTS.
90	200.78	201.89	1.11	*60			SANDSTONE	MG. MOD. M. GY. THNB. BRKN AS ABOVE. SLTST BANDS DECREASE TOWARDS BASE. THIN BANDS OF ANGULAR QTZ WITHIN GIVING A SPECKLED APPEARANCE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
91	201.89	203.17	1.28	*62			SANDSTONE	VFG. MOD. M. GY. LAM. BRKN INTERLAM. OF MUD AND SILT. HELMINTHOPSIS.
91	203.17	203.45	0.28		57		SANDSTONE	CG. MOD. LT. GY. THNB. BRKN SPECKLED SAND. SILT BAND WITHIN. MINOR COALIFIED MATERIAL.
91	203.45	203.70	0.25		55		SILTSTONE	M. GY. LAM. HRMBU. BRKN INTERLAMINATED WITH FG. SS. BURROWS THROUGHOUT. TOPS UP.
91	203.70	203.97	0.27		53		SILTSTONE	M. GY. LAM. HRMBU. BRKN AS ABOVE. PLANT HASH THROUGHOUT SLTST.
92	203.97	204.51	0.54	*50			SILTSTONE	M. GY. LAM. HRMBU. BRKN AS ABOVE. PLANT HASH.
92	204.51	205.55	1.04	*52			SANDSTONE	FG. HEL. LT. GY. THNB. HRMBU WITH INTERBEDS OF SLTST.
92	205.55	206.09	0.54	*52			SILTSTONE	CLY. M. GY. LAM. HRMBU. BRKN INTERLAM. OF SS. BURROWS THROUGHOUT. TOPS UP.
93	206.09	206.72	0.63	*52			SILTSTONE	CLY. M. GY. LAM. HRMBU. BRKN AS ABOVE. CALCITE VEINING WITHIN. PLANT HASH. SOME IS COALIFIED TOWARDS BASE. SAND INTERLAMINATIONS ARE SPECKLED.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
93	206.72	208.20	1.48	59		SANDSTONE	FG. MOD. LT. GY. THNB. HRMBU. BRKN WITH SLTST BANDS. SAND CONTAINS WHITE ANGULAR QTZ CLASTS UP TO 3MM (AVG IMM). GRADES TOWARDS BASE TO MINORATED YFG SS. MINOR SHEARED SURFACES.
94	208.20	209.76	1.56	*70		SANDSTONE	YFG. MEL. M. GY. THNB. BRKN WITH SLTST LAMS AND SOME SPECKLED SAND. TOWARDS BASE IS 32CM OF NUMEROUS BIVALVE SHELLS. TOPS UP.
94	209.76	210.30	0.54	53		SANDSTONE	YFG. MEL. M. GY. THNB. BIOTR. BRKN AS ABOVE WITH CALCITE VEINS AND SHEARED SURFACES.
95	210.30	211.53	1.23	38		SANDSTONE	YFG. MEL. M. GY. THNB. BIOTR. BRKN AS ABOVE. NUMEROUS BIVALVE BURROWS WITH SOME SHELL FRAGS. TOPS UP. SHEARED SURFACES TOWARDS BASE. BEDDING STEEPENS.
95	211.53	212.20	0.67	*23		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN INTERLAMINATED WITH SS. LISTRIC SURFACE AND MINOR BRECCIA WITHIN.
95	212.20	212.58	0.38	28		ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
96	212.58	213.09	0.51	33		SANDSTONE	FG. MEL. LT-M. GY. VTHNB. SSD. YBRKN INTERBEDDED WITH SLTST. LISTRIC SURFACE AND CALCITE VEINING WITHIN.
96	213.09	213.19	0.10	36		SANDSTONE	FG. MEL. LT-M. GY. VTHNB. SSD. YBRKN AS ABOVE.
96	213.19	213.83	0.64	*40		MUDSTONE	SLTY. DK. GY. LAM. SSD. BRKN SS LAMINATIONS WITHIN. SAND INCREASES TOWARDS BASE. TOPS UP. CALCITE VEINING AT BASE.
96	213.83	214.57	0.74	36		SANDSTONE	FG. MEL. LT. GY. THNB. BIOTR. BRKN MINOR SLTST LAMS. FECAL PELLETS. SHEARED SURFACES. CALCITE VEINING.
97	214.57	216.14	1.57	*30		SANDSTONE	FG. MEL. LT. GY. THNB. BRKN SLTST LAMS AND BANDS. SHEAR SURFACES. CALCITE VEINS.
97	216.14	216.69	0.55	21		SANDSTONE	FG. MEL. LT. GY. THNB. BIOTR. BRKN AS ABOVE WITH NUMEROUS BURROWS AT BASE.
98	216.69	218.64	1.95	*11		SANDSTONE	FG. MEL. LT. GY. THNB. BIOTR. BRKN AS ABOVE. SILTY IN PARTS. BURROWS INDICATED TOPS UP. SHEAR SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88026

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
99	218.64	219.05	0.41	11			SANDSTONE	FG. MEL. LT. GY. THNB. BIOTR. BRKN AS ABOVE. MINOR RIP-UPS. LISTRIC SURFACES. SHARP BASAL CONTACT.
99	219.05	220.04	0.99	11			SANDSTONE	FG. MEL. LT. GY. THNB. BIOTR. BRKN AS ABOVE.
99	220.04	220.60	0.56	11			MUDSTONE	DK. GY. LAM. BRKN LISTRIC SURFACES. CALCITE VEIN AT BASE.
100	220.60	222.00	1.40	11			MUDSTONE	DK. GY. LAM. BRKN FAIRLY STRUCTURELESS MUDST. MINOR LISTRIC SURFACES. END OF HOLE. ID = 222.00 M.

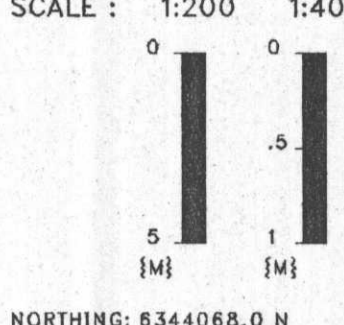
* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88026

GEOLOGIST : MURRAY

DATE : FEB 21/89

DRAWING NO. :



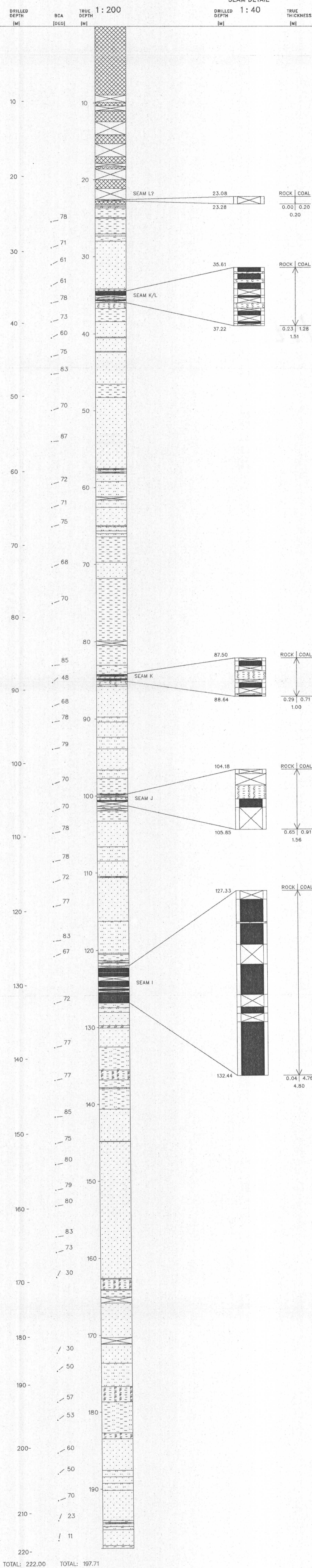
NORTHING: 6344068.0 N
 EASTING: 507973.7 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 222.00 TOTAL: 197.71

Gulf Canada Resources Limited Coal Division

Geophysical Log

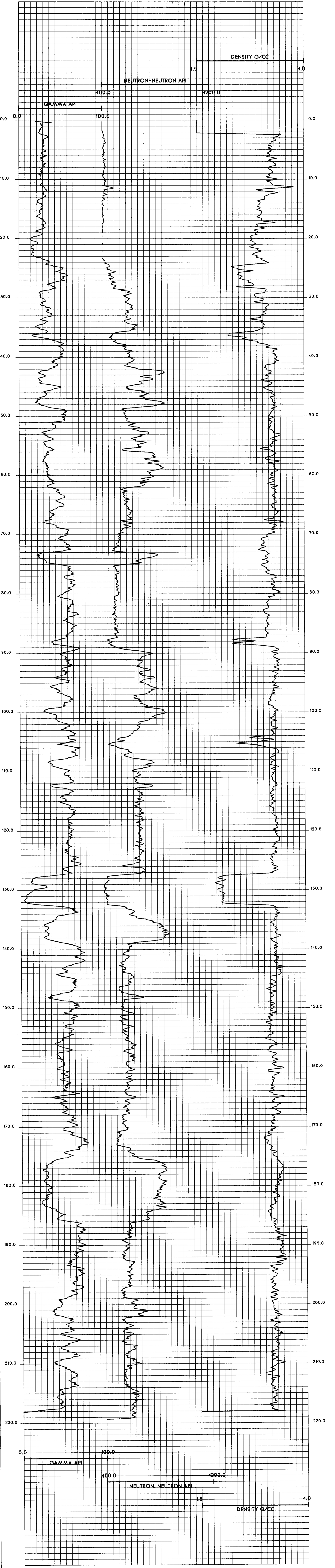
Datasource: **KPNLRDDH88026**
Log Date: 88-07-10
Company: CENTURY
Geologist: MURRAY

Province: BC Northing: 6344070.00 Lat: 5714.30
Zone: 9 Easting: 507974.00 Long: 1285204
Measuring Point: GROUND LEVEL Elevation: 1539.6

Scale: 1 to 200.0
Depth Range: 0.0 to 224.0
True Thickness: NO

Comments:
1. LOGGED THROUGH RODS
2.

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88027

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88027

DATE - 02/15/89

- HISTORY -

START DATE - 07/08/88

END DATE - 07/09/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - KRAUS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - SEAMS L?, K/L, K, J, I AND I OVERTURNED.

- LOCATION -

PROVINCE - BC
ELEVATION - 1631.43

ZONE - 9
NORTHING - 6343131.90
EASTING - 506605.23

LICENCE/LEASE NUMBER - 7147

LATITUDE - 571359
LONGITUDE - 1285326

- ORIENTATION -

LENGTH - 176.40

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-027

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

L ?

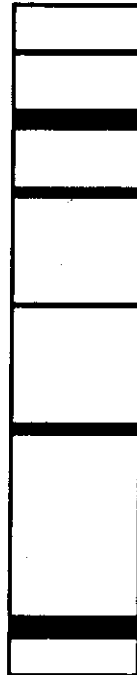
K/L

K

J

I

I ovt.



0.76 m

4.69 m

1.86 m

0.82 m

2.59 m

5.59 m

SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.57	4.57	69			OVERBURDEN	CASING DEPTH.
1	4.57	6.53	1.96	69			ROCK LOSS	
1	6.53	7.98	1.45	69			SANDSTONE	FG.WEL.M.GY.MAS.VBRKN POSSIBLE CORE LOSS. SLTST WISPS & RIP-U PS. QTZ. & MUD. PRESENT.
2	7.98	8.47	0.49	69			SANDSTONE	FG.WEL.M.GY.MAS.SLD AS ABOVE WITH LOTS OF QTZ FRACTURE FILL
2	8.47	8.74	0.27	69			MUDSTONE	CLYY.M.GY.MAS.BRKN NOT LITHIFIED MUD. PROBABLE CORE LOSS.
2	8.74	9.74	1.00	69			ROCK LOSS	
2	9.74	9.96	0.22	69			MUDSTONE	CLYY.BLK.MAS.BRKN UNLITHIFIED MUD. PROBABLE CORE LOSS. CO AL STRINGERS & COALIFIED PLANT MATTER.
2	9.96	11.28	1.32	69			ROCK LOSS	
2	11.28	11.83	0.55	69			MUDSTONE	CLYY.DK.GY.MAS.BRKN UNLITHIFIED MUD. PROBABLE CORE LOSS. QT Z & CHLORITE SHEARED AND LISTRIC SURFAC ES. FEW COAL STRINGERS?

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	11.83	12.24	0.41	69			ROCK LOSS	
2	12.24	13.05	0.81	69	99998	L?	COAL LOSS	
3	13.05	13.11	0.06	69			MUDSTONE	CLYY.DK.GY.MAS.BRKN AS ABOVE. NO COAL. SHEARING.
3	13.11	13.23	0.12	69			ROCK LOSS	
3	13.23	14.08	0.85	69			MUDSTONE	CLYY.DK.GY.MAS.BRKN UNLITHIFIED. MAY BE BRECCIATED MUDST - LITHIFIED. MUDST PEBBLES. PRESENT. SOME SHEARED (QTZ) SURFACES.
3	14.08	14.29	0.21	69			SILTSTONE	SSY.WEL.M-DK.GY.VTHNB.SSD.SLD INTERBEDDED WITH VFG SS WITH A GRITTY S URFACE. LOAD CAST - TOPS UP.
3	14.29	15.17	0.88	*69			SILTSTONE	SSY.WEL.M-DK.GY.VTHNB.SSD.SLD AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	15.17	17.20	2.03	*75		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, SLD AS ABOVE. COARSENING TO GRIT OCCASIONAL LY WITH MUD PARTINGS. SLUMP FEATURE TOP S UP. A SLTST DYKE (FRACTURE), MUD & QT Z FRACTURE FILL.
5	17.20	19.21	2.01	*62		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE. COARSENING TO GRIT OCCASIONAL LY. XBDG - TOPS UP. MUD FRACTURE FILL.
6	19.21	20.18	0.97	*73		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, SLD AS ABOVE WITH SLUMP & PENECONTEMPORANEO US FRACTURE INDICATE TOPS UP. MUD PARTI NG.
6	20.18	21.25	1.07	70		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, SLD AS ABOVE WITH MUD PARTINGS.
7	21.25	23.07	1.82	*67		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE. TOPS UP. MUD FRACTURE FILL. S LIGHT BIOTRB.
7	23.07	23.17	0.10	68		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	23.17	25.27	2.10	*69		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN INTERBEDDED WITH VFG SS. COARSENING TO GRIT OCCASIONALLY. MUD PARTINGS. SSD - TOPS UP.
9	25.27	26.01	0.74	66		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE.
9	26.01	26.67	0.66	63		SILTSTONE	MOD, M-DK, GY, VTHNB, BIOTR, BRKN WITH MUDST LAMINATIONS (MOTTLED); POSSI BLY BIOTURBATION. MUD PARTINGS AND MUD FRACTURE FILL.
9	26.67	27.29	0.62	*60		SILTSTONE	SSY, MEL, M-DK, GY, VTHNB, SSD, BRKN INTERBEDDED WITH VFG SS. COARSING TO GR IT OCCASIONALLY. MUD PARTINGS. SSD- TOP S UP.
9	27.29	27.34	0.05	60		MUDSTONE	CARB, VMEL, BLK, SLD QTZ STRINGERS & COAL STRINGERS. COALIFI ED PLANT MATTER.
10	27.34	27.46	0.12	60 08356	K/L ROOF	MUDSTONE	CARB, BLK, VBRKN THIST-OFFS. POSSIBLE CORE LOSS. K/L SEA M ROOF ROCK. SAMPLED.
10	27.46	27.52	0.06	61 08356	K/L ROOF	MUDSTONE	BN, SHRD VERY SOFT, POORLY CONSOLIDATED. K/L SEA M ROOF ROCK. SAMPLED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	27.52	27.60	0.08	61 08357	K/L	COAL LOSS	
10	27.60	27.72	0.12	61 08357	K/L	COAL	C-3.BLK.VBRKN MINOR CARB MUDST WITHIN.
10	27.72	27.79	0.07	61 08357	K/L	MUDSTONE	BN. SHRD SOFT, POORLY CONSOLIDATED.
10	27.79	28.06	0.27	61 08357	K/L	COAL	C-3.BLK.VBRKN TWIST-OFFS WITHIN.
10	28.06	28.31	0.25	61 08357	K/L	COAL	C-3.BLK.YSHRD APPEARS TO BE C-3, SOME C-2 WITHIN.
10	28.31	28.39	0.08	62 08357	K/L	COAL	C-2.BLK.VBRKN GOOD CONCOIDAL FRACTURES.
10	28.39	28.62	0.23	62 08357	K/L	COAL	C-2.BLK.BRKN GOOD CLEAT. CONCOIDAL FRACTURES.
10	28.62	28.86	0.24	62 08357	K/L	COAL	C-3.BLK.BRKN
10	28.86	29.10	0.24	62 08357	K/L	COAL	C-2.BLK.BRKN
11	29.10	29.17	0.07	62 08357	K/L	COAL	C-5.BLK.VBRKN CARB MUD WITHIN.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	29.17	29.41	0.24	62 08357	K/L	COAL	C-4.BLK.VBRKN AS ABOVE.
11	29.41	29.46	0.05	63 08357	K/L	COAL LOSS	
11	29.46	29.61	0.15	63 08357	K/L	COAL	C-3.BLK.VBRKN
11	29.61	29.75	0.14	63 08358	K/L	COAL LOSS	
11	29.75	29.78	0.03	63 08358	K/L	MUDSTONE	CARB.BLK.VBRKN TWIST-OFFS.
11	29.78	29.92	0.14	63 08358	K/L	COAL	C-2.BLK.BRKN GOOD CLEAT, SOME CONCOIDAL FRACTURES.
11	29.92	30.13	0.21	64 08358	K/L	COAL LOSS	
11	30.13	30.18	0.05	64 08358	K/L	MUDSTONE	CARB.BLK.BRKN
11	30.18	30.35	0.17	64 08358	K/L	COAL LOSS	
11	30.35	30.44	0.09	64 08358	K/L	COAL	C-3.BLK.BRKN MINOR CARB MUD WITHIN.
11	30.44	30.51	0.07	64 08358	K/L	COAL	C-2.BLK.BRKN GOOD CLEAT. SOME CONCOIDAL FRACTURES.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	30.51	30.68	0.17	65	08358	K/L	COAL LOSS	
11	30.68	30.74	0.06	65	08358	K/L	MUDSTONE	CARB. BLK. BRKN
11	30.74	31.51	0.77	65	08358	K/L	COAL LOSS	
11	31.51	31.69	0.18	65	08358	K/L	COAL	C-2. BLK. VBRKN WITH SOME C-1 BANDS. TWIST-OFFS AT BASE
11	31.69	31.78	0.09	65	08358	K/L	MUDSTONE	CARB. BLK. SHRD MINOR C-3 WITHIN.
11	31.78	31.89	0.11	66	08358	K/L	COAL LOSS	
11	31.89	32.01	0.12	66	08358	K/L	COAL	C-3. BLK. BRKN C-2 WITHIN.
11	32.01	32.07	0.06	66	08358	K/L	COAL	C-6. BLK. VBRKN TWIST-OFFS. BONE COAL.
11	32.07	32.12	0.05	66	08358	K/L	COAL	C-4. BLK. VBRKN CARB MUDST WITHIN.
11	32.12	32.19	0.07	66	08358	K/L	COAL	C-3. BLK. VBRKN MINOR CARB MUDST WITHIN.
11	32.19	32.75	0.56	67	08358	K/L	COAL LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	32.75	32.84	0.09	67	08358	K/L	MUDSTONE	CARB. BLK. BRKN
12	32.84	33.02	0.18	67	08358	K/L	MUDSTONE	CARB. BLK. BRKN
12	33.02	33.10	0.08	67	08358	K/L	COAL LOSS	
12	33.10	33.18	0.08	67	08358	K/L	COAL	C-5. BLK. BRKN VERY MUDDY WITH C-2 AND C-3 BANDS.
12	33.18	33.34	0.16	68	08358	K/L	MUDSTONE	CARB. BLK. VBRKN THIN COAL LAMELLAE THROUGHOUT. TWIST-OFF AT TOP.
12	33.34	33.40	0.06	68	08358	K/L	COAL	C-5. BLK. VBRKN
12	33.40	33.43	0.03	68	08358	K/L	MUDSTONE	CARB. BLK. BRKN PLANT FRAGS THROUGHOUT.
12	33.43	33.47	0.04	68	08358	K/L	COAL	C-4. BLK. BRKN QTZ WITHIN.
12	33.47	33.56	0.09	68	08358	K/L	COAL LOSS	
12	33.56	33.66	0.10	69	08358	K/L	SILTSTONE	M. GY. BRKN VERY FINE COALY QTZ STRINGERS WITHIN.

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	33.66	33.71	0.05	69	08358 K/L	COAL	C-5, BLK. VBRKN
12	33.71	33.77	0.06	69	08358 K/L	MUDSTONE	CARB. BLK. BRKN
12	33.77	33.91	0.14	69	08358 K/L	COAL	C-4, BLK. VBRKN 2CM MUDST BAND WITHIN.
12	33.91	33.97	0.06	70	08358 K/L	COAL LOSS	
12	33.97	34.03	0.06	70	08359 K/L FLOOR	MUDSTONE	CARB. BLK. VBRKN K/L SEAM FLOOR ROCK. SAMPLED.
12	34.03	34.91	0.88	*70	08359 K/L FLOOR	MUDSTONE	M-DK. GY. LAM. BRKN WITHIN ARE NUMEROUS PLANT FRAGS. COAL S TRINGERS. MUD FRACTURE FILL. SHEARED SU RFACES. K/L SEAM FLOOR, SAMPLED UPPER 1 9.0CM.
12	34.91	34.98	0.07	71		ROCK LOSS	
13	34.98	35.17	0.19	73		SILTSTONE	MOD. M-DK. GY. YTHNB. SSD. SLD INTERBEDDED WITH VFG SS. LOAD CASTS - T OPS. UP. FEW MUDST LAMINATIONS.

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	35.17	35.84	0.67	*74		SILTSTONE	MOD. M-DK. GY. YTHNB. SSD. SLD AS ABOVE. SLIGHT BIOTRB.
13	35.84	36.90	1.06	72		MUDSTONE	SSY. MOD. DK. GY. LAM. SSD. SLD INTERLAMINATED WITH FG SS. ALTERNATING WELL DEFINED AND BURROHED. LOAD CASTS - TOPS UP. SS. MAYBE GRITTY.
14	36.90	38.16	1.26	*70		MUDSTONE	SSY. MOD. DK. GY. LAM. SSD. SLD AS ABOVE. WITH MUD. PARTINGS.
14	38.16	38.98	0.82	73		MUDSTONE	SSY. MOD. DK. GY. LAM. SSD. SLD AS ABOVE.
15	38.98	41.07	2.09	*77		MUDSTONE	SSY. MOD. DK. GY. LAM. SSD. SLD AS ABOVE WITH MUD FRACTURE FILL. ALSO I NTERLAM WITH SLTST (CONTAINS FECAL PELL ETS).
16	41.07	41.11	0.04	74		MUDSTONE	SSY. MOD. DK. GY. LAM. BIOTR. BRKN INTERLAMINATED WITH FG SS. ALTERNATING WELL DEFINED AND BURROHED. LOAD CASTS - TOPS UPS. SS MAYBE GRITTY.
16	41.11	41.27	0.16	71		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	41.27	42.17	0.90	*68		MUDSTONE	SSY. MOD. DK. GY. LAM. BIOTR. BRKN AS ABOVE.
16	42.17	43.36	1.19	70		MUDSTONE	MOD. DK. GY. LAM. SLD INTERLAMINATED WITH SLTST AND VFG GRITTY Y SS. GENERALLY UNDISTURBED, SOME WORM BURRONS.
17	43.36	44.29	0.93	*73		MUDSTONE	MOD. DK. GY. LAM. BRKN AS ABOVE. SOME DISSEMINATED PYRITE. SHEARED SURFACE (QTZ).
17	44.29	45.36	1.07	*75		MUDSTONE	VHEL. DK. GY. LAM. SLD INTERLAM WITH SLTST. UNDISTURBED. CONTACT IS GRADUAL FROM ABOVE. DISSEMINATED PYRITE. A 1CM BAND - BIVALVE, DEATH ASS EMBLAGE - STAFFINELLA (14CM FROM MARKER). BIVALVES & COALIFIED PLANT FRAGMENTS THROUGHOUT.
18	45.36	45.56	0.20	76		MUDSTONE	VHEL. DK. GY. LAM. SLD AS ABOVE.
18	45.56	46.12	0.56	77		BRECCIA	CLYY. DK. GY. SLD MUD & MUDSTONE BRECCIA. SHEARED LISTRIC SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	46.12	47.23	1.11	*78		MUDSTONE	VHEL. DK. GY. LAM. BRKN SLTST LAMS - MUD PARTINGS (<1CM). LOTS OF DISSEMINATED PYRITE IN BANDS. SOME TIMES ASSOCIATED WITH QTZ.
18	47.23	47.36	0.13	78		ROCK LOSS	
18	47.36	47.44	0.08	78		MUDSTONE	VHEL. DK. GY. LAM. BRKN AS ABOVE. HIGHLY SHEARED, LISTRIC SURFACES.
18	47.44	47.74	0.30	78		ROCK LOSS	
19	47.74	47.97	0.23	78	08370 K ROOF	MUDSTONE	CARB. BLK. VBRKN BROKEN SURFACES POLISHED. SAMPLED 23CM. K SEAM ROOF ROCK.
19	47.97	48.03	0.06	78	08371 K	COAL LOSS	
19	48.03	48.09	0.06	78	08371 K	COAL	C-2. BLK. BRKN MINOR C-1 AND C-4 BANDS.
19	48.09	48.14	0.05	78	08371 K	COAL	C-3. BLK. BRKN C-2 AND C-4 BANDS ABUNDANT.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	48.14	48.18	0.04	78	08371	K	MUDSTONE	CARB. BLK. PHRD EXTREMELY SHEARED, SOFT.
19	48.18	48.31	0.13	78	08371	K	COAL	C-4. BLK. BRKN ABUNDANT MUOST PARTINGS AND C-1 LAMS.
19	48.31	48.39	0.08	78	08371	K	COAL	C-3. BLK. BRKN
19	48.39	48.47	0.08	78	08371	K	COAL	C-5. BLK. BRKN
19	48.47	48.49	0.02	78	08371	K	COAL LOSS	
19	48.49	48.56	0.07	78	08371	K	MUDSTONE	CARB. BLK. PHRD SOFT, EXTREMELY SHEARED.
19	48.56	48.64	0.08	78	08371	K	COAL	C-1. BLK. BRKN
19	48.64	48.69	0.05	78	08371	K	COAL	C-2. BLK. BRKN
19	48.69	48.75	0.06	78	08371	K	COAL	C-2. BLK. PHRD
19	48.75	48.80	0.02	78	08371	K	COAL	C-5. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	48.80	48.82	0.05	78	08371	K	COAL	C-2. BLK. BRKN
19	48.82	48.84	0.02	78	08371	K	COAL	C-1. BLK. BRKN
19	48.84	48.86	0.02	78	08371	K	COAL	C-2. BLK. BRKN
19	48.86	48.88	0.02	78	08371	K	COAL	C-1. BLK. VBRKN
19	48.88	48.92	0.04	78	08371	K	COAL	C-2. BLK. BRKN
19	48.92	48.95	0.03	78	08371	K	COAL	C-1. BLK. BRKN
19	48.95	49.05	0.10	78	08371	K	COAL	C-3. BLK. BRKN
19	49.05	49.07	0.02	78	08371	K	COAL LOSS	
19	49.07	49.29	0.22	78	08371	K	MUDSTONE	DK. GY. LAM. SSD. BRKN MINOR. VERY THIN COAL PARTINGS.
19	49.29	49.45	0.16	78	08371	K	COAL	C-3. BLK. VBRKN ABUNDANT C-2 AND C-4 BANDS PRESENT.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	49.45	49.48	0.03		78	08371 K	COAL	C-2.BLK.VBRKN ABUNDANT C-1 BANDS.
19	49.48	49.50	0.02		78	08371 K	COAL	C-1.BLK.BRKN
19	49.50	49.53	0.03		78	08371 K	COAL	C-2.BLK.VBRKN
19	49.53	49.59	0.06		78	08371 K	COAL	C-3.BLK.BRKN
19	49.59	49.87	0.28		78	08371 K	COAL LOSS	
20	49.87	50.71	0.84		78		MUDSTONE	CARB.VHEL.DK.GY.LAM.SLD COAL STRINGERS GRADUALLY DISAPPEAR. INT ERLAM WITH SLTST. MUD PARTING. INCREAS ING SLTST CONTENT. PLANT HASH COMMON. K SEAM FLOOR ROCK. NOT SAMPLED.
20	50.71	51.93	1.22	*78			MUDSTONE	MOD.DK.GY.LAM.BIOTR.BRKN INTERBEDDED WITH SLTST AND FG SS. BIYAL VES & PLANT HASH. TOPS UP - LOADING STR UCTURE.
21	51.93	53.64	1.71	*78			MUDSTONE	MOD.DK.GY.LAM.SSD.BRKN AS ABOVE. SOME BIOTRB AND SLTST RIP-UPS . SLUMP - TOPS UP. PLANT HASH.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	53.64	53.84	0.20		77		ROCK LOSS	
21	53.84	54.25	0.41		77		MUDSTONE	MOD.DK.GY.LAM.SSD.BRKN AS ABOVE WITH RIP-UPS & PLANT HASH.
22	54.25	56.36	2.11	*76			MUDSTONE	SLTY.VHEL.DK.GY.LAM.SSD.SLD INTERLAM WITH SLTST. VERY LITTLE VFG SS . MOTTLED - RIP-UPS & SOME BIOTRB. QTZ VEINING.
23	56.36	56.81	0.45	*75			SILTSTONE	MOD.M-DK.GY.YTHNB.SSD.BRKN INTERBEDDED WITH VFG SS AND MUDST LAMS. SLUMP - TOPS UP.
23	56.81	57.68	0.87	75			SANDSTONE	MG.MEL.S-P.GY.MAS.BRKN SLTST LAMINATIONS AND RIP-UPS. QTZ VEIN S. SHEARED SURFACES.
23	57.68	58.24	0.56	*75			SILTSTONE	SSY.MOD.DK.GY.LAM.SSD.SLD INTERBEDDED WITH VFG SS AND MUDST LAMS. LOADING STRUX - TOPS UP. DISTINCTIVE B EDS.
24	58.24	59.54	1.30	*78			SILTSTONE	MOD.DK.GY.LAM.VBRKN AS ABOVE (RHYTHMIC). NO TOPS UP. PARTS PARALLEL TO BEDDING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	59.54	59.86	0.32		76		ROCK LOSS	
24	59.86	60.34	0.48		73		SILTSTONE	MOD. DK. GY. LAM. BRKN AS ABOVE.
25	60.34	60.81	0.47		*71		SILTSTONE	SSY. MOD. M-DK. GY. VTHNB. BRKN AS ABOVE WITH INCREASINGLY THICK FG SS BEDS.
25	60.81	62.32	1.51		73		SANDSTONE	MG. VHEL. S-P. GY. MAS. BRKN WITH SLTST LAMS/RIP-UPS. CALCITE VEINS.
26	62.32	62.81	0.49		75		SANDSTONE	MG. VHEL. S-P. GY. VTHNB. BRKN AS ABOVE. WITH INCREASING SLTST LAMS.
26	62.81	64.35	1.54		77		SANDSTONE	MG. PR. M-DK. GY. VTHNB. BRKN SS ALTERNATING WITH BANDS OF INTERLAMINATED SLTST AND MUDST - 10 CM. CALCITE VEINS. PENECONTEMPORANEOUS FRACTURE FILLED WITH MUDST.
27	64.35	65.75	1.40		*79		SANDSTONE	MG. PR. M-DK. GY. VTHNB. BRKN AS ABOVE. NO FRACTURE. GRADING TO A MUDST.
27	65.75	66.30	0.55		*73		MUDSTONE	VHEL. DK. GY. LAM. BRKN INTERLAM WITH SLTST. FEW VFG. SS. BEDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	66.30	68.23	1.93		*76		MUDSTONE	VHEL. DK. GY. LAM. VBRKN AS ABOVE. WITH CALCITE VEINS. SLIGHT SS D - TOPS UP.
28	68.23	68.56	0.33		75		ROCK LOSS	
29	68.56	69.00	0.44		73		MUDSTONE	VHEL. DK. GY. LAM. SLD AS ABOVE. FEW SHEARED SURFACES.
29	69.00	70.63	1.63		*72		MUDSTONE	VHEL. DK. GY. LAM. SLD AS ABOVE.
30	70.63	70.83	0.20		74		MUDSTONE	VHEL. DK. GY. LAM. BRKN AS ABOVE. SS DISAPPEARING.
30	70.83	71.98	1.15		*77		MUDSTONE	VHEL. DK. GY. LAM. VBRKN RHYTHMIC INTERLAMINATION OF SLTST & MUDST. PARTING PARALLEL TO BEDDING. SOME MUD FRACTURE FILL. COASTERS.
30	71.98	72.68	0.70		77		MUDSTONE	VHEL. DK. GY. LAM. BRKN AS ABOVE.
31	72.68	72.97	0.29		77		MUDSTONE	VHEL. DK. GY. LAM. VBRKN AS ABOVE. SOME CALCITE VEINS ALSO. PROBABLE CORE LOSS. POSSIBLE CAVE IN AS FG SS PIECES ARE SEEN (5CM IN SIZE) - WELL ROUNDED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	72.97	73.47	0.50	77			ROCK LOSS	
31	73.47	74.87	1.40	*77			MUDSTONE	VHEL.DK.GY.LAM.BRKN COASTER - RHYTHMITES OF SLTST & MUDST. CALCITE VEINS.
32	74.87	76.12	1.25	*78			MUDSTONE	VHEL.DK.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
32	76.12	76.50	0.38	81			ROCK LOSS	
33	76.50	76.84	0.34	84			MUDSTONE	VHEL.DK.GY.LAM.VBRKN AS ABOVE.
33	76.84	77.80	0.96	*87			MUDSTONE	VHEL.DK.GY.LAM.BRKN NO SLTST. MUD & CALCITE PARTINGS. PARTS PARALLEL TO BEDDING.
33	77.80	78.16	0.36	83			MUDSTONE	CARB.VHEL.DK.GY.LAM.BIOTR.BRKN COAL STRINGERS. SOME PYRITE & CALCITE. J SEAM ROOF ROCK. NOT SAMPLED.
33	78.16	78.55	0.39	81 99999 J			MUDSTONE	CARB.BLK.LAM.BRKN J SEAM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	78.55	78.99	0.44	79 99999 J			MUDSTONE	CARB.BLK.LAM.BRKN COAL STRINGERS AND VITRINITE LAMS. J SEAM.
34	78.99	79.89	0.90	*75			MUDSTONE	VHEL.DK.GY.LAM.SSD.BRKN INTERLAM WITH SLTST. A LARGE BAND OF BR ECCATED MUD, PLANT WASH & FEW COAL STR INGERS. J SEAM. FLOOR ROCK.
34	79.89	80.61	0.72	71			MUDSTONE	SLTY.VHEL.DK.GY.LAM.SSD.SLD INTERLAM WITH SLTST. CALCITE VEINS.
35	80.61	82.72	2.11	*66			MUDSTONE	SSY.MEL.DK.GY.LAM.BIOTR.SLD INTERBEDDED WITH FG SS AND SLTST. DISTI NCTIVE BEDDING AND ALTERNATELY BURROWED TOPS UP. SOME SSD. CALCITE VEIN. FEW PLANT FRAGMENTS.
36	82.72	82.88	0.16	70			MUDSTONE	VHEL.DK.GY.LAM.SSD.SLD INTERLAM WITH SLTST. TOPS UP - LOADING.
36	82.88	84.62	1.74	*74			MUDSTONE	VHEL.DK.GY.LAM.SSD.SLD AS ABOVE. PARTS PARALLEL TO BEDDING. PL ANT FRAGMENTS.
36	84.62	84.83	0.21	75			SANDSTONE	MG.MEL.LY-M.GY.VTHNB.SSD.SLD WITH MUDST & SLTST LAMINATIONS; TOPS UP

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	84.83	85.54	0.71	76			SANDSTONE	MG. MEL. LT-DK. GY. YTHNB. SSD. SLD AS ABOVE. GRADUALLY BECOMING FINER GRAINED (FG SS) - PENECONTEMPORANEOUS FRACTURING, CALCITE VEINS.
37	85.54	85.88	0.34	76			MUDSTONE	MEL. DK. GY. LAM. SSD. BRKN INTERLAM WITH VFG SS AND SLTST (RHYTHMIC). SLIGHT SSD & BIOTRB.
37	85.88	86.08	0.20	77			ROCK LOSS	
37	86.08	87.14	1.06	*78			MUDSTONE	MEL. DK. GY. LAM. SSD. BRKN AS ABOVE. WITH MINOR FAULTING (1CM). CALCITE PARTING (2CM). TOPS UP, LOADING & BURROWS; FEW PLANT FRAGS.
38	87.14	88.99	1.85	*69			MUDSTONE	MEL. DK. GY. LAM. BIOTR. BRKN INTERLAM WITH VFG SS & SLTST. TOPS UP - LOADING, FECAL PELLETS, SHEARED LISTRIC SURFACES AND QTZ PARTINGS.
38	88.99	89.15	0.16	71			MUDSTONE	MEL. DK. GY. LAM. BIOTR. SLD AS ABOVE.
38	89.15	90.20	1.05	73			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	90.20	92.11	1.91	*75			MUDSTONE	MEL. DK. GY. LAM. BIOTR. VBRKN AS ABOVE. COARSENING SS (MG). SOME BIOTRB. BURROWS & LOADING - TOPS UP, POSSIBLE CORE LOSS, DISTINCTIVE LAMINATIONS.
40	92.11	92.69	0.58	*73			MUDSTONE	MEL. DK. GY. LAM. SSD. BRKN AS ABOVE.
40	92.69	93.22	0.53	73			ROCK LOSS	
40	93.22	94.44	1.22	*74			MUDSTONE	MEL. DK. GY. LAM. SSD. VBRKN AS ABOVE. POSSIBLE CORE LOSS. BRECCIATE D. MUD FRACTURE FILL.
41	94.44	95.53	1.09	73			MUDSTONE	MEL. DK. GY. LAM. VBRKN AS ABOVE. POSSIBLE CORE LOSS, MUD FRACTURE FILL & BRECCIA. FECAL PELLETS.
41	95.53	96.27	0.74	73			ROCK LOSS	
41	96.27	96.59	0.32	*72			MUDSTONE	MEL. DK. GY. LAM. BRKN AS ABOVE.
41	96.59	97.09	0.50	71			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	97.09	99.25	2.16	*69			SANDSTONE	FG.WEL.LT-M.GY.MAS.SLD WITH SLTST & CG SS MISPS. CALCITE VEINS . SHEARED SURFACE. SLIGHT FRACTURE DISPLACEMENT (<1CM).
43	99.25	99.76	0.51	*72			SANDSTONE	FG.WEL.LT-M.GY.MAS.BRKN AS ABOVE.
43	99.76	100.72	0.96	75			SANDSTONE	FG.WEL.LT-M.GY.MAS.BRKN AS ABOVE. SLTST RIP-UPS.
43	100.72	100.91	0.19	*79			SANDSTONE	MG.PR.LT-DK.GY.VTHNB.SLD INTERLAM WITH SLTST (LT GREY). ASH INFLUENCE.
43	100.91	101.30	0.39	78			SILTSTONE	VWEL.LT.GY.LAM.SLD WITH LAMINATIONS OF DK GREY SLTST. ASH INFLUENCE TUFFITE. CALCITE VEINS.
43	101.30	101.50	0.20	77			ROCK LOSS	
44	101.50	102.34	0.84	75			SILTSTONE	VWEL.LT.GY.LAM.BRKN AS ABOVE. MUD & SLTST FRACTURE FILL. POSSIBLE CORE LOSS.
44	102.34	102.61	0.27	74	10368		BENTONITE	CLYY.LT.GY.SLD WITH SLTST & CALCITE PARTINGS & VEINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	102.61	102.67	0.06	73			ROCK LOSS	
44	102.67	102.89	0.22	72			MUDSTONE	WEL.DK.GY.LAM.VBRKN INTERBEDDED WITH SLTST. POSSIBLE CORE LOSS.
44	102.89	103.14	0.25	70			MUDSTONE	WEL.DK.GY.LAM.BIOTR.VBRKN AS ABOVE. FECAL PELLETS.
44	103.14	103.50	0.36	69			ROCK LOSS	
45	103.50	105.33	1.83	*68			MUDSTONE	WEL.DK.GY.LAM.BIOTR.BRKN AS ABOVE. POSSIBLE CORE LOSS. BURROWS, BLACK SPECKS. TOPS UP.
46	105.33	105.97	0.64	72			MUDSTONE	WEL.DK.GY.LAM.BIOTR.VBRKN AS ABOVE. POSSIBLE CORE LOSS. WITH BRECCIATED MUD FRACTURE FILL.
46	105.97	106.98	1.01	*77			MUDSTONE	WEL.DK.GY.LAM.BIOTR.VBRKN AS ABOVE.
46	106.98	108.14	1.16	75			ROCK LOSS	
47	108.14	109.01	0.87	74			MUDSTONE	WEL.DK.GY.LAM.BIOTR.VBRKN AS ABOVE WITH SLIGHT BIOTR AND FEW SHEARED SURFACES.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION	
47	109.01	109.80	0.79	72			MUDSTONE	MEL. DK. GY. LAM. BIOTR. SLD AS ABOVE. CALCITE STRINGERS AND PLANT H ASH (COALIFIED).	
48	109.80	109.98	0.18	*70	08360	I	ROOF	MUDSTONE	M. GY. LAM. BRKN QUARTZ FRACTURE FILL PARALLEL TO BEDDIN G. ABUNDANT FOSSIL FRAGMENTS. BOTTOM 5C M WEAKLY CARBONACEOUS. SAMPLED 18CM. I SEAM ROOF ROCK.
48	109.98	110.11	0.13	70	08361	I		COAL LOSS	
48	110.11	110.15	0.04	70	08361	I		COAL	C-5. BLK. SHRD
48	110.15	110.19	0.04	70	08361	I		COAL	C-3. BLK. SHRD POORLY CLEATED.
48	110.19	110.21	0.02	70	08361	I		COAL	C-5. BLK. PHRD VERY MUDDY.
48	110.21	110.39	0.18	70	08361	I		COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION	
48	110.39	110.46	0.07	70	08361	I	MUDSTONE	M. GY. SHRD POORLY CONSOLIDATED - TOP IS CARBONACEOUS.	
48	110.46	110.53	0.07	70	08361	I	COAL	C-4. BLK. VBRKN POORLY CONSOLIDATED.	
48	110.53	110.99	0.46	70	08361	I		COAL LOSS	
48	110.99	111.03	0.04	70	08361	I	MUDSTONE	BLK. VSHRD VERY CARBONACEOUS IN PARTS.	
48	111.03	111.06	0.03	70	08361	I		COAL	C-4. BLK. PHRD
48	111.06	111.43	0.37	71	08362	I		COAL	C-3. BLK. VSHRD MODERATELY CLEATED. POORLY CONSOLIDATED
48	111.43	111.57	0.14	71	08362	I		COAL	C-2. BLK. VSHRD BORDERLINE C-1. WELL CLEATED.
48	111.57	111.68	0.11	71	08362	I		COAL	C-3. BLK. PHRD MODERATELY CLEATED FRAGMENTS.
48	111.68	112.13	0.45	71	08362	I		COAL LOSS	
48	112.13	112.24	0.11	71	08363	I		COAL	C-2. BLK. VBRKN WELL CLEATED. BORDERLINE C-1.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	112.24	112.41	0.17	71	08363	I	COAL	C-2.BLK.PWRD
49	112.41	112.60	0.19	71	08363	I	COAL	C-1.BLK.PWRD C-1 FRAGMENTS THROUGHOUT.
49	112.60	112.69	0.09	71	08363	I	COAL	C-3.BLK.PWRD
49	112.69	112.73	0.04	71	08363	I	COAL	C-2.BLK.VBRKN WELL CLEATED C-2 FRAGMENTS.
49	112.73	114.30	1.57	*71	08364	I FLOOR	MUDSTONE	SLTY.M.GY.LAM.BRKN ABUNDANT PLANT FRAGMENTS AND COAL STRINGS. VERY FRACTURED IN PARTS WITH CLAY INFILL. I SEAM FLOOR ROCK. SAMPLED UPPER 25CM.
50	114.30	114.77	0.47	*60			MUDSTONE	MOD.DK.GY.LAM.BIOTR.BRKN INTERLAM WITH SLTST. SOME DISSEMINATED PYRITE. TOPS UP.
50	114.77	115.01	0.24	62			SANDSTONE	MG.MOD.M.GY.VTHNB.VBRKN INTERBEDDED WITH SLTST. POSSIBLE CORE LOSS. CALCITE VEINS & FRACTURES.
50	115.01	115.46	0.45	63			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	115.46	115.71	0.25	65			SANDSTONE	MG.MOD.M.GY.VTHNB.VBRKN AS ABOVE.
50	115.71	116.54	0.83	67			SANDSTONE	CG.MOD.S-P.GY.MAS.VBRKN WITH SLTST LAMS. POSSIBLE CORE LOSS. SHEARED SURFACES WITH CALCITE.
51	116.54	117.56	1.02	69			SANDSTONE	CG.MOD.S-P.GY.MAS.VBRKN AS ABOVE. WITHIN 8CM BRECCIATED BAND. PROBABLE CORE LOSS.
51	117.56	118.15	0.59	70			ROCK LOSS	
51	118.15	118.72	0.57	72			SANDSTONE	CG.MOD.S-P.GY.MAS.VBRKN AS ABOVE.
52	118.72	120.51	1.79	*74			MUDSTONE	SSY.FG.PR.M-DK.GY.LAM.BIOTR.BRKN INTERBEDDED WITH FG SS & SLTST. BURROWS & LOADING SHOWS TOPS UP. SLTST RIP-UP (SSD). BLACK PELLETS. QTZ FRACTURE FILL & SHEARING. COALIFIED PLANT FRAGMENTS.
53	120.51	121.18	0.67	73			MUDSTONE	WEL.DK.GY.LAM.BIOTR.VBRKN INTERLAM WITH SLTST. VERY SHEARED. POSSIBLE CORE LOSS. BLACK PELLETS. MUD FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB8027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	121.18	121.31	0.13	72			SANDSTONE	MG. MEL. M. GY. MAS. BRKN QTZ VEINING.
53	121.31	121.76	0.45	71			BRECCIA	CLYY. M. GY. BRKN BRECCIATED MUD & SS WITH QTZ & SHEARED SURFACES.
53	121.76	122.12	0.36	70			MUDSTONE	MEL. DK. GY. LAM. BIOTR. BRKN INTERLAM WITH SLTST & VFG SS. BURROWS - TOPS UP. SOME SHEARING.
53	122.12	122.42	0.30	69			BRECCIA	CLYY. DK. GY. VBRKN SHEARING WITH MUD & QTZ ON SURFACES. PO SSIBLE CORE LOSS. SLTY MUDST (CLASTS).
53	122.42	122.56	0.14	68			ROCK LOSS	
54	122.56	123.55	0.99	67			BRECCIA	CLYY. DK. GY. VBRKN AS ABOVE.
54	123.55	124.23	0.68	66			ROCK LOSS	
54	124.23	124.76	0.53	65			BRECCIA	CLYY. DK. GY. SLD AS ABOVE.
54	124.76	125.32	0.56	64			MUDSTONE	VHEL. DK. GY. LAM. SLD SLIGHTLY BRECCIATED (MUD).

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB8027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	125.32	126.61	1.29	63			MUDSTONE	VHEL. DK. GY. MAS. BRKN SLIGHTLY BRECCIATED (MUD). BRECCIATION GRADUALLY DISAPPEARS.
55	126.61	127.34	0.73	62			MUDSTONE	VHEL. DK. GY. MAS. BRKN FEATURELESS.
56	127.34	127.48	0.14	61			MUDSTONE	VHEL. DK. GY. MAS. SLD AS ABOVE. CALCITE VEIN.
56	127.48	127.76	0.28	59			BRECCIA	DK. GY. SLD BRECCIATED MUDSTONE WITH MUD & CALCITE.
56	127.76	127.99	0.23	58			MUDSTONE	MEL. DK. GY. LAM. SLD WITH SLTST BEDS.
56	127.99	129.04	1.05	57			BRECCIA	DK. GY. VBRKN MUDSTONE BRECCIATED WITH MUD & CALCITE.
56	129.04	129.28	0.24	56			ROCK LOSS	
57	129.28	129.71	0.43	55			BRECCIA	DK. GY. BRKN MUDSTONE INTERBEDDED WITH SLTST (VTHNB) ; CALCITE VEINS. FRACTURE DISPLACEMENT (MINOR). TOPS UP.
57	129.71	130.33	0.62	54			MUDSTONE	SLTY. VHEL. DK. GY. MAS. BRKN BLACK FLECKS SEEN (DISCONTINUOUS MUD LA MELLAE). CALCITE VEINS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	130.33	131.24	0.91	*53			MUDSTONE	MEL. DK. GY. LAM. SSD. SLD AS ABOVE. WITH PYRITE NODULE. INTERLAM WITH SLTST. WITH BLACK FLECKS. SHEARED SURFACES.
58	131.24	132.76	1.52	*45			MUDSTONE	MEL. DK. GY. LAM. BRKN AS ABOVE. BLACK FLECKS. SHEARED SURFACE S & QTZ FRACTURE FILL. POSSIBLE LOSS. BLACK FLECKS - EITHER HELMINTHOPSIS OR MUDST. LAMS.
58	132.76	133.31	0.55	47			ROCK LOSS	
58	133.31	133.55	0.24	49			MUDSTONE	SLTY. MEL. DK. GY. LAM. SSD. SLD INTERLAM WITH SLTST. DISSEMINATED PYRIT E. SLTST. RIP-UPS.
58	133.55	133.63	0.08	51			SANDSTONE	MG. MOD. M. GY. VTHNB. SLD SLTST. LAMS. MUD. PARTINGS. AND QTZ. VEINS.
59	133.63	134.60	0.97	*53			SANDSTONE	MG. MOD. S-P. GY. MAS. SLD AS ABOVE. LOTS. QTZ. FRACTURE FILL RESEMBLES A BRECCIA. FINES TO A VFG SS WITH BLACK FLECKS (AS ABOVE).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	134.60	135.72	1.12	38			MUDSTONE	SLTY. VMEL. DK. GY. LAM. SLD WITH SLTST. LAMS. PYRITE NODULES & BLACK FLECKS. QTZ VEINS. GRADES FROM A VFG S S. WITH BLACK FLECKS.
60	135.72	136.52	0.80	*23			MUDSTONE	VMEL. DK. GY. LAM. BRKN WITH SLTST. LAMS. LOTS OF PYRITE NODULES. BLACK FLECKS? QTZ VEINS.
60	136.52	137.71	1.19	18			MUDSTONE	VMEL. DK. GY. LAM. BRKN AS ABOVE.
61	137.71	139.17	1.46	*12			MUDSTONE	VMEL. DK. GY. LAM. BRKN AS ABOVE. SLIGHTLY BRECCIATED WITH MUD FRACTURE FILL. POSSIBLY OVERTURNED? A LOAD CAST FEATURE. CORE BOX HALF FILLED.
62	139.17	141.28	2.11	*14			MUDSTONE	VMEL. DK. GY. LAM. SSD. BRKN WITH SLTST & VFG SS LAMS WITH BLACK FLECKS. TOPS UP - LOADING. DISSEMINATED PYRITE.
63	141.28	141.63	0.35	14			MUDSTONE	VMEL. DK. GY. LAM. SLD AS ABOVE. NO TOPS INDICATORS. BLACK FLECKS (HELMINTHOPSIS?).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	141.63	143.34	1.71	*15		MUDSTONE	MEL. DK. GY. LAM. SSD. BRKN INTERLAM WITH SLTST AND VFG SS. TOPS UP - LOADING. ALSO O/T LOADING STRUCTURES. BCA'S OF 10, 17, 19 DEGREES. COARSEN TO A FG SS WITH MUDST INTERLAMINATIONS.
64	143.34	144.98	1.64	*25		BRECCIA	SSY. FG. PR. M-DK. GY. LAM. SSD. VBRKN POSSIBLE CORE LOSS. BCA'S OF 22, 25, 28 DEGREES. UPRIGHT AND O/T FEATURES. SHEARING, MUD AND CALCITE. ROCK IS FG SS AND MUDST.
65	144.98	145.62	0.64	20		SILTSTONE	SSY. YPR. M-DK. GY. YTHNB. SSD. VBRKN WITH INTERBEDS OF FG SS. CALCITE VEINS AND SHEARING. POSSIBLE CORE LOSS. SLTST RIP-UPS IN SS.
65	145.62	145.81	0.19	15		ROCK LOSS	
65	145.81	146.84	1.03	*10		SILTSTONE	SSY. YPR. M-DK. GY. YTHNB. SSD. BRKN AS ABOVE. WITH SS RIP-UPS IN SLTST. VERTICAL BCA'S. FRACTURING IS SEEN.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	146.84	147.88	1.04	*02		SILTSTONE	SSY. PR. M-DK. GY. YTHNB. SSD. BRKN ABRUPT CONTACT WITH UNDERLYING MG SS. CALCITE VEINS AND RIP-UP CLASTS ALONG CONTACT. ALMOST VERTICAL BCA. 8 TO 0 TO 1 DEGREES. SOME SHEARING POSSIBLE CORE LOSS. PROBABLE FOLD AXIS.
66	147.88	148.71	0.83	*13		SANDSTONE	MG. MEL. S-P. GY. MAS. SLD CALCITE VEINS.
67	148.71	150.57	1.86	*33		SANDSTONE	CG. MEL. S-P. GY. MAS. SLD AS ABOVE WITH SLTST RIP-UP CLASTS. BRECCIATED. LOTS CALCITE FRACTURES.
68	150.57	151.32	0.75	33		SANDSTONE	MG. MEL. S-P. GY. MAS. VBRKN BRECCIATED. POSSIBLE CORE LOSS. CALCITE FRACTURES.
68	151.32	151.72	0.40	32		ROCK LOSS	
68	151.72	152.59	0.87	*32		SANDSTONE	MG. MEL. S-P. GY. MAS. BRKN CALCITE VEINS. BROKEN MUDST LAMELLAE.
69	152.59	153.48	0.89	32		SANDSTONE	MG. MEL. S-P. GY. MAS. VBRKN AS ABOVE WITH SLTST RIP-UPS. SLIGHTLY BRECCIATED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	153.48	153.62	0.14	31		ROCK LOSS	
69	153.62	154.36	0.74	31		SANDSTONE	MG. VHEL. S-P. GY. MAS. SLD CALCITE VEINS. SLTST LAMS AND RIP-UPS.
70	154.36	154.78	0.42	31		SANDSTONE	MG. VHEL. S-P. GY. MAS. SLD AS ABOVE.
70	154.78	156.25	1.47	30		SANDSTONE	MG. VHEL. S-P. GY. MAS. BRKN AS ABOVE. MUD PARTINGS.
71	156.25	157.35	1.10	30		SANDSTONE	MG. VHEL. S-P. GY. MAS. VBRKN AS ABOVE. SLIGHTLY BRECCIATED WITH MUD AND CALCITE. SHEARED LISTRIC SURFACES.
71	157.35	157.83	0.48	29		ROCK LOSS	
71	157.83	158.62	0.79	*29		MUDSTONE	SLTY. WEL. DK. GY. LAM. SSD. BRKN GRADES FROM UNDERLYING SS. INTERLAM WIT H. SLTST. LOADING - O/T. SHEARED SURFACE S.
71	158.62	158.97	0.35	31		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	158.97	160.17	1.20	*33 08365	I OVT FLOOR	MUDSTONE	DK. GY. LAM ABUNDANT PLANT FRAGMENTS. SAMPLED LOWER 12CM. I (OVT) FLOOR ROCK.
72	160.17	160.30	0.13	33 08365	I OVT FLOOR	MUDSTONE	DK. GY. VBRKN POLISHED ALONG BROKEN SURFACES. SAMPLED ALL. I (OVT) FLOOR ROCK.
72	160.30	160.46	0.16	33 08366	I OVT	COAL LOSS	
72	160.46	160.56	0.10	33 08366	I OVT	COAL	C-3. BLK. SHRD
72	160.56	160.61	0.05	34 08366	I OVT	COAL	C-2. BLK. SHRD
72	160.61	160.75	0.14	34 08366	I OVT	COAL	C-3. BLK. SHRD ABUNDANT C-1 AND C-2 FRAGS.
72	160.75	160.82	0.07	34 08366	I OVT	COAL	C-4. BLK. SHRD
72	160.82	160.86	0.04	34 08366	I OVT	COAL	C-1. BLK. SHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	160.86	160.96	0.10	34	08366	I OVT	COAL	C-2, BLK, BRKN C-1 AND C-4 INTERBANDS.
72	160.96	160.99	0.03	34	08366	I OVT	COAL	C-1, BLK, YSHRD
72	160.99	161.03	0.04	34	08366	I OVT	COAL	C-2, BLK, YBRKN
73	161.03	161.11	0.08	34	08366	I OVT	COAL	C-2, BLK, YBRKN
73	161.11	161.43	0.32	35	08366	I OVT	COAL	C-1, BLK, PWRD
73	161.43	161.63	0.20	35	08366	I OVT	COAL	C-2, BLK, PWRD ABUNDANT C-1 FRAGS.
73	161.63	161.72	0.09	35	08366	I OVT	COAL	C-2, BLK, YBRKN ABUNDANT C-1 AND C-3 FRAGS.
73	161.72	161.93	0.21	35	08366	I OVT	COAL	C-2, BLK, PWRD ABUNDANT C-1 FRAGS AND C-3 FRAGS.
73	161.93	162.00	0.07	35	08366	I OVT	COAL	C-4, BLK, PWRD
73	162.00	163.01	1.01	35	08366	I OVT	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	163.01	163.17	0.16	35	08366	I OVT	COAL	C-1, BLK, PWRD ABUNDANT LARGE 2-3CM C-1 CHUNKS.
73	163.17	163.27	0.10	35	08366	I OVT	COAL	C-2, BLK, YBRKN
73	163.27	163.44	0.17	36	08366	I OVT	COAL	C-3, BLK, PWRD ABUNDANT C-1 FRAGS.
74	163.44	163.92	0.48	36	08366	I OVT	COAL	C-3, BLK, PWRD C-1 AND C-2 FRAGS PRESENT.
74	163.92	164.09	0.17	36	08366	I OVT	COAL	C-2, BLK, YBRKN
74	164.09	164.19	0.10	36	08366	I OVT	COAL	C-5, BLK, YBRKN
74	164.19	164.22	0.03	36	08366	I OVT	MUDSTONE	CARB, BLK, YSHRD
74	164.22	164.54	0.32	36	08366	I OVT	COAL LOSS	
74	164.54	164.58	0.04	36	08366	I OVT	COAL	C-4, BLK, PWRD
74	164.58	164.66	0.08	36	08366	I OVT	COAL	C-2, BLK, PWRD ABUNDANT C-3 FRAGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	164.66	165.08	0.42		37 08366	I OVT	COAL	C-3.BLK.PMRD ABUNDANT C-4 AND C-2 FRAGS.
75	165.08	165.21	0.13		37 08366	I OVT	COAL	C-2.BLK.PMRD
75	165.21	165.31	0.10		37 08366	I OVT	COAL	C-3.BLK.PMRD ABUNDANT C-2 AND C-4 FRAGS.
75	165.31	165.43	0.12		37 08366	I OVT	COAL	C-1.BLK.PMRD MINOR C-2 FRAGS PRESENT.
75	165.43	165.52	0.09		37 08366	I OVT	COAL	C-2.BLK.PMRD
75	165.52	165.61	0.09		37 08366	I OVT	COAL	C-1.BLK.PMRD
75	165.61	165.67	0.06		37 08366	I OVT	COAL	C-1.BLK.BRKN
75	165.67	165.76	0.09		37 08366	I OVT	MUDSTONE	CARB.BLK.BRKN
75	165.76	165.78	0.02		38 08366	I OVT	COAL	C-1.BLK.BRKN
75	165.78	165.81	0.03		38 08366	I OVT	MUDSTONE	CARB.BLK.VSHRD SOFT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	165.81	166.01	0.20		38 08366	I OVT	COAL	C-1.BLK.BRKN
75	166.01	166.34	0.33		38 08367	I OVT	MUDSTONE	DK.GY.VSHRD UNLITHIFIED.
75	166.34	166.44	0.10		38 08368	I OVT	COAL LOSS	
75	166.44	166.56	0.12		38 08368	I OVT	COAL	C-1.BLK.PMRD ABUNDANT 1-2CM FRAGS OF C-1.
75	166.56	166.79	0.23		38 08368	I OVT	COAL	C-2.BLK.PMRD ABUNDANT C-1 FRAGS.
75	166.79	167.05	0.26		39 08368	I OVT	COAL	C-2.BLK.PMRD ABUNDANT C-1 FRAGS.
75	167.05	167.07	0.02		39 08368	I OVT	COAL	C-1.BLK.PMRD
75	167.07	167.13	0.06		39 08368	I OVT	COAL	C-2.BLK.PMRD ABUNDANT C-1 FRAGS.
75	167.13	167.15	0.02		39 08368	I OVT	COAL	C-5.BLK.VBRKN
75	167.15	167.18	0.03		39 08368	I OVT	COAL	C-3.BLK.PMRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	167.18	167.33	0.15	39	08368	I OVT	COAL	C-2.BLK.PWRD
75	167.33	167.80	0.47	39	08368	I OVT	COAL	C-1.BLK.PWRD
75	167.80	167.95	0.15	39	08368	I OVT	COAL LOSS	
75	167.95	168.06	0.11	40	08368	I OVT	COAL	C-3.BLK.PWRD
75	168.06	168.10	0.04	40	08368	I OVT	COAL	C-2.BLK.VBRKN
75	168.10	168.15	0.05	40	08368	I OVT	COAL	C-4.BLK.VBRKN
75	168.15	168.20	0.05	40	08368	I OVT	COAL	C-1.BLK.PWRD
75	168.20	168.40	0.20	40	08368	I OVT	COAL	C-2.BLK.VBRKN ABUNDANT C-3 FRAGMENTS.
77	168.40	168.64	0.24	40	08368	I OVT	COAL	C-3.BLK.PWRD
77	168.64	168.75	0.11	40	08368	I OVT	COAL	C-1.BLK.PWRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	168.75	168.83	0.08	40	08368	I OVT	MUDSTONE	DK.GY.VSHRD SOFT, UNLITHIFIED.
77	168.83	168.93	0.10	41	08368	I OVT	COAL	C-1.BLK.VBRKN
77	168.93	168.99	0.06	41	08368	I OVT	COAL LOSS	
77	168.99	169.14	0.15	41	08368	I OVT	MUDSTONE	DK.GY.VSHRD SOFT, UNLITHIFIED.
77	169.14	169.40	0.26	*41	08368	I OVT	COAL	C-1.BLK.SLD
77	169.40	169.55	0.15	35	08368	I OVT	COAL	C-2.BLK.BRKN
77	169.55	169.63	0.08	29	08368	I OVT	COAL	C-1.BLK.SLD
77	169.63	170.47	0.84	23	08369	I OVT ROOF	MUDSTONE	DK.GY.LAM.BRKN MINOR LT. GREY SLTST LAMS. PLANT HASH AB UNDANT. SAMPLED UPPER 25CM. I (OVT) ROO F ROCK.
78	170.47	171.43	0.96	*17			MUDSTONE	VHEL.DK.GY.LAM.SLD SLTST LAMS & RIP-UP. SLIGHT SSD. FRACTU RE DISPLACEMENT (MINOR). CALCITE STRING ERS. O/T. FEW COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88027

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
78	171.43	172.49	1.06	*41		MUDSTONE	VHEL.DK.GY.LAM.SLD AS ABOVE. BCA CHANGE FROM ABOVE AFTER MINOR FRACTURING DISPLACEMENT (<1CM).
79	172.49	173.36	0.87	*25		MUDSTONE	VHEL.DK.GY.LAM.BIOTR.SLD SLTST LAMS. SLIGHT BIOTRB. CALCITE VEIN S.
79	173.36	174.40	1.04	*23		MUDSTONE	VHEL.DK.GY.LAM.BIOTR.SLD AS ABOVE. LOADING - O/T.
80	174.40	176.16	1.76	*25		MUDSTONE	VHEL.DK.GY.LAM.BIOTR.SLD AS ABOVE. BURROWS INDICATE O/T. END OF HOLE.
80	176.16	176.40	0.24	25		ROCK LOSS	TD=176.40

* DENOTES MEASURED BCA
NEWPAGE

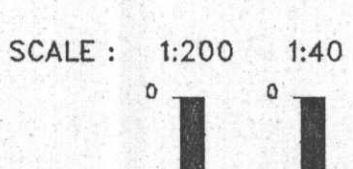
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88027

GEOLOGIST : KRAUS

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

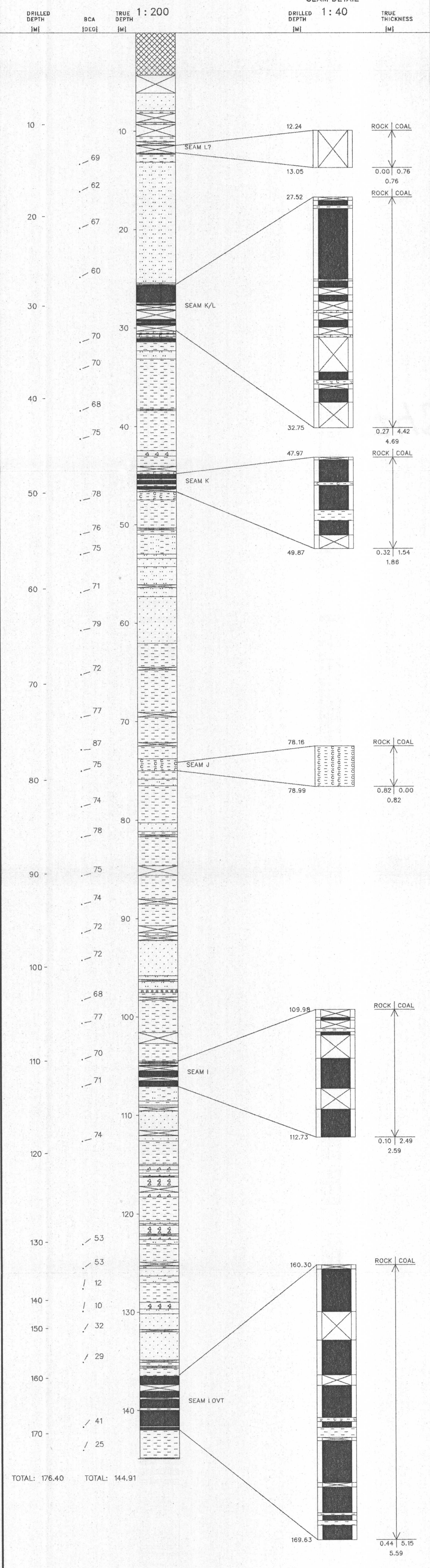


NORTHING: 6343131.0 N
 EASTING: 506605.1 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL

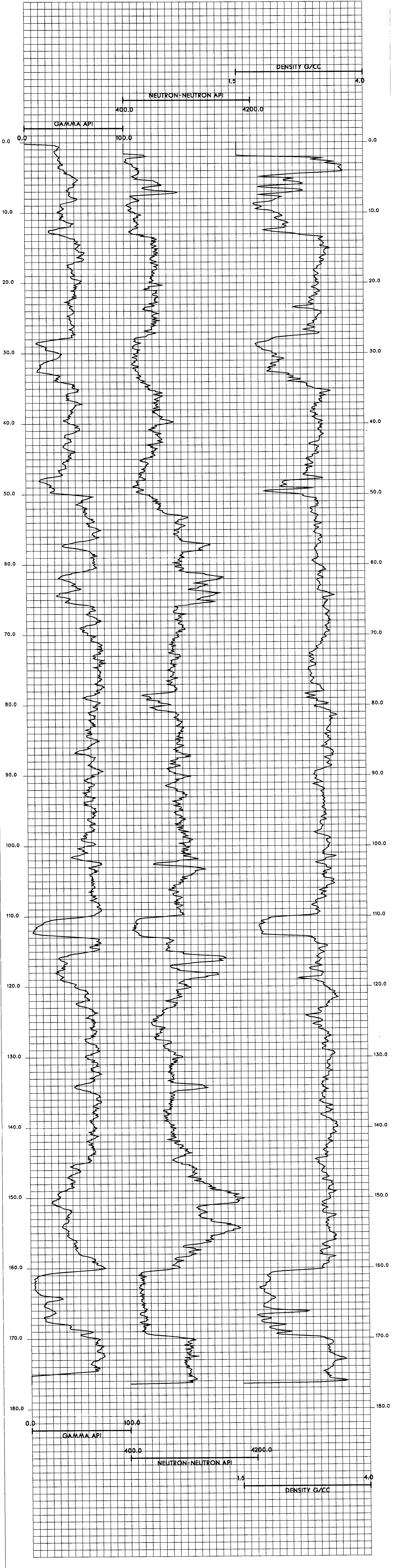


Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: KPNLRDDH88027 Log Date: 88-07-10 Company: CENTURY Geologist: KRAUS	Province: BC Northing: 6343130.00 Lat: 571359 Zone: 9 Easting: 506605.00 Long: 1285326 Measuring Point: GROUND LEVEL Elevation: 1631.4	
Scale: 1 to 200.0 Depth Range: 0.0 to 181.0 True Thickness: NO	Comments: 1. LOGGED THROUGH RODS 2.	

Logs Plotted:	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88028

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPMLRDDH88028

DATE - 02/15/89

- HISTORY -

START DATE - 07/09/88

END DATE - 07/12/88

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MATTHEWS

OPERATOR - G.C.R.L.
SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS O?, N?, N(OVT), O, N, M/N, ?, MU
, M, L.

- LOCATION -

PROVINCE - BC
ELEVATION - 1406.82

ZONE - 9
NORTHING - 6346457.20
EASTING - 508436.32

LICENCE/LEASE NUMBER - 7162

LATITUDE - 571547
LONGITUDE - 1285137

- ORIENTATION -

LENGTH - 167.96

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ -

CASING DEPTH (M) - 6.71
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** O INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-028

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

N ovt.

0.79 m

O
N

0.68 m

1.11 m

M/N

0.53 m

M

0.61 m/1.90 m



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.



Gulf Canada Resources Limited

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	6.71	6.71	78			OVERBURDEN	CASING DEPTH.
1	6.71	8.49	1.78	78			ROCK LOSS	
1	8.49	8.59	0.10	78			SANDSTONE	FG.MOD.M.BN.VTHNB.BRKN LITHIC SS, OXIDATION, CORE TWIST-OFF.
1	8.59	8.89	0.30	78			ROCK LOSS	
1	8.89	9.34	0.45	78			MUDSTONE	DK.GY.THNB.SSD.VBRKN LT GREY SLTY MUDST MISPS. PYRITE FRACTURE RE DISPLACEMENT.
1	9.34	9.44	0.10	78			ROCK LOSS	
1	9.44	10.70	1.26	*78			MUDSTONE	SLTY.LT.GY.VTHKB.SSD.BRKN ARGILLACEOUS MISPS & LAMS. FEWER MISPS NEAR END OF BOX. BIOTRB.
1	10.70	10.93	0.23	78			ROCK LOSS	
2	10.93	11.83	0.90	78			SANDSTONE	CLYY.FG.MOD.LT.GY.THKB.SSD.VBRKN ARGILLACEOUS MISPS & LAMS. FRACTURE DIS- PLACEMENT, CALCITE & QTZ VEINING. POSSI- BLE CORE LOSS. BIOTRB.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
2	11.83	12.03	0.20	78			ROCK LOSS	
2	12.03	12.28	0.25	78			MUDSTONE	M-DK.GY.VTHNB.BRKN UNCONSOLIDATED MUD WITH SSS RX FRAGMENT S THROUGHOUT. FRAG AVERAGE 1.0CM.
2	12.28	12.63	0.35	78			SANDSTONE	CLYY.FG.WEL.LT.GY.THNB.VBRKN FG SS GRADES TO CG SS. GRADED BEDDING. RIP UP CLASTS.
2	12.63	13.08	0.45	78			SANDSTONE	CG.PR.M.GY.THKB.VBRKN POSSIBLE CORE LOSS. RIP-UP CLASTS.
2	13.08	13.21	0.13	78			ROCK LOSS	
3	13.21	14.28	1.07	78			SANDSTONE	MG.PR.M.GY.THKB.BRKN FEM ARGILLACEOUS MISPS. CALCITE FRACTUR E FILL.
3	14.28	14.58	0.30	78			ROCK LOSS	
3	14.58	14.63	0.05	78			MUDSTONE	M.GY.VTHNB.BRKN UNLITHIFIED.
3	14.63	15.04	0.41	78			MUDSTONE	M.GY.THNB.VBRKN SOFT MUDST.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	15.04	15.10	0.06	78			ROCK LOSS	
3	15.10	15.32	0.22	78			MUDSTONE	DK.GY.THNB.BRKN
3	15.32	15.34	0.02	78			ROCK LOSS	
3	15.34	15.46	0.12	78			MUDSTONE	DK.GY.THNB.VBRKN
4	15.46	15.86	0.40	78			MUDSTONE	DK.GY.THNB.SSD.BRKN LT GREY SLTY MUDDY MISPS.
4	15.86	15.98	0.12	78			MUDSTONE	DK.GY.LAM.VBRKN ALT LAMS OF DK GREY MUDST & LT GREY SLT Y MUDST.
4	15.98	16.02	0.04	78			ROCK LOSS	
4	16.02	16.27	0.25	78			MUDSTONE	DK.GY.LAM.SSD.BRKN AS ABOVE.
4	16.27	16.32	0.05	78			ROCK LOSS	
4	16.32	16.69	0.37	*78			SANDSTONE	CLYY.FG.WEL.LT.GY.LAM.SSD.BRKN ALT LAMS OF CLYY SS & DK GREY MUDST.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	16.69	16.84	0.15	78			SANDSTONE	CLYY.MG.WEL.LT.GY.LAM.SSD.BRKN AS ABOVE.
4	16.84	17.11	0.27	79			SANDSTONE	CLYY.MG.WEL.LT.GY.THNB.BRKN MOD.
4	17.11	17.27	0.16	79			MUDSTONE	M.GY.THNB.BRKN
4	17.27	17.30	0.03	79			ROCK LOSS	
4	17.30	17.44	0.14	79			MUDSTONE	DK.GY.THNB.SSD.BRKN LT GREY SLTY MISPS. & LAMS.
4	17.44	17.51	0.07	79			SANDSTONE	MG.WEL.LT-M.GY.THNB.SSD.SLD DK.GREY.ARGILLACEOUS.LAMS.
4	17.51	17.61	0.10	80			MUDSTONE	DK.GY.THNB.SLD LT GREY SLTY MISPS.
5	17.61	17.69	0.08	80			SANDSTONE	FG.WEL.LT.GY.VTHNB.BRKN DK.GREY.ALT.MISPS.
5	17.69	17.84	0.15	80			ROCK LOSS	
5	17.84	17.93	0.09	*80			MUDSTONE	DK.GY.THNB.SLD LT GREY SLTY MISPS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	17.93	18.19	0.26	80			SANDSTONE	FG.WEL.LT.GY.MAS.SSD.SLD DK GREY ARGILLACEOUS WISPS, LAMS & VERY THIN BEDS. QTZ & CALCITE VEINING.
5	18.19	19.70	1.51	80			SANDSTONE	MG.WEL.LT.GY.THKB.SSD.SLD ARGILLACEOUS WISPS. RIP-UP CLASTS.
5	19.70	19.74	0.04	80	99994	0 ?	MUDSTONE	CARB.BLK
5	19.74	19.83	0.09	80	99994	0 ?	COAL LOSS	
6	19.83	20.93	1.10	80			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.BRKN DK GREY ARGILLACEOUS WISPS & LAMS. CALCITE & QTZ FRACTURE FILLS. POSSIBLE CORE LOSS.
6	20.93	21.19	0.26	*80			BRECCIA	BRKN SSY CLASTS & MUDDY MATRIX. SOME CALCITE & QTZ FRACTURE FILL.
6	21.19	21.79	0.60	70			MUDSTONE	SLTY.LT.GY.THKB.SSD.BRKN FRACTURE DISPLACEMENT. DK GREY ARGILLACEOUS WISPS & LAMS. POSSIBLE CORE LOSS.
7	21.79	22.62	0.83	54			MUDSTONE	SLTY.LT.GY.LAM.SSD.BRKN DK GREY ARGILLACEOUS WISPS & ALT LAMS O F.LT.GREY SLTY MUDST & DK GREY MUDST.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	22.62	22.87	0.25	42			ROCK LOSS	
7	22.87	22.99	0.12	38			MUDSTONE	M.GY.THNB.SLD SHEAR, BOUNDED BY CALCITE & QTZ VEINS.
7	22.99	23.29	0.30	*33			MUDSTONE	SLTY.LT.GY.LAM.SSD.BRKN ALT LAMS OF LT GREY SLTY MUDST & DK GREY MUDST. CALCITE & QTZ VEINS.
7	23.29	23.59	0.30	35			ROCK LOSS	
7	23.59	24.14	0.55	37			SANDSTONE	CG.WEL.LT.GY.THKB.BRKN LARGE CALCITE & QTZ VEIN. RIP-UP CLASTS. POSSIBLY CHERT. (MIN-3MM, MAX-10MM).
8	24.14	24.54	0.40	40			SANDSTONE	MG.MOD.LT.GY.THKB.VBRKN CALCITE & QTZ VEINING.
8	24.54	24.84	0.30	42			ROCK LOSS	
8	24.84	25.04	0.20	43			CONGLOMERATE	LT.GY.THNB.BRKN SMALL CONGLOMERATE ZONE. MATRIX SUPPORT ED. SSY MATRIX. MAX CLAST 10MM. MIN CLASTS 2MM. CHERT CLASTS. THIS IS MORE OF A PARA-CONGLOMERATE. CALCITE AND QTZ VEINS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
8	25.04	26.14	1.10	46			SANDSTONE	CG. MOD. LT. GY. VTHKB. VBRKN FEW ARGILLACEOUS MISPS & QTZ & CALCITE VEINS. POSSIBLE CORE LOSS.
8	26.14	26.44	0.30	50			ROCK LOSS	
9	26.44	27.04	0.60	53			SANDSTONE	MG. MOD. LT. GY. VTHKB. VBRKN AS ABOVE. POSSIBLE CORE LOSS. RIP-UP CL ASTS.
9	27.04	27.29	0.25	55			ROCK LOSS	
9	27.29	28.44	1.15	59			SANDSTONE	MG. MEL. LT. GY. VTHKB. VBRKN AS ABOVE. POSSIBLE CORE LOSS. FRACTURE DISPLACEMENT. RIP-UP CLASTS.
9	28.44	28.84	0.40	63			ROCK LOSS	
10	28.84	29.64	0.80	66			SANDSTONE	CG. PR. LT. GY. THKB. VBRKN CALCITE & QTZ VEINING. RIP-UP CLASTS.
10	29.64	29.89	0.25	69			ROCK LOSS	
10	29.89	29.91	0.02	70			BENTONITE	LT. GY. POSSIBLE DRILLERS MUD.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	29.91	30.14	0.23	71			ROCK LOSS	
10	30.14	30.41	0.27	72			SANDSTONE	CLYY. MG. MOD. LT. GY. THNB. BRKN ARGILLACEOUS MISPS & LAMS.
10	30.41	30.64	0.23	74			SANDSTONE	CG. PR. LT. GY. THNB. BRKN RIP-UP CLASTS.
10	30.64	30.95	0.31	*75			SANDSTONE	MG. PR. LT. GY. THNB. BRKN
10	30.95	31.25	0.30	63			SANDSTONE	FG. MOD. LT. GY. MAS. BRKN POSSIBLE CORE LOSS.
10	31.25	31.45	0.20	54			ROCK LOSS	
10	31.45	31.52	0.07	49			MUDSTONE	SLTY. DK. GY. THNB. VBRKN
10	31.52	31.94	0.42	39			ROCK LOSS	
11	31.94	32.09	0.15	29			MUDSTONE	SLTY. DK. GY. THNB. VBRKN POSSIBLE CORE LOSS.
11	32.09	32.39	0.30	*20			MUDSTONE	SLTY. LT. GY. LAM. SSD. VBRKN ALT LAMS OF LT GREY SLTY MUDST & DK GRE Y MUDST, WITH SOME FG SS LAMS. CALCITE & QTZ VEINS. BRECCIATION. FOLD AXIS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	32.39	33.09	0.70	17			MUDSTONE	DK. GY. THKB. YBRKN LT. GREY SLTY & SSS LAMS & WISPS. MINOR SHEARING. POSSIBLE CORE LOSS. N? SEAM R OOF ROCK. NOT SAMPLED.
11	33.09	33.38	0.29	14	99995	N?	COAL LOSS	
11	33.38	33.51	0.13	13	99995	N?	ROCK LOSS	
11	33.51	33.94	0.43	11	99995	N?	COAL LOSS	
12	33.94	34.21	0.27	*09			MUDSTONE	DK. GY. THKB. SSD. SLD LT. GREY SLTY WISPS & LAMS. N? SEAM FLOOR ROCK. NOT SAMPLED.
12	34.21	34.31	0.10	10			ROCK LOSS	
12	34.31	35.04	0.73	11			MUDSTONE	DK. GY. THKB. SSD. SLD AS ABOVE.
12	35.04	35.14	0.10	13			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
12	35.14	35.21	0.07	13			BRECCIA	M. GY. THNB. BRKN SLTY MUDST FRAGMENTS IN CLAY MATRIX.
12	35.21	35.96	0.75	*15			MUDSTONE	DK. GY. THNB. BRKN SLTY & SSS WISPS & LAMS. QYZ & CALCITE FRACTURE. LARGE QYZ & CALCITE VEIN. SOME SHEAR.
12	35.96	36.09	0.13	14			ROCK LOSS	
12	36.09	36.20	0.11	14			MUDSTONE	DK. GY. THNB. BRKN SLTY WISPS & LAMS.
13	36.20	36.26	0.06	14			MUDSTONE	DK. GY. THNB. BRKN AS ABOVE. CALCITE & QYZ VEINS.
13	36.26	37.04	0.78	13			BRECCIA	GY. THKB. SLD LARGE BRECCIATED ZONE. ANGULAR MUDST CLASTS. CLASTS VARY IN SIZE, FROM 0.5CM TO 0.10CM LONG. CALCITE, QYZ MATRIX. FOLD AXIS.
13	37.04	37.19	0.15	12			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	37.19	37.46	0.27	12			MUDSTONE	DK.GY.THMB.SLD LT GREY SLTY WISPS & LAMS.
13	37.46	37.53	0.07	11			ROCK LOSS	
13	37.53	37.88	0.35	11			BRECCIA	GY.THMB.BRKN AS BREC ABOVE. FOLD AXIS.
13	37.88	37.93	0.05	11			ROCK LOSS	
13	37.93	38.33	0.40	10			MUDSTONE	DK.GY.THKB.SSD.SLD AS MUDST ABOVE. BIOTRB.
14	38.33	38.69	0.36	10			MUDSTONE	DK.GY.THKB.SSD.BRKN QTZ FRACTURE FILL. SSY & SLTY INFILL OF BIOTRB. SSY WISPS & LAMS. BIOTRB.
14	38.69	39.48	0.79	08			BRECCIA	THKB.SLD ANGULAR MUDST CLASTS IN QTZ & CALCITE M ATRIX. CLASTS VARY IN SIZE. FOLD AXIS?
14	39.48	39.63	0.15	08			ROCK LOSS	
14	39.63	40.26	0.63	07			MUDSTONE	DK.GY.THKB.SSD.SLD SLTY - SSY WISPS & LAMS. POSSIBLE GETTI NG INTO O/T ROCKS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
14	40.26	40.34	0.08	06			ROCK LOSS	
14	40.34	40.46	0.12	06			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE.
14	40.46	40.51	0.05	06			ROCK LOSS	
15	40.51	40.97	0.46	05			MUDSTONE	DK.GY.THKB.SLD AS ABOVE.
15	40.97	41.02	0.05	05			ROCK LOSS	
15	41.02	41.04	0.02	05			BENTONITE	LT.GY.VTHMB.SLD
15	41.04	42.61	1.57	03			MUDSTONE	DK.GY.THKB.SLD AS MUDST ABOVE. CALCITE & QTZ VEIN. O/T
15	42.61	42.71	0.10	02			ROCK LOSS	
16	42.71	43.49	0.78	*01			MUDSTONE	DK.GY.LAM.SSD.SLD ALT LAMS OF SLTY MUDST & MUDST. BIOTRB.
16	43.49	43.59	0.10	01			ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	43.59	44.87	1.28	02			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. BIOTRB.
16	44.87	44.97	0.10	02			ROCK LOSS	
17	44.97	46.08	1.11	03			MUDSTONE	DK.GY.THKB.SSD.SLD SLTY & SSS MISPS & LAMS, STILL BECOMING O/T, SOME CALCITE & QTZ FRACTURE FILLS . BIOTRB.
17	46.08	46.28	0.20	03			ROCK LOSS	
17	46.28	46.30	0.02	03			BENTONITE	LT.GY.BRKN
17	46.30	46.62	0.32	03			MUDSTONE	DK.GY.THKB.SSD.BRKN AS MUDST ABOVE. BIOTRB.
17	46.62	47.01	0.39	04			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. BIOTRB.
17	47.01	47.09	0.08	04			ROCK LOSS	
18	47.09	48.92	1.83	05			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. BIOTRB.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
18	48.92	49.19	0.27	05			ROCK LOSS	
19	49.19	49.92	0.73	06			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE. BIOTRB. DEMATERING.
19	49.92	51.23	1.31	06			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE. BIOTRB. DEMATERING.
20	51.23	52.80	1.57	07			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE. BIOTRB. DEMATERING.
20	52.80	53.05	0.25	08			ROCK LOSS	
20	53.05	53.41	0.36	08			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE. BIOTRB. DEMATERING.
21	53.41	54.41	1.00	09			MUDSTONE	DK.GY.THKB.SSD.SLD AS ABOVE. BIOTRB. DEMATERING.
21	54.41	54.68	0.27	09			ROCK LOSS	
21	54.68	55.41	0.73	10			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. BIOTRB, D EMATERING, BLACK PELLETS.
21	55.41	55.51	0.10	10			ROCK LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	55.51	55.80	0.29	10			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS. BIOTRB, DEMATERING, BLACK PELLETS.
22	55.80	55.83	0.03	10	10370		BENTONITE	LT.GY.VTHNB.BRKN
22	55.83	55.91	0.08	10			MUDSTONE	DK.GY.VBRKN HAS SOME BENTONITE MIXED IN WITH IT.
22	55.91	55.94	0.03	10			ROCK LOSS	
22	55.94	57.24	1.30	11			MUDSTONE	DK.GY.THKB.SSD.VBRKN AS BRKN MUDST ABOVE. POSSIBLE CORE LOSS
22	57.24	57.49	0.25	11			ROCK LOSS	
23	57.49	58.90	1.41	*12			MUDSTONE	DK.GY.THKB.SSD.BRKN SHEARED AS ABOVE. POSSIBLE CORE LOSS. O/T. BIOTRB.
23	58.90	59.20	0.30	14			ROCK LOSS	
23	59.20	59.66	0.46	15			MUDSTONE	DK.GY.THKB.SSD.BRKN AS ABOVE. BIOTRB.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	59.66	61.57	1.91	*17			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE, NOT AS HEAVILY BIOTRB OR SSD, LAMS MORE DISTINCT. O/T BEDDING. CALCI TE ON SHEAR SURFACES. POSSIBLE CORE LOS S. BIOTRB.
24	61.57	61.78	0.21	17			ROCK LOSS	
25	61.78	62.24	0.46	17			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. O/T. BIOTRB, DEMATERING.
25	62.24	63.85	1.61	17			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. STILL O/T. BIOTRB, DEMATERING
26	63.85	65.17	1.32	*17			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. NOT AS HEAVILY SSD OR BIOTRB. BIOTRB, DEMATERING.
26	65.17	65.27	0.10	15			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	65.27	65.98	0.71	*14		MUDSTONE	DK.GY.LAM.SSD.SLD SHEARED. COAL STRINGERS (C-3,C-4). CALCITE & TALC ASSOCIATED WITH STRINGERS. LIGHT GREY SLTY MISPS & LAMS ALT WITH MUDST. EACH LAM GRADE INTO ONE ANOTHER.
27	65.98	66.28	0.30	16		ROCK LOSS	
27	66.28	66.73	0.45	17	08373 N OVT FLOOR	MUDSTONE	DK.GY.BRKN QTZ VEINS 1-5MM THICK. C-1 PARTINGS 1-5 MM THICK. SAMPLED LOWER 25 CM. N (OVT) SEAM FLOOR ROCK.
27	66.73	67.17	0.44	18	08374 N OVT	COAL	C-5.BLK.VSHRD
27	67.17	67.21	0.04	19	08374 N OVT	COAL LOSS	
27	67.21	67.33	0.12	19	08374 N OVT	COAL	C-3.BLK.VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	67.33	67.63	0.30	20	08374 N OVT	COAL	C-4.BLK.PHRD
27	67.63	67.73	0.10	20	08374 N OVT	COAL LOSS	
27	67.73	67.89	0.16	21	08374 N OVT	COAL	C-3.BLK.VBRKN C-1, C-2, C-4 AND CARB MUDST BANDS AND FRAGMENTS.
28	67.89	68.12	0.23	21	08374 N OVT	COAL LOSS	
28	68.12	68.25	0.13	22	08374 N OVT	COAL	C-4.BLK.PHRD
28	68.25	68.41	0.16	22	08374 N OVT	MUDSTONE	CARB.BLK.BRKN SHEARED ALONG BROKEN SURFACES.
28	68.41	68.70	0.29	23	08374 N OVT	COAL LOSS	
28	68.70	68.73	0.03	23	08374 N OVT	COAL	C-3.BLK.VBRKN MINOR MUDST FRAGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	68.73	68.85	0.12	24	08374 N OVT	COAL	C-3. BLK. VBRKN MINOR MUOBT BANDS. MINOR C-1 BANDS 1-2 MM THICK.
28	68.85	68.96	0.11	24	08374 N OVT	COAL	C-4. BLK. VBRKN MINOR CALCITE VEINS NEAR BASE 1-5 MM THICK.
28	68.96	70.11	1.15	*26	08375 N OVT ROOF	MUDSTONE	DK. GY. LAM. SSD LAMINATED NEAR BASE. HOMOGENEOUS NEAR TOP. FLARE STRINGER NEAR BASE. BRECCIATE D AT BOTTOM OF UNIT WITH ABUNDANT CALCITE VEINING. N. (OVT) ROOF ROCK. UPPER 25 CM SAMPLED.
29	70.11	71.54	1.43	*40		MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD. ALT LAMS OF SLTY MUOBT & DK GREY MUOBT. O/T.
29	71.54	72.23	0.69	42		MUDSTONE	SLTY. LT. GY. LAM. SSD. SLD AS ABOVE.
30	72.23	72.96	0.73	43		MUDSTONE	SLTY. LT. GY. THKB. SSD. SLD. DK GREY MUOBT LAMS & WISPS. WORM BURROW S.
30	72.96	73.02	0.06	44		BRECCIA	SLD SMALL BREC ZONE WITH ANGULAR MUOBT CLASTS. QTZ & CALCITE MATRIX.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	73.02	74.35	1.33	46		SANDSTONE	MG. MOD. LT. GY. THKB. SLD. CALCITE & QTZ FRACTURE FILLS. DK GREY MUOBT WISPS & LAMS. SOME CARBONACEOUS MISP. RIP-UP CLASTS.
31	74.35	74.46	0.11	47		SANDSTONE	MG. MOD. LT. GY. THKB. SLD. DK GREY MUOBT WISPS.
31	74.46	75.60	1.14	48		SANDSTONE	MG. MOD. LT. GY. THKB. SLD. ARGILLACEOUS WISPS & LAMS. SOME CARBONACEOUS FILMS FOUND WITH WISPS. GRADED BEDDING.
31	75.60	76.30	0.70	50		SANDSTONE	MG. MOD. LT. GY. THKB. SSD. SLD. FRACTURE DISPLACEMENT. QTZ & CALCITE FRACTURE FILL. O/T BEDDING. ABUNDANT LAMS & WISPS. BIOTRB.
32	76.30	77.30	1.00	52		SANDSTONE	FG. MOD. LT. GY. THKB. SSD. SLD. QTZ & CALCITE FRACTURE FILLS. DK GREY ARGILLACEOUS WISPS. O/T BEDDING.
32	77.30	77.74	0.44	53		SANDSTONE	FG. MEL. LT. GY. THKB. BIOTR. BRKN SHEAR. CALCITE & QTZ FRACTURE FILL. DK GREY ARGILLACEOUS LAMS AND WISPS.
32	77.74	78.04	0.30	54		BRECCIA	SMALL BREC ZONE WITH QTZ & CALCITE.
31	78.04	78.19	0.15	54		ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	78.19	78.53	0.34	55			SANDSTONE	FG.WEL.LT.GY.THKB.BRKN AS SS ABOVE. BECOMING FRACTURED NEAR END, WITH CALCITE & QTZ.
33	78.53	78.97	0.44	56			BRECCIA	SLD SLTY ARGILLACEOUS ANGULAR FRAG IN QTZ-C CALCITE MATRIX. FAULT?. SHEARED. BECOMING COALY NEAR END.
33	78.97	79.07	0.10	56			MUDSTONE	DK.BLK.THNB.BRKN CARBONACEOUS SHEARED MUDST. CALCITE & QTZ FRACTURE FILL. COAL STRINGERS AND PARTICLES C-2, C-3.
33	79.07	79.32	0.25	57			ROCK LOSS	
33	79.32	80.17	0.85	58			MUDSTONE	DK.BLK.THKB.SLD COAL STRINGERS. CALCITE FRACTURE FILL. PLANT MASH.
33	80.17	80.70	0.53	*59			MUDSTONE	DK.GY.LAM.SSD.SLD ALT LAMS OF MUDST & LT GREY MUDST. PYRITE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	80.70	82.76	2.06	64			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD RIGHT WAY UP. DK GREY ARGILLACEOUS LAMS & WISPS.
35	82.76	83.68	0.92	71			SANDSTONE	MG.WEL.LT.GY.THKB.SLD DK GREY ARGILLACEOUS WISPS.
35	83.68	84.59	0.91	74			SANDSTONE	MG.WEL.LT.GY.THKB.SSD.SLD AS ABOVE. SHEARED.
36	84.59	85.36	0.77	78			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD ARGILLACEOUS WISPS. PYRITE. RIP-UP CLASTS.
36	85.36	86.59	1.23	*82			SANDSTONE	FG.WEL.LT.GY.THKB.SSD MORE ARGILLACEOUS WISPS & LAMS. BURROWS.
37	86.59	87.29	0.70	82			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.YBRKN POSSIBLE CORE LOSS. ARGILLACEOUS WISPS & LAMINAE. BIOTRB. O SEAM ROOF ROCK. NOT SAMPLED.
37	87.29	87.53	0.24	82	99996	0	COAL LOSS	
37	87.53	87.75	0.22	83	99996	0	ROCK LOSS	

* DENOTES MEASURED BCA

FORM 4000-1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	87.75	87.98	0.23	83	99996	0	COAL LOSS	
37	87.98	88.96	0.98	83			SANDSTONE	MG. WEL. LT. GY. THKB. SSD. SLD DK GREY TO LT BLK ARGILLACEOUS LAMS & M ISPS. QTZ FRACTURE FILL. FAULT. Q SEAM FLOOR ROCK. NOT SAMPLED.
38	88.96	89.73	0.77	83			SANDSTONE	MG. MOD. LT. GY. THKB. SSD. SLD DK GREY - BLACK ARGILLACEOUS LAMS & WIS PS. QTZ FRACTURE FILL. GRADED BED, BIOT RB.
38	89.73	89.78	0.05	83			ROCK LOSS	
38	89.78	89.89	0.11	83			MUDSTONE	DK. GY. LAM. SSD. SLD ALT LAMS OF DK GREY MUDST & LT GREY SLT Y MUDST. BIOTRB.
38	89.89	90.04	0.15	83			ROCK LOSS	
38	90.04	91.14	1.10	83			MUDSTONE	SLTY. LT. GY. THKB. SSD. SLD ARGILLACEOUS LAMS & WISPS. BIOTRB, BURR OWS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	91.14	91.32	0.18	84			ROCK LOSS	
39	91.32	93.07	1.75	*84	08376	N ROOF	SANDSTONE	CLY. YFG. WEL. M. GY. LAM. SSD. SLD VFG SS WITH MUDST INTERLAMS. LOAD CASTS SHOW TOPS UP. FLASER BEDDING. N SEAM R OOF ROCK. SAMPLED LOWER 25CM.
39	93.07	93.11	0.04	83	08377	N	COAL	C-4. BLK. BRKN ABUNDANT CALCITE VEINS 1-6MM THICK AT T OP.
39	93.11	93.12	0.01	83	08377	N	COAL LOSS	
39	93.12	93.18	0.06	83	08377	N	COAL	C-2. BLK. BRKN INTERBEDDED C-1 AND C-3.
39	93.18	93.24	0.06	83	08377	N	COAL	C-3. BLK. YBRKN MINOR C-2 BANDS.
39	93.24	93.26	0.02	83	08377	N	COAL	C-5. BLK. YBRKN
39	93.26	93.40	0.14	83	08377	N	COAL LOSS	
39	93.40	93.44	0.04	83	08377	N	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	93.44	93.48	0.04	83	08377	N	COAL	C-1.BLK.VBRKN
40	93.48	93.53	0.05	83	08377	N	COAL	C-2.BLK.PMRD
40	93.53	93.71	0.18	83	08377	N	COAL	C-3.BLK.PMRD
40	93.71	93.74	0.03	83	08377	N	MUDSTONE	CARB.BLK.BRKN
40	93.74	93.76	0.02	83	08377	N	COAL	C-3.BLK.VBRKN
40	93.76	93.94	0.18	83	08377	N	MUDSTONE	CARB.BLK.BRKN ABUNDANT C-2 AND C-3 PARTINGS.
40	93.94	94.00	0.06	83	08377	N	COAL	C-4.BLK.VBRKN
40	94.00	94.19	0.19	82	08377	N	COAL LOSS	
40	94.19	95.01	0.82	*82	08378	N FLOOR	MUDSTONE	DK.GY.BRKN NUMEROUS THIN (1-5 MM) COAL PARTINGS. C ALCITE VEINS NEAR TOP (TOP 10CM). REST OF UNIT IS HOMOGENEOUS. CORE TWIST-OFF @ BASE. POSSIBLE CORE LOSS. MINOR PLANT HASH. SAMPLED UPPER 25CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	95.01	95.52	0.51	83			MUDSTONE	SLTY DK.GY.LAM.SLD MUDST WITH SILTY INTERLAM. CALCITE VE IN (3MM) AT TOP. MINOR PLANT HASH.
41	95.52	96.32	0.80	83			MUDSTONE	DK.GY.LAM.SSD.VBRKN ALT LAMS OF LT GREY SLTY MUDST & DK GRE Y MUDST. POSSIBLE CORE LOSS.
41	96.32	97.25	0.93	84			MUDSTONE	DK.GY.LAM.SSD.VBRKN AS ABOVE. POSSIBLE CORE LOSS.
42	97.25	98.90	1.65	85			MUDSTONE	DK.GY.LAM.SSD.BRKN AS ABOVE. POSSIBLE CORE LOSS.
42	98.90	99.04	0.14	86			ROCK LOSS	
43	99.04	99.47	0.43	*86			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE.
43	99.47	99.90	0.43	86			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. LT GREY LAM GETTING SSY.
43	99.90	99.96	0.06	86			ROCK LOSS	
43	99.96	100.42	0.46	86			SANDSTONE	CG.MOD.LT.GY.THKB.SSD.SLD ARGILLACEOUS & SLTY WISPS & LAMS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	100.42	101.12	0.70	86		SANDSTONE	MG. MEL. LT. GY. THKB. SLD FAINT ARGILLACEOUS WISPS. GRADING CG TO FG & BACK TO CG, RHYTHMIC. RIP-UP CLASTS.
44	101.12	102.15	1.03	86		SANDSTONE	FG. MEL. LT. GY. THKB. SLD ARGILLACEOUS WISPS.
44	102.15	102.28	0.13	86		SANDSTONE	MG. PR. LT. GY. THKB. SLD FEW ARGILLACEOUS WISPS & LAMS. RIP-UP CLASTS.
44	102.28	102.92	0.64	86		SANDSTONE	MG. PR. LT. GY. THKB. SLD AS ABOVE. FEW ARGILLACEOUS WISPS & LAMS
45	102.92	104.07	1.15	86		SANDSTONE	MG. PR. LT. GY. THKB. SLD ARGILLACEOUS WISPS. GRADED BEDDING. RIP UP CLASTS.
45	104.07	104.12	0.05	86		ROCK LOSS	
45	104.12	105.02	0.90	86		MUDSTONE	DK. GY. LAM. SSD. SLD LT. GREY. SLTY LAMS & WISPS.
46	105.02	105.26	0.24	86		MUDSTONE	DK. GY. LAM. SSD. SLD ALT LAMS OF LT. GREY. SLTY MUDST & DK GREY-BLACK MUDST.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	105.26	106.76	1.50	86		MUDSTONE	DK. GY. LAM. SSD. SLD AS ABOVE.
46	106.76	107.19	0.43	87		MUDSTONE	DK. GY. LAM. SSD. SLD ALT LAMS AS ABOVE WHICH GRADE INTO ONE ANOTHER.
47	107.19	108.23	1.04	87		MUDSTONE	DK. GY. LAM. SSD. SLD AS ABOVE.
47	108.23	108.39	0.16	87		ROCK LOSS	
47	108.39	109.29	0.90	87		MUDSTONE	DK. GY. LAM. SSD. BRKN VERY FAINT LAMS GRADING INTO ONE ANOTHER. PLANT WASH.
48	109.29	110.22	0.93	87		MUDSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE. QIZ VEIN AREA WHERE MOST VEIN S. HAVE BEEN FORMED INTO A CHEYRON FOLD.
48	110.22	110.37	0.15	87		ROCK LOSS	
48	110.37	110.39	0.02	87		BENTONITE	LT. GY ACTUALLY A. TUFFITE.
48	110.39	110.64	0.25	87		MUDSTONE	DK. GY. LAM. SSD. BRKN AS MUDST ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	110.64	111.01	0.37	87			MUDSTONE	CARB. DK. BLK. VBRKN PLANT HASH, COAL STRINGERS & PARTINGS. C-3 & POSSIBLY SOME C-2.
48	111.01	111.41	0.40	87			ROCK LOSS	
48	111.41	111.72	0.31	87			MUDSTONE	DK. GY. LAM. SSD. BRKN FAINT ALT LAMS OF DK & LT MUDST. LAMS GRADE INTO ONE ANOTHER.
49	111.72	112.69	0.97	87			MUDSTONE	DK. BLK. LAM. SLD AS ABOVE. FEW COAL STRINGERS. PLANT HAS H.
49	112.69	112.83	0.14	87			ROCK LOSS	
49	112.83	112.96	0.13	*87			MUDSTONE	DK. BLK. LAM. SLD AS ABOVE. ABUNDANT COAL STRINGERS, CALCITE VEINING.
49	112.96	113.38	0.42	*84			MUDSTONE	DK. BLK. LAM. SLD AS ABOVE. FEW COAL STRINGERS. PLANT HAS H (EXCELLENT EQUISETITES LYELLI). M/N S. EAM ROOF ROCK. NOT SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
49	113.38	113.54	0.16	83	99997	M/N	COAL LOSS	
49	113.54	113.60	0.06	83	99997	M/N	COAL	C-4. DK. BLK. VBRKN POWDERED.
49	113.60	113.70	0.10	83	99997	M/N	COAL	C-2. DK. BLK. PWRD SHEARED.
49	113.70	113.86	0.16	82	99997	M/N	COAL	C-3. DK. BLK. PWRD SHEARED.
49	113.86	113.91	0.05	82	99997	M/N	COAL LOSS	
50	113.91	114.53	0.62	81			MUDSTONE	DK. BLK. LAM. BRKN SHEARED. PLANT HASH. FAINT ALT LAMS OF LT GREY & BLK CARBONACEOUS MUDST. M/N S. EAM FLOOR ROCK. NOT SAMPLED.
50	114.53	114.80	0.27	80			SANDSTONE	FG. MOD. LT. GY. THKB. SSD. BRKN ARGILLACEOUS LAMS & MISPS. CALCITE FRACTURE FILL. POSSIBLE CORE LOSS.
50	114.80	114.95	0.15	79			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	114.95	115.83	0.88	78			SANDSTONE	FG. MOD. LT. GY. THKB. SSD. BRKN AS ABOVE. BIVALVES.
50	115.83	115.93	0.10	77			ROCK LOSS	
51	115.93	116.26	0.33	*76			SANDSTONE	FG. MOD. LT. GY. THKB. SLD ARGILLACEOUS MISPS & LAMINAE.
51	116.26	116.30	0.04	76			ROCK LOSS	
51	116.30	117.73	1.43	75			MUDSTONE	DK. GY. LAM. BRKN LT GREY SLTY LAM. FRACTURE DISPLACEMENT CALCITE & QTZ. FRACTURE FILL. HELMINTH OPSIS. SHEARED.
51	117.73	117.94	0.21	75			ROCK LOSS	
52	117.94	118.04	0.10	75			MUDSTONE	DK. GY. VTHKB. SLD BLACK PELLETS.
52	118.04	119.04	1.00	74			MUDSTONE	DK. GY. VTHKB. SLD DISSEMINATED PYRITE, BIVALVES. POSSIBLE STAFFINELLA.
52	119.04	119.18	0.14	74			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	119.18	119.94	0.76	73			SANDSTONE	FG. MEL. LT. GY. THKB. SSD. BRKN CALCITE & QTZ FRACTURE FILL. PYRITE. SHEARED. ARGILLACEOUS MISPS & LAMS.
52	119.94	120.03	0.09	73			ROCK LOSS	
53	120.03	121.03	1.00	73			SANDSTONE	FG. MEL. LT. GY. THKB. SSD. BRKN AS ABOVE. FRACTURE DISPLACEMENT. NO PYRITE.
53	121.03	121.08	0.05	72			SANDSTONE	CG. PR. LT. GY. VTHNB. SLD
53	121.08	121.43	0.35	*72			MUDSTONE	DK. GY. LAM. SLD FAINT ALT LAMS WHICH GRADE INTO ONE AND OTHER. ? SEAM ROOF ROCK. NOT SAMPLED.
53	121.43	121.60	0.17	72 99998 ?			COAL	C-S. PWRD PYRITE CRYSTALS.
53	121.60	121.82	0.22	72 99998 ?			COAL LOSS	
53	121.82	121.87	0.05	72			MUDSTONE	DK. BLK. SHRD POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	121.87	122.09	0.22	*72			MUDSTONE	DK.BLK.THNB.BRKN CARBONACEOUS MUDST WITH C-3 COAL STRINGERS & PARTINGS.
54	122.09	122.74	0.65	72			MUDSTONE	DK.BLK.THKB.SLD LT GREY WISPS & LAM, GRADING INTO BLACK CARBONACEOUS MUDST. PLANT WASH. FEM COAL STRINGERS.
54	122.74	122.85	0.11	72			ROCK LOSS	
54	122.85	124.24	1.39	71			SANDSTONE	FG.MEL.M.GY.LAM.SSD.SLD ALT LAMS OF FG SS & BLACK MUDST. WRMBUR . BIOTRB.
55	124.24	124.85	0.61	71			SANDSTONE	FG.MEL.LT.GY.LAM.SSD.SLD CALCITE & TALC ON SHEAR SURFACE.
55	124.85	125.00	0.15	71			ROCK LOSS	
55	125.00	125.62	0.62	71			SANDSTONE	FG.MOD.LT.GY.THKB.SSD.SLD ARGILLACEOUS WISPS & LAMS.
55	125.62	125.68	0.06	70			ROCK LOSS	
55	125.68	126.00	0.32	70			SANDSTONE	MG.MOD.LT.GY.THNB.SLD FAINT ARGILLACEOUS WISPS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	126.00	126.45	0.45	70			MUDSTONE	BLK.SSD.SLD LT GREY FAINT SLTY WISPS & LAMS. COAL'S TRINGERS. BIOTRB.
56	126.45	126.79	0.34	70			MUDSTONE	BLK.SSD.SLD SLTY-SSY WISPS & LAMS. TALC DEPOSITS ON SHEAR SURFACE, CALCITE & QTZ VEIN.
56	126.79	127.28	0.49	70			SANDSTONE	MG.MOD.LT.GY.VTHKB.SSD.SLD ARGILLACEOUS WISPS & LAMS. RIP-UP CLAST S. GRADED BEDDING.
56	127.28	128.46	1.18	70			SANDSTONE	MG.MOD.LT.GY.VTHKB.SSD.SLD AS ABOVE. RIP-UP CLASTS. GRADED BEDDING
56	128.46	128.55	0.09	69			ROCK LOSS	
57	128.55	128.85	0.30	69			SANDSTONE	MG.MOD.LT.GY.THNB.VBRKN RIP-UP CLASTS.
57	128.85	129.69	0.84	69			SANDSTONE	MG.MOD.LT.GY.THKB.SLD ARGILLACEOUS WISPS & LAMINAE. RIP-UP CL ASTS. GRADED BEDDING.
57	129.69	129.84	0.15	69			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	129.84	130.30	0.46	69			SANDSTONE	CG. PR. LT. GY. MAS. SLD FEW ARGILLACEOUS WISPS & LAMINAE. RIP-UP CLASTS.
57	130.30	130.35	0.05	69			ROCK LOSS	
57	130.35	130.44	0.09	69			SANDSTONE	MG. MOD. LT. GY. THNB. SLD AS ABOVE.
57	130.44	130.66	0.22	68			SANDSTONE	FG. WEL. LT. GY. THNB. BRKN ARGILLACEOUS LAM. POSSIBLE CORE LOSS.
57	130.66	130.70	0.04	68			ROCK LOSS	
58	130.70	132.77	2.07	*68			SANDSTONE	FG. WEL. LT. GY. VTHKB. SSD. SLD ARGILLACEOUS LAMS & WISPS. BURROW.
58	132.77	132.80	0.03	73			ROCK LOSS	
59	132.80	133.48	0.68	*75			SANDSTONE	FG. WEL. LT. GY. VTHKB. SSD. SLD ARGILLACEOUS LAMS & WISPS. PLANT HASH FOUND IN SOME LAMS. FRACTURE DISPLACEMENT. BIOTRB.
59	133.48	134.80	1.32	75			SANDSTONE	FG. WEL. LT. GY. VTHKB. SSD. SLD AS ABOVE. BIOTRB.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	134.80	136.43	1.63	76			SANDSTONE	FG. WEL. LT. GY. VTHKB. SSD. SLD ARGILLACEOUS LAMS & WISPS. CARBONACEOUS FILM CAN BE FOUND ON SOME LAMS.
60	136.43	136.89	0.46	77			SANDSTONE	FG. WEL. LT. GY. VTHKB. SSD. SLD AS ABOVE.
61	136.89	137.59	0.70	77			SANDSTONE	FG. WEL. LT. GY. THKB. SLD PYRITE. ARGILLACEOUS WISPS & LAMINAE. RIP-UP CLASTS.
61	137.59	138.31	0.72	77			SANDSTONE	FG. WEL. LT. GY. LAM. XBDG. SLD ALT LAMS OF FG. SS & DK. GREY-BLACK MUDST. - SSD.
61	138.31	138.94	0.63	78			MUDSTONE	DK. GY. LAM. SSD. SLD ALT LAMS OF MUDST & LT GREY SLTY SSS LAMS.
62	138.94	139.64	0.70	*78	08379 M	UPPER ROOF	MUDSTONE	SLTY DK. GY. VTHNB. SSD. BRKN MUDST WITH SLTST INTERBEDS. LOAD CASTS INDICATE TOPS UP. L. SEAM ROOF ROCK. LOWER 25.0CM SAMPLED.
62	139.64	139.74	0.10	78	08380 M	UPPER	COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	139.74	139.93	0.19	77	08380	M UPPER	COAL	C-3.BLK.VSHRD
62	139.93	140.31	0.38	77	08380	M UPPER	MUDSTONE	DK.GY.SHRD
62	140.31	140.43	0.12	77	08380	M UPPER	MUDSTONE	DK.GY.SHRD
62	140.43	140.77	0.34	76	08380	M UPPER	MUDSTONE	SLTY DK.GY.VTHNB.VBRKN MUDST WITH SLTST INTERBEDS.
62	140.77	140.91	0.14	76	08380	M UPPER	SILTSTONE	CLY.M.GY.VTHNB.SSD.BRKN FINING UP. GRADED BEDDING 5-20MM THICK - GRADES FROM VFG SS UP TO MUDST. LOAD CASTS INDICATE TOPS UP. DISSEMINATED PY RITE FOUND AT BASE.
62	140.91	141.00	0.09	76	08381	M UPPER	COAL	C-3.BLK.PHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	141.00	141.03	0.03	76	08381	M UPPER	COAL LOSS	
62	141.03	141.10	0.07	76	08381	M UPPER	MUDSTONE	CARB.BLK.BRKN ABUNDANT C-2 AND C-3 BANDS 1.0-5.0MM TH ICK.
63	141.10	141.35	0.25	76	08381	M UPPER	COAL	C-2.BLK.PHRD ABUNDANT C-1 AND C-3 FRAGS.
63	141.35	141.37	0.02	75	08381	M UPPER	MUDSTONE	CARB.BLK.VBRKN ABUNDANT THIN COAL PARTINGS.
63	141.37	141.41	0.04	75	08381	M UPPER	COAL	C-3.BLK.BRKN INTERBEDDED C-1 AND MUDST.
63	141.41	141.45	0.04	75	08381	M UPPER	COAL	C-4.BLK.PHRD
63	141.45	141.54	0.09	75	08381	M UPPER	COAL LOSS	
63	141.54	141.59	0.05	75	08382	M UPPER FLR	MUDSTONE	DK.GY.BRKN L SEAM FLOOR ROCK. SAMPLED.
63	141.59	141.88	0.29	*75	08382	M UPPER FLR	SANDSTONE	FG.M.GY.BRKN MINOR THIN (1-3MM) MUDST LENSES. L SEAM FLOOR ROCK. UPPER 20.0CM SAMPLED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	141.88	142.43	0.55	*71		SANDSTONE	MG.M.GY.MB.SSD.BRKN MINOR MUDST INTERBEDS. ABUNDANT LOAD CASTS INDICATE TOPS UP.
63	142.43	142.73	0.30	70		SANDSTONE	MG.M.GY.MB.SSD.BRKN
63	142.73	143.14	0.41	69		SILTSTONE	CLYY.M.GY.THNB.SSD.BRKN ABUNDANT MUDST INTERBEDS AND YFG.SS INT ERBEDS 5.0-2.0MM THICK. ABUNDANT LOAD C ASTS INDICATE TOPS UP.
64	143.14	143.98	0.84	67	08383 M ROOF	SILTSTONE	CLYY.M.GY.THNB.SSD.BRKN AS ABOVE PLUS BIVALVE BURROWS & DISSEMI NATED PYRITE BANDS 5-15MM THK (3). ? SE AM ROOF ROCK. LOWER 25.0CM SAMPLED.
64	143.98	144.05	0.07	65	08384 M	COAL LOSS	
64	144.05	144.08	0.03	65	08384 M	COAL	C-3.BLK.BRKN

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	144.08	144.19	0.11	*65	08384 M	COAL	C-1.BLK.BRKN
64	144.19	144.27	0.08	64	08384 M	COAL	C-2.BLK.VBRKN
64	144.27	144.36	0.09	64	08384 M	COAL	C-1.BLK.VBRKN
64	144.36	144.41	0.05	63	08384 M	COAL	C-2.BLK.PHRD ABUNDANT C-1 AND C-3 FRAGS.
64	144.41	144.44	0.03	63	08384 M	COAL	C-3.BLK.PHRD EXTREMELY SHEARED.
64	144.44	144.46	0.02	63	08384 M	MUDSTONE	CARB.BLK.PHRD
64	144.46	144.52	0.06	62	08384 M	MUDSTONE	CARB.BLK.BRKN CORE TWIST-OFF AT TOP. POSSIBLE CORE LO SS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	144.52	144.60	0.08	62	08384	M	COAL	C-3. BLK. YSHRD C-2 AND C-4 BANDS PRESENT.
64	144.60	144.78	0.18	61	08384	M	COAL	C-3. BLK. PWRD
64	144.78	144.80	0.02	60	08384	M	MUDSTONE	CARB. BLK. YSHRD
64	144.80	144.83	0.03	60	08384	M	COAL LOSS	
64	144.83	144.85	0.02	60	08384	M	COAL	C-3. BLK. PWRD
64	144.85	144.91	0.06	59	08384	M	MUDSTONE	CARB. BLK. BRKN
64	144.91	145.04	0.13	59	08384	M	COAL LOSS	
64	145.04	145.09	0.05	58	08384	M	COAL	C-2. BLK. SHRD
64	145.09	145.12	0.03	58	08384	M	COAL	C-1. BLK. PWRD
65	145.12	145.15	0.03	57	08384	M	COAL	C-1. BLK. PWRD
65	145.15	145.29	0.14	57	08384	M	COAL	C-3. BLK. PWRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	145.29	145.32	0.03	56	08384	M	MUDSTONE	CARB. BLK. SHRD
65	145.32	145.36	0.04	56	08384	M	ROCK LOSS	
65	145.36	145.45	0.09	55	08384	M	COAL LOSS	
65	145.45	145.53	0.08	55	08384	M	COAL	C-2. BLK. PWRD
65	145.53	145.56	0.03	54	08384	M	COAL	C-2. BLK. PWRD
65	145.56	145.63	0.07	54	08384	M	COAL LOSS	
65	145.63	145.68	0.05	53	08384	M	COAL	C-5. BLK. SHRD ABUNDANT INTERBEDDED CARB MUDST.
65	145.68	145.75	0.07	53	08384	M	MUDSTONE	CARB. BLK. SHRD
65	145.75	145.80	0.05	53	08384	M	COAL	C-5. BLK. PWRD ABUNDANT MUDST FRAGS.
65	145.80	145.92	0.12	52	08384	M	COAL LOSS	
65	145.92	145.96	0.04	51	08384	M	MUDSTONE	CARB. BLK. SHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	145.96	146.03	0.07	51	08384 M	COAL	C-4. BLK. PWRD ABUNDANT MUDST FRAGS.
65	146.03	146.07	0.04	50	08384 M	COAL	C-3. BLK. PWRD
65	146.07	146.24	0.17	50	08384 M	COAL LOSS	
65	146.24	146.38	0.14	49	08385 M FLOOR	MUDSTONE	DK. GY. VSHRD ? SEAM FLOOR ROCK. SAMPLED.
65	146.38	146.53	0.15	47	08385 M FLOOR	ROCK LOSS	
65	146.53	147.02	0.49	*45	08385 M FLOOR	MUDSTONE	SLTY. M. GY. LAM. BRKN MUDST WITH ABUNDANT SLTST INTERLAMS. SAMPLED UPPER 11.0CM. ? SEAM FLOOR ROCK.
66	147.02	147.69	0.67	*65		SANDSTONE	FG. WEL. LT. GY. THKB. SSD. SLD ARGILLACEOUS LAMS & NISPS. SHEARED.
66	147.69	147.79	0.10	66		ROCK LOSS	
66	147.79	148.50	0.71	66		SANDSTONE	FG. WEL. LT. GY. THKB. SSD. BRKN AS ABOVE. POSSIBLE CORE LOSS.
66	148.50	148.65	0.15	67		ROCK LOSS	

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	148.65	148.90	0.25	67		MUDSTONE	DK. GY. LAM. SSD. BRKN ALT LAMS OF LT GREY SLTY SSSY MUDST & DK GREY-BLACK MUDST.
66	148.90	148.93	0.03	67		ROCK LOSS	
66	148.93	149.23	0.30	67		MUDSTONE	DK. GY. LAM. SSD. BRKN AS ABOVE.
67	149.23	150.09	0.86	*68		SANDSTONE	YFG. WEL. M. GY. LAM. SSD CALCITE QTZ FRACTURE FILL. BIOTRB.
67	150.09	150.24	0.15	68		ROCK LOSS	
67	150.24	150.49	0.25	68		SANDSTONE	YFG. WEL. M. GY. LAM. SSD. YBRKN AS ABOVE. BIOTRB.
67	150.49	151.43	0.94	68		SANDSTONE	YFG. WEL. M. GY. LAM. SSD. YBRKN BIOTRB.
68	151.43	151.94	0.51	69		SILTSTONE	LT. GY. LAM. SSD. SLD FRACTURE DISPLACEMENT. ALT LAMS OF LT GREY SLTST & DK GREY-BLACK MUDST. SHEARED.
68	151.94	153.51	1.57	69		SILTSTONE	LT. GY. LAM. SSD. SLD AS ABOVE.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	153.51	154.91	1.40	69			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE. PLANT HASH, CARBONACEOUS FILM
69	154.91	155.59	0.68	70			MUDSTONE	DK.GY.LAM.SSD.SLD
70	155.59	157.66	2.07	70			MUDSTONE	DK.GY.LAM.SSD.SLD ALT LAMS OF MUDST & SLTY LT GREY MUDST. PLANT HASH. SHEARED.
71	157.66	157.85	0.19	71			MUDSTONE	DK.GY.LAM.SSD.SLD AS ABOVE.
71	157.85	159.73	1.88	*71			MUDSTONE	CARB.DK.GY.LAM.SSD.SLD AS ABOVE.
72	159.73	159.78	0.05	75			MUDSTONE	DK.BLK.LAM.BRKN AS ABOVE. K/L? SEAM ROOF ROCK. NOT SAMP LED.
72	159.78	159.98	0.20	76	99999	L	COAL	C-5.BLK.PHRD CARBONACEOUS MUD MIXED WITH COAL PARTIC LES.
72	159.98	160.03	0.05	76	99999	L	COAL LOSS	

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	160.03	160.11	0.08	76	99999	L	COAL	C-3.BLK.VBRKN
72	160.11	160.82	0.71	*78			MUDSTONE	CARB.DK.BLK.LAM.SSD.SLD LT GREY & BLK LAMS, GRADE INTO ONE ANOT HER.K/L? S.EAM.FLOOR.ROCK. NOT SAMPLED.
72	160.82	160.89	0.07	78			ROCK LOSS	
72	160.89	161.79	0.90	77			SILTSTONE	LT.GY.THKB.SSD.SLD ARGILLACEOUS LAMS & WISPS.
72	161.79	161.85	0.06	77			ROCK LOSS	
73	161.85	163.79	1.94	76			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD ARGILLACEOUS WISPS & LAMINAE. RIP-UP CL ASTS.
74	163.79	163.84	0.05	76			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD AS ABOVE. RIP-UP CLASTS.
74	163.84	165.79	1.95	75			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD AS ABOVE. BIYALVES. DEMATERING. BURROWS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88028

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	165.79	166.16	0.37	74			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD ARGILLACEOUS WISPS & LAMS. WRM BURROWS.
75	166.16	166.52	0.36	74			SANDSTONE	FG.WEL.LT.GY.THKB.SSD.SLD FAINT ARGILLACEOUS WISPS & PLANT FRAGME NTS.
75	166.52	166.79	0.27	*74			SANDSTONE	FG.WEL.LT.GY.LAM.SLD ALT LAMS OF SS & MUDST.
75	166.79	167.70	0.91	74			SANDSTONE	FG.MOD.LT.GY.THKB.BRKN ARGILLACEOUS LAMS & WISPS. POSSIBLE COR E LOSS. SS SLOWLY BECOMES COARSER NEAR END OF BOX.
76	167.70	167.87	0.17	74			ROCK LOSS	
76	167.87	167.96	0.09	74			SANDSTONE	HG.MOD.LT.GY.THKB.BRKN ARGILLACEOUS WISPS. PYRITE. END OF HOLE . ID = 167.96M.

* DENOTES MEASURED BCA
NEWPAGE

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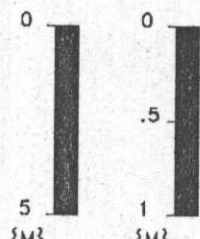
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88028

GEOLOGIST : MATTHEWS

DATE : FEB 27/89

DRAWING NO. :

SCALE : 1:200 1:40



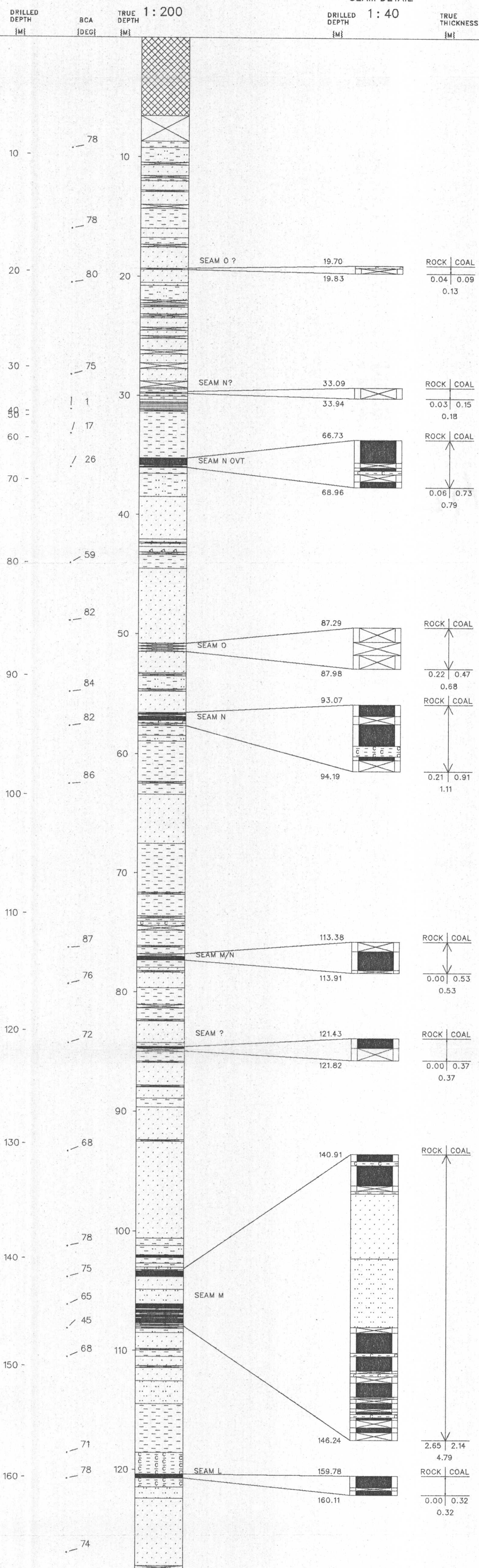
NORTHING: 6346457.0 N
 EASTING: 508436.3 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 167.96 TOTAL: 128.32

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Gulf Canada Resources Limited Coal Division

Geophysical Log

Datasource: **KPNLRDDH88028**

Province: BC Northing: 6346460.00 Lat: 571547

Log Date: 88-07-12

Zone: 9 Easting: 508436.00 Long: 1285137

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1406.8

Geologist: MATTHEWS

Scale: 1 to 200.0

Comments:

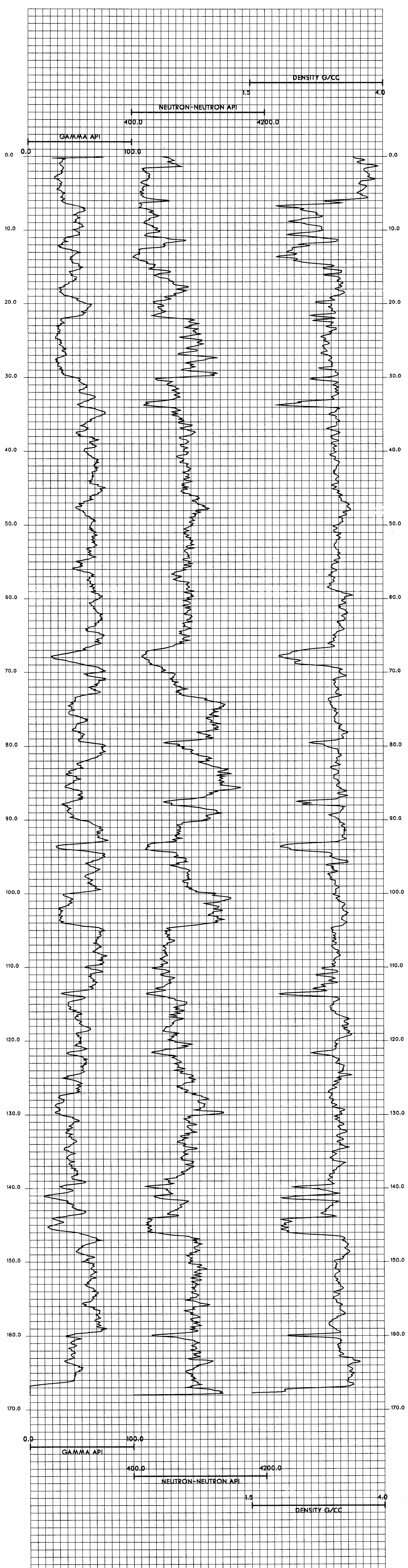
1. LOGGED THROUGH RODS
- 2.

Depth Range: 0.0 to 173.0

True Thickness: NO

Logs Plotted:

Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	



KPNLRDDH88029

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH88029

DATE - 02/15/89

- HISTORY -

START DATE - 07/14/88

END DATE - 07/16/88

CONTRACTOR - J.T. THOMAS

GEOLOGIST - HEARN

OPERATOR - G.C.R.L.

SURVEYOR - TRONNES

REMARKS - FINAL DRILL HOLE FOR 1988. SEAMS INTERSECTED: O, N
, M, L, & K/L.

- LOCATION -

PROVINCE - BC

ELEVATION - 1615.94

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343983.57

EASTING - 507393.93

LATITUDE - 571427

LONGITUDE - 1285239

- ORIENTATION -

LENGTH - 158.09

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ -

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

MOUNT KLAPPAN ANTHRACITE PROJECT

SCHEMATIC PROFILE

DDH88-029

SEAM

TRUE SEAM THICKNESS
(Coal + Rock)

N

1.65 m

M

11.13 m

L

2.69 m

K/L

4.27 m



SCALE

1:2000

NOTE: Seams less than 0.5 m thick are not shown.

Gulf Canada Resources Limited



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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	3.66	3.66	16		OVERBURDEN	CASING DEPTH.
1	3.66	3.76	0.10	16		MUDSTONE	M-DK.GY.SLD WEATHERED FRACTURES, CG SS FRACTURES & LENSES.
1	3.76	3.87	0.11	16		SANDSTONE	CG.M.GY.SLD
1	3.87	4.69	0.82	16		MUDSTONE	M-DK.GY.VBRKN CG SS FRACTURES. SMALL SCALE QTZ VEINS.
1	4.69	4.74	0.05	16		ROCK LOSS	
1	4.74	4.88	0.14	16		SANDSTONE	CG.M.GY.BRKN TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS.
1	4.88	4.95	0.07	16		ROCK LOSS	
1	4.95	5.65	0.70	16		SANDSTONE	CLYY.CG.M.GY.LAM.BRKN TWIST-OFF AT TOP OF UNIT, POSSIBLE CORE LOSS. SLTST LAMELLAE & VERY THIN BEDS.
2	5.65	7.85	2.20	16		SANDSTONE	CLYY.CG.M.GY.LAM.BRKN SLTST LAMELLAE & RARE QTZ LAMELLAE.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
3	7.85	8.05	0.20	16		SANDSTONE	CLYY.CG.M.GY.LAM.BRKN SLTST LAMELLAE & VERY THIN BEDS.
3	8.05	8.29	0.24	*16		SANDSTONE	CLYY.CG.M.GY.LAM.SLD AS ABOVE WITH SMALL SCALE QTZ VEINS. TWIST-OFF AT TOP OF UNIT.
3	8.29	8.48	0.19	17		SANDSTONE	CLYY.CG.M.GY.VBRKN AS ABOVE WITHOUT TWIST-OFF.
3	8.48	8.79	0.31	19		SILTSTONE	M-DK.GY.VBRKN SS LOAD CASTS & FRACTURE FILL & RIP-UPS SMALL SCALE QTZ VEINS.
3	8.79	9.03	0.24	19		SANDSTONE	CLYY.CG.M-DK.GY.VBRKN SLTST VERY THIN BEDS.
3	9.03	9.08	0.05	20		SANDSTONE	CLYY.CG.M-DK.GY.BRKN
3	9.08	9.72	0.64	21		SANDSTONE	CLYY.CG.M-DK.GY.BRKN TWIST-OFF AT TOP OF UNIT, POSSIBLE CORE LOSS. SLTST RIP-UP CLASTS AT BASAL UNIT (UP TO 3CM; AVERAGE 1CM) ARE POORLY SORTED AND WELL PACKED. GRADE INTO INBRI-CATION OF RIP-UPS (UP TO 3CM; AVERAGE LESS 1.0CM). SPARSE CLASTS AT TOP OF UNIT.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
4	9.72	10.35	0.63	22		SANDSTONE	CG.M.GY.BRKN SLTST RIP-UPS UP TO 8.0CM (AVERAGE 1.0CM). INBRICATION OF RIP-UPS AT TOP OF UNIT.
4	10.35	10.48	0.13	23		SILTSTONE	SSY.MG.M-DK.GY.LAM.BRKN SS LAMELLAE & LOAD CASTS.
4	10.48	10.88	0.40	24		SANDSTONE	SLTY.MG.M.GY.BRKN SILTY MISPS.
4	10.88	11.61	0.73	*25		SANDSTONE	SLTY.MG.M.GY.BRKN AS ABOVE.
5	11.61	12.28	0.67	27		SANDSTONE	MG.M-DK.GY.LAM.BRKN FEW MUDST VERY THIN BEDS. MUDST & SLTST LAMELLAE. SMALL SCALE QTZ VEINS. SMALL SCALE LOAD CASTS.
5	12.28	12.51	0.23	28		SANDSTONE	FG.M.GY.LAM.SSD.VBRKN
5	12.51	12.94	0.43	31		SILTSTONE	M-DK.GY.BRKN FEW FG SS LENSES. VERY FINE QTZ VEINS.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
5	12.94	13.52	0.58	*33		SILTSTONE	M-DK.GY.BRKN LAMINATED IN A FEW AREAS (APPROX 4.0CM) UP TO 1.0CM CARBONATE FRACTURE FILL.
6	13.52	13.94	0.42	32		MUDSTONE	DK.GY.BRKN MASSIVE. FEW SMALL SCALE QTZ & CARB VEINS. AS ABOVE.
6	13.94	15.48	1.54	*31		MUDSTONE	DK.GY.BRKN AS ABOVE. O SEAM ROOF ROCK. NOT SAMPLED.
7	15.48	15.91	0.43	31 99999 0		MUDSTONE	DK.GY.BRKN AS ABOVE.
7	15.91	16.01	0.10	31 99999 0		MUDSTONE	CARB.BLK.VSHRD SHEARED & POWDERED. VERY GOEY ON STICKY WITH SMALL (LESS 0.5CM) ANGULAR COAL FLECKS.
7	16.01	16.31	0.30	31 99999 0		ROCK LOSS	
7	16.31	16.49	0.18	31		MUDSTONE	DK.GY.BRKN MASSIVE. TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
7	16.49	16.59	0.10	31			ROCK LOSS	
7	16.59	17.80	1.21	31			MUDSTONE	DK. GY. BRKN MASSIVE. FEW SMALL SCALE QTZ VEINS.
8	17.80	18.01	0.21	31			MUDSTONE	DK. GY. BRKN MASSIVE.
8	18.01	19.33	1.32	31			MUDSTONE	DK. GY. BRKN MASSIVE. TWIST-OFF AT TOP OF UNIT.
8	19.33	19.53	0.20	31			ROCK LOSS	
8	19.53	19.73	0.20	31			MUDSTONE	DK. GY. SLD HEAVILY FRACTURED WITH ARGILLACEOUS FIL.
8	19.73	19.81	0.08	31			MUDSTONE	DK. GY. VSHRD.
8	19.81	19.92	0.11	31			MUDSTONE	DK. GY. BRKN
9	19.92	20.11	0.19	31			MUDSTONE	DK. GY. VBRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
9	20.11	20.16	0.05	31			ROCK LOSS	
9	20.16	20.37	0.21	31			MUDSTONE	SLTY. DK. GY. VBRKN VERY THIN CARBONATE VEINS.
9	20.37	20.41	0.04	31			ROCK LOSS	
9	20.41	20.64	0.23	31			SILTSTONE	DK. GY. VSHRD VERY SHEARED WITH ARGILLACEOUS FILL.
9	20.64	20.85	0.21	31			ROCK LOSS	
9	20.85	21.13	0.28	31			MUDSTONE	DK. GY. TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS. VERY FINE CARBONATE VEINS.
9	21.13	21.23	0.10	31			ROCK LOSS	
9	21.23	21.42	0.19	31			MUDSTONE	SLTY. DK. GY. BRKN QTZ & ARGILLACEOUS FRACTURE FILL.
9	21.42	21.53	0.11	31			MUDSTONE	SLTY. DK. GY. VBRKN
9	21.53	22.15	0.62	31			MUDSTONE	DK. GY. BRKN MASSIVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	22.15	22.50	0.35	31			MUDSTONE	DK.GY.BRKN MIXTURE OF QTZ & ARGILLACEOUS FRACTURES FILL; UP TO 2.0CM. BIVALVES (UP TO 4.0 CM) & PLANT FRAG.
10	22.50	24.06	1.56	31			MUDSTONE	SLTY.DK.GY.BRKN MASSIVE.
11	24.06	25.55	1.49	31			MUDSTONE	DK.GY.BRKN MASSIVE.
11	25.55	26.05	0.50	31			MUDSTONE	DK.GY.BRKN MASSIVE. MIXTURE OF QTZ & ARGILLACEOUS FRACTURE FILL; UP TO 3.0CM.
12	26.05	28.07	2.02	32			MUDSTONE	DK.GY.BRKN AS ABOVE.
13	28.07	28.36	0.29	32			MUDSTONE	DK.GY.BRKN AS ABOVE. BUT ONLY ONE FRACTURE (UP TO 2.0CM) AT TOP OF UNIT.
13	28.36	28.96	0.60	32			MUDSTONE	DK.GY.BRKN MIXTURE OF QTZ & ARGILLACEOUS FRACTURE FILL. POST QTZ FRACTURES (UP TO 0.5CM).
13	28.96	29.98	1.02	32			MUDSTONE	DK.GY.BRKN THIN-TOFF AT TOP OF UNIT. POSSIBLE THIS 1-OFF. MASSIVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
13	29.98	30.18	0.20	32			ROCK LOSS	
14	30.18	31.56	1.38	32			MUDSTONE	DK.GY.BRKN BIVALVES UP TO 2.0CM.
14	31.56	32.22	0.66	32			MUDSTONE	DK.GY.BRKN DISSEMINATED PYRITE IN CENTER OF UNIT.
15	32.22	34.22	2.00	32			MUDSTONE	DK.GY.BRKN MASSIVE. FEW SCATTERED AREAS OF DISSEMINATED PYRITE.
16	34.22	34.52	0.30	32			MUDSTONE	CARB.DK.GY.BRKN MASSIVE.
16	34.52	34.70	0.18	32			MUDSTONE	CARB.DK.GY.BRKN MASSIVE. SMALL AMOUNT OF SILT INCORPORATION.
16	34.70	34.84	0.14	32			MUDSTONE	SLTY.DK.GY.BRKN MIXTURE OF QTZ & ARGILLACEOUS FRACTURE FILL IN CENTER OF UNIT. FEW FRACTURES 1.0-3.0CM LONG.
16	34.84	35.65	0.81	32			MUDSTONE	SLTY.DK.GY.BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
16	35.65	36.32	0.67	32			MUDSTONE	CARB. DK. GY. BRKN HEAVILY FRACTURED WITH ARGILLACEOUS FIL L. SEVERAL SHEAR ZONES.
17	36.32	37.46	1.14	32			MUDSTONE	DK. GY. BRKN MASSIVE. 2.0CM PYRITE BLEB AT BASE OF UNIT.
17	37.46	38.34	0.88	32			MUDSTONE	DK. GY. BRKN AS ABOVE WITH DISPERSED PYRITE BLEBS.
18	38.34	40.36	2.02	*32			MUDSTONE	DK. GY. BRKN MASSIVE.
19	40.36	40.55	0.19	32			MUDSTONE	SLTY. DK. GY. VBRKN
19	40.55	40.58	0.03	32			ROCK LOSS	
19	40.58	42.36	1.78	33			MUDSTONE	BRKN TWIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS.
19	42.36	42.56	0.20	33			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	42.56	43.16	0.60	33	08386	N ROOF	MUDSTONE	DK. GY. BRKN HOMOGENEOUS. ABUNDANT DISSEMINATED PYRITE AND 5-15 MM THICK CALCITE VEINS IN BOTTOM 15.0CM. SAMPLED LOWER 25.0CM. N S EAM ROOF ROCK.
20	43.16	43.20	0.04	33	08387	N	COAL	C-5, BLK, BRKN ABUNDANT MUDST AND C-4 BANDS.
20	43.20	43.23	0.03	34	08387	N	COAL	C-3, BLK, VSHRD
20	43.23	43.32	0.09	34	08387	N	COAL LOSS	
20	43.32	43.43	0.11	34	08387	N	MUDSTONE	CARB. BLK. VSHRD ABUNDANT MINOR COAL FRAGMENTS AND PARTICLES.
20	43.43	43.62	0.19	34	08387	N	COAL	C-5, BLK, PMRD ABUNDANT CARB MUDST FRAGS.
20	43.62	43.80	0.18	35	08387	N	COAL	C-3, BLK, PMRD
20	43.80	43.84	0.04	35	08387	N	COAL	C-3, BLK, VSHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	43.84	43.89	0.05	35	08387 N	MUDSTONE	CARB. BLK. VBRKN ABUNDANT CALCITE VEINS 2.0-10.0MM THICK
20	43.89	43.92	0.03	35	08387 N	COAL LOSS	
20	43.92	44.02	0.10	36	08387 N	COAL	C-4. BLK. PHRD ABUNDANT CARB MUDST FRAGS.
20	44.02	44.04	0.02	36	08387 N	COAL	C-4. BLK. PHRD ABUNDANT CARB MUDST FRAGS.
20	44.04	44.11	0.07	36	08387 N	MUDSTONE	CARB. BLK. VSHRD ABUNDANT COAL FRAGS.
20	44.11	44.17	0.06	36	08387 N	COAL	C-5. BLK. PHRD ABUNDANT CARB MUDST FRAGS. EXTREMELY SH EARED.
20	44.17	44.34	0.17	37	08387 N	COAL	C-4. BLK. PHRD ABUNDANT CARB MUDST FRAGS. EXTREMELY SH EARED.
21	44.34	44.42	0.08	37	08387 N	COAL	C-4. BLK. PHRD ABUNDANT CARB MUDST FRAGS. EXTREMELY SH EARED.

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	44.42	44.56	0.14	37	08387 N	COAL LOSS	
21	44.56	44.65	0.09	37	08387 N	MUDSTONE	CARB. BLK. SHRD
21	44.65	44.99	0.34	37	08387 N	COAL LOSS	
21	44.99	45.07	0.08	38	08387 N	MUDSTONE	CARB. BLK. VSHRD SOFT, UNLITHIFIED. ABUNDANT COAL FRAGS NEAR BASE.
21	45.07	45.10	0.03	38	08387 N	MUDSTONE	CARB. BLK. SHRD
21	45.10	45.17	0.07	38	08387 N	MUDSTONE	CARB. BLK. PHRD
21	45.17	45.29	0.12	38	08387 N	COAL	C-3. BLK. PHRD ABUNDANT C-2 AND C-4 FRAGS.
21	45.29	45.33	0.04	39	08387 N	COAL	C-5. BLK. VBRKN
21	45.33	45.35	0.02	39	08387 N	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	45.35	45.41	0.06	39	08387 N	MUDSTONE	CARB. BLK. SHRD
21	45.41	45.45	0.04	39	08387 N	COAL	C-1. BLK. VBRKN
21	45.45	45.47	0.02	40	08387 N	MUDSTONE	CARB. BLK. VBRKN
21	45.47	45.52	0.05	40	08387 N	COAL LOSS	
21	45.52	45.58	0.06	40	08387 N	COAL	C-5. BLK. SHRD ABUNDANT MUDST. (CARB.) BANDS.
21	45.58	45.63	0.05	40	08387 N	MUDSTONE	CARB. BLK. SHRD
21	45.63	45.66	0.03	41	08387 N	COAL	C-4. BLK. SHRD ABUNDANT THIN CARB. MUDST. LAMS.
21	45.66	45.76	0.10	41	08387 N	MUDSTONE	CARB. BLK. VSHRD
21	45.76	45.90	0.14	41	08387 N	COAL	C-5. BLK. VBRKN MINOR MUDST. LAMS.
21	45.90	46.04	0.14	41	08388 N FLOOR	MUDSTONE	DK. GY. SHRD N SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
21	46.04	46.10	0.06	42	08388 N FLOOR	MUDSTONE	CARB. BLK. PHRD N SEAM FLOOR ROCK. SAMPLED.
21	46.10	46.14	0.04	42	08388 N FLOOR	MUDSTONE	DK. GY. VBRKN SHEARED ON BROKEN SURFACES. N SEAM FLOOR ROCK. SAMPLED.
21	46.14	46.47	0.33	42	08388 N FLOOR	MUDSTONE	SLTY. DK. GY. THNB. SSD. BRKN VERY THIN (<1MM) MUDST. STRINGERS. BEDDING NG. CONTORTED LIKELY DUE TO WATER ESCAPE N SEAM FLOOR ROCK. TOP 1.0CM SAMPLED.
22	46.47	47.08	0.61	42		MUDSTONE	SLTY. DK. GY. BRKN MASSIVE.
22	47.08	47.10	0.02	43		ROCK LOSS	
22	47.10	47.20	0.10	*43		MUDSTONE	SHRD EXTENSIVE ARGILLACEOUS MATERIAL & SHEARED MUDST.
22	47.20	48.10	0.90	44		MUDSTONE	DK. GY. BRKN HEAVILY FRACTURED WITH ARGILLACEOUS FILLS AND ABUNDANT COAL STRINGERS.
22	48.10	48.20	0.10	45		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	48.20	48.25	0.05	45		MUDSTONE	CARB. BLK. SHRD
22	48.25	48.27	0.02	46		SILTSTONE	DK. GY QTZ VEIN 2CM WIDE CUTS SLTST.
22	48.27	48.36	0.09	47		COAL	C-3. BLK. PHRD SHEARED & POWDERED.
22	48.36	48.71	0.35	48		MUDSTONE	DK. GY. BRKN 3.0CM LAMINATED & CRENUATED QTZ VEINS AT TOP OF UNIT. PLANT DEBRIS. OTHER MIS E MASSIVE.
23	48.71	50.19	1.48	48		MUDSTONE	DK. GY. BRKN FEW COAL STRINGERS.
23	50.19	50.29	0.10	49		ROCK LOSS	
23	50.29	50.84	0.55	50		MUDSTONE	DK. GY. BRKN AS ABOVE.
23	50.84	50.85	0.01	51		ROCK LOSS	
24	50.85	50.94	0.09	52		MUDSTONE	DK. GY. BRKN AS ABOVE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	50.94	51.17	0.23	53		MUDSTONE	SLTY. DK. GY. SSD. BRKN AS ABOVE WITH PLANT DEBRIS.
24	51.17	51.91	0.74	53		MUDSTONE	SLTY. DK. GY. SSD. SLD TWIST-OFF. POSSIBLE CORE LOSS. FEW COAL STRINGERS.
24	51.91	52.06	0.15	54		ROCK LOSS	
24	52.06	52.98	0.92	55		MUDSTONE	SLTY. DK. GY. SSD. BRKN PLANT DEBRIS SCATTERED IN AREAS.
24	52.98	53.08	0.10	56		ROCK LOSS	
25	53.08	53.41	0.33	57		MUDSTONE	SLTY. DK. GY. SSD. BRKN EXTENSIVE PLANT DEBRIS.
25	53.41	55.01	1.60	58		MUDSTONE	SLTY. DK. GY. SSD. SLD COAL STRINGERS & PLANT DEBRIS.
25	55.01	55.11	0.10	59		ROCK LOSS	
26	55.11	55.30	0.19	59		MUDSTONE	SLTY. DK. GY. SLD FINE FRACTURES FILLED WITH SOFT. AQUA GR. EEN SHEET SILICATE.
26	55.30	55.38	0.08	60		SANDSTONE	DK. GY. BRKN FEW SLTST CLASTS (LESS 3.0CM).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	55.38	55.71	0.33	61			MUDSTONE	SLTY.DK.GY.SSD.BRKN 4.0CM QTZ & CARBONATE VEIN AT BASE. COA L DEBRIS & LAMELLAE.
26	55.71	56.28	0.57	62			MUDSTONE	SLTY.DK.GY.BIOTR.BRKN BIOTURBATION & SSD. FEW MG SS & FG SS L ENSES.
26	56.28	56.29	0.01	63			ROCK LOSS	
26	56.29	56.58	0.29	*64			SILTSTONE	LAM.BRKN MUDDY SLTST. FRACTURE DISPLACEMENT (LES S 1.0CM).
26	56.58	56.70	0.12	64			MUDSTONE	SLTY.DK.GY.BRKN BRECCIATED & VERY FINE QTZ & CARB VEINS AT BASAL 3.0CM.
26	56.70	57.01	0.31	63			MUDSTONE	SLTY.DK.GY.SSD LAMINATED AT BASAL SECTION.
27	57.01	57.07	0.06	63			SANDSTONE	FG.LT.GY.SLD CARBONATE VEINS. VERY THIN SLTST BED.
27	57.07	57.13	0.06	63			BRECCIA	DK.GY.SLD BRECCIATED MUDST WITH CARBONATE MATRIX.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	57.13	57.63	0.50	63			SANDSTONE	MG.LT.GY.BRKN MUDST WISPS. CARB VEINS. SLTST RIP-UPS (UP TO 5.0CM).
27	57.63	57.66	0.03	62			SANDSTONE	MG.LT.GY.SLD SMALL ANGULAR QTZ CLASTS; LESS 2MM, AVE RAGE .1MM. FEW SLTST RIP-UPS; LESS 1.0C M.
27	57.66	58.40	0.74	62			SANDSTONE	MG.LT.GY.SLD CARBONATE VEINS SCATTERED THROUGHOUT SS WITH MUDST WISPS.
27	58.40	58.43	0.03	62			ROCK LOSS	
27	58.43	58.46	0.03	62			SANDSTONE	MG.LT.GY.SLD SLTST RIP-UPS (LESS: 1.5CM, AVG: 1CM) S LIGHTLY DEFORMED OR CRENULATED. FINE SL TST LAMELLAE AT BASAL UNIT.
27	58.46	59.16	0.70	61			SANDSTONE	MG.LT.GY.BRKN CARBONATE VEINS SCATTERED THROUGHOUT SS WITH MUDST WISPS. SPARSE SLTST RIP-UPS (ABOUT 1.0CM IN LENGTH).
27	59.16	59.18	0.02	61			ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	59.18	59.35	0.17	61			SANDSTONE	MG.LT.GY.BRKN AS ABOVE EXCEPT SLTST CLASTS ARE MUCH LARGER (AVG =3.0CM).
28	59.35	59.86	0.51	60			SANDSTONE	LT.GY.BRKN MUOIST HISP & LAMELLAE. SCATTERED CARBONATE VEINS.
28	59.86	59.94	0.08	60			BRECCIA	SSY.MG.LT.GY.VSHRD PHRD TO SHRD.QTZ WITH CONSOLIDATED SLTS.
28	59.94	60.08	0.14	60			BRECCIA	SSY.MG.LT.GY.BRKN VERY EXTENSIVE FRACTURE WITH LESS 0.5CM QTZ FRACTURE FILL.
28	60.08	60.38	0.30	60			SANDSTONE	MG.LT.GY.BRKN EXTENSIVE FRACTURING AS ABOVE.
28	60.38	60.60	0.22	59			BRECCIA	SLTY.MG.LT.GY.SLD VERY EXTENSIVE FRACTURING AS ABOVE.
28	60.60	61.07	0.47	59			SANDSTONE	SLTY.MG.LT.GY.BRKN EXTENSIVE CARB FRACTURE FILLING. 3.0CM FRACTURE DISPLACEMENT. VERY THIN SLTST BEDS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	61.07	61.23	0.16	59			SILTSTONE	M.GY.BRKN EXTENSIVE FRACTURE WITH ARGILLACEOUS FRACTURE FILL. FEW FG SS BANDS (3.0-4.0CM THICK).
29	61.23	61.37	0.14	58			SANDSTONE	MG.H.GY.BRKN VERY FINE CARB FRACTURES VEINS.
29	61.37	61.44	0.07	58			SILTSTONE	M.GY.LAM.BRKN CARB FRACTURE FILL (UP TO 0.5CM) & SPARSE SOFT AQU AGREEN SHEET SILICATE FRACTURE FILL.
29	61.44	61.51	0.07	58			SANDSTONE	MG.H.GY.SLD HEAVILY FRACTURED WITH ARGILLACEOUS FRACTURE FILL. FEW MUOIST HISP & QTZ VEINS.
29	61.51	62.35	0.84	58			SILTSTONE	M.GY.LAM.BRKN FEW CARB VEINS. HEAVILY FRACTURED WITH ARGILLACEOUS FRACTURE FILL.
29	62.35	62.40	0.05	57			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
29	62.40	63.00	0.60	*57			SILTSTONE	SSY.MG.M.GY.LAM.BRKN CARB & SOFT AQUA GREEN SHEET SILICATE V EIN & FRACTURE FILL (LESS 0.5CM). SMALL SCALE FRACTURE DISPLACEMENT (LESS 2.0C M). SS LAMELLAE & VERY THIN BED.
29	63.00	63.02	0.02	55			ROCK LOSS	
30	63.02	63.37	0.35	53			SANDSTONE	MG.LT.GY.LAM.SLD MUDST. & SLTST LAMELLAE & VERY THIN BEDS.
30	63.37	63.53	0.16	51			SANDSTONE	MG.LT.GY.LAM.SLD MUDST LAMELLAE & WISPS.
30	63.53	63.83	0.30	*49			SILTSTONE	M.GY.LAM.BRKN FG SS LAMELLAE. SPARSE CARB VEINS.
30	63.83	63.92	0.09	52			SANDSTONE	MG.LT.GY.SLD EXTENSIVE FRACTURED WITH ARGILLACEOUS F RACTURE FILL.
30	63.92	63.97	0.05	54			SILTSTONE	M.GY.LAM.BRKN CARB VEINS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	63.97	64.31	0.34	57			SANDSTONE	FG.LT.GY.VBRKN MUDST WISPS. CARB FRACTURE FILL.
30	64.31	64.45	0.14	59			SANDSTONE	FG.LT.GY.SHRD AS ABOVE.
30	64.45	64.62	0.17	62			SILTSTONE	M.GY.LAM.BRKN TWIST-OFF AT TOP OF UNIT. POSSIBLE THIS T-OFF. MUDST LAM.
30	64.62	64.77	0.15	65			ROCK LOSS	
30	64.77	64.86	0.09	67			SANDSTONE	FG.LT-M.GY.LAM.BRKN MUDST LAMELLAE. CARB VEINS.
30	64.86	65.08	0.22	*70			SILTSTONE	LT-M.GY.LAM.BRKN MUDST LAMELLAE WITH CARB VEINS (LESS 0. 5CM).
31	65.08	65.20	0.12	*66			SANDSTONE	FG.LT-M.GY.SLD FEW MUDST. WISPS.
31	65.20	65.60	0.40	65			SILTSTONE	M.GY.LAM.SSD.BRKN FG.SS LAMELLAE. 1.0CM CARBONATE VEIN.
31	65.60	65.82	0.22	64			SANDSTONE	FG.LT-M.GY.SLD FEW MUDST. WISPS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	65.82	66.46	0.64	62			SILTSTONE	M.GY.LAM.SSD.BRKN FG SS LAMELLAE. LOAD CASTS SHOW TOPS UP
31	66.46	66.48	0.02	61			ROCK LOSS	
31	66.48	66.88	0.40	60			SANDSTONE	SLTY.FG.H-DK.GY.LAM.SSD.BRKN MUDST LAMELLAE. CARB & QTZ FRACTURE FIL L - UP TO 3.0CM WIDE.
31	66.88	67.18	0.30	59			SILTSTONE	M.GY.LAM.SSD.BRKN FG SS LAMELLAE. CARB & QTZ FRACTURE FIL L - UP TO 1.0CM.
32	67.18	67.34	0.16	57			MUDSTONE	CARB.M.GY.LAM.SLD SS LAMELLAE. SHEARED. PLANT DEBRYS.
32	67.34	67.71	0.37	56			MUDSTONE	CARB.M.GY.LAM.YBRKN SHEARED.
32	67.71	68.89	1.18	*55			MUDSTONE	SLTY.M.GY.LAM.SSD.BRKN SLTST LAM. LOAD CASTS INDICATE TOPS UP.
32	68.89	68.99	0.10	54			ROCK LOSS	
32	68.99	69.13	0.14	52			SANDSTONE	M.GY.LAM.SSD.BRKN SLTST LAM.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	69.13	69.56	0.43	*51			SANDSTONE	FG.MOD.LT.GY.MB.BRKN MINOR DK GREY MUDST INTERBEDS.
33	69.56	70.62	1.06	*71	08399	M ROOF	MUDSTONE	SSY.DK.GY.MB.SSD.BRKN ABUNDANT FG SS INTERBEDS 1-20 MM THICK. LOAD CASTS INDICATE TOPS UP. RARE PYRI TE NODULES 5-10 MM NEAR BASE. BOTTOM 4. 0CM SAMPLED. M SEAM ROOF ROCK.
33	70.62	70.72	0.10	70	08399	M ROOF	ROCK LOSS	
33	70.72	70.77	0.05	68	08399	M ROOF	MUDSTONE	DK.GY.SHRD M SEAM ROOF ROCK. SAMPLED.
33	70.77	70.81	0.04	67	08399	M ROOF	MUDSTONE	DK.GY.BRKN ABUNDANT CALCITE VEINS 1.0-5.0MM THICK. M SEAM ROOF ROCK. SAMPLED.
33	70.81	70.84	0.03	66	08399	M ROOF	MUDSTONE	CARB.BLK.VSHRD M SEAM ROOF ROCK. SAMPLED.
33	70.84	70.86	0.02	65	08400	M	COAL	C-4.BLK.PHRD EXTREMELY SHEARED.
33	70.86	70.88	0.02	63	08400	M	MUDSTONE	CARB.BLK.VSHRD

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	70.88	70.96	0.08	62	08400	M	COAL	C-5, BLK, PNRD ABUNDANT CARB MUDST FRAGS.
33	70.96	71.10	0.14	61	08400	M	COAL LOSS	
33	71.10	71.40	0.30	59	08400	M	ROCK LOSS	
33	71.40	71.59	0.19	58	08400	M	COAL LOSS	
33	71.59	71.69	0.10	57	08400	M	MUDSTONE	DK. GY. SHRD
33	71.69	71.72	0.03	56	08400	M	COAL	C-5, BLK, YSHRD ABUNDANT CARB MUDST MIXED IN.
33	71.72	71.76	0.04	54	08400	M	MUDSTONE	CARB, BLK, SHRD
34	71.76	72.06	0.30	53	08400	M	COAL	C-5, BLK, YSHRD VERY BROKEN - ABUNDANT COAL FRAGS.
34	72.06	72.48	0.42	52	08400	M	COAL LOSS	
34	72.48	72.59	0.11	49	08400	M	COAL	C-5, BLK, YSHRD ABUNDANT MUDST FRAGS.
34	72.59	72.76	0.17	48	08400	M	COAL	C-3, BLK, VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	72.76	72.85	0.09	46	08400	M	COAL	C-2, BLK, BRKN
34	72.85	72.95	0.10	*45	08400	M	MUDSTONE	CARB, BLK, BRKN
34	72.95	72.98	0.03	45	08400	M	COAL	C-3, BLK, VBRKN
34	72.98	73.02	0.04	45	08400	M	COAL	C-4, BLK, YSHRD
34	73.02	73.05	0.03	45	08400	M	COAL	C-5, BLK, VBRKN
34	73.05	73.08	0.03	45	08400	M	COAL	C-3, BLK, VBRKN
34	73.08	73.13	0.05	45	08400	M	COAL	C-1, BLK, BRKN MINOR C-3 LAMS.
34	73.13	73.44	0.31	45	08400	M	COAL	C-3, BLK, VBRKN
34	73.44	73.46	0.02	45	08400	M	MUDSTONE	CARB, BLK, YSHRD
34	73.46	73.54	0.08	45	08400	M	COAL	C-3, BLK, VBRKN MINOR C-2 BANDS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	73.54	73.58	0.04	45	08400 M	MUDSTONE	CARB. BLK. SHRD
34	73.58	73.61	0.03	45	08400 M	COAL	C-1. BLK. VBRKN
34	73.61	73.75	0.14	45	08400 M	MUDSTONE	CARB. BLK. SHRD
35	73.75	73.79	0.04	45	08400 M	COAL	C-3. BLK. VBRKN
35	73.79	73.83	0.04	45	08400 M	MUDSTONE	CARB. BLK. SHRD MINOR COAL STRINGERS THROUGHOUT.
35	73.83	73.86	0.03	45	08400 M	COAL	C-5. BLK. SHRD
35	73.86	73.90	0.04	45	08400 M	MUDSTONE	CARB. BLK. BRKN MINOR COAL PARTINGS THROUGHOUT.
35	73.90	73.95	0.05	45	08400 M	COAL	C-3. BLK. VBRKN
35	73.95	73.97	0.02	45	08400 M	COAL	C-5. BLK. VBRKN
35	73.97	74.04	0.07	45	08400 M	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	74.04	74.08	0.04	45	08400 M	COAL	C-4. BLK. VBRKN
35	74.08	74.13	0.05	45	08400 M	MUDSTONE	CARB. BLK. SHRD
35	74.13	74.22	0.09	45	08400 M	COAL	C-3. BLK. VBRKN SHEARED.
35	74.22	74.24	0.02	45	08400 M	COAL	C-1. BLK. VBRKN
35	74.24	74.27	0.03	45	08400 M	MUDSTONE	CARB. BLK. VSHRD
35	74.27	75.02	0.75	44	08400 M	COAL LOSS	
35	75.02	75.08	0.06	44	08400 M	COAL	C-2. BLK. VBRKN ABUNDANT C-1 AND C-3 BANDS.
35	75.08	75.12	0.04	44	08400 M	COAL	C-1. BLK. VBRKN
35	75.12	75.17	0.05	44	08400 M	COAL	C-4. BLK. VBRKN
35	75.17	75.19	0.02	44	08400 M	COAL	C-4. BLK. VBRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	75.19	75.24	0.05	44	08400	M	COAL	C-3.BLK.VSHRD ABUNDANT C-2 AND C-4 BANDS.
35	75.24	75.31	0.07	44	08400	M	MUDSTONE	CARB.BLK.VSHRD
35	75.31	75.35	0.04	44	08400	M	COAL	C-3.BLK.VSHRD
35	75.35	75.38	0.03	44	08400	M	COAL	C-4.BLK.PHRD
35	75.38	75.42	0.04	44	08400	M	COAL	C-3.BLK.VBRKN
35	75.42	75.47	0.05	44	08400	M	COAL	C-3.BLK.PHRD
35	75.47	75.59	0.12	44	08400	M	COAL	C-3.BLK.VSHRD
35	75.59	75.66	0.07	44	08400	M	COAL	C-5.BLK.VSHRD MINOR WITH ABUNDANT CARB MUDST.
35	75.66	75.68	0.02	44	08400	M	COAL	C-4.BLK.VBRKN
36	75.68	75.76	0.08	44	08400	M	COAL	C-3.BLK.VBRKN ABUNDANT C-4, C-1 AND C-2 BANDS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	75.76	75.79	0.03	44	08400	M	COAL	C-4.BLK.VBRKN
36	75.79	75.83	0.04	44	08400	M	COAL	C-3.BLK.PHRD
36	75.83	75.88	0.05	44	08400	M	COAL	C-5.BLK.VSHRD
36	75.88	75.98	0.10	44	08400	M	COAL	C-4.BLK.VSHRD
36	75.98	76.01	0.03	44	08400	M	COAL	C-5.BLK.VSHRD
36	76.01	76.10	0.09	44	08400	M	COAL	C-4.BLK.VSHRD ABUNDANT C-2 BANDS.
36	76.10	76.14	0.04	44	08400	M	COAL	C-3.BLK.VSHRD
36	76.14	76.19	0.05	*44	08400	M	COAL	C-5.BLK.VSHRD
36	76.19	76.23	0.04	44	08400	M	COAL	C-3.BLK.PHRD
36	76.23	76.29	0.06	45	08400	M	COAL LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	76.29	76.32	0.03	46	08400 M	MUDSTONE	CARB. BLK. SHRD
36	76.32	76.34	0.02	46	08400 M	COAL	C-3. BLK. PWRD
36	76.34	76.76	0.42	46	08400 M	COAL LOSS	
36	76.76	76.85	0.09	47	08400 M	MUDSTONE	CARB. BLK. SHRD ABUNDANT THIN COAL PARTINGS.
36	76.85	76.87	0.02	47	08400 M	COAL	C-4. BLK. PWRD
36	76.87	76.91	0.04	48	08400 M	MUDSTONE	CARB. BLK. SHRD
36	76.91	76.95	0.04	48	08400 M	COAL	C-4. BLK. PWRD
36	76.95	76.98	0.03	48	08400 M	MUDSTONE	CARB. BLK. PWRD
36	76.98	77.60	0.62	49	08400 M	COAL LOSS	
36	77.60	77.66	0.06	49	08400 M	COAL	C-4. BLK. PWRD
36	77.66	77.71	0.05	50	08400 M	MUDSTONE	CARB. BLK. VSHRD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	77.71	77.77	0.06	50	08400 M	COAL LOSS	
36	77.77	77.82	0.05	50	08400 M	COAL	C-5. BLK. PWRD
36	77.82	77.86	0.04	51	08400 M	COAL	C-4. BLK. PWRD
36	77.86	77.90	0.04	51	08400 M	COAL	C-3. BLK. PWRD
36	77.90	77.95	0.05	52	08400 M	COAL	C-4. BLK. PWRD ABUNDANT C-3 AND C-5 FRAGS.
36	77.95	77.97	0.02	52	08400 M	COAL	C-4. BLK. PWRD
36	77.97	78.02	0.05	52	08400 M	COAL	C-3. BLK. VBRKN C-1 AND C-4 INTERBANDS.
36	78.02	78.04	0.02	53	08400 M	COAL	C-1. BLK. VBRKN
36	78.04	78.11	0.07	53	08400 M	COAL	C-6. BLK. BRKN RARE C-1 BANDS 1-3 MM THICK.
37	78.11	78.18	0.07	54	08400 M	MUDSTONE	DK. GY. SHRD RARE COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	78.18	78.28	0.10	54	08400	M	MUDSTONE	DK. GY. BRKN RARE COAL STRINGERS.
37	78.28	78.33	0.05	54	08400	M	COAL	C-5 BLK. VSHRD MINOR C-1 BANDS 1-5 MM THICK.
37	78.33	78.40	0.07	55	08400	M	COAL	C-3. BLK. PHRD
37	78.40	78.46	0.06	55	08400	M	COAL	C-4. BLK. VBRKN
37	78.46	78.50	0.04	56	08400	M	COAL	C-4. BLK. VSHRD
37	78.50	78.52	0.02	56	08400	M	COAL	C-6. BLK. BRKN
37	78.52	78.60	0.08	57	08400	M	COAL	C-4. BLK. VSHRD
37	78.60	78.62	0.02	57	08400	M	COAL	C-5. BLK. BRKN
37	78.62	78.64	0.02	57	08400	M	MUDSTONE	CARB. BLK. VSHRD
37	78.64	78.66	0.02	58	08400	M	COAL	C-5. BLK. PHRD ABUNDANT CARB MUDST FRAGS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	78.66	78.70	0.04	58	08400	M	COAL	C-3. BLK. PHRD
37	78.70	78.75	0.05	59	08400	M	COAL	C-2. BLK. PHRD
37	78.75	78.80	0.05	59	08400	M	COAL	C-4. BLK. PHRD
37	78.80	78.93	0.13	59	08400	M	MUDSTONE	CARB. BLK. VBRKN
37	78.93	79.04	0.11	60	08400	M	COAL	C-4. BLK. PHRD ABUNDANT CARB MUDST FRAGS.
37	79.04	79.07	0.03	60	08400	M	COAL	C-5. BLK. PHRD AS ABOVE.
37	79.07	79.21	0.14	61	08401	M	MUDSTONE	CARB. BLK. VSHRD
37	79.21	79.38	0.17	61	08401	M	MUDSTONE	DK. GY. SHRD VERY BROKEN. PYRITE BAND 1-15 MM THICK IN MIDDLE OF UNIT.
37	79.38	79.60	0.22	61	08401	M	MUDSTONE	CARB. BLK. VSHRD MINOR COAL FRAGS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
37	79.60	79.66	0.06	62	08401	M	MUDSTONE	CARB. BLK. YBRKN
37	79.66	79.70	0.04	62	08402	M	COAL	C-3. BLK. VSHRD
37	79.70	79.72	0.02	63	08402	M	COAL	C-1. BLK. YBRKN
37	79.72	79.80	0.08	63	08402	M	COAL	C-4. BLK. VSHRD
38	79.80	79.84	0.04	64	08402	M	COAL	C-4. BLK. PHRD
38	79.84	79.89	0.05	64	08402	M	MUDSTONE	CARB. BLK. YBRKN
38	79.89	79.94	0.05	64	08402	M	COAL	C-5. BLK. BRKN
38	79.94	80.05	0.11	65	08402	M	MUDSTONE	CARB. BLK. BRKN
38	80.05	80.16	0.11	65	08402	M	COAL	C-4. BLK. SHRD POORLY CLEATED.
38	80.16	80.30	0.14	66	08402	M	COAL	C-3. BLK. BRKN QUARTZ FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	80.30	80.37	0.07	*66	08402	M	COAL	C-4. BLK. BRKN VERY HARD WITH C-6 BANDS.
38	80.37	80.40	0.03	66	08402	M	COAL	C-3. BLK. YBRKN POORLY CLEATED.
38	80.40	80.49	0.09	66	08402	M	MUDSTONE	CARB. M. GY. VSHRD QUARTZ FRACTURE FILL.
38	80.49	80.55	0.06	66	08402	M	COAL	C-4. BLK. BRKN
38	80.55	80.64	0.09	66	08402	M	MUDSTONE	CARB. M-DK. GY. BRKN PLANT FRAGMENTS.
38	80.64	80.68	0.04	65	08402	M	COAL	C-3. BLK. BRKN POORLY CLEATED.
38	80.68	80.74	0.06	65	08402	M	COAL	C-4. BLK. BRKN BORDERLINE C-3.
38	80.74	80.79	0.05	65	08402	M	MUDSTONE	CARB. BLK. BRKN
38	80.79	81.07	0.28	65	08402	M	COAL	C-3. BLK. BRKN MODERATELY CLEATED.
38	81.07	81.19	0.12	65	08402	M	COAL	C-4. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	81.19	81.28	0.09	65	08402	M	COAL	C-3, BLK, BRKN MODERATELY CLEATED.
38	81.28	81.36	0.08	65	08402	M	MUDSTONE	CARB. M. GY. BRKN QUARTZ FRACTURE FILL. VERY HARD.
38	81.36	81.44	0.08	65	08402	M	COAL	C-2, BLK, BRKN BORDERLINE C-3 AT BASE.
39	81.44	81.46	0.02	65	08402	M	COAL	C-3, BLK, YBRKN
39	81.46	81.49	0.03	65	08402	M	MUDSTONE	CARB. BN. SHRD LISTRIC SURFACES.
39	81.49	81.56	0.07	64	08402	M	COAL	C-3, BLK, BRKN MODERATELY CLEATED.
39	81.56	81.61	0.05	64	08402	M	MUDSTONE	CARB. BLK. SHRD LISTRIC SURFACES.
39	81.61	81.69	0.08	64	08402	M	COAL	C-4, BLK, BRKN BORDERLINE C-3 AT BASE.
39	81.69	82.00	0.31	64	08402	M	COAL	C-3, BLK, YBRKN MODERATELY CLEATED. PYRITE AT BASE.
39	82.00	82.04	0.04	64	08402	M	COAL	C-6, M. GY. BRKN VERY HARD WITH PYRITE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	82.04	82.14	0.10	64	08402	M	COAL	C-2, BLK, BRKN C-1 WITH MUD BANDS.
39	82.14	82.18	0.04	64	08402	M	COAL	C-4, BLK, YSHRD VERY UNCONSOLIDATED.
39	82.18	82.23	0.05	64	08402	M	COAL	C-4, BLK, PHRD VERY SHEARED. SHINEY LISTRIC SURFACES.
39	82.23	82.25	0.02	64	08402	M	MUDSTONE	CARB. BLK, YBRKN POORLY CONSOLIDATED.
39	82.25	82.32	0.07	64	08402	M	COAL	C-5, BLK, YSHRD
39	82.32	82.37	0.05	63	08402	M	COAL	C-1, BLK, YSHRD
39	82.37	82.41	0.04	63	08402	M	COAL	C-2, BLK, YBRKN
39	82.41	82.45	0.04	63	08402	M	COAL	C-1, BLK, BRKN WELL CLEATED.
39	82.45	82.47	0.02	63	08402	M	MUDSTONE	CARB. BLK. BRKN
39	82.47	82.58	0.11	63	08402	M	MUDSTONE	CARB. DK. GY. BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	82.58	82.74	0.16	63	08402 M	COAL	C-3, BLK, VBRKN BANDS OF C-1.
39	82.74	82.82	0.08	63	08402 M	COAL	C-2, BLK, BRKN ABUNDANT QUARTZ VEINING.
39	82.82	82.88	0.06	63	08403 M	MUDSTONE	CARB, BLK, BRKN
39	82.88	82.92	0.04	63	08403 M	COAL	C-5, BLK, BRKN QUARTZ VEINING.
40	82.92	82.94	0.02	63	08403 M	COAL	C-1, BLK, BRKN QUARTZ FRACTURE FILL.
40	82.94	83.02	0.08	62	08403 M	MUDSTONE	CARB, BLK, SHRD
40	83.02	83.06	0.04	62	08403 M	COAL	C-4, BLK, SHRD BANDS OF C-1.
40	83.06	83.39	0.33	62	08403 M	MUDSTONE	CARB, BLK, SHRD PLANT FRAGMENTS.
40	83.39	83.42	0.03	62	08403 M	COAL	C-4, BLK, BRKN
40	83.42	83.47	0.05	62	08403 M	MUDSTONE	CARB, BLK, BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	83.47	83.50	0.03	63	08403 M	COAL	C-3, BLK, SHRD LYSTRIC SURFACES.
40	83.50	83.58	0.08	64	08403 M	SILTSTONE	M, GY, SLD PYRITE CUBES, UNKNOWN FOSSILS, POSSIBLY GASTROPODS. VERY HARD.
40	83.58	83.75	0.17	64	08403 M	COAL	C-4, BLK, VSHRD ABUNDANT QUARTZ FRACTURE FILL.
40	83.75	83.78	0.03	65	08403 M	MUDSTONE	CARB, BLK, VSHRD
40	83.78	83.85	0.07	66	08403 M	COAL	C-2, BLK, BRKN C-1 BANDS WITH C-2.
40	83.85	83.91	0.06	67	08403 M	COAL	C-4, BLK, VBRKN
40	83.91	84.06	0.15	68	08403 M	MUDSTONE	CARB, BLK, SHRD
40	84.06	84.31	0.25	69	08403 M	COAL LOSS	
40	84.31	84.38	0.07	69	08403 M	COAL	C-3, BLK, VBRKN C-1 WITH MUD. OVERALL C-3.
40	84.38	84.53	0.15	70	08403 M	COAL	C-4, BLK, BRKN ABUNDANT QUARTZ FRACTURE FILL.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
40	84.53	85.08	0.55	*71	08404 M FLOOR	MUDSTONE	SLTY. M. GY. LAM. BRKN HEAVILY CARBONACEOUS. M SEAM FLOOR ROCK. UPPER 25.0CM SAMPLED.
41	85.08	85.22	0.14	71		MUDSTONE	DK. GY. BRKN 2.0-3.0CM BAND OF COAL STRINGERS & C-3 AT TOP OF UNIT. 3.0-4.0CM SLTST. BAND AT BASE OF UNIT.
41	85.22	85.37	0.15	71		MUDSTONE	CARB. DK. GY. SHRD
41	85.37	85.52	0.15	71		MUDSTONE	CARB. DK. GY. BIOTR. SLD DEWATERING FEATURES. VERY THIN SLTST. BE D. COAL STRINGERS AT BASE OF UNIT.
41	85.52	85.64	0.12	71		MUDSTONE	DK. GY. BRKN COAL STRINGERS.
41	85.64	85.66	0.02	71		MUDSTONE	DK. GY. SLD EXTENSIVE CARB INTERLEAFING.
41	85.66	86.01	0.35	71		MUDSTONE	DK. GY. SSD. BRKN COAL STRINGERS. 1.0CM ARGILLACEOUS INFI LL IN CENTER OF UNIT.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
41	86.01	86.16	0.15	71		MUDSTONE	DK. GY. VBRKN
41	86.16	86.53	0.37	70		ROCK LOSS	
41	86.53	86.63	0.10	70		MUDSTONE	CARB. DK. GY. BRKN
41	86.63	86.80	0.17	70		MUDSTONE	DK. GY. VBRKN
41	86.80	87.18	0.38	70		SILTSTONE	DK. GY. SSD. SLD THIN FG SS BED. DEWATERING. POSSIBLE TW IST-OFF AT TOP OF UNIT.
41	87.18	87.68	0.50	70		ROCK LOSS	
42	87.68	87.90	0.22	70		SILTSTONE	M. GY. LAM. BRKN FG SS & MUDST LAMELLAE.
42	87.90	88.12	0.22	*70		SILTSTONE	M. GY. LAM. SLD AS ABOVE.
42	88.12	88.18	0.06	68		ROCK LOSS	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	88.18	88.53	0.35	66			SILTSTONE	M.GY.LAM.SSD.BRKN FG SS & MUDST, VERY THIN BEDS & LAMELLAE.
42	88.53	88.67	0.14	64			MUDSTONE	M.GY.LAM VERY THIN FG SS BED AT TOP OF UNIT.
42	88.67	88.71	0.04	61			COAL	BLK.SLD BREC WITH CARBONATE INFILL.
42	88.71	88.98	0.27	59			SILTSTONE	M.GY.LAM.BRKN MUDST & FG SS LAMELLAE.
42	88.98	89.78	0.80	57			MUDSTONE	SLTY.DK.GY.LAM.SSD.BRKN DENATERING.
43	89.78	91.45	1.67	*55			SILTSTONE	M.GY.LAM.SSD.BRKN LOAD CASTS INDICATE TOPS UP.
43	91.45	91.65	0.20	55			ROCK LOSS	
43	91.65	91.75	0.10	56			SANDSTONE	FG.LT.GY.SLD
43	91.75	91.83	0.08	56			SILTSTONE	M.GY.LAM.SLD FG SS LAMELLAE.
43	91.83	91.91	0.08	56			SANDSTONE	FG.LT.GY.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	91.91	91.94	0.03	57			SILTSTONE	M.GY.LAM.SLD FG SS LAMELLAE.
43	91.94	91.97	0.03	57			ROCK LOSS	
43	91.97	92.08	0.11	58			SANDSTONE	FG.LT.GY.BRKN MUDST. WISPS.
44	92.08	92.21	0.13	58			SANDSTONE	FG.LT.GY.SLD AS ABOVE.
44	92.21	92.24	0.03	58			SILTSTONE	M.GY.LAM.SSD.SLD
44	92.24	92.39	0.15	59			SILTSTONE	M.GY.LAM.SSD.SLD FEW VERY THIN SS BEDS IN CENTER OF UNIT
44	92.39	92.79	0.40	59			SANDSTONE	LT.GY.LAM.SLD FEW VERY THIN SLTST BEDS (CONCENTRATED TOWARD UPPER PART OF UNIT). MUDST WISPS LOAD CASTS INDICATE TOPS UP.
44	92.79	92.89	0.10	59			ROCK LOSS	
44	92.89	93.42	0.53	60			SANDSTONE	M.GY.LAM.SSD.BRKN AS ABOVE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
44	93.42	93.69	0.27	60			SANDSTONE	M-GY BRKN MASSIVE. FEW MUDST WISPS.
44	93.69	93.79	0.10	61			SILTSTONE	M-GY BRKN VERY THIN FG SS BED.
44	93.79	94.18	0.39	61			SILTSTONE	M-DK GY SSD SLD VERY THIN FG SS BEDS & MUDDY FG SS BEDS. LOAD CASTS SHOW TOPS UP.
45	94.18	94.43	0.25	61			SILTSTONE	M-DK GY LAM SLD MG SS LAMELLAE WITH LOAD CASTS INDICATING TOPS UP. 4.0CM CARBONATE & SLTST RIP-UP.
45	94.43	94.46	0.03	62			SANDSTONE	MG LT GY SLD MUDST WISPS.
45	94.46	94.63	0.17	62			SILTSTONE	M-DK GY SLD MG SS VERY THIN BEDS. MG SS LAMELLAE AT BASAL UNIT.
45	94.63	95.10	0.47	63			SANDSTONE	MG M GY LAM SSD BRKN CARB & SLTST RIP-UP UP TO 2CM & WELL ROUNDED. AVERAGE IS 0.5CM. IMBRICATION OF RECTANGULAR RIP-UPS. MUDDY SS.
45	95.10	95.20	0.10	63			SILTSTONE	DK GY SLD LOAD CASTS INDICATE TOPS UP.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	95.20	95.42	0.22	63			SANDSTONE	MG M GY LAM BRKN AS ABOVE SS BUT ONLY RECTANGULAR RIP-UP S. UP TO 2CM LONG. AVERAGE 0.5CM.
45	95.42	95.56	0.14	64			SANDSTONE	MG M GY LAM SLD AS ABOVE.
45	95.56	95.68	0.12	64			SILTSTONE	DK GY SLD 4.0CM MG SS LAMELLAE AT BASAL UNIT.
45	95.68	96.05	0.37	64			SANDSTONE	MG M GY LAM SLD AS ABOVE SS. QTZ & SLTST RIP-UPS UP TO 2CM. AVG 1CM. COAL STRINGERS.
45	96.05	96.24	0.19	65			SILTSTONE	GY SLD
45	96.24	96.29	0.05	65			SANDSTONE	MG M GY LAM SLD MUDDY SS.
46	96.29	96.63	0.34	66			SANDSTONE	MG M GY LAM SLD MUDDY SS WITH SLTST RIP-UPS & LAMELLAE. MAX RIP-UPS OF 2.5CM. AVERAGE LESS 0.5 CM.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	96.63	96.67	0.04	*66			SILTSTONE	OK.GY.SLD
46	96.67	98.40	1.73	66			SANDSTONE	MG.M.GY.LAM.BRKN SLTST WISPS. LAMELLAE & RIP-UPS. RIP-UP S. MAX 3CM LONG. AVG 1CM. FEW QTZ RIP-U PS. LIGHT INTERSPERSED BANDS OF COMPACT ED RIP-UPS.
47	98.40	98.45	0.05	66			SANDSTONE	MG.LT.GY.BRKN MUDDY SS.
47	98.45	98.48	0.03	66			SANDSTONE	MG.LT.GY.SLD MUDDY SS.
47	98.48	98.60	0.12	66			SANDSTONE	MG.LT-M.GY.SLD CONVOLUTED SLTST LAMELLAE DUE TO DEMATE RING.
47	98.60	99.22	0.62	66			SANDSTONE	MG.LT.GY.SLD MUDDY SS. MUDDY WISPS. 2.5 CM ROUNDED S LTST CLAST.
47	99.22	99.34	0.12	66			SANDSTONE	MG.LT-M.GY.SLD CONVOLUTED SLTST LAMELLAE DUE TO DEMATE RING.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
47	99.34	99.47	0.13	*66			SANDSTONE	MG.LT.GY.SLD MUDDY SS. MUDDY WISPS.
47	99.47	99.58	0.11	67			SANDSTONE	MG.LT-M.GY.SLD CONVOLUTED SLTST LAMELLAE DUE TO DEMATE RING.
47	99.58	99.78	0.20	69			SANDSTONE	MG.LT.GY.BRKN MUDDY SS.
47	99.78	99.81	0.03	70			SANDSTONE	MG.LT-M.GY.SLD CONVOLUTED SLTST LAMELLAE DUE TO DEMATE RING.
47	99.81	99.87	0.06	72			SANDSTONE	MG.LT.GY.BRKN MUDDY SS.
47	99.87	99.93	0.06	73			SANDSTONE	MG.M.GY.SLD CONVOLUTED SLTST LAMELLAE DUE TO DEMATE RING.
47	99.93	100.36	0.43	75			SANDSTONE	MG.LT.GY.BRKN MUDDY SS. 2.5CM FRACTURE NEAR TOP OF UN IT WITH ARGILLACEOUS FRACTURE FILL.
47	100.36	100.53	0.17	76			SILTSTONE	M.GY.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	100.53	100.56	0.03	78			SILTSTONE	M.GY. BRKN
48	100.56	100.68	0.12	79			SANDSTONE	MG.LT.GY. BRKN MUDDY SS WITH MUDST WISPS.
48	100.68	100.74	0.06	81			SANDSTONE	MG.LT.GY. SLD CONVOLUTED SLTST LAMELLAE DUE TO DEHATE RING. UNIDENTIFIED WHITE PHYLLO - SILIC ATE STRINGERS WITH MINOR COAL PARTINGS.
48	100.74	100.94	0.20	82			SANDSTONE	MG.LT.GY. SLD MUDDY SS WITH MUDST WISPS. 2.5CM ROUNDE D SLTST RIP-UP.
48	100.94	101.03	0.09	*84			SANDSTONE	MG.M.GY. SLD CONVOLUTED SLTST LAMELLAE DUE TO DEHATE RING.
48	101.03	101.61	0.58	81			SILTSTONE	M.GY. BRKN 3.0CM QTZ AND CARB VEIN IN CENTER OF UN IT. VERY FINE CARB VEINS AT BASAL UNIT.
48	101.61	102.17	0.56	78			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	102.17	102.29	0.12	75			SILTSTONE	M.GY. VBRKN 2.0CM CARB VEIN & SMALL SCALE FRACTURE DISPLACEMENT.
48	102.29	102.90	0.61	71			SANDSTONE	MG.LT.GY. LAM. BRKN LAMELLAE OF SLTST RIP-UPS (UP TO 2CM, A VG 0.5CM). MUDDY SS.
48	102.90	102.95	0.05	68			SANDSTONE	MG.M.GY. SLD CONVOLUTED SLTST LAMELLAE DUE TO DEHATE RING.
48	102.95	103.12	0.17	65			SANDSTONE	MG.LT.GY. BRKN SLTST CLASTS ROUNDED, 5CM LONG AVG 1.5 AND RECTANGULAR.
49	103.12	104.32	1.20	*62			SILTSTONE	SSY.LT-M.GY. LAM. BRKN MG SS LAMELLAE.
49	104.32	104.52	0.20	62			ROCK LOSS	
49	104.52	104.94	0.42	62			SANDSTONE	SLTY MG.M.GY. LAM. SSD. SLD SLTST LAMELLAE.
49	104.94	105.04	0.10	62			ROCK LOSS	
49	105.04	105.42	0.38	62			SANDSTONE	MG.M.GY. BRKN MUDST WISPS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	105.42	105.52	0.10	61			SANDSTONE	MG. M. GY. SLD
50	105.52	106.35	0.83	61			SANDSTONE	SLTY. MG. M-DK. GY. LAM. SSD. BRKN FEW SHEARED SURFACES. LOAD CASTS INDICATE TOPS UP.
50	106.35	106.45	0.10	61			ROCK LOSS	
50	106.45	106.61	0.16	61			SILTSTONE	DK. GY. SSD. SLD DEMATERING.
50	106.61	107.04	0.43	61			SANDSTONE	SLTY. MG. M-DK. GY. LAM. SSD. BRKN
50	107.04	107.29	0.25	61			SILTSTONE	DK. GY. 3CM FRACTURES OF BREC RUNS SUB-VERTICAL A FEW COAL STRINGERS AT BASAL UNIT. SHEAR ZONES.
50	107.29	107.52	0.23	61			SANDSTONE	MG. M-DK. GY. SSD. SLD VERY FEW COAL STRINGERS.
51	107.52	107.61	0.09	61			SANDSTONE	FG. LT. GY. SLD COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
51	107.61	107.84	0.23	60			SANDSTONE	SLTY. FG. M-DK. GY. LAM. SSD. BRKN SMALL SCALE FRACTURES DISPLACEMENT (LESS 1.0CM).
51	107.84	108.63	0.79	60			SILTSTONE	DK. GY. LAM. SSD. BRKN FG SS LAMELLAE.
51	108.63	108.74	0.11	60			ROCK LOSS	
51	108.74	109.62	0.88	*60			SILTSTONE	DK. GY. LAM. BRKN 19.0CM SHEAR ZONE WITH QTYZ INFILL AT BASAL UNIT.
52	109.62	110.42	0.80	60			MUDSTONE	SLTY. DK. GY. BRKN 46CM FROM TOP IS 1.5CM COAL STRINGER, OCCASSIONAL MUD LAMINATION. THIN COAL STRINGERS WITH QUARTZ NEAR BASE. LISTRIC SURFACES.
52	110.42	110.57	0.15	60	08389	L ROOF	SILTSTONE	M-DK. GY. BRKN MOTTLED LOOK FROM PRESSURE DEFORMATION, LISTRIC SURFACES. L SEAM ROOF ROCK. BOTTOM 11.0CM SAMPLED.
52	110.57	110.64	0.07	60	08389	L ROOF	MUDSTONE	DK. GY. SLD NUMEROUS QTYZ FRACTURE FILLS. LISTRIC SURFACES. L SEAM ROOF ROCK. SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	110.64	110.71	0.07	60	08389	L ROOF	MUDSTONE	CARB. DK. GY. BRKN SHEARED, QTZ FRACTURING. L SEAM ROOF RO CK. SAMPLED.
52	110.71	110.82	0.11	61	08390	L	COAL LOSS	
52	110.82	110.90	0.08	61	08390	L	COAL	C-4. BLK. PHRD
52	110.90	110.97	0.07	61	08390	L	COAL	C-3. BLK. PHRD
52	110.97	111.02	0.05	61	08390	L	COAL	C-4. BLK. PHRD
52	111.02	111.08	0.06	61	08390	L	COAL	C-2. BLK. PHRD
52	111.08	111.12	0.04	61	08390	L	COAL	C-5. BLK. PHRD
52	111.12	111.15	0.03	61	08390	L	COAL	C-3. BLK. PHRD LISTRIC SURFACES.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
52	111.15	111.29	0.14	61	08390	L	COAL	C-3. BLK. BRKN BANDED.
52	111.29	111.35	0.06	61	08390	L	COAL	C-3. BLK. PHRD
52	111.35	111.39	0.04	62	08390	L	MUDSTONE	CARB. BLK. BRKN MANY LISTRIC SURFACES, COAL STRINGERS.
52	111.39	111.44	0.05	62	08390	L	COAL	C-2. BLK. VBRKN
52	111.44	111.67	0.23	62	08390	L	COAL	C-2. BLK. BRKN BANDING, TALC SURFACES, CORE HOLDS TOGETHER WELL.
53	111.67	111.72	0.05	62	08390	L	COAL	C-3. BLK. VBRKN BANDED, LISTRIC SURFACES.
53	111.72	111.76	0.04	62	08390	L	COAL	C-5. BLK. BRKN SOME BETTER COAL BANDS.
53	111.76	111.89	0.13	62	08391	L	COAL LOSS	
53	111.89	111.93	0.04	62	08391	L	MUDSTONE	CARB. DK. GY. VBRKN SHEARED.
53	111.93	111.94	0.01	62	08391	L	COAL	C-2. BLK. SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	111.94	111.96	0.02	63 08391	L	COAL	C-4. BLK
53	111.96	111.98	0.02	63 08391	L	MUDSTONE	CARB. DK. GY. BRKN SHEARED.
53	111.98	112.03	0.05	63 08391	L	MUDSTONE	CARB. DK. GY. VSHRD
53	112.03	112.07	0.04	63 08391	L	COAL	C-3. BLK. BRKN
53	112.07	112.10	0.03	63 08391	L	MUDSTONE	CARB. BLK. SHRD ABUNDANT LISTRIC SURFACES.
53	112.10	112.13	0.03	63 08391	L	COAL	C-4. BLK. BRKN
53	112.13	112.19	0.06	63 08391	L	COAL	C-3. BLK. BRKN
53	112.19	112.31	0.12	63 08391	L	COAL	C-5. BLK. BRKN BREAKS TO POWDER EASILY, SHEARED.
53	112.31	112.34	0.03	63 08391	L	MUDSTONE	CARB. DK. GY. BRKN
53	112.34	112.37	0.03	64 08391	L	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	112.37	112.39	0.02	64 08391	L	COAL	C-2. BLK. BRKN
53	112.39	112.46	0.07	64 08391	L	COAL	C-4
53	112.46	112.51	0.05	64 08391	L	COAL	C-2. BLK. VBRKN
53	112.51	112.55	0.04	64 08391	L	COAL	C-1. BLK. SLD
53	112.55	112.58	0.03	64 08391	L	MUDSTONE	CARB. BLK. SHRD
53	112.58	112.60	0.02	64 08391	L	COAL	C-5. BLK. VSHRD
53	112.60	112.71	0.11	64 08391	L	COAL	C-1. BLK. BRKN CONCOIDAL FRACTURES.
53	112.71	112.77	0.06	64 08391	L	COAL	C-2. BLK. VBRKN SHEARED.
53	112.77	112.81	0.04	65 08391	L	COAL	C-2. BLK. BRKN
53	112.81	112.82	0.01	65 08391	L	COAL	C-3. BLK. BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	112.82	112.84	0.02	65	08391	L	COAL	C-2.BLK.BRKN CLEATED.
53	112.84	112.90	0.06	65	08391	L	ROCK LOSS	
53	112.90	112.93	0.03	65	08391	L	MUDSTONE	CARB.BLK.VSHRD SOFT.
53	112.93	112.96	0.03	65	08391	L	COAL	C-3.BLK.BRKN BANDED.
53	112.96	113.04	0.08	65	08391	L	COAL	C-2.BLK.SLD
53	113.04	113.12	0.08	65	08391	L	COAL	C-3.BLK.BRKN
53	113.12	113.18	0.06	65	08391	L	COAL	C-3.BLK.PHRD
53	113.18	113.20	0.02	66	08391	L	COAL	C-5.BLK.BRKN LISTRIC SURFACES.
53	113.20	113.25	0.05	66	08391	L	COAL	C-2.BLK.BRKN HELL CLEATED.
53	113.25	113.33	0.08	66	08391	L	COAL	C-3.BLK.BRKN MUCH QTZ VEINING (1.0CM THICK).

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
53	113.33	113.41	0.08	66	08391	L	MUDSTONE	CARB.BLK.VSHRD WITH COAL STRINGERS.
53	113.41	113.50	0.09	66	08391	L	COAL	C-3.BLK.PHRD SOME 1.0CM SIZED PIECES, MUDDY BANDS AT BASE.
54	113.50	113.51	0.01	66	08391	L	COAL	C-4.BLK.SLD
54	113.51	113.55	0.04	66	08391	L	MUDSTONE	DK.GY.SLD
54	113.55	113.66	0.11	66	08391	L	COAL LOSS	
54	113.66	113.70	0.04	67	08391	L	COAL	C-3.BLK.PHRD
54	113.70	113.72	0.02	67	08391	L	COAL	C-4.BLK.SLD
54	113.72	113.82	0.10	67	08392	L FLOOR	MUDSTONE	CARB.DK.GY.LAM.BRKN ABUNDANT COAL STRINGERS, LISTRIC SURFAC ES. L SEAM FLOOR ROCK. SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
54	113.82	113.99	0.17	67	08392	L FLOOR MUDSTONE	DK.GY.LAM.BRKN ABUNDANT PLANT FRAGS. SOME COAL STRINGERS. L SEAM FLOOR ROCK. TOP 15 CM SAMPLE D.
54	113.99	114.09	0.10	*67		SILTSTONE	LT-M.GY.LAM.BRKN WITH MUDST LAMS. QTZ AT BOTTOM.
54	114.09	114.46	0.37	72		MUDSTONE	DK.GY.LAM.BRKN COALY FRAGMENTS. PLANT FRAGMENTS. OCC C OAL STRINGER.
54	114.46	114.59	0.13	76		SILTSTONE	M.GY.BRKN MUDDY, COALY WOOD FRAGMENTS.
54	114.59	114.83	0.24	81		SANDSTONE	FG.M.GY.VTHNB.BRKN LITRIFIC SURFACES. 0.5CM ROUNDED LT BN C LASTS AT 20.0CM DOWN.
54	114.83	114.99	0.16	85		SANDSTONE	VFG.M.GY.BRKN GRADES FROM UNIT ABOVE.
54	114.99	115.35	0.36	*90		SANDSTONE	VFG.M.GY.VTHNB.BRKN M GREY 1CM CLAY BAND AT TOP, SLTY INTER LAM. ABUNDANT LITRIFIC SURFACES WITH ASS OCIATED QTZ.
55	115.35	116.19	0.84	89		MUDSTONE	DK.GY.BRKN COAL STRINGERS.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	116.19	117.03	0.84	88		MUDSTONE	CARB.DK.GY.SHRD COAL STRINGERS. EXTENSIVE PLANT DEBRIS.
55	117.03	117.28	0.25	86		SILTSTONE	DK.GY.BRKN CONVOLUTED CARB LAMELLAE AT TOP OF UNIT
55	117.28	117.46	0.18	85		MUDSTONE	CARB.DK.GY.SHRD
55	117.46	117.63	0.17	84		ROCK LOSS	
56	117.63	117.90	0.27	83		MUDSTONE	CARB.DK.GY.SHRD
56	117.90	118.10	0.20	82		ROCK LOSS	
56	118.10	118.15	0.05	81		MUDSTONE	CARB.DK.GY.SHRD PITYOPHYLLUM NORDENSKIOLDIY & PLANT DEB RIS.
56	118.15	118.85	0.70	79		MUDSTONE	CARB.DK.GY.SHRD THIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	118.85	119.15	0.30		78		ROCK LOSS	
56	119.15	119.37	0.22	*	77		SILTSTONE	M.GY.VBRKN SHEARED AT BASAL UNIT. PLANT WASH.
56	119.37	119.79	0.42		76		MUDSTONE	CARB.DK.GY.BRKN EXTENSIVE COAL STRINGERS. VERY THIN CARB VEINS. EXTENSIVE PLANT DEBRIS.
56	119.79	120.07	0.28		76		MUDSTONE	CARB.DK.GY.SHRD AS ABOVE. SOFT AQUA GREEN SHEET SILICAT E. IN SHEAR ZONE.
56	120.07	120.32	0.25		75		ROCK LOSS	
57	120.32	121.00	0.68		74		MUDSTONE	CARB.DK.GY.BRKN COAL STRINGERS. MG.SS LENSES.
57	121.00	121.48	0.48		73		SILTSTONE	M-DK.GY.SSD.BRKN MIST-OFF AT TOP OF UNIT. POSSIBLE CORE LOSS. MG.SS LENSES.
57	121.48	121.85	0.37		73		SILTSTONE	SSY.M.GY.LAM.SSD.BRKN

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	121.85	122.31	0.46	*	72		SANDSTONE	SLTY.LT-M.GY.LAM.SSD.BRKN SLTST LAMELLAE.
58	122.31	122.68	0.37		70		SANDSTONE	SLTY.LT-M.GY.LAM.SSD.BRKN AS ABOVE.
58	122.68	124.31	1.63	*	67		SILTSTONE	M-DK.GY.LAM.SSD.BRKN MUDDY SLTST. LOAD CASTS INDICATE TOPS UP.
59	124.31	124.44	0.13		69		SILTSTONE	M-DK.GY.LAM.SSD.SLD MUDDY SLTST.
59	124.44	126.30	1.86		71		SILTSTONE	SSY.M-DK.GY.LAM.SSD.BRKN DEWATERING. BURROWS. SLTST RIP-UPS; MAX 3CM. AVG 2.5CM. SAND VOLCANOES. MUDST LAMELLAE. LOAD CASTS INDICATE TOPS UP.
60	126.30	127.45	1.15	*	73		SILTSTONE	M-DK.GY.LAM.SSD.BRKN DEWATERING. MUDST LAMELLAE & VERY THIN BEDS. LOAD CASTS INDICATE TOPS UP.
60	127.45	128.40	0.95		68		SANDSTONE	FG.LT.GY.LAM.BRKN MUDST LAMELLAE & MISPS.
61	128.40	130.47	2.07	*	63		SANDSTONE	FG.LT.GY.LAM.BRKN WISPY MUDST LAMELLAE. COAL STRINGERS.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	130.47	132.66	2.19	*70			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE & CARB WISPS.
63	132.66	133.54	0.88	*67			SANDSTONE	FG.LT.GY.LAM.BRKN CARBONACEOUS WISPS. AS ABOVE.
63	133.54	133.92	0.38	63			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE.
63	133.92	134.13	0.21	59			SANDSTONE	CLYY.FG.LT.GY.LAM.BRKN CLYY LAMELLAE & MUDST WISPS. QYZ & CARB VEIN (1.0CM) AT BASAL.
63	134.13	134.82	0.69	*55			SANDSTONE	FG.LT.GY.LAM.BRKN WISPY MUDST LAMELLAE. GRADED BEDDING.
64	134.82	135.72	0.90	*57			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE.
64	135.72	136.14	0.42	54			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE WITH BREC FRACTURE FILL. 4CM W IDE OF CARB.
64	136.14	136.60	0.46	52			SANDSTONE	FG.LT.GY.LAM.BRKN WISPY MUDST LAMELLAE. RIP-UPS UP TO 1CM , BUT ARE SPARSE. SHEAR ZONE.

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	136.60	136.82	0.22	49			SANDSTONE	FG.LT.GY.LAM.BRKN
65	136.82	137.50	0.68	*46			SANDSTONE	FG.LT.GY.BRKN SLIGHTLY LAMINATED. WELL LAMINATED WITH MUDSTONE AT TOP 15.0CM.
65	137.50	138.89	1.39	*69			SANDSTONE	FG.LT.GY.LAM.SSD.BRKN MUDST LAMELLAE.
66	138.89	139.69	0.80	68			SANDSTONE	FG.LT.GY.LAM.SSD.BRKN AS ABOVE.
66	139.69	140.49	0.80	66			ROCK LOSS	
66	140.49	141.80	1.31	*65			SANDSTONE	FG.LT.GY.LAM.BRKN AS ABOVE. TWIST-OFF AT TOP OF UNIT. FEW CARBONATE CLASTS NEAR BASAL UNIT UP TO 2.0CM LONG.
67	141.80	143.41	1.61	*75			SANDSTONE	FG.LT.GY.LAM.BIOTR.BRKN MUDST LAMELLAE. LISTRIC SURFACES.
67	143.41	143.59	0.18	75			SANDSTONE	FG.LT.GY.LAM.SLD MUDST LAMELLAE. SMALL SCALE FRACTURE (L ESS 1.0CM).

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	143.59	143.61	0.02	75	08393	K/L ROOF COAL	C-3.BLK.VBRKN BREAKS EASILY TO A POWDERED STATE.
68	143.61	143.67	0.06	74	08393	K/L ROOF COAL	C-4.BLK.PHRD SOME CARB MUDST, PIECES TO 3.0MM IN SIZ E.
68	143.67	143.74	0.07	74	08393	K/L ROOF COAL	C-4.BLK.PHRD WITH 2.0CM PIECES, SOME C-3, SOME MUD.
68	143.74	143.75	0.01	74	08393	K/L ROOF MUDSTONE	CARB.BLK.VBRKN WITH COAL STRINGERS, BREAKS RELATIVELY EASILY. K/L ROOF ROCK. SAMPLED.
68	143.75	143.84	0.09	74	08393	K/L ROOF MUDSTONE	DK.GY.VBRKN VERY HARD, SOME LISTRIC SURFACES. CARBY AT BASE. K/L ROOF ROCK. SAMPLED.
68	143.84	144.04	0.20	74	08394	K/L COAL	C-5.BLK.PHRD LOTS OF CARB MUD ESP AT TOP, SOME 2.0CM CHUNKS.
68	144.04	144.11	0.07	74	08394	K/L MUDSTONE	CLYY.DK.GY.PHRD STICKY, C-5 COAL FLECKS & PIECES.
68	144.11	144.15	0.04	73	08394	K/L COAL	C-3.BLK.VBRKN

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	144.15	144.24	0.09	73	08394	K/L MUDSTONE	CARB.DK.GY.VBRKN PYRITE (DISSEMINATED) BAND. MINOR QTZ F ILLED FRACTURES. SHEAR SURFACES.
68	144.24	144.29	0.05	73	08394	K/L COAL	C-3.BLK.BRKN BANDED.
68	144.29	144.31	0.02	73	08394	K/L MUDSTONE	CARB.DK.GY.VBRKN WITH COAL STRINGERS.
68	144.31	144.39	0.08	73	08394	K/L COAL	C-4.BLK.PHRD WITH CARB MUD, SOME GOOD (C-3) COAL PIE CES.
68	144.39	144.40	0.01	73	08394	K/L MUDSTONE	DK.GY.SLD
68	144.40	144.42	0.02	72	08394	K/L COAL	C-4.BLK.BRKN
68	144.42	144.43	0.01	72	08394	K/L COAL	C-2.BLK.BRKN
68	144.43	144.48	0.05	72	08394	K/L MUDSTONE	CARB.BLK.VBRKN WITH COAL STRINGERS, SOME SHEARING.

* DENOTES MEASURED BCA

FORM 4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	144.48	144.55	0.07	72	08394 K/L	COAL	C-4.BLK.VBRKN WITH SOME C-2, C-3 BANDS.
68	144.55	144.58	0.03	72	08394 K/L	MUDSTONE	BRKN LISTRIC SURFACES.
68	144.58	144.65	0.07	72	08394 K/L	COAL	C-4.BLK.PHRD SOME BROKEN PIECES.
68	144.65	144.70	0.05	71	08394 K/L	COAL	C-3.BLK.BRKN
68	144.70	144.73	0.03	71	08394 K/L	MUDSTONE	DK.GY.BRKN QTZ FRACTURES.
68	144.73	144.75	0.02	71	08394 K/L	COAL	C-4.BLK.BRKN AS ABOVE.
68	144.75	144.77	0.02	71	08394 K/L	COAL	C-1.BLK.BRKN CONCOIDAL FRACTURES, QTZ FRACTURES.
68	144.77	144.83	0.06	71	08394 K/L	MUDSTONE	DK.GY.VBRKN WITH COAL STRINGERS UP TO 0.5CM THICK (SHOWING CON COIDAL FRACTURES), SOME SHEAR SURFACES.
68	144.83	144.87	0.04	70	08394 K/L	COAL	C-2.BLK.BRKN SOME C-1 CONCOIDAL FRACTURES, CORE THIS T-OFF.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	144.87	144.89	0.02	70	08394 K/L	COAL	C-4.BLK.SHRD
68	144.89	144.94	0.05	70	08394 K/L	MUDSTONE	CARB.BLK.SHRD
68	144.94	144.96	0.02	70	08394 K/L	COAL	C-3.BLK.SLD
68	144.96	145.00	0.04	70	08394 K/L	COAL	C-3.BLK.SHRD
68	145.00	145.06	0.06	70	08394 K/L	COAL	C-5.BLK.VSHRD SOME MUD.
68	145.06	145.17	0.11	69	08394 K/L	COAL	C-4.BLK.BRKN SOME LISTRIC SURFACES WITH MUDST BANDS.
69	145.17	145.23	0.06	69	08394 K/L	COAL	C-4.BLK.VBRKN WITH SOME C-2 BANDS.
69	145.23	145.26	0.03	69	08394 K/L	COAL	C-2.BLK.BRKN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	145.26	145.30	0.04	69	08394	K/L	MUDSTONE	DK.GY.SLD
69	145.30	145.39	0.09	69	08405	K/L	COAL	C-3.BLK.BRKN
69	145.39	145.44	0.05	69	08405	K/L	COAL	C-4.BLK.BRKN WITH SOME CARB MUD, SHEARED WITH MUD BANDS.
69	145.44	145.50	0.06	68	08405	K/L	COAL	C-5.BLK
69	145.50	145.72	0.22	68	08405	K/L	MUDSTONE	DK.GY.BRKN SHEARED, SOME COAL STRINGERS, TALC SURFACES.
69	145.72	145.74	0.02	68	08405	K/L	COAL	C-1.BLK.BRKN
69	145.74	145.77	0.03	68	08405	K/L	MUDSTONE	DK.GY.BRKN
69	145.77	145.79	0.02	68	08405	K/L	COAL	C-1.BLK.BRKN QTZ FRACTURE FILL.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	145.79	145.94	0.15	67	08405	K/L	MUDSTONE	CARB.DK.GY.BRKN LISTRIC SURFACES. NUMEROUS COAL STRINGERS.
69	145.94	146.01	0.07	67	08405	K/L	MUDSTONE	CARB.DK.GY.VSHRD AS ABOVE.
69	146.01	146.09	0.08	67	08405	K/L	COAL	C-5.BLK.VBRKN MUCH MUD BANDS.
69	146.09	146.18	0.09	67	08405	K/L	COAL	C-5.BLK.BRKN NUMEROUS COAL STRINGERS ALMOST 50% OF CORE.
69	146.18	146.21	0.03	67	08405	K/L	COAL	C-1.BLK.BRKN CONCOIDAL FRACTURES.
69	146.21	146.42	0.21	67	08405	K/L	MUDSTONE	CARB.DK.GY.LAM.BRKN SHEARED, COAL STRINGERS AND C1-C2 COAL BANDS, COAL IS 40% OF CORE.
69	146.42	146.48	0.06	66	08405	K/L	MUDSTONE	CARB.DK.GY.VSHRD AS ABOVE.
69	146.48	146.51	0.03	66	08405	K/L	MUDSTONE	CARB.DK.GY.SHRD AS ABOVE, 0.5CM C-1 COAL STRINGER.
69	146.51	146.54	0.03	66	08405	K/L	COAL	C-3.BLK.SLD

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	146.54	146.59	0.05	66	08405 K/L	COAL	C-2.BLK.VBRKN SOME C-1 CONCHOIDAL FRACTURE.
69	146.59	146.66	0.07	66	08405 K/L	MUDSTONE	DK.GY.VBRKN LISTRIC SURFACES.
70	146.66	146.84	0.18	66	08405 K/L	COAL	C-3.BLK.VBRKN SOME C-2, SOME CORE IS POWDERED.
70	146.84	146.87	0.03	65	08395 K/L PARTING	MUDSTONE	BLK.YSHRD
70	146.87	146.91	0.04	65	08395 K/L PARTING	MUDSTONE	LT.BN.SHRD MODERATELY CONSOLIDATED.
70	146.91	147.02	0.11	*65	08395 K/L PARTING	MUDSTONE	SLTY.M-DK.GY.BRKN WITH COAL STRINGERS.
70	147.02	147.05	0.03	65	08395 K/L PARTING	COAL	C-5.BLK.BRKN
70	147.05	147.45	0.40	66	08395 K/L PARTING	MUDSTONE	SLTY.M-DK.GY.BRKN NUMEROUS LISTRIC SURFACES, HIGHLY QTZ FRACTURED, OCCASIONAL COAL STRINGERS.
70	147.45	147.60	0.15	66	K/L PARTING	SILTSTONE	M.GY.SLD GRADES FROM SLTY MUD. PYRITE BANDS. VERY FRACTURED (QTZ) BANDS CRENLATED BY PRESSURE.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	147.60	148.06	0.46	67	K/L PARTING	SILTSTONE	M.GY.LAM.BRKN WITH MUDST WISPS, OCCASSIONAL QUARTZ FILLED FRACTURE. SHEARED SURFACES. COALY FRAGMENTS.
70	148.06	148.26	0.20	67	K/L PARTING	SILTSTONE	SSY.M.GY.VTHNB.BRKN VERY SOFT SHEARED ZONE, 5CM THICK, 8CM FROM TOP, INTERBEDDED WITH FINER GRAINED ROCKS.
70	148.26	148.66	0.40	*68	K/L PARTING	SANDSTONE	VFG.LY-M.GY.LAM.BRKN INTERBEDDED WITH SLTST, SOME VTHNB ZONE S, LISTRIC SURFACES, SOME DISCONT MUDDY WISPS (RIP-UPS?), SLIGHTLY DISTURBED BDG, QUESTIONABLE BCA.
71	148.66	148.99	0.33	68	K/L PARTING	MUDSTONE	DK.GY.LAM.BRKN WITH COAL STRINGERS, ABUNDANT PLANT FRAGMENTS, NUMEROUS LISTRIC SURFACES.
71	148.99	149.06	0.07	67	K/L PARTING	MUDSTONE	DK.GY.LAM.VBRKN AS ABOVE.
71	149.06	149.15	0.09	67	K/L PARTING	MUDSTONE	CARB.DK.GY.BRKN COAL STRINGERS.
71	149.15	149.16	0.01	66	K/L PARTING	COAL	C-2.BLK.PHRD

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	149.16	149.18	0.02	66	K/L PARTING	MUDSTONE	CARB. DK. GY. VBRKN
71	149.18	149.21	0.03	65	K/L PARTING	COAL	C-2. BLK. VBRKN
71	149.21	149.23	0.02	65	K/L PARTING	ROCK LOSS	
71	149.23	149.32	0.09	64	K/L PARTING	MUDSTONE	M-DK. GY. BRKN NUMEROUS COALY FRAGS., PLANT HASH, SOME SHEARED SURFACES.
71	149.32	149.52	0.20	64	K/L PARTING	SILTSTONE	M. GY. VTHNB. SLD WITH MUDST INTERLAM. STRUCTURALLY DISTU RBED BEDS, PYRITE BLEBS, DEMATERING STR UCTURE?, PLANT FRAGMENTS.
71	149.52	149.64	0.12	63 08396	K/L PARTING	MUDSTONE	CARB. BLK. BRKN COAL STRINGERS, NUMEROUS LISTRIC SURFAC ES.
71	149.64	149.69	0.05	63 08396	K/L PARTING	MUDSTONE	CARB. BLK. VSHRD AS ABOVE.
71	149.69	149.84	0.15	62 08396	K/L PARTING	MUDSTONE	CARB. BLK. VBRKN AS ABOVE.
71	149.84	149.91	0.07	62 08397	K/L	COAL	C-4. BLK. PHRD SOME 3.0CM PIECES.

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 74

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. BCA ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	149.91	150.07	0.16	61 08397	K/L	COAL	C-4. BLK. PHRD SOME PIECES.
71	150.07	150.24	0.17	61 08397	K/L	COAL LOSS	
71	150.24	150.37	0.13	60 08397	K/L	MUDSTONE	DK. GY. VBRKN
71	150.37	150.45	0.08	60 08397	K/L	COAL	C-4. BLK. PHRD SOME MUD, SOME BETTER COAL.
71	150.45	150.46	0.01	59 08397	K/L	MUDSTONE	M-DK. GY. SLD
71	150.46	150.53	0.07	59 08397	K/L	COAL	C-2. BLK. BRKN SOME C-3 COAL.
72	150.53	150.59	0.06	58 08397	K/L	COAL	C-2. BLK. BRKN SHEARED.
72	150.59	150.99	0.40	58 08397	K/L	COAL LOSS	
72	150.99	151.07	0.08	57 08397	K/L	COAL	C-4. BLK. SHRD COAL GRADE HARD TO DETERMINE.
72	151.07	151.10	0.03	57 08397	K/L	MUDSTONE	DK. GY. VSHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 75

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	151.10	151.15	0.05	56	08397	K/L	MUDSTONE	CARB. DK. GY. VBRKN COAL STRINGERS, DISSEMINATED PYRITE, QT Z.
72	151.15	151.19	0.04	56	08397	K/L	MUDSTONE	CARB. DK. GY. VSHRD
72	151.19	151.42	0.23	55	08397	K/L	COAL LOSS	
72	151.42	151.44	0.02	55	08397	K/L	COAL	C-2. BLK. VBRKN
72	151.44	151.67	0.23	54	08397	K/L	COAL	C-5. BLK. PHRD SOOPY LOOK.
72	151.67	151.79	0.12	54	08397	K/L	MUDSTONE	CARB. BLK. PHRD SOME PIECES, COAL FLECKS.
72	151.79	151.87	0.08	53	08397	K/L	COAL	C-2. BLK. PHRD WITH PIECES.
72	151.87	151.99	0.12	52	08397	K/L	COAL	C-4. BLK. PHRD OVERALL C-4 WITH C-3 CHUNKS.
72	151.99	152.02	0.03	52	08397	K/L	COAL	C-3. BLK. PHRD

* DENOTES MEASURED BCA

89/02/15

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 76

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	152.02	152.41	0.39	52	08397	K/L	COAL LOSS	
72	152.41	152.52	0.11	51	08397	K/L	ROCK LOSS	
72	152.52	152.54	0.02	51	08397	K/L	MUDSTONE	DK. GY. VBRKN WITH COAL STRINGERS.
72	152.54	152.55	0.01	50	08397	K/L	COAL	C-2. BLK. VBRKN
72	152.55	152.63	0.08	50	08397	K/L	COAL	C-3. BLK. PHRD
72	152.63	152.72	0.09	49	08397	K/L	COAL	C-3. BLK. VBRKN
72	152.72	152.85	0.13	49	08397	K/L	COAL LOSS	
72	152.85	152.92	0.07	48	08398	K/L FLOOR	MUDSTONE	DK. GY. VBRKN SOME COAL STRINGERS AT TOP. K/L SEAM FL OOR ROCK. SAMPLED.
72	152.92	152.97	0.05	48	08398	K/L FLOOR	MUDSTONE	CLYY. DK. BN. SHRD GREY-BROWN, SOFT. K/L SEAM FLOOR ROCK. SAMPLED.
72	152.97	153.06	0.09	47	08398	K/L FLOOR	MUDSTONE	CARB. DK. GY. VBRKN MINOR COAL STRINGERS. K/L SEAM FLOOR RO CK. SAMPLED.

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	153.06	153.17	0.11	47	08398	K/L FLOOR	MUDSTONE	DK.GY.LAM.SLD NUMEROUS QTZ INFILLS PARALLEL TO BEDDING, COAL STRINGERS, SMALL SCALE FOLD PROBABLE CORE LOSS AT TOP. TOP 4.0CM SAMPLED. K/L SEAM FLOOR ROCK.
72	153.17	153.41	0.24	*46			SILTSTONE	LT-M.GY.LAM.BRKN WITH REGULAR MUDST WISPS, COALY FRAGMENTS, SOME LITRIC SURFACES.
72	153.41	153.43	0.02	46			SANDSTONE	FG.LT.GY.SSD.SLD SLTST RIP-UPS, LOAD CASTS TOPS UP (A COUPLE LOOK OVERTURNED).
72	153.43	153.65	0.22	47			SILTSTONE	LT-M.GY.TMNB.BRKN GRADES TO NEXT UNIT WITH SS INTERBEDS, BECOMES LAM.
72	153.65	153.92	0.27	47			SANDSTONE	FG.LT.GY.VTMNB.SLD DISCONTINUOUS MUDDY LAM WHICH HAVE BEEN COMPRESSED FROM PRESSURE, TWIST OFF AT BASE.
73	153.92	154.82	0.90	*48			SILTSTONE	M.GY.LAM.SSD.BRKN MUDDY SLTST. 1 CM QTZ & CARB YEIN (10 CM FROM TOP OF UNIT).

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH88029

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA ID	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	154.82	155.72	0.90	*47			MUDSTONE	SLTY.M-DK.GY.LAM.BRKN ARGILLACEOUS FRACTURE FILL AT TOP 15CM OF UNIT. FEW FG SS LENS AT CENTER OF UNIT. CARBONATE WISPS.
74	155.72	156.27	0.55	*44			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.BRKN LARGE ROUND SLTST CLASTS - 6.0CM.
74	156.27	157.39	1.12	36			MUDSTONE	SLTY.M-DK.GY.LAM.SSD.VBRKN
74	157.39	157.80	0.41	19			SANDSTONE	FG.M.GY.LAM.SSD.BRKN MUDST.LAMELLAE.
75	157.80	158.09	0.29	*10			SANDSTONE	FG.M.GY.LAM.SSD.BRKN MUDST.LAMELLAE. LOAD CASTS INDICATE TOP S UP. END OF HOLE. TD = 158.09 M.

748

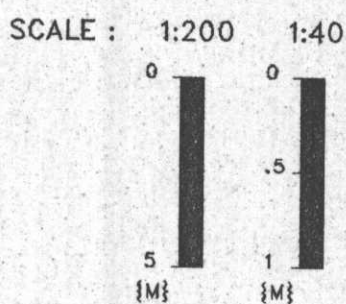
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88029

GEOLOGIST : HEARN

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

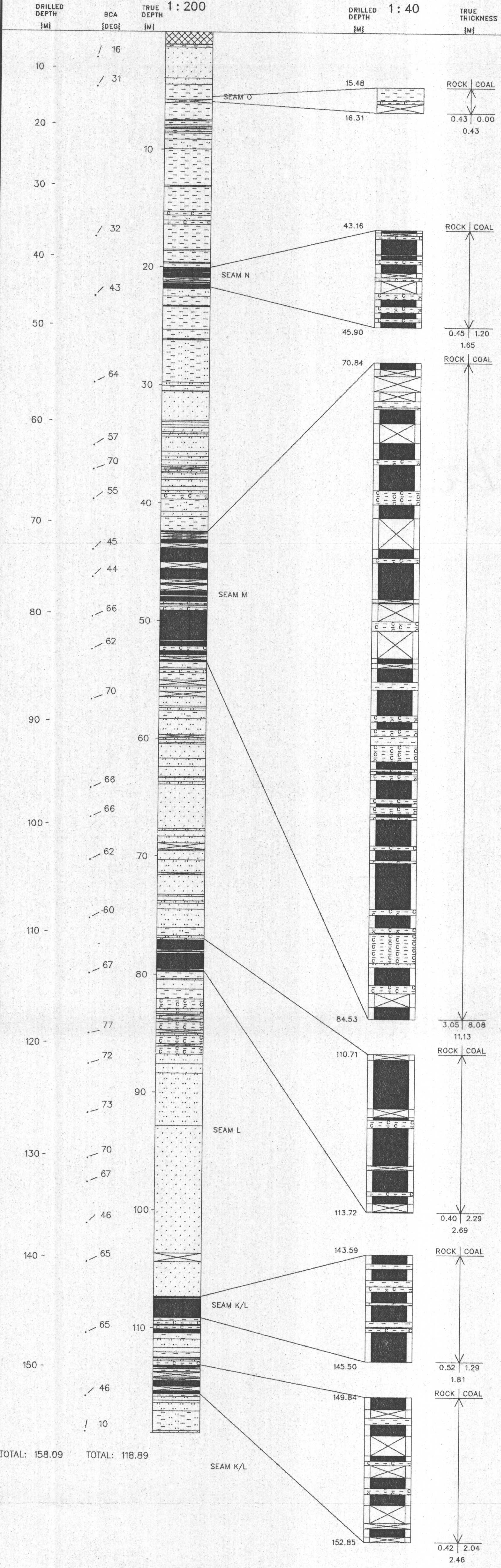


NORTHING: 6343983.0 N
 EASTING: 507393.8 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



TOTAL: 158.09

TOTAL: 118.89

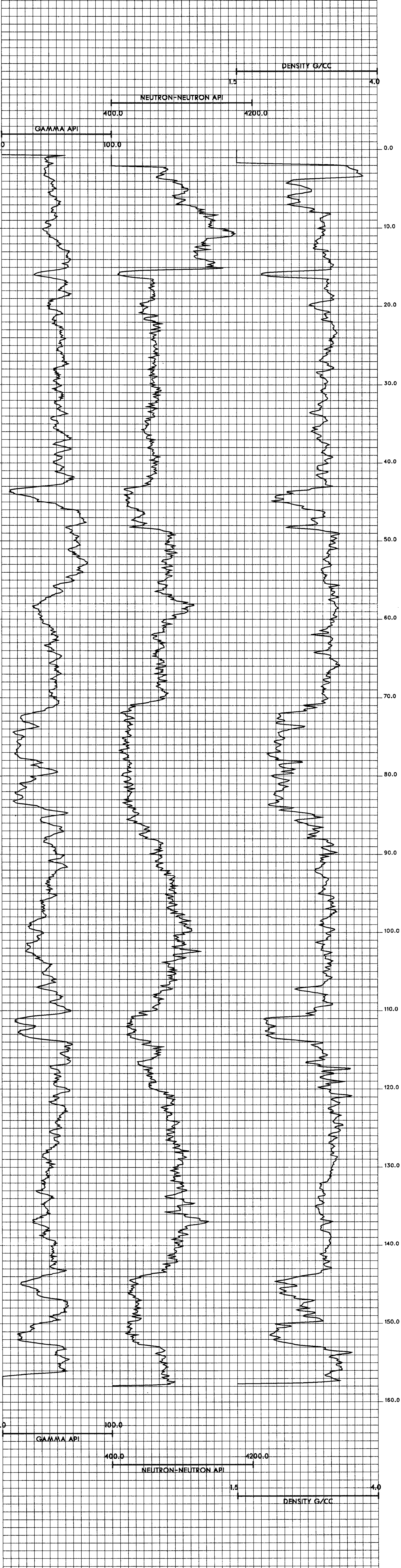
SEAM K/L

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Gulf Canada Resources Limited Coal Division

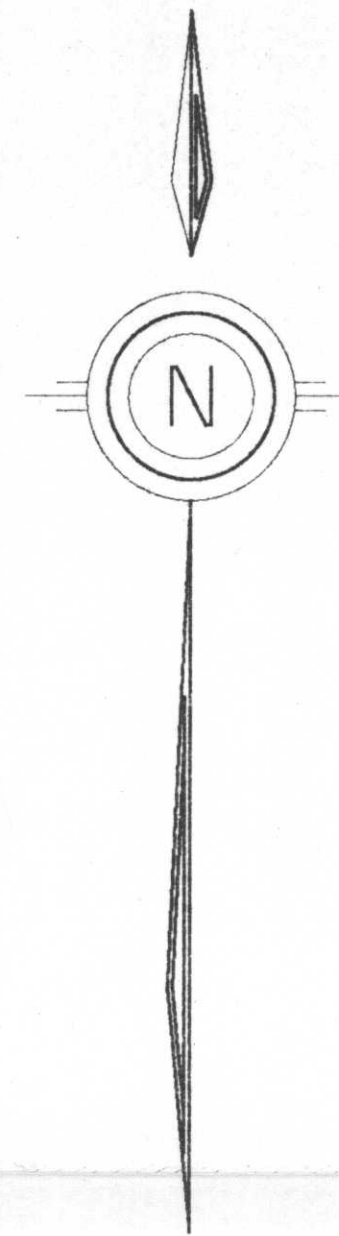
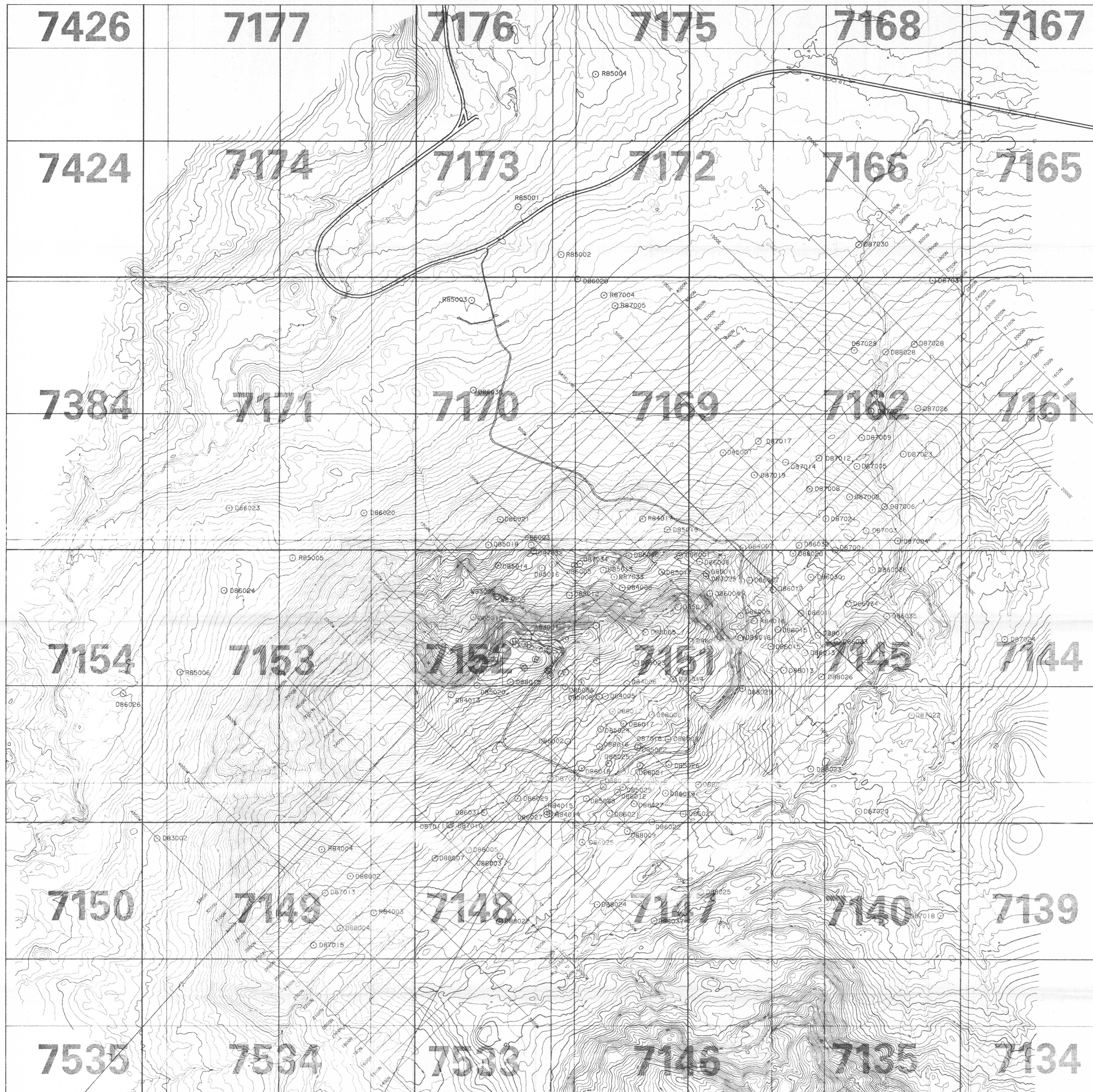
Geophysical Log

Datasource: KPNLRDDH88029	Province: BC	Northing: 6343980.00	Lat: 571427		
Log Date: 88-07-14	Zone: 9	Easting: 507394.00	Long: 1285239		
Company: CENTURY	Measuring Point: GROUND LEVEL		Elevation: 1615.9		
Geologist: HEARN					
Scale: 1 to 200.0	Comments:				
Depth Range: 0.0 to 162.0	1. LOGGED THROUGH RODS				
True Thickness: NO	2.				
Logs Plotted:					
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	

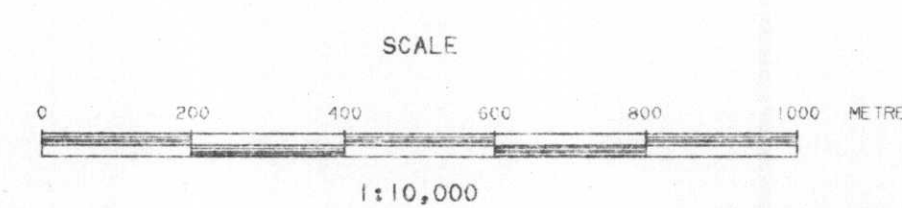
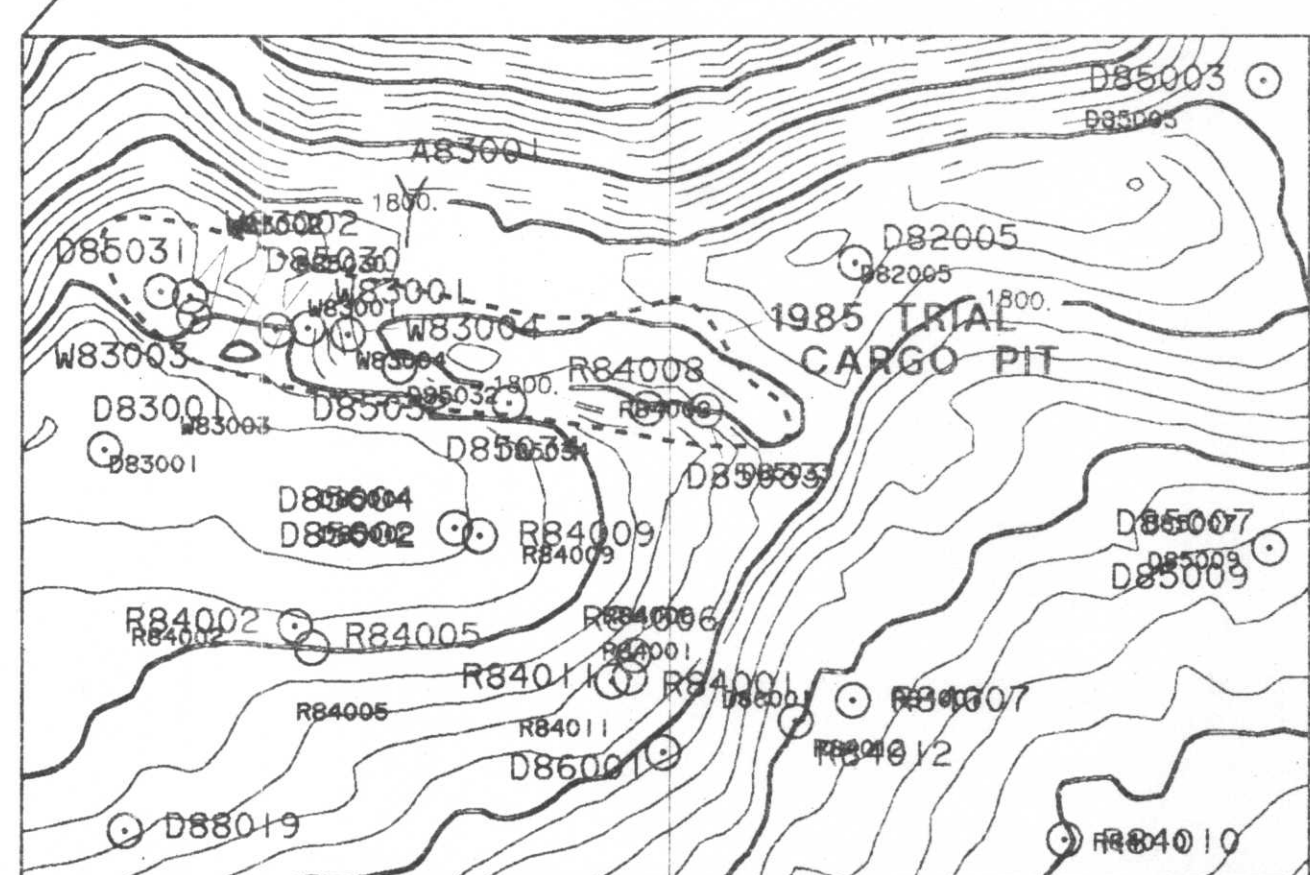
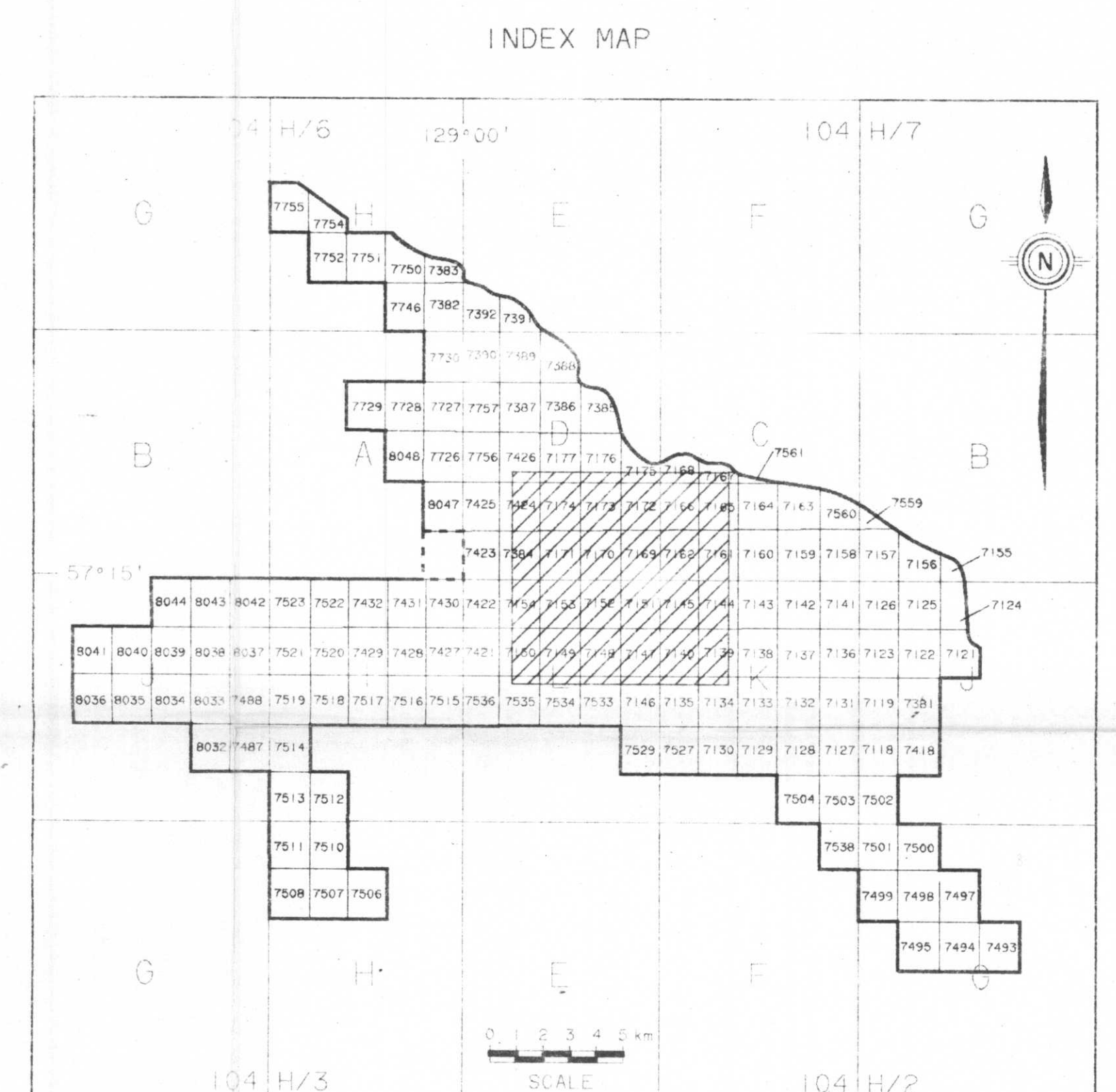


1:10,000 DIAMOND DRILL HOLE

LOCATION MAP



- LEGEND**
- MAJOR CONTOUR
 - INTERMEDIATE CONTOUR
 - DIAMOND DRILL HOLE
 - ROTARY DRILL HOLE
 - WINKY DRILL HOLE
 - ADIT
 - LICENCE BOUNDARY & NUMBER



- LEGEND**
- LICENCE AREA
 - LICENCE NUMBER
 - UNDER APPLICATION

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GULF CANADA RESOURCES LIMITED

MAP KPN8001

MOUNT KLAPPAN ANTHRACITE PROPERTY
1988
LOST FOX AREA
DRILL HOLE LOCATION MAP

AUTHOR: D.W.	DATE: NOVEMBER, 1988
APPROVED BY: E.S.	SLAPT1205027180554001.L00

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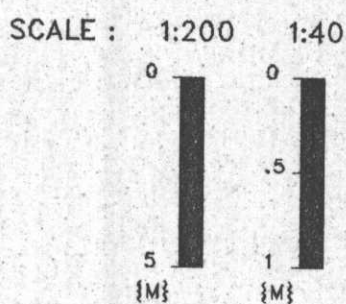
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH88029

GEOLOGIST : HEARN

DATE : FEB 21/89

DRAWING NO. :

LITHOLOGIC SYMBOLS

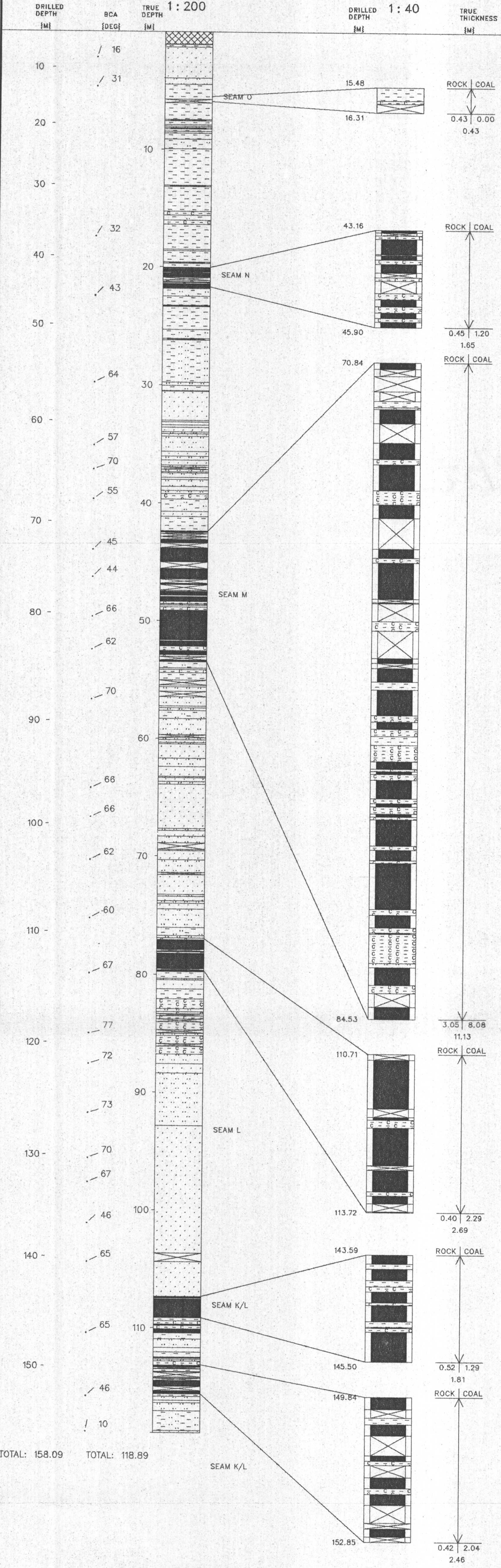


NORTHING: 6343983.0 N
 EASTING: 507393.8 E

INCLINATION: 90.0°

	SANDSTONE		BENTONITE
	SILTSTONE		BRECCIA
	COAL		CARBONACEOUS
	OVERBURDEN		QUARTZ
	MUDSTONE, CLAYSTONE		PYRITE
	TUFF		FERRUGINOUS
	LIMESTONE		CONGLOMERATE
	CORE LOSS		FOSSIL BED

SEAM DETAIL



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Gulf Canada Resources Limited Coal Division

Geophysical Log

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Company: CENTURY	Measuring Point: GROUND LEVEL	Elevation: 1615.9			
Geologist: HEARN	Comments: 1. LOGGED THROUGH RODS 2.				
Scale: 1 to 200.0	True Thickness: NO				
Depth Range: 0.0 to 162.0					
Logs Plotted:					
Description	Axis Range	Axis Length	Smoothing Points	Tool	Comments
1. GAMMA API	0.0 to 100.0	7.0	31	9055A	
2. NEUTRON-NEUTRON API	400.0 to 4200.0	9.0	9	9055A	
3. DENSITY G/CC	1.5 to 4.0	9.0	15	9030AA	

